COMMONWEALTH of VIRGINIA

DEPARTMENT OF LABOR AND INDUSTRY

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ITEMS HIGHLIGHTED
IN YELLOW
INDICATE SUBJECT TO CHANGE

DRAFT: January 4, 2021

VIRGINIA SAFETY AND HEALTH CODES BOARD

BRIEFING PACKAGE FOR

January 12, 2021

Final Standard for Infectious Disease Prevention of the SARS-CoV-2 That Causes COVID-19, §16 VAC 25-220

I. Action Requested.

The VOSH Program requests the Safety and Health Codes Board adopt a final standard for Infectious Disease Prevention of the SARS-CoV-2 That Causes COVID-19, §16 VAC 25-220, applicable to every employer, employee, and place of employment in the Commonwealth of Virginia within the jurisdiction of the VOSH program as described in §§16 VAC 25-60-20 and 16 VAC 25-60-30. Va. Code §40.1-22(6a).

A. Attachments.

ATTACHMENT A:
INDUSTRY SPECIFIC INFORMATION

ATTACHMENT B:
CURRENT LAWS AND REGULATIONS
RECOGNIZED MITIGATION STRATEGIES FOR COVID-19 NOT COVERED BY VOSH REGULATIONS OR STANDARDS
VA. CODE §40.1-51(A), THE "GENERAL DUTY CLAUSE"

ATTACHMENT C:
OTHER STATE COVID-19 LAWS, STANDARDS AND REGULATIONS

ATTACHMENT D:
FINDING OF "GRAVE DANGER" TO SUPPORT THE ADOPTION OF THE EMERGENCY TEMPORARY STANDARD (ETS) FOR INFECTION DISEASE PREVENTION OF THE SARS-COV-2 VIRUS THAT CAUSES COVID-19, 16VAC25-220, EFFECTIVE JULY 27, 2020

ATTACHMENT E:
OSHA RECORDKEEPING GUIDELINES FOR RECORDING COVID-19 OCCUPATIONALLY RELATED CASES.

ATTACHMENT F:
VOSH INVESTIGATION AND INSPECTION PROCEDURES

ATTACHMENT G:
DETERMINING CAUSE OF DEATH (CDC)

ATTACHMENT H:
VOSH Violations Issued in COVID-19 Cases Opened From February 1, 2020 to December 30, 2020

B. Situation Summary.[1]

- On February 7, 2020, the Commissioner of the Virginia Department of Health (VDH) issued a Declaration of Public Emergency.[2]
- On March 7, the first case of COVID-19 in Virginia was confirmed.[3]
- On March 11, the World Health Organization characterized COVID-19 as a pandemic.[4]
- On March 12, Governor Ralph S. Northam issued Executive Order 51, Declaration of a State of Emergency Due To Novel Coronavirus (Covid-19) in the Commonwealth of Virginia.[5]

[1] https://www.vdh.virginia.gov/coronavirus/ - Situation Summary Taken in Part from the Virginia Department of Health Website
[2] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/Order-of-the-Governor-and-State-Health-Commissioner-Declaration-of-Public-Health-Emergency.pdf
[3] https://www.vdh.virginia.gov/news/2020-news-releases/first-virginia-case-of-covid-19-confirmed-at-fort-belvoir/
[4] https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020
[5] https://www.governor.virginia.gov/media/governorvirginiagov/governor-of-virginia/pdf/eo/EO-51-Declaration-of-a-State-of-Emergency-Due-to-Novel- Coronavirus-(COVID-19).pdf

- On March 13, 2020, President Donald J. Trump declared a national emergency in response to the COVID-19 pandemic.[6]

- On March 17, Governor Northam and State Health Commissioner M. Norman Oliver, MD, MA issued a Declaration of Public Health Emergency.[7]

- On March 23, Governor Northam issued Executive Order 53[8] that orders the closure of certain non-essential businesses, bans all gatherings of more than 10 people, and closes all K-12 schools for the remainder of the academic year. Governor Northam also urged all Virginians to avoid non-essential travel outside the home, if and when possible. Food establishments are mandated to offer curbside takeout and delivery service only, or close to the public.

- On March 25, Governor Northam and State Health Commissioner M. Norman Oliver, MD, MA directed all hospitals to stop performing elective surgeries or procedures to help conserve supplies of personal protective equipment (PPE). Order of Public Health Emergency Two.[9]

- On March 30, Governor Northam issued Executive Order 55[10], a statewide Temporary Stay at Home order. The executive order took effect immediately and will remain in place until June 10, 2020. The order directed all Virginians to stay home except in extremely limited circumstances. Individuals may leave their residence for allowable travel, including to seek medical attention, work, care for family or household members, obtain goods and services like groceries, prescriptions, and others as outlined in Executive Order Fifty-Three, and engage in outdoor activity with strict social distancing requirements.

- On May 8, Governor Northam issued Executive Order 61 and Order of Public Health Emergency Three, Phase One Easing of Certain Temporary Restrictions Due to Novel Coronavirus (COVID-19).[11]

- On May 12, Governor Northam issued Executive Order 62 and Order of Public Health Emergency Four, Jurisdictions Temporarily Delayed from Entering Phase

[6] https://www.whitehouse.gov/presidential-actions/proclamation-declaring-national-emergency-concerning-novel-coronavirus-disease-covid-19-outbreak/
[7] https://www.governor.virginia.gov/media/governorvirginiagov/governor-of-virginia/pdf/Order-of-the-Governor-and-State-Health-Commissioner-Declaration-of-Public-Health-Emergency.pdf
[8] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-53-Temporary-Restrictions-Due-To-Novel-Coronavirus-(COVID-19).pdf
[9] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/Order-of-Public-Health-Emergency-Two---Order-of-The-Governor-and-State-Health-Commissioner.pdf
[10] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-55-Temporary-Stay-at-Home-Order-Due-to-Novel-Coronavirus-(COVID-19).pdf
[11] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-61-and-Order-of-Public-Health-Emergency-Three---Phase-One-Easing-Of-Certain-Temporary-Restrictions-Due-To-Novel-Coronavirus-(COVID-19).pdf

One in Executive Order 61 and Permitted to Remain in Phase Zero Northern Virginia Region.[12]

- On May 14, Governor Northam issued Amended Executive Order 62 and Amended Order of Public Health Emergency Four, Jurisdictions Temporarily Delayed from Entering Phase One in Executive Order 61 and Permitted to Remain in Phase Zero, Phase Zero Jurisdictions.[13]

- On May 26, Governor Northam issued a revised Executive Order 63[14] (EO 63), "Order of Public Health Emergency Five, Requirement to Wear Face Covering While Inside Buildings." EO 63 also directed the Commissioner of the Virginia Department of Labor and Industry [and Virginia Safety and Health Codes Board] to promulgate emergency regulations and standards to control, prevent, and mitigate the spread of COVID-19 in the workplace.

II. Summary of Rulemaking Process.

A. Petition Concerning Poultry and Meat Processing.

On April 23, 2020, the Commissioner of Labor and Industry received a petition from the Virginia Legal Aid Justice Center (LAJC), Community Organizing, and Community Solidarity with the Poultry Workers organizations to enact an emergency regulation to address COVID-19 related workplace hazards in the poultry processing and meatpacking industries. On April 29, 2020, Commissioner C. Ray Davenport provided an initial response to the April 23rd petition letter.

On May 6, 2020, the Commissioner received a follow-up letter from the same petitioners. On May 14, 2020, Commissioner C. Ray Davenport provided a follow-up response to the April 23rd and May 6th petition letters indicating that the petition would be submitted to the Virginia Safety and Health Codes Board for consideration.

B. Virginia Executive Order 63, issued May 26, 2020.

On May 26, 2020, Governor Northam issued a revised Executive Order 63[15] (EO 63), "Order of Public Health Emergency Five, Requirement to Wear Face Covering While Inside Buildings" that provides in part:

> "E. Department of Labor and Industry
> Except for paragraph B above, this Order does not apply to employees, employers, subcontractors, or other independent contractors in the workplace. The Commissioner of the Virginia Department of Labor and Industry shall

[12] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-62-and-Order-of-Public-Health-Emergency-Four---Jurisdictions-Temporarily-Delayed-From-Entering-Phase-One-in-Executive-Order-61-and-Permitted-to-Remain-in-Phase-Zero-Northern-Virginia-Region.pdf
[13] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-62-and-Order-of-Public-Health-Emergency-Four-AMENDED.pdf
[14] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-63-and-Order-Of-Public-Health-Emergency-Five---Requirement-To-Wear-Face-Covering-While-Inside-Buildings.pdf
[15] *Id.*

promulgate emergency regulations and standards to control, prevent, and mitigate the spread of COVID-19 in the workplace. The regulations and standards adopted in accordance with §§ 40.1-22(6a) or 2.2-4011 of the Code of Virginia shall apply to every employer, employee, and place of employment within the jurisdiction of the Virginia Occupational Safety and Health program as described in 16 Va. Admin. Code § 25-60-20 and Va. Admin. Code § 25-60-30. These regulations and standards must address personal protective equipment, respiratory protective equipment, and sanitation, access to employee exposure and medical records and hazard communication. Further, these regulations and standards may not conflict with requirements and guidelines applicable to businesses set out and incorporated into Amended Executive Order 61 and Amended Order of Public Health Emergency Three."[16] (Emphasis added).

Although EO 63 does not mention the Safety and Health Codes Board, Governor Northam issued a news release which says in part:

> "The Governor is also directing the Commissioner of the Department of Labor and Industry to develop emergency temporary standards for occupational safety that will protect employees from the spread of COVID-19 in their workplaces. These occupational safety standards will require the approval by vote of the Virginia Safety and Health Codes Board and must address personal protective equipment, sanitation, record-keeping of incidents, and hazard communication. Upon approval, the Department of Labor and Industry will be able to enforce the standards through civil penalties and business closures."[17] (Emphasis added).

C. Emergency Meeting of Safety and Health Codes Board.

1. Emergency Temporary Standard.

On June 12, 2020 the Department posted a Notice of Meeting for a June 24, 2020 emergency meeting[18] of the Safety and Health Codes Board to consider for adoption an Emergency Temporary Standard/Emergency Regulation ("ETS/ER"), Infectious Disease Prevention: SARS-CoV-2 Virus That Causes COVID-19, applicable to every employer, employee, and place of employment in the Commonwealth of Virginia within the jurisdiction of the VOSH program as described in §§16VAC 25-60-20 and 16 VAC 25-60-30.

On June 12, 2020 the Department also opened a 10 day Comment Forum[19] to provide the public the opportunity to submit written comments on the Department's request to consider for adoption an ETS/ER Infectious Disease Prevention, SARS-CoV-2 Virus that Causes COVID-19. The comment period closed on June 22, 2020, and the

[16] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-61-and-Order-Of-Public-Health-Emergency-Three-AMENDED---Phase-One-Easing-Of-Certain-Temporary-Restrictions-Due-To-Novel-Coronavirus-(COVID-19).pdf
[17] https://www.governor.virginia.gov/newsroom/all-releases/2020/may/headline-857020-en.html
[18] https://townhall.virginia.gov/L/ViewMeeting.cfm?MeetingID=31004
[19] https://townhall.virginia.gov/L/comments.cfm?GeneralNoticeid=1118

comments were reviewed with the Board at its meeting on June 24, 2020.

On June 24, 2020, the Board decided to proceed with the adoption of an ETS under Va. Code §40.1-22(6a) and further provided that once the ETS was adopted, the Board would proceed with the consideration of adopting a permanent replacement standard for the ETS.

The Board continued its meeting of June 24th on June 29, 2020,[20] July 7, 2020[21] and July 15, 2020.[22] On July 15, 2020, the Virginia Safety and Health Codes Board adopted §16 VAC 25-220, Emergency Temporary Standard, Infectious Disease Prevention: SARS-CoV-2 Virus That Causes COVID-19.

The ETS was published in the Richmond Times Dispatch on July 27, 2020 and took immediate effect.[23] The ETS expires on January 26, 2021.

2. Proposed Permanent Standard.

Pursuant to Va. Code §40.1-22(6a), publication of the COVID-19 ETS in the Richmond Times Dispatch constituted notice that the Board intends to adopt a permanent standard within a period of six months.

Although not required to under Va. Code §40.1-22(6a), the Board opted to engage in the following notice and comment process that would mirror, to the extent possible within the compressed six month timeline for adoption, Virginia Administrative Process Act (APA) procedures:

- The Board held a 60 day written comment period for the proposed permanent standard running from August 27, 2020 to September 25, 2020.[24]

- The Board held a public hearing on the proposed permanent standard on September 30, 2020.[25]

  The Department received 993 written comments through the Virginia Regulatory Townhall for the 60 day written comment period from August 27, 2020 to September 25, 2020. There were 33 written comments sent directly to the Department during the 60 day written comment period, although a number of those were also posted by the Commenters on the Virginia Regulatory Townhall. There were 29 oral comments received during the public hearing on September 30, 2020.

  The Board was briefed on the Department's response to the public comments at its regular meeting on November 12, 2020.

[20] https://townhall.virginia.gov/L/ViewMeeting.cfm?MeetingID=31037
[21] https://townhall.virginia.gov/L/ViewMeeting.cfm?MeetingID=31057
[22] https://townhall.virginia.gov/L/ViewMeeting.cfm?MeetingID=31089
[23] http://register.dls.virginia.gov/emergency_regs.shtml
[24] https://townhall.virginia.gov/L/ViewNotice.cfm?gnid=1137
[25] https://townhall.virginia.gov/L/ViewMeeting.cfm?MeetingID=31418

- In response to the public comments received, the Department developed recommended revisions to the proposed permanent standard and published them on December 10, 2020 with a 30 day written comment period ending January 9, 2021.[26]

- A public hearing is scheduled for January 5, 2021.[27]

- An economic impact analysis (EIA) based on the requirements of Va. Code §2.2-4007.04[28] will be issued no later than January 11, 2021. The EIA is being prepared by Chmura Economics & Analytics, a nationally recognized economic consulting firm.[29]

  [TO BE PROVIDED ON OR BEFORE JANUARY 11, 2021]

3. Final Standard.

- A meeting of the Board to consider adoption of a final standard is scheduled for January 12, 2021.[30] If necessary, continued meeting dates of January 13, 2021[31] and January 19, 2021[32] have been scheduled.

D. Review of Comments Submitted: Initial 60 day Written Comment Period from August 27, 2020 to September 25, 2020; and Public Hearing of September 30, 2020.

The Department received 993 written comments through the Virginia Regulatory Townhall for the 60 day written comment period from August 27, 2020 to September 25, 2020.[33]

There were 33 written comments sent directly to the Department during the 60 day written comment period, although a number of those were also posted by the Commenter on the Virginia Regulatory Townhall.[34]

There were 29 oral comments received during the public hearing on September 30, 2020.[35]

E. Review of Comments Submitted: Follow-up 30 day Written Comment Period from December 10, 2020 to January 9, 2021; and Public Hearing of January 5, 2021.

[TO BE PROVIDED ON JANUARY 11, 2021]

[26] https://townhall.virginia.gov/L/ViewNotice.cfm?gnid=1177
[27] https://townhall.virginia.gov/L/ViewMeeting.cfm?MeetingID=31985
[28] https://law.lis.virginia.gov/vacode/title2.2/chapter40/section2.2-4007.04/
[29] http://www.chmuraecon.com/
[30] https://townhall.virginia.gov/L/ViewMeeting.cfm?MeetingID=31986
[31] https://townhall.virginia.gov/L/ViewMeeting.cfm?MeetingID=31987
[32] https://townhall.virginia.gov/L/ViewMeeting.cfm?MeetingID=31989
[33] https://townhall.virginia.gov/L/GetFile.cfm?File=meeting\92\31594\Agenda_DOLI_31594_v6.pdf
[34] *Id.*
[35] https://townhall.virginia.gov/L/ViewNotice.cfm?gnid=1162

F. Summary DOLI Recommended Changes From Revised Proposed Standard to Final Standard in Response to Comments Received During the 60 Day Written Comment Period, September 30, 2020 Public Hearing, and 30 Day Written Comment Period (as of January 3, 2021).

16VAC25-220-10. Purpose, scope, and applicability.

Language added to 16VAC25-220-10.C:

> Notwithstanding anything to the contrary in this standard, no enforcement action shall be brought against an employer or institution for failure to provide PPE required by this standard, if such PPE is not readily available on commercially reasonable terms, and the employer or institution makes a good faith effort to acquire or provide such PPE as is readily available on commercially reasonable terms. The Department of Labor and Industry shall consult with the Virginia Department of Health as to the ready availability of PPE on commercially reasonable terms and, in the event there are limited supplies of PPE, whether such supplies are being allocated to high risk or very high risk workplaces.[36]

16VAC25-220-20. Effective dates.

Language added as 16VAC25-220-20.A:

> A. Adoption Process.
> 1. This standard shall take effect upon review by the Governor, and if no revisions are requested, filing with the Registrar of Regulations, and publication in a newspaper of general circulation, published in the City of Richmond, Virginia.
> 2. If the Governor's review results in one or more requested revisions to the standard, the Safety and Health Codes Board shall reconvene to approve, amend, or reject the requested revisions.
> 3. If the Safety and Health Codes Board approves the requested revisions to the standard as submitted, the standard shall take effect upon filing with the Registrar of Regulations and publication in a newspaper of general circulation published in the City of Richmond, Virginia.
> 4. Should the Governor fail to review the standard under subsection 1 within thirty (30) days of its approval by the Safety and Health Codes Board, the Board will not need to reconvene to take further action, and the standard shall take effect upon filing with the Registrar of Regulations and publication in a newspaper of general circulation published in the City of Richmond, Virginia.

[36] DOLI interprets the phrase "no enforcement action" to mean that either no citation shall issue, or if a citation has already been issued it shall be vacated, "if such PPE is not readily available on commercially reasonable terms, and the employer or institution makes a good faith effort to acquire or provide such PPE as is readily available on commercially reasonable terms."

DOLI will still retain the right to carry out its statutory authority to conduct informal investigations or onsite inspections and verify employer compliance with this provision.

Language added as 16VAC25-220-20.B:

> B. The requirements for 16VAC25-220-70 [Infection disease preparedness and response plan] shall take effect on March 26, 2021.[37] The training requirements in 16VAC25-220-80 shall take effect on March 26, 2021.[38]

Language added as 16VAC25-220-20.C:

> C. Within fourteen (14) days of the expiration of the Governor's COVID-19 State of Emergency and Commissioner of Health's COVID-19 Declaration of Public Emergency, the Virginia Safety and Health Codes Board shall notice a regular, special, or emergency meeting/conduct a regular, special, or emergency meeting to determine whether there is a continued need for the standard.[39]

16VAC25-220-30. Definitions.

Definition of "Face covering" revised:

> "Face covering" means an item made of two or more layers of washable, breathable fabric that fits snugly against the sides of the face without any gaps, completely covering the nose and mouth and fitting securely under the chin. Neck gaiters made of two or more layers of washable, breathable fabric, or folded to make two such layers are considered acceptable face coverings. Face coverings shall not have exhalation valves or vents, which allow virus particles to escape, and shall not be made of material that makes it hard to breathe, such as vinyl. [40] A face covering is not a surgical/medical procedure mask or respirator….

New definition for "Minimal occupational contact" is provided:

> "Minimal occupational contact" means no or very limited, brief, and infrequent contact with employees or other persons at the place of employment. Examples include, but are not limited to, remote work (i.e., those working from home); employees with no more than brief contact with others

[37] This date assumes the permanent standard has an effective date of January 27, 2021.
[38] This date assumes the permanent standard has an effective date of January 27, 2021.
[39] The new language in 16VAC25-220.C requires the Board to make a "determination" of whether there is continued need for the standard. The Department has identified three "determination" options:

- That there is no continued need for the standard;
- That there is a continued need for the standard with no changes; and
- That there is a continued need for a revised standard.

Regardless of the determination, the Department and Board will provide notice and comment opportunities on any changes to or revocation of the standard.

With regard to the phrase "notice a regular, special, or emergency meeting/conduct a regular, special, or emergency meeting to," the intent of the language is to give the Board the maximum amount of flexibility to "notice" the Board meeting within 14 days even if the Board may not actually meet within 14 days.
[40] https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html

inside six feet (e.g., passing another person in a hallway that does not allow physical distancing of six feet); healthcare employees providing only telemedicine services; a long distance truck driver.[41]

New definition of "Severely immunocompromised" is provided:

"Severely immunocompromised" means being on chemotherapy for cancer, being within one year out from receiving a hematopoietic stem cell or solid organ transplant, untreated HIV infection with CD4 T lymphocyte count < 200, combined primary immunodeficiency disorder, and receipt of prednisone >20mg/day for more than 14 days."[42] The degree of immunocompromise is determined by the treating provider, and preventive actions are tailored to each individual and situation.

16VAC25-220-40. Mandatory requirements for all employers.

16VAC25-220-40.B.8.d [notification to VDH of positive cases] is changed to:

d. The Virginia Department of Health during a declaration of an emergency by the Governor pursuant to § 44-146.17. Every employer as defined by § 40.1-2 of the Code of Virginia shall report to the Virginia Department of Health (VDH) when the worksite has had two or more confirmed cases of COVID-19 <u>of its own employees present at the place of employment within a 14-day period testing positive for SARS-CoV-2 virus during that 14-day time period.</u> Employers shall make such a report in a manner specified by VDH, including name, date of birth, and contact information of each case, within 24 hours of becoming aware of such cases. Employers shall continue to report all cases until the local health department has closed the outbreak. After the outbreak is closed, subsequent identification of two or more confirmed cases of COVID-19 during a declared emergency shall be reported, as above. The following employers are exempt from this provision because of separate outbreak reporting requirements contained in 12VAC5-90-90: any residential or day program, service, or facility licensed or operated by any agency of the Commonwealth, school, child care center, or summer camp;
(Emphasis added).

16VAC25-220.C.1.a is changed to reflect a symptoms based strategy for return to work:

1. Employers shall develop and implement policies and procedures for employees known or suspected to be infected with the SARS-CoV-2 virus to return to work.

a. Symptomatic employees known or suspected to be infected with the SARS-CoV-2 virus are excluded from returning to work until all three of the following have been met:

(i) The employee is fever-free (less than 100.0° F) for at least 24 hours,

[41] https://www.osha.gov/SLTC/covid-19/hazardrecognition.html
[42] Footnote 1, https://www.cdc.gov/coronavirus/2019-ncov/hcp/return-to-work.html

without the use of fever-reducing medications,
(ii) Respiratory symptoms, such as cough and shortness of breath have improved, and
(iii) At least 10 days have passed since symptoms first appeared.
However, a limited number of employees with severe illness may produce replication-competent virus beyond 10 days that may warrant extending duration of isolation for up to 20 days after symptom onset. Employees who are severely immunocompromised may require testing to determine when they can return to work - consider consultation with infection control experts.

b. Employees known to be infected with SARS-CoV-2 who never develop signs or symptoms are excluded from returning to work until 10 days after the date of their first positive RT-PCR test for SARS-CoV-2 RNA.

16VAC25-220-40.F [multiple employees occupying a vehicle] and -40.G [where physical distancing cannot be maintained], the following language was added:

Until adequate supplies of respiratory protection and/or personal protective equipment become readily available for non-medical and non-first responder employers and employees, employers shall provide and employees shall wear face coverings while occupying a work vehicle with other employees or persons.

16VAC25-220-40.H, the following language is added:

H. When it is necessary for employees solely exposed to lower risk hazards or job tasks to have brief contact with others inside six feet (e.g., passing another person in a hallway that does not allow physical distancing of six feet), a face covering is required.

16VAC25-220-40.J.1, the following language is added:

1. Although face shields are not considered a substitute for face coverings as a method of source control and not used as a replacement for face coverings among people without medical contraindications, face shields may provide some level of protection against contact with respiratory droplets. In situations where a face covering cannot be worn due to medical contraindications, employers shall provide and employees shall wear either:

a. A face shield that wraps around the sides of the wearer's face and extends below the chin, or

b. A hooded face shield; and

c. To the extent feasible, employees wearing face shields in accordance with this subsection shall observe physical distancing requirements in this standard.

2. Face shield wearers shall wash their hands before and after removing the face shield and avoid touching their eyes, nose and mouth when removing it.

3. Disposable face shields shall only be worn for a single use and disposed of according to manufacturer instructions.

4. Reusable face shields shall be cleaned and disinfected after each use

according to manufacturer instructions.

16VAC25-220-50. Requirements for hazards or job tasks classified as very high or high exposure risk.

16VA25-220-50.B.1 [air handling systems] is changed by deleting references to ASHRAE and ANSI standards,[43] and adding the following:

b. Where feasible and within the design parameters of the system, are utilized as follows:

i. Increase total airflow supply to occupied spaces provided that a greater hazard is not created (e.g., airflow that is increased too much may make doors harder to open or may blow doors open);

ii. In ground transportation settings, use natural ventilation (i.e., opening windows if possible and safe to do so) to increase outdoor air dilution of inside air when environmental conditions and transportation safety and health requirements allow;

iii. Inspect filter housing and racks to ensure appropriate filter fit and check for ways to minimize filter bypass;

iv. Increase air filtration to as high as possible in a manner that will still enable the system to provide airflow rates as the system design requires. Ensure compliance with higher filtration values is allowed by the air handler manufacturer's installation instructions and listing;

v. Generate clean-to-less-clean air movements by re-evaluating the positioning of supply and exhaust air diffusers and/or dampers and adjusting zone supply and exhaust flow rates to establish measurable pressure differentials;

vi. Have staff work in "clean" ventilation zones that do not include higher-risk areas such as visitor reception or exercise facilities (if open);

vii. Ensure exhaust fans in restroom facilities are functional and operating continuously when the building is occupied.

viii. If the system's design can accommodate such an adjustment and is allowed by the air handler manufacturer's installation instructions and listing, improve central air filtration to MERV-13 and seal edges of the filter to limit bypass; and

ix. Check filters to ensure they are within service life and appropriately installed.

c. Comply with USBC and applicable referenced American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standards.

16VA25-220-60.B.6, the following language is added:

Diagnostic laboratories that conduct routine medical testing and environmental specimen testing for COVID-19 are not required to operate at BSL-3.

[43] American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standards 62.1 and 62.2 (ASHRAE 2019a, 2019b), which include requirements for outdoor air ventilation in most residential and nonresidential spaces, and ANSI/ASHRAE/ASHE Standard 170 (ASHRAE 2017a).

16VAC25-220-60.C.6, the following language from the ETS was accidentally deleted from the Revised Proposed Standard posted on December 10, 2020 during the .pdf conversion process and is added back in:

> 6. To the extent feasible, employers shall ensure that psychological and behavioral support is available to address employee stress at no cost to the employee.

16VAC25-220-60. Requirements for hazards or job tasks classified at medium exposure risk.

16VA25-220-60.B.1 [air handling systems] is changed in the same manner as 16VA25-220-50.B.1 above.

16VAC25-220-70. Infectious disease preparedness and response plan.

16VAC25-220-70.C.3.a.iv, new language is added:

> C. ….The plan shall:
> 3. Consider and address the level of SARS-CoV-2 virus and COVID-19 disease risk associated with various places of employment, the hazards employees are exposed to at those sites, and job tasks employees perform at those sites. Such considerations shall include:
> ….
> iv. Situations where employees work during higher risk activities involving potentially large numbers of people or enclosed work areas such as at large social gatherings, weddings, funerals, parties, restaurants, bars, hotels, sporting events, concerts, parades, movie theaters, rest stops, airports, bus stations, train stations, cruise ships, river boats, airplanes, etc.[44]

16VAC25-220-80. Training.

16VAC25-220-80.C.2 [written certification of training], new language is added:

> 2. A physical or electronic signature is not necessary if other documentation of training completion can be provided (e.g., electronic certification through a training system; security precautions that enable the employer to demonstrate that training was accessed by passwords and usernames unique to each employee, etc.).

III. Summary of the Final Standard.

10 Purpose, scope, and applicability.

- The final standard is designed to establish requirements for employers to control, prevent, and mitigate the spread of coronavirus disease 2019 (COVID-19) to and among employees

[44] https://www.vdh.virginia.gov/coronavirus/coronavirus/travel-to-areas-with-widespread-ongoing-community-spread/ https://www.cdc.gov/coronavirus/2019-ncov/travelers/travel-during-covid19.html

and employers, and would apply to all Virginia employees and employers under VOSH's jurisdiction.

NOTE: VOSH is required by the OSH Act of 1970[45] and OSHA regulations[46] to be "at least as effective as" federal OSHA; and standards and regulations adopted by VOSH must be "as stringent as" those adopted by federal OSHA in accordance with Va. Code §40.1-22(5). VOSH generally follows OSHA interpretations of federal identical standards and regulations.

- Application of the standard to a place of employment will be based on the exposure risk level presented by SARS-CoV-2 virus-related and COVID-19 disease-related hazards present or job tasks undertaken by employees at the place of employment as defined in this standard (i.e., "very high", "high, "medium", and "lower").
- It is recognized that various hazards or job tasks at the same place of employment can be designated as "very high", "high, "medium", or "lower" as presenting potential exposure risk for purposes of application of the requirements of this standard.
- Provides factors to be considered in determining exposure risk level.
- No enforcement action shall be brought against an employer or institution for failure to provide PPE required by this standard, if such PPE is not readily available on commercially reasonable terms, and the employer or institution makes a good faith effort to acquire or provide such PPE as is readily available on commercially reasonable terms. The Department of Labor and Industry shall consult with the Virginia Department of Health as to the ready availability of PPE on commercially reasonable terms and, in the event there are limited supplies of PPE, whether such supplies are being allocated to high risk or very high risk workplaces.

  NOTE: DOLI interprets the phrase "no enforcement action" to mean that either no citation shall issue, or if a citation has already been issued it shall be vacated, "if such PPE is not readily available on commercially reasonable terms, and the employer or institution makes a good faith effort to acquire or provide such PPE as is readily available on commercially reasonable terms."

  DOLI will still retain the right to carry out its statutory authority to conduct informal investigations or onsite inspections and verify employer compliance with this provision.

- In lieu of specific provisions of the final standard, employers are permitted to comply with CDC guidelines, both mandatory and non-mandatory, provided that the CDC recommendation provides equivalent or greater protection than provided by a provision of the final standard.

  NOTE: The intent of the above section is to give employers the option to either comply with the requirements of the final standard or demonstrate that as an alternative that they have complied with requirements in a CDC publication addressing the same hazard, issue, etc.

[45] https://www.osha.gov/laws-regs/oshact/section_18
[46] https://www.osha.gov/laws-regs/regulations/standardnumber/1902/1902.4

In order for an employer to take advantage of the provision, it would have to demonstrate that it was complying with language in CDC publications that could be considered both "mandatory" (e.g., "shall", "will", etc.) and "non-mandatory" ("it is recommended that", "should", "may", etc.). In other words, an employer would have to comply with a CDC "recommended" practice even if the CDC publication doesn't "require" it.

VOSH's interpretation of the above section and language in CDC publications will otherwise follow normal rules of regulatory/statutory construction. For instance, if the CDC publication language offers options for an employer to address a hazard, issue, etc., that is also addressed by the final standard (e.g., the employer "should" do "this", or "that", or "the other"), then employer is required to implement at least one of the options in order for the above section to apply.

The final standard does not require employers to comply with any CDC publication language that is solely directed at assuring the safety and health of the general public.

- Similar to the CDC provision referenced above, a public school division or private school that submits its plans to the Virginia Department of Education to move to Phase II and Phase III that are aligned with CDC guidance for reopening of schools that provide equivalent or greater levels of employee protection than a provision of this standard and who operate in compliance with the public school division's or private school's submitted plans shall be considered in compliance with this standard.
- A public or private institution of higher education that has received certification from the State Council of Higher Education of Virginia that the institution's re-opening plans are in compliance with guidance documents, whether mandatory or non-mandatory, developed by the Governor's Office in conjunction with the Virginia Department of Health shall be considered in compliance with this standard, provided the institution operates in compliance with its certified reopening plans and the certified reopening plans provide equivalent or greater levels of employee protection than this standard.

20 Dates.

- Provides a process for gubernatorial review of the final standard prior to its becoming effective.
- Requirements for training and development of infectious disease prevention and response plans take effect March 26, 2021.[47]
- Within fourteen (14) days of the expiration of the Governor's COVID-19 State of Emergency and Commissioner of Health's COVID-19 Declaration of Public Emergency, the Virginia Safety and Health Codes Board shall notice a regular, special, or emergency meeting/conduct a regular, special, or emergency meeting to determine whether there is a continued need for the standard.[48]

[47] This date assumes an effective date for the final standard of January 27, 2021.
[48] NOTE 1: The intent of the language is to give the Board the maximum amount of flexibility to "notice" the Board meeting within 14 days even if the Board may not actually meet within 14 days.

30 Definitions.

- Definitions are provided for the following terms: Administrative Control, Airborne infection isolation room (AIIR), Asymptomatic, Building/facility owner, Cleaning, Community transmission, COVID-19, Disinfecting, Duration and frequency of employee exposure, Economic feasibility, Elimination, Employee, Engineering control, Exposure Risk Level ("Very high," "High," "Medium," and "Lower"), Face covering, Face shield, Feasible, Filtering facepiece, Hand sanitizer, HIPAA, Known to be infected with SARS-CoV-2 virus, May be infected with SARS-CoV-2 virus, Minimal occupational contact, Occupational exposure, Personal protective equipment, Physical distancing, Respirator, Respirator user, SARS-CoV-2, Severely immunocompromised, Signs of COVID-19, Surgical/Medical procedure mask, Suspected to be infected with SARS-CoV-2 virus, Symptomatic, Technical feasibility, USBC, VDH, VOSH, and Work practice control.

40 Mandatory requirements for employers in all exposure risk levels.

- Employers shall assess their workplace for hazards and job tasks that can potentially expose employees to the SARS-CoV-2 virus or COVID-19 disease. Employers shall classify each job task according to the hazards employees are potentially exposed to and ensure compliance with the applicable sections of this standard for very high, high, medium, or lower risk levels of exposure. Tasks that are similar in nature and expose employees to the same hazard may be grouped for classification purposes.
- Serologic test issues are addressed.
- Employers shall develop and implement policies and procedures for employees to report when they are experiencing signs and/or symptoms consistent with COVID-19, and no alternative diagnosis has been made (e.g., tested positive for influenza). Such employees shall not report to or be allowed to remain at work or on a job site until cleared for return to work.
- Employers shall not permit employees known to be infected with SARS-CoV-2 to report to or be allowed to remain at work or on a job site until cleared for return to work. Employers shall discuss with subcontractors, and companies that provide contract or temporary employees about the importance of suspected COVID-19 and known COVID-19 subcontractor, contract, or temporary employees staying home and encourage them to develop non-punitive sick leave policies. Known COVID-19 and suspected COVID-19 subcontractor, contract, or temporary employees shall not report to or be allowed to remain at work or on a job site until cleared for return to work.
- Employers shall notify employees at the place of employment, other employers, and the building/facility owner if an employer is notified of a COVID-19 positive test for one of its own employees, a subcontractor employee, or other person who was present at the

NOTE 2: The new language in 16VAC25-220.C requires the Board to make a "determination" of whether there is continued need for the standard. The Department has identified three "determination" options:

- That there is no continued need for the standard;
- That there is a continued need for the standard with no changes; and
- That there is a continued need for a revised standard.

Regardless of the determination, the Department and Board will provide notice and comment opportunities on any changes to or revocation of the standard.

place of employment within 2 days prior to symptom onset (or positive test if the employee is asymptomatic) until 10 days after onset (or positive test).

- Employers must also notify VDH and DOLI in certain situations.
- Employer shall develop and implement policies and procedures for employee return to work.
- Unless otherwise provided in this standard, employers shall establish and implement policies and procedures that ensure employees observe physical distancing while on the job and during paid breaks on the employer's property, including policies and procedures for verbal announcements, signage or visual cues to promote social distancing; and implement procedures to decrease worksite density.
- Access to common areas, break or lunchrooms shall be closed or controlled.
- Employers shall implement procedures when multiple employees are occupying a vehicle for work purposes.
- Employers shall comply with applicable respiratory protection, personal protective equipment regulations and ensure compliance with mandatory requirements of any applicable executive order or order of public health emergency.
- A medical exemption is provided from use of a respirator, surgical/medical procedure mask, or face covering by any employee.
- Procedures for use of a face shield are provided when face coverings cannot be worn due to medical contraindications.
- Employers must implement sanitation and disinfecting procedures, and assure compliance with the VOSH hazard communication standard.

50 Requirements for hazards or job tasks classified at very high or high exposure risk.

- Engineering controls (including installed air handling systems),[49] administrative and work practice controls, and personal protective equipment requirements are listed.
- Employers shall use special precautions associated with Biosafety Level 3 (BSL-3), as defined by the U.S. Department of Health and Human Services Publication No. (CDC) 21-1112 Biosafety in Microbiological and Biomedical Laboratories (Dec. 2009), which is hereby incorporated by reference, when handling specimens from patients or persons known or suspected to be infected with the SARS-CoV-2 virus. Diagnostic laboratories that conduct routine medical testing and environmental specimen testing for COVID-19 are not required to operate at BSL-3.[50]
- For those employers with hazards or job tasks classified at very high or high exposure risk not already covered by 1910.132(d), that section is included to require employers to conduct a written assessment of the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). Employers shall provide for employee and employee representative involvement in the assessment process.

NOTE: An employer's "assessment of the workplace" may take into account the jobsite characteristics that could impact its decision making (e.g., the differences between the "linear" aspects of a highway construction workplace versus the "vertical" aspects of a building construction worksite).

[49] https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html
[50] See Frequently Asked Question (FAQ) §50, FAQ 3, https://www.doli.virginia.gov/conronavirus-covid-19-faqs/

- Unless specifically addressed by an industry specific standard applicable to the employer and providing for PPE protections to employees from the SARS-COV-2 virus or COVID-19 disease (e.g., Parts 1926, 1928, 1915, 1917, or 1918), the requirements of §§1910.132 (General requirements) and 1910.134 (Respiratory protection) shall apply to all employers for that purpose.

60 Requirements for hazards or job tasks classified at medium exposure risk.

- Engineering controls (including installed air handling systems),[51] administrative and work practice controls, and personal protective equipment requirements are listed.
- For those employers with hazards or job tasks classified at very high or high exposure risk not already covered by 1910.132(d), that section is included to require employers to conduct a written assessment of the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). Employers shall provide for employee and employee representative involvement in the assessment process.

  NOTE: An employer's "assessment of the workplace" may take into account the jobsite characteristics that could impact its decision making (e.g., the differences between the "linear" aspects of a highway construction workplace versus the "vertical" aspects of a building construction worksite).

- Unless specifically addressed by an industry specific standard applicable to the employer and providing for PPE protections to employees from the SARS-COV-2 virus or COVID-19 disease (e.g., Parts 1926, 1928, 1915, 1917, or 1918), the requirements of §§1910.132 (General requirements) and 1910.134 (Respiratory protection) shall apply to all employers for that purpose.
- Employers shall provide and require employees to wear face coverings who, because of job tasks, cannot feasibly practice physical distancing from another employee or other person if the hazard assessment has determined that personal protective equipment, such as respirators or surgical/medical procedure masks, was not required for the job task.
- Employers shall provide and require employees in customer or other person facing jobs to wear face coverings.

70 Infectious disease preparedness and response plan.

- Employers with hazards or job tasks classified as:
  - "Very high," and "high," shall develop and implement a written Infectious Disease Preparedness and Response Plan;
  - "Medium" with eleven (11) or more employees shall develop and implement a written Infectious Disease Preparedness and Response Plan.
- The plan and training requirements tied to the plan shall only apply to those employees classified as very high, high, and medium covered by this section. Provide for employee involvement in development and implementation of the plan.

[51] *Id.*

- The plan shall consider and address the level(s) of risk associated with various places of employment, the hazards employee are exposed to and job tasks employees perform at those sites.
- The plan shall consider contingency plans for situations that may arise as a result of outbreaks that impact employee safety and health.
- The plan shall identify basic infection prevention measures to be implemented.
- The plan shall provide for the prompt identification and isolation of sick persons away from work, including procedures for employees to report when they are sick or experiencing symptoms of COVID-19.
- The plan shall address infectious disease preparedness and response with outside businesses.
- The plan shall identify the mandatory and non-mandatory recommendations in any CDC guidelines or Commonwealth of Virginia guidance documents the employer is complying with, if any, in lieu of a provision of this standard, as provided for in 16VAC25-220-10.

80 Training.

- Employers with hazards or job tasks classified at "very high" or "high" exposure risk shall provide training to all employee(s) regardless of employee risk classification.
- Employees shall be trained on the requirements of this standard, the employer's Infectious Disease Preparedness and Response Plan, where applicable, the characteristics and methods of spread of the SARS-CoV-2 virus, the symptoms of the COVID-19 disease as well as the asymptomatic reactions of some persons to the SARS-CoV-2 virus, safe work practices, including but not limited to, disinfection procedures, disinfecting frequency, noncontact methods of greeting, and PPE.
- When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required, the employer shall retrain each such employee.

NOTE: Construction employers, regardless of risk category, will be required to provide SARS-C0V-2 and COVID-19 related training, and training on the ETS/ER in accordance with the federal identical OSHA/VOSH regulation at 1926.21(b)(2), which provides:

"The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury." (Emphasis added).

90 Discrimination against an employee for exercising rights under this emergency temporary standard/emergency regulation is prohibited.

- No person shall discharge or in any way discriminate against an employee who voluntarily provides and wears the employee's own personal protective equipment, including but not limited to a respirator, face shield, gown, or gloves, , provided that the PPE does not create a greater hazard to the employee or create a serious hazard for other employees. No person shall discharge or in any way discriminate against an employee who voluntarily provides and wears the employee's own face covering,

provided that the face covering does not create a greater hazard to the employee or create a serious hazard for other employees.

- No person shall discharge or in any way discriminate against an employee who raises a reasonable concern about infection control related to the SARS-CoV-2 virus and COVID-19 disease to the employer, the employer's agent, other employees, a government agency, or to the public such as through print, online, social, or any other media.

NOTE: HIPAA does not apply to apply to VOSH or OSHA.[52]

IV. Basis, Purpose and Impact of the Final Standard.

A. Basis.

1. Applicable Statutes.

The Safety and Health Codes Board is authorized by Title 40.1-22(5)[53] to:

> "... adopt, alter, amend, or repeal rules and regulations to further, protect and promote the safety and health of employees in places of employment over which it has jurisdiction and to effect compliance with the federal OSH Act of 1970...as may be necessary to carry out its functions established under this title….All such rules and regulations shall be designed to protect and promote the safety and health of such employees. In making such rules and regulations to protect the occupational safety and health of employees, the Board shall adopt the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity. However, such standards shall be at least as stringent as the standards promulgated by the Federal Occupational Safety and Health Act of 1970 (P.L. 91-596). In addition to the attainment of the highest degree of health and safety protection for the employee, other considerations shall be the latest available scientific data in the field, the feasibility of the standards, and experience gained under this and other health and safety laws. Whenever practicable, the standard promulgated shall be expressed in terms of objective criteria and of the performance desired. Such standards when applicable to products which are distributed in interstate commerce shall be the same as federal standards unless deviations are required by compelling local conditions and do not unduly burden interstate commerce."

Va. Code §40.1-22(6a)[54] provides that:

> ….
> (6a) The Board shall provide, without regard to the requirements of Chapter 40 (§ 2.2-4000 et seq.) of Title 2.2, for an emergency temporary standard to

[52] https://www.osha.gov/Publications/OSHA-factsheet-HIPPA-whistle.pdf
[53] https://law.lis.virginia.gov/vacode/40.1-22/
[54] *Id.*

> take immediate effect upon publication in a newspaper of general circulation, published in the City of Richmond, Virginia, if it determines that employees are exposed to grave danger from exposure to substances or agents determined to be toxic or physically harmful or from new hazards, and that such emergency standard is necessary to protect employees from such danger. The publication mentioned herein shall constitute notice that the Board intends to adopt such standard within a period of six months. The Board by similar publication shall prior to the expiration of six months give notice of the time and date of, and conduct a hearing on, the adoption of a permanent standard. The emergency temporary standard shall expire within six months or when superseded by a permanent standard, whichever occurs first, or when repealed by the Board.
> (Emphasis added).

The Department consulted with the OAG concerning the meaning and proper application of Va. Code §40.1-22(6a) and received the following response:

> Our interpretation of Va. Code Section 40.1-22(6a) is that the APA does not apply to the Board's power to issue emergency temporary/permanent standards if the Board determines that employees are exposed to grave danger from exposure to substances or agents determined to be toxic or physically harmful or from new hazards and that such standard is necessary to protect employees from such danger. The clear intent of 40.1-22(6a) and 29 USC Section 655(c) in the OSH Act – is to create an alternative path to a temporary and permanent standard outside of the rigors and processes of the APA. The emergency standard takes effect almost immediately, and then the Board can go through (6a)'s hearing process to adopt a permanent standard – instead of the normal APA process required by 40.1-22(6) for non-emergency rules and regulations issued by the Board [Title 2.2, which includes the Administrative Process Act]. This creates a separate procedure for emergency temporary/permanent standards – deliberately outside of the APA. And it is incumbent on the Board to make findings and a record sufficient to support those findings of a grave danger and the necessity of the standard to protect employees from that grave danger.
> ….
> As this is an issue of first impression – and as with any litigation – there are corresponding risks that a Court may interpret that statute differently and apply the APA to 40.1-22(6a).
> (Emphasis added).

2. Requirements More Restrictive than Federal.[55]

Federal OSHA does not have a specific regulation or standard that addresses the SARS-CoV-2 virus that causes COVID-19.

[55] Identify and describe any requirement of the regulatory change which is more restrictive than applicable federal requirements. Include a specific citation for each applicable federal requirement, and a rationale for the need for the more restrictive requirements. If there are no applicable federal requirements, or no requirements that exceed applicable federal requirements, include a specific statement to that effect. Based on Townhall Agency Background Document, From TH-02.

3. Agencies, Localities, and Other Entities Particularly Affected.[56]

The Department is not aware of any agency, locality or entity that is likely to bear a disproportionate material impact which would not be experienced by other agencies, localities, or entities.

4. Alternatives to Standard.[57]

See ATTACHMENT B, CURRENT LAWS AND REGULATIONS RECOGNIZED MITIGATION STRATEGIES FOR COVID-19 NOT COVERED BY VOSH REGULATIONS OR STANDARDS.

OSHA does not have a regulation specific to SARS-CoV-2 or COVID-19 or infectious diseases generally. VOSH has the ETS which expires on January 26, 2021.

Certain VOSH regulations (identical to OSHA counterparts unless otherwise noted) can be used to address some SARS-CoV-2 or COVID-19 hazards (see ATTACHMENT B), but other hazards and mitigation efforts cannot be so addressed (see list below).

There are no VOSH or OSHA regulations or standards that would require:

Physical distancing of at least six feet where feasible (also known as Social Distancing)

Disinfection of work areas where known or suspected COVID-19 employees or other persons accessed or worked

Employers to develop policies and procedures for employees to report when they are sick or experiencing symptoms consistent with COVID-19

Employers to, prior to the commencement of each work shift, prescreen of employees and other persons to verify each employee or person is not COVID-19 symptomatic

Employers to prohibit known and suspected COVID-19 employees and other persons from reporting to or being allowed to remain at work or on a job site until cleared for return

[56] Identify any other state agencies, localities, or other entities particularly affected by the regulatory change. "Particularly affected" are those that are likely to bear any identified disproportionate material impact which would not be experienced by other agencies, localities, or entities. "Locality" can refer to either local governments or the locations in the Commonwealth where the activities relevant to the regulation or regulatory change are most likely to occur. If no agency, locality, or entity is particularly affected, include a specific statement to that effect. Based on Townhall Agency Background Document, From TH-02.

[57] Describe any viable alternatives to the regulatory change that were considered, and the rationale used by the agency to select the least burdensome or intrusive alternative that meets the essential purpose of the regulatory change. Also, include discussion of less intrusive or less costly alternatives for small businesses of achieving the purpose of the regulatory change. Based on Townhall Agency Background Document, From TH-02.

Employers to develop and implement policies and procedures for known COVID-19 or suspected COVID-19 employees to return to work using either a symptom-based or test-based strategy depending on local healthcare and testing circumstances

Employers to prohibit COVID-19 positive employees from reporting to or being allowed to remain at work or on a job site until cleared for return to work

Employers to provide employees assigned to work stations and in frequent contact with other persons inside six feet with alcohol based hand sanitizers at their workstations

Employers with hazards or job tasks classified at very high, high, or medium exposure risk to develop a written Infectious Disease Preparedness and Response Plan

Employee training on SARS-CoV-2 and COVID-19 hazards, with the exception of 1926.21(b)(2) referenced above for the Construction Industry

Va. Code §40.1-51(a), otherwise known as the "general duty clause" (the Virginia equivalent to §5(a)(1)[58] of the OSH Act of 1970), can be used to address some SARS-CoV-2 or COVID-19 hazards, but other hazards and mitigation efforts cannot be so addressed (see below). Va. Code §40.1-51(a) provides that:

> "It shall be the duty of every employer to furnish to each of his employees safe employment and a place of employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees...."

While Congress intended that the primary method of compliance and enforcement under the OSH Act of 1970 would be through the adoption of occupational safety and health standards[59], it also provided the general duty clause as an enforcement tool that could be used in the absence of an OSHA (or VOSH) regulation.

As is evident from the wording of the general duty statute, it does not directly address the issue of SARS-CoV-2 or COVID-19 related hazards. While preferable to no enforcement tool at all, the general duty clause does not provide either the regulated community, employees, or the VOSH Program with substantive and consistent requirements on how to reduce or eliminate SARS-CoV-2 or COVID-19 related hazards.

Federal case law has established that the general duty clause can only be used to address "serious" recognized hazards to which employees of the cited employer are exposed through reference to such things as national consensus standards, manufacturer's requirements, requirements of the Centers for Disease Control

[58] https://www.osha.gov/laws-regs/oshact/section_5, 29 U.S.C. § 654(a)(1).
[59] *The Law of Occupational Safety and Health,* Nothstein, 1981, page 259.

(CDC), or an employer's safety and health rules. Other than serious hazards cannot be addressed by the general duty clause.

One limitation on the use of the general duty clause can result in unfortunate outcomes worksites with multiple employers. For instance, a general duty clause violation can only be issued to an employer whose own employees were exposed to the alleged hazard.[60] In the context of a COVID-19 situation, consider a subcontractor ("subcontractor one") who sends one employee to a multi-employer worksite who is COVID-19 positive and knowingly allows that employee to work around disease free employees of another subcontractor ("subcontractor two"), which results in the transmission of the disease to one or more of the second contractors' employees.

In such a situation, because no uninfected employees of subcontractor one were exposed to the disease at the worksite, the contractor who created the hazard could not be issued a general duty violation or accompanying monetary penalty.

Finally, in the context of the COVID-19 pandemic, the primary problem with the use of the general duty clause is the inability to use it to enforce any national consensus standard, manufacturer's requirements, CDC recommendations, or employer safety and health rules which use "should," "may," "it is recommended," and similar non-mandatory language.[61]

5. Regulatory Flexibility Analysis.[62]

The standard contains alternative regulatory methods in the form of options for employers to reduce the burden of compliance:

- At its core the Standard is a risk management system to prevent or limit the spread in the workplace of the SARS-CoV-2 virus that causes COVID-19. It is designed to provide basic protections for all employees and employers within the jurisdiction of the VOSH program.
- It provides certain mandatory requirements for all employers and specific additional requirements for Very High, High, and Medium risk job tasks

60 https://townhall.virginia.gov/L/GetFile.cfm?File=C:\TownHall\docroot\GuidanceDocs\181\GDoc_DOLI_5354_v6.pdf, VOSH Field Operations Manual (FOM), Chapter 10, page 18)

61" Courts and the [Occupational Safety and Health Review] Commission have held that OSHA must define an alleged hazard in such a way as to give the employer fair notice of its obligations under the OSH Act. In *Ruhlin Co.* [*Ruhlin Co.*, 21 OSH Cases 1779], the Commission held that the employer 'lacked fair notice that it could have an obligation under section 5(a)(1) to require its employees to wear high visibility vests.' The Commission found that a May 2004 interpretive letter by OSHA refers to a provision of the Federal Highway Administration manual which contained optional, not mandatory language."

62 Describe the agency's analysis of alternative regulatory methods, consistent with health, safety, environmental, and economic welfare, that will accomplish the objectives of applicable law while minimizing the adverse impact on small business. Alternative regulatory methods include, at a minimum: 1) establishing less stringent compliance or reporting requirements; 2) establishing less stringent schedules or deadlines for compliance or reporting requirements; 3) consolidation or simplification of compliance or reporting requirements; 4) establishing performance standards for small businesses to replace design or operational standards required in the proposed regulation; and 5) the exemption of small businesses from all or any part of the requirements contained in the regulatory change. Based on Townhall Agency Background Document, From TH-02.

centered around mitigation of hazards. The Standard is also designed to incentivize employers to make changes in the workplace that will enable employees in certain situations to be classified to a reduced level of risk (e.g., from high to medium or from medium to lower), thereby also reducing the employer's compliance and cost burdens.

- Employers with hazards and job tasks classified as very high, high and medium were provided 30 days to train employees and 60 days to develop and implement an Infectious disease preparedness and response plan. Employers with hazards and job tasks classified as lower risk were exempted from training and plan requirements. Small employers with 10 or fewer employees were exempted from the Infectious disease preparedness and response plan requirements.
- The standard provides flexibility to businesses through 16VAC25-220-10.E which provides that: "To the extent that an employer actually complies with a recommendation contained in CDC guidelines, whether mandatory or non-mandatory, to mitigate SARS-CoV-2 virus and COVID-19 disease related hazards or job tasks addressed by this standard, and provided that the CDC recommendation provides equivalent or greater protection than provided by a provision of this standard, the employer's actions shall be considered in compliance with this standard. An employer's actual compliance with a recommendation contained in CDC guidelines, whether mandatory or non-mandatory, to mitigate SARS-COV-2 and COVID19 related hazards or job tasks addressed by this standard shall be considered evidence of good faith in any enforcement proceeding related to this standard."
- The standard provides flexibility to higher education through 16VAC25-220-10.F which provides that: "Public and private institutions of higher education that have received certification from the State Council of Higher Education of Virginia that the institution's re-opening plans are in compliance with guidance documents, whether mandatory or non-mandatory, developed by the Governor's Office in conjunction with the Virginia Department of Health, shall be considered in compliance with this standard, provided the institution operates in compliance with their certified reopening plans and the certified reopening plans provide equivalent or greater levels of employee protection than this standard."
- The standard provides flexibility to public and private schools through 16VAC25-220-10.G.2: "A public school division or private school that submits its plans to the Virginia Department of Education to move to Phase II and Phase III that are aligned with CDC guidance for reopening of schools that provide equivalent or greater levels of employee protection than a provision of this standard and who operate in compliance with the public school division's or private school's submitted plans shall be considered in compliance with this standard. An institution's actual compliance with recommendations contained in CDC guidelines or the Virginia Department of Education guidance, whether mandatory or non-mandatory, to mitigate SARS-CoV-2 and COVID-19 related hazards or job tasks addressed by this standard shall be considered evidence of good faith in any enforcement proceeding related to this standard."
- The standard provides flexibility to employer purchase of PPE in 16VAC25-220-10.C: "Notwithstanding anything to the contrary in this standard, no

enforcement action shall be brought against an employer or institution for failure to provide PPE required by this standard, if such PPE is not readily available on commercially reasonable terms, and the employer or institution makes a good faith effort to acquire or provide such PPE as is readily available on commercially reasonable terms. The Department of Labor and Industry shall consult with the Virginia Department of Health as to the ready availability of PPE on commercially reasonable terms and, in the event there are limited supplies of PPE, whether such supplies are being allocated to high risk or very high risk workplaces."

B. Purpose.

The purpose of the standard is to reduce/eliminate employee injuries, illnesses, and fatalities through the adoption of a comprehensive final standard to address the exposure of similarly situated employees to SARS-CoV-2 and COVID-19 related hazards and job tasks in all industries under the jurisdiction of the Virginia State Plan.

Application of the proposed standard to a place of employment will be based on the exposure risk level presented by SARS-CoV-2 virus-related and COVID-19 disease-related hazards present or job tasks undertaken by employees at the place of employment as defined in this standard (i.e., "very high", "high, "medium", and "lower").

C. Background.

1. SARS-CoV-2 Virus That Causes the COVID-19 Disease.

SARS-CoV-2 is a betacoronavirus, like MERS-CoV (Middle East Respiratory Syndrome Coronavirus) and SARS-CoV (Severe Acute Respiratory Syndrome Coronavirus). Coronaviruses are named for crown-like spikes on their surface. SARS-CoV-2 causes the Coronavirus Disease 2019 (COVID-19).

The Virginia Safety and Health Codes Board ETS addressing the virus lapses on January 26, 2021. SARS-CoV-2 is easily transmitted through the air from person-to-person through respiratory droplets, aerosols, and other forms of airborne transmission, and the virus can settle and deposit on environmental surfaces where it can remain viable for days.

"Signs of COVID-19" are abnormalities that can be objectively observed, and may include fever, trouble breathing or shortness of breath, cough, vomiting, new confusion, bluish lips or face, etc.

"Symptoms of COVID-19" are abnormalities that are subjective to the person and not observable to others, and may include chills, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, nausea, congestion or runny nose, diarrhea, etc.

COVID-19 Medical Complications.

"Although most people with COVID-19 have mild to moderate symptoms, the disease

can cause severe medical complications and lead to death in some people. Older adults or people with existing chronic medical conditions are at greater risk of becoming seriously ill with COVID-19."[63]:

"Younger adults are also being hospitalized in the U.S. Adults 20–44 account for 20% of hospitalizations, 12% of ICU admissions."[64]

"Complications can include:

- Pneumonia and trouble breathing
- Organ failure in several organs
- Heart problems
- A severe lung condition that causes a low amount of oxygen to go through your bloodstream to your organs (acute respiratory distress syndrome)
- Blood clots
- Acute kidney injury
- Additional viral and bacterial infections"[65]

"Illness Severity [CDC]

The largest cohort of >44,000 persons with COVID-19 from China showed that illness severity can range from mild to critical:

- Mild to moderate (mild symptoms up to mild pneumonia): 81%
- Severe (dyspnea, hypoxia, or >50% lung involvement on imaging): 14%
- Critical (respiratory failure, shock, or multi-organ system dysfunction): 5%

In this study, all deaths occurred among patients with critical illness and the overall case fatality rate was 2.3%. The case fatality rate among patients with critical disease was 49%. Among children in China, illness severity was lower with 94% having asymptomatic, mild or moderate disease, 5% having severe disease, and <1% having critical disease.

Among U.S. COVID-19 cases with known disposition, the proportion of persons who were hospitalized was 19%. The proportion of persons with COVID-19 admitted to the intensive care unit (ICU) was 6%."[66] (Emphasis added).

Long-term Effects of COVID-19

"People with moderate to severe asthma may be at higher risk of getting very sick from COVID-19. COVID-19 can affect your respiratory tract (nose, throat, lungs), cause an asthma attack, and possibly lead to pneumonia and acute respiratory disease.

[63] https://www.mayoclinic.org/diseases-conditions/coronavirus/symptoms-causes/syc-20479963
[64] https://www.hopkinsguides.com/hopkins/view/Johns_Hopkins_ABX_Guide/540747/all/Coronavirus_COVID_19__SARS_CoV_2
[65] *Id.*
[66] https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html

….
There is currently no specific treatment for or vaccine to prevent COVID-19. The best way to prevent illness is to avoid being exposed to this virus."[67]

'Patients with acute respiratory distress syndrome (ARDS), seen often in severe COVID-19 illness, sometimes develop permanent lung damage or fibrosis as well,' Dr. Andrew Martin, chair, pulmonary medicine at Deborah Heart and Lung Center in Browns Mills, New Jersey, told Healthline.
….
'Viral respiratory infections can lead to anything from a simple cough that lasts for a few weeks or months to full-blown chronic wheezing or asthma,' Martin said. He added that when a respiratory infection is severe, recovery can be prolonged with a general increase in shortness of breath — even after lung function returns to normal.

Also, patients with COVID-19 who developed ARDS, a potentially life threatening lung injury that could require treatment in an intensive care unit (ICU), have a greater risk of long-term health issues.
….
Those most at risk are 'people 65 years and older, people who live in a nursing home or long-term care facility, people with chronic lung, heart, kidney and liver disease,' said Dr. Gary Weinstein, pulmonologist/critical care medicine specialist at Texas Health Presbyterian Hospital Dallas (Texas Health Dallas). Additionally, he said others who could be at risk are those with compromised immune systems and people with morbid obesity or diabetes.

Weinstein added that there are particular health issues that patients with severe COVID-19 illness may face. He said some patients will need to recover from pneumonia or acute ARDS and that many may require oxygen. Additionally, depending on the duration of the illness, many will be severely debilitated, deconditioned, weak, and could require aggressive rehabilitation.

'Finally, when patients have lung failure, they frequently have failure or dysfunction of their other organs, such as the kidney, heart, and brain,' emphasized Weinstein. However, 'Patients with mild symptoms will recover faster and be less likely to need oxygen but will likely have weakness and fatigue.'"[68] (Emphasis added).

A CDC report on "Characteristics and Clinical Outcomes of Adult Patients Hospitalized with COVID-19 — Georgia, March 2020":[69]

> "In a cohort of 305 hospitalized adults with COVID-19 in Georgia (primarily metropolitan Atlanta)….One in four hospitalized patients had no recognized risk factors for severe COVID-19.
> ….
> Although a larger proportion of older patients had worse outcomes (IMV

[67] https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/asthma.html
[68] https://www.healthline.com/health-news/what-we-know-about-the-long-term-effects-of-covid-19#COVID-19-might-affect-the-brain-stem
[69] https://www.cdc.gov/mmwr/volumes/69/wr/mm6918e1.htm

[invasive mechanical ventilation] or death), a considerable proportion of patients aged 18–64 years who lacked high-risk conditions received ICU-level care and died (23% and 5%, respectively). Estimated case fatality among patients who received ICU care was high (37%–49%) but comparable with that observed in a smaller case series of COVID-19 patients in the state of Washington. Among hospitalized patients, 26% lacked high-risk factors for severe COVID-19, and few patients (7%) lived in institutional settings before admission, suggesting that SARS-CoV-2 infection can cause significant morbidity in relatively young persons without severe underlying medical conditions. Community mitigation recommendations (e.g., social distancing) should be widely instituted, not only to protect older adults and those with underlying medical conditions, but also to prevent the spread of SARS-CoV-2 among persons in the general population who might not consider themselves to be at risk for severe illness.

Report on "What factors did people who died with COVID-19 have in common?"[70]

"A team of investigators hailing from eight institutions in China and the United States — including the Chinese People's Liberation Army General Hospital in Beijing, and the University of California – Davis — recently looked at the data of 85 patients who died of multiple organ failure after having received care for severe COVID-19.

….

'The greatest number of deaths in our cohort were in males over 50 with noncommunicable chronic diseases,' the investigators note.

'We hope that this study conveys the seriousness of COVID-19 and emphasizes the risk groups of males over 50 with chronic comorbid conditions, including hypertension (high blood pressure), coronary heart disease, and diabetes,' they have commented.

The team also notes that, among the 85 patients whose records they analyzed, the most common COVID-19 symptoms were fever, shortness of breath, and fatigue.

….

Among the complications that the patients experienced while hospitalized with COVID-19, some of the most common were respiratory failure, shock, acute respiratory distress syndrome, and cardiac arrhythmia, or irregular heartbeat.

….

'Perhaps our most significant observation is that while respiratory symptoms may not develop until a week after presentation, once they do there can be a rapid decline, as indicated by the short duration between time of admission and death (6.35 days on average) in our study,' they write."

[70] https://www.medicalnewstoday.com/articles/what-factors-did-people-who-died-with-covid-19-have-in-common#The-majority-were-older-males

Report on "Irish Study: Blood Clotting a Significant Cause of Death in Patients With COVID-19."

> "A study led by clinician scientists at RCSI University of Medicine and Health Sciences has found that Irish patients admitted to hospital with severe COVID-19 infection are experiencing abnormal blood clotting that contributes to death in some patients.
>
> The study, carried out by the Irish Centre for Vascular Biology, RCSI and St James' Hospital, Dublin, is published in current edition of the British Journal of Hematology.
>
> The authors found that abnormal blood clotting occurs in Irish patients with severe COVID-19 infection, causing micro-clots within the lungs. They also found that Irish patients with higher levels of blood clotting activity had a significantly worse prognosis and were more likely to require ICU admission.
>
> 'Our novel findings demonstrate that COVID-19 is associated with a unique type of blood clotting disorder that is primarily focused within the lungs and which undoubtedly contributes to the high levels of mortality being seen in patients with COVID-19,' said Professor James O'Donnell, Director of the Irish Centre for Vascular Biology, RCSI and Consultant Hematologist in the National Coagulation Centre in St James's Hospital, Dublin.
>
> 'In addition to pneumonia affecting the small air sacs within the lungs, we are also finding hundreds of small blood clots throughout the lungs. This scenario is not seen with other types of lung infection, and explains why blood oxygen levels fall dramatically in severe COVID-19 infection.'"[71]

2. National and State COVID-19 Case, Death and Hospitalization Statistics.

Centers for Disease Control (CDC): U.S. and Virginia Statistics

As of June 21, 2020, there were 1,248,029 total cases (32,411 new cases compared to June 20, 2020) of COVID-19 and 119,615 deaths (560 new deaths compared to June 20, 2020).[72] Confirmed COVID-19 cases in Virginia totaled 57,994 with 1,611 deaths.

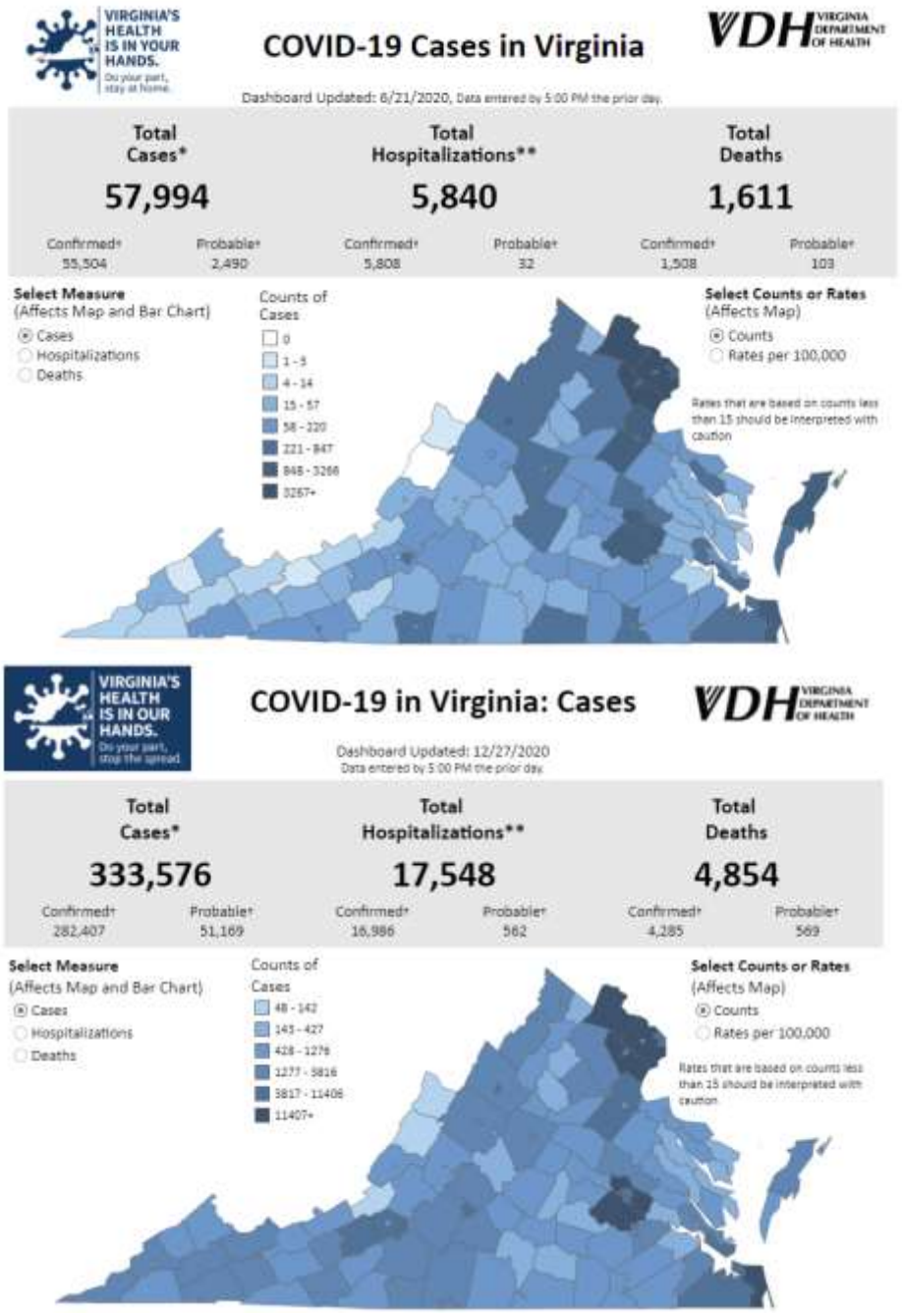
As of December 26, 2020, there were 18,730,806 total cases (146,512 new cases compared to December 25, 2020) and 329,592 deaths (1,692 new deaths compared to December 25, 2020). Confirmed COVID-19 cases in Virginia totaled 333,576 with 4,854 deaths.[73]

[71] https://www.invasivecardiology.com/news/irish-study-blood-clotting-significant-cause-death-patients-covid-19
[72] https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html
[73] https://www.vdh.virginia.gov/coronavirus/covid-19-in-virginia/

National and Virginia Charts

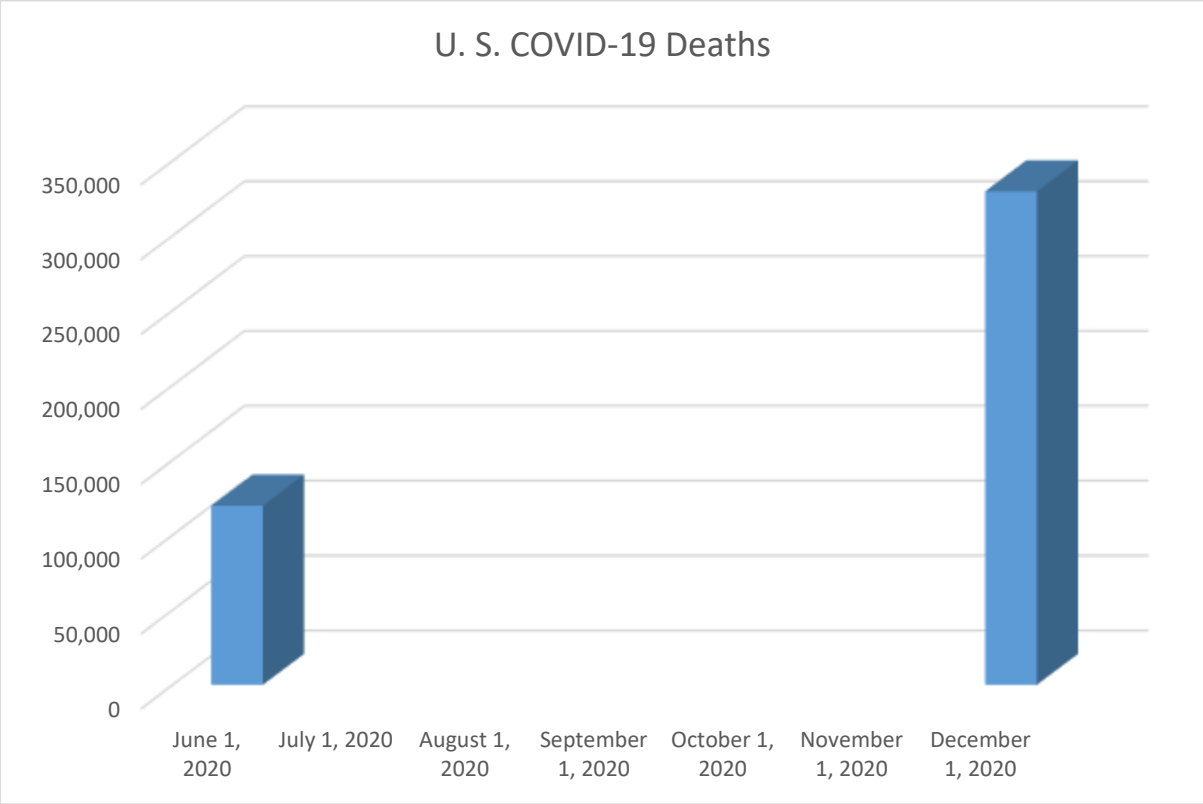
Virginia Cases by County as of June 21, 2020 and December 26, 2020.[74]

As is evident from the below county by county chart, community transmission of the virus remains widespread in Virginia. "Community spread [or transmission] means spread of an illness for which the source of infection is unknown."[75]

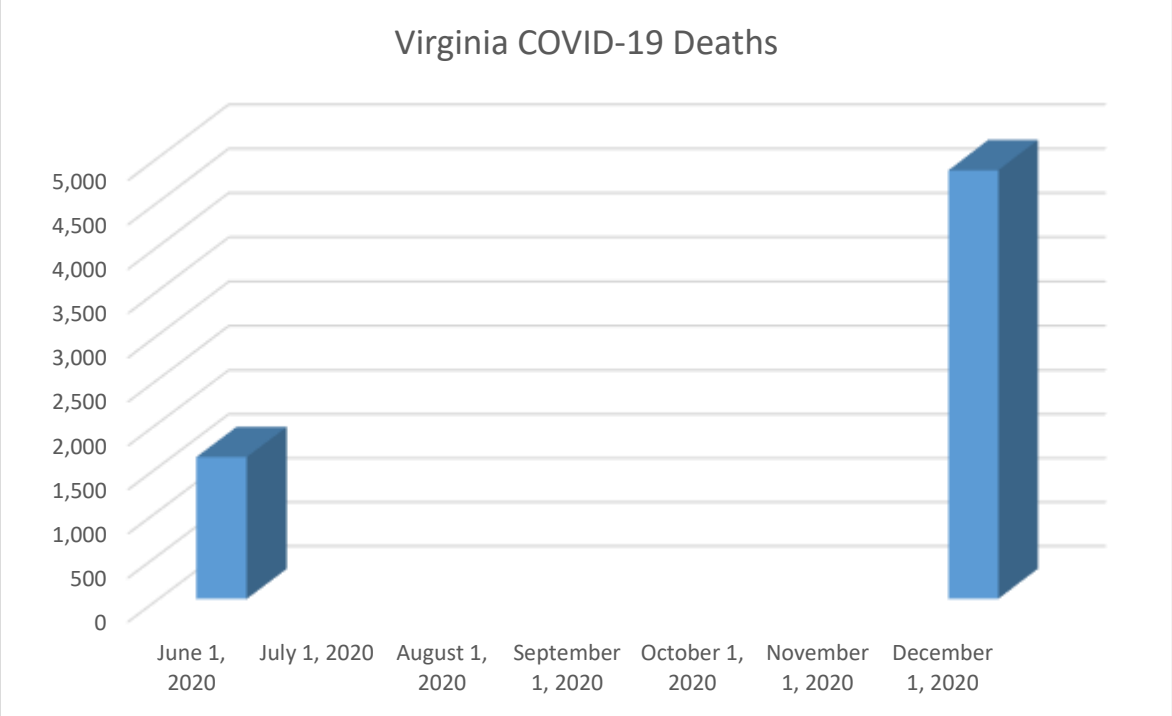


[74] https://www.vdh.virginia.gov/coronavirus/
[75] https://www.cdc.gov/media/releases/2020/s0226-Covid-19-spread.html

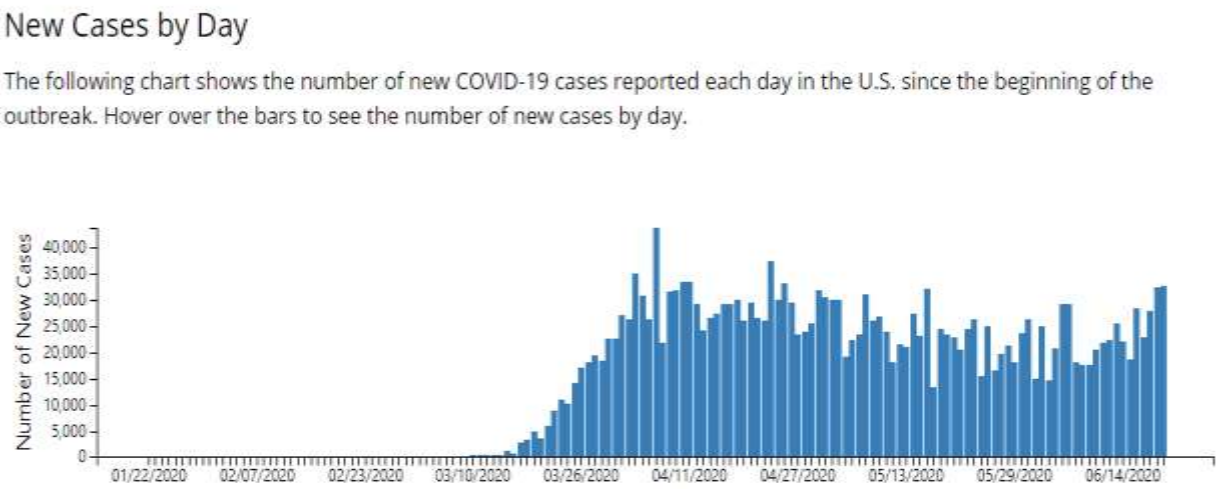
Comparison of U. S. Deaths as of June 21, 2020 versus as of December 26, 2020



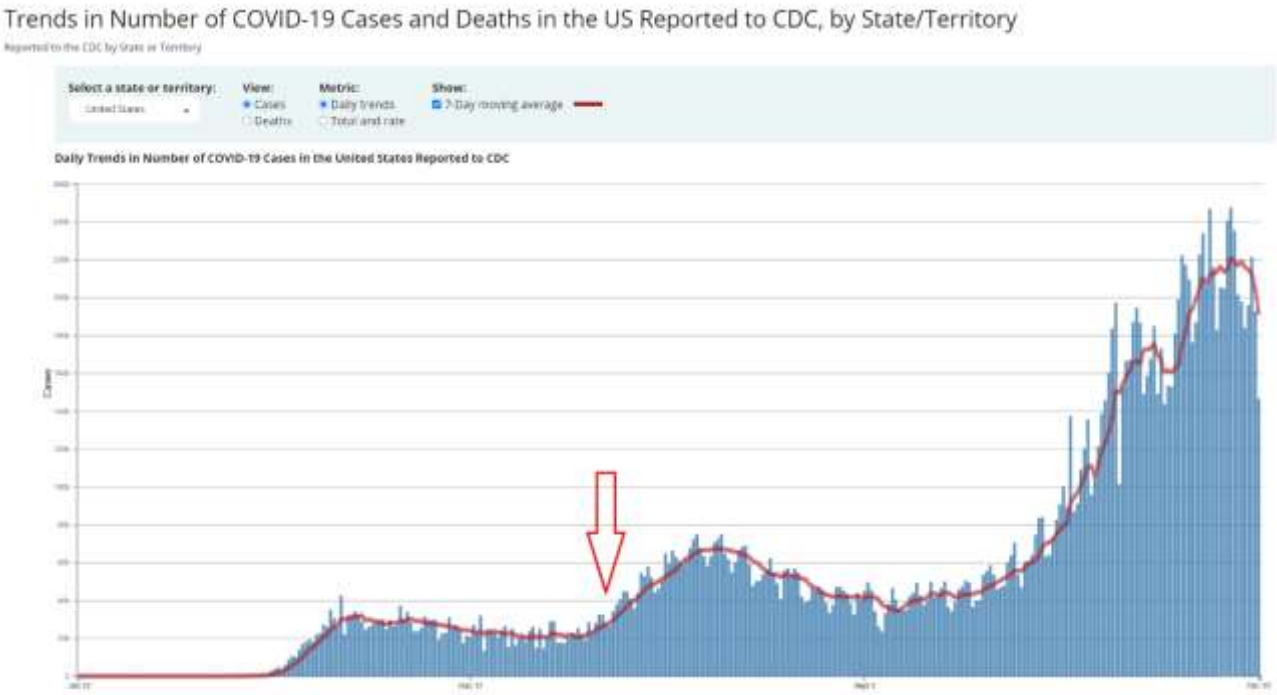
Comparison of Virginia Deaths as of June 21, 2020 versus as of December 26, 2020



National COVID-19 Cases as of June 21, 2020[76]

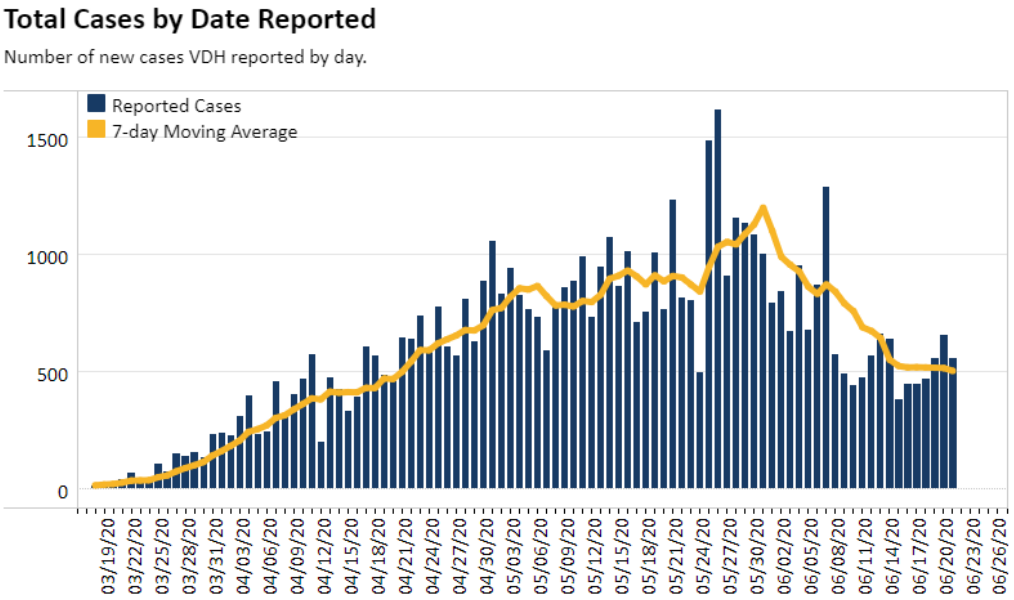


National COVID-19 Cases as of December 26, 2020.[77]

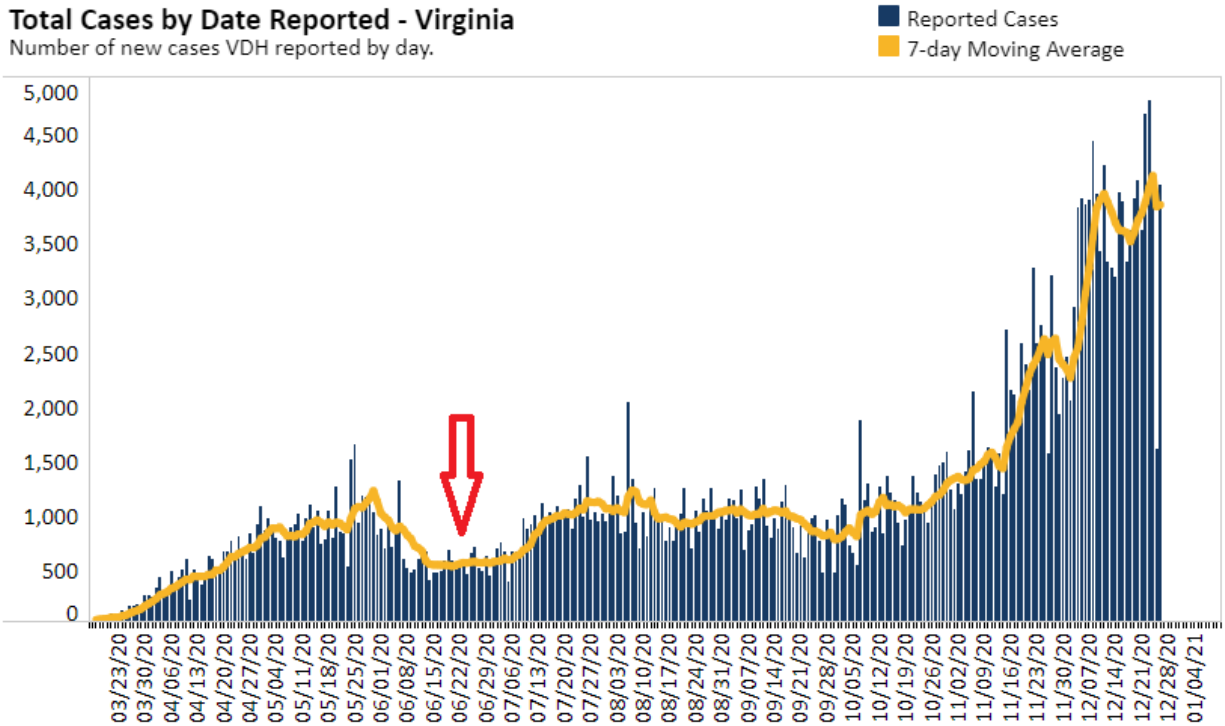


[76] https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html
[77] *Id.*

Virginia Cases as of June 21, 2020.[78]

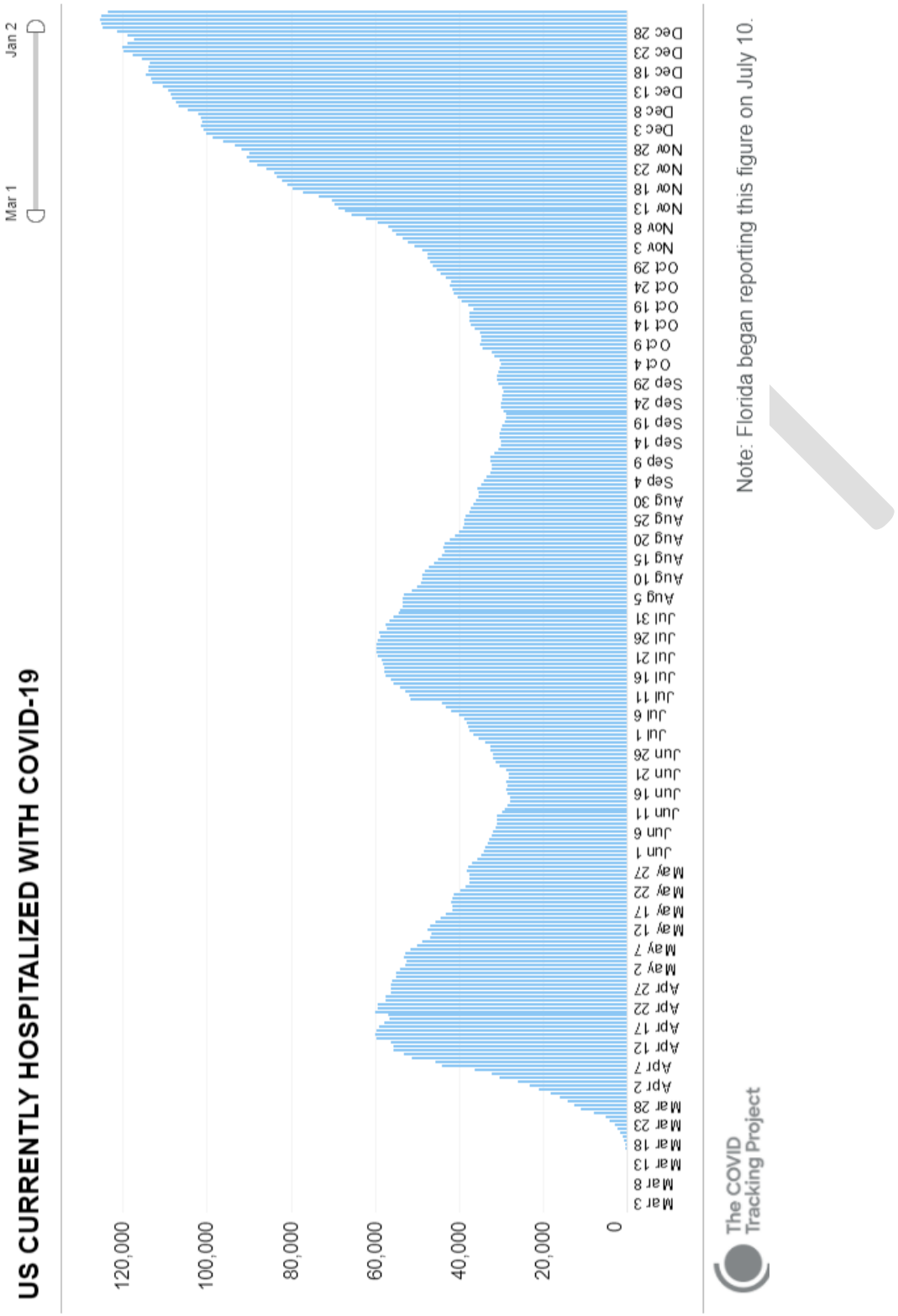


Virginia Cases as of December 26, 2020.[79]



[78] https://www.vdh.virginia.gov/coronavirus/key-measures/
[79] *Id.*

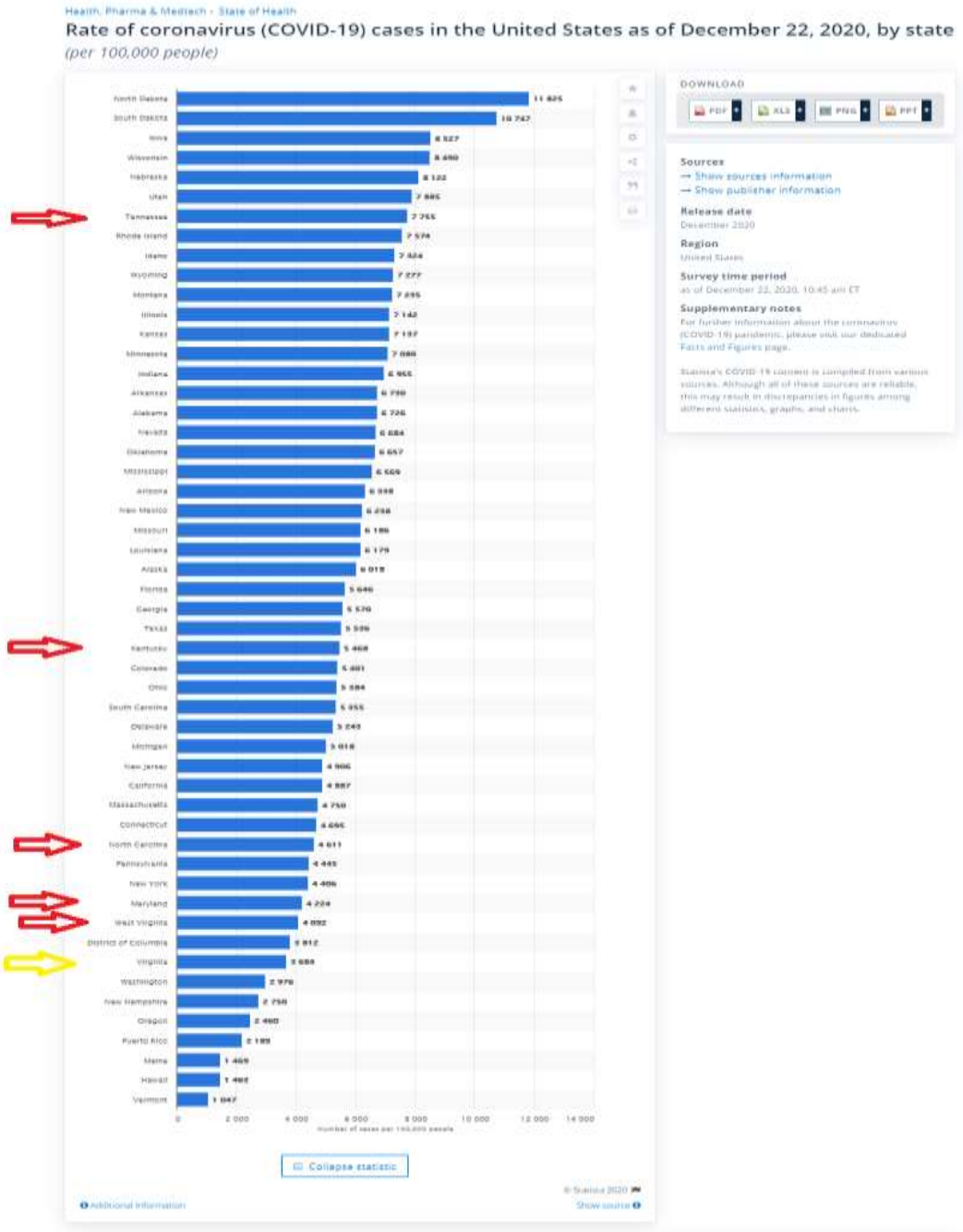
Current hospitalizations remain the most reliable statistic. Hospitalizations are a much better reflection of reality than the other metrics through the holiday reporting bumpiness.[80]



[80] https://covidtracking.com/data/charts/us-currently-hospitalized

COVID-19 State Rankings: Total Cases per 100K as of December 22, 2020 [81]

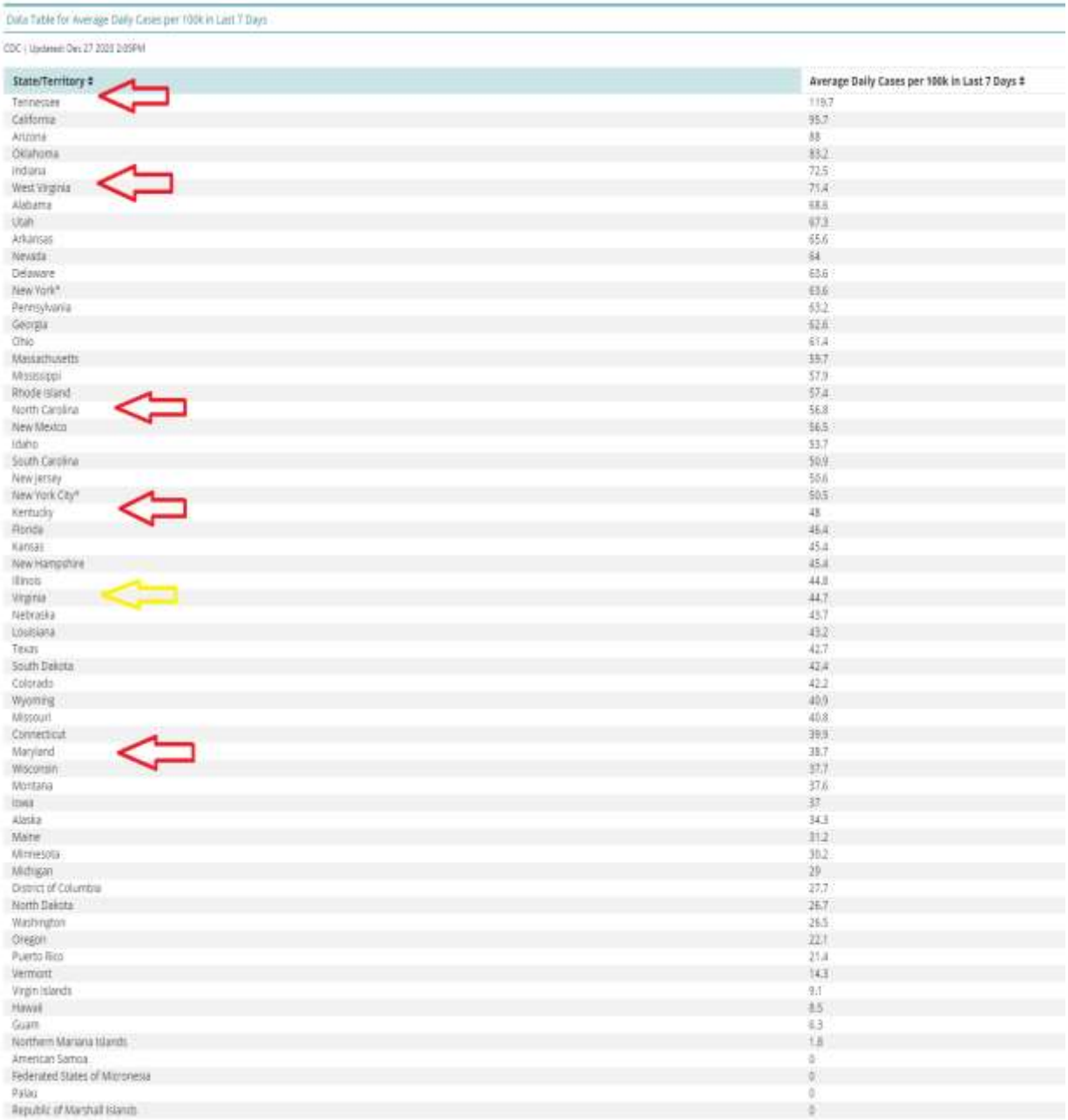
7	-	Tennessee
29	-	Kentucky
39	-	North Carolina
42	-	Maryland
43	-	West Virginia
45	-	Virginia



[81] https://www.statista.com/statistics/1109004/coronavirus-covid19-cases-rate-us-americans-by-state/

COVID-19 State Rankings: Average Daily Cases per 100K in Last 7 Days as of December 26, 2020. [82]

1	-	Tennessee
6	-	West Virginia
19	-	North Carolina
25	-	Kentucky
30	-	Virginia
39	-	Maryland



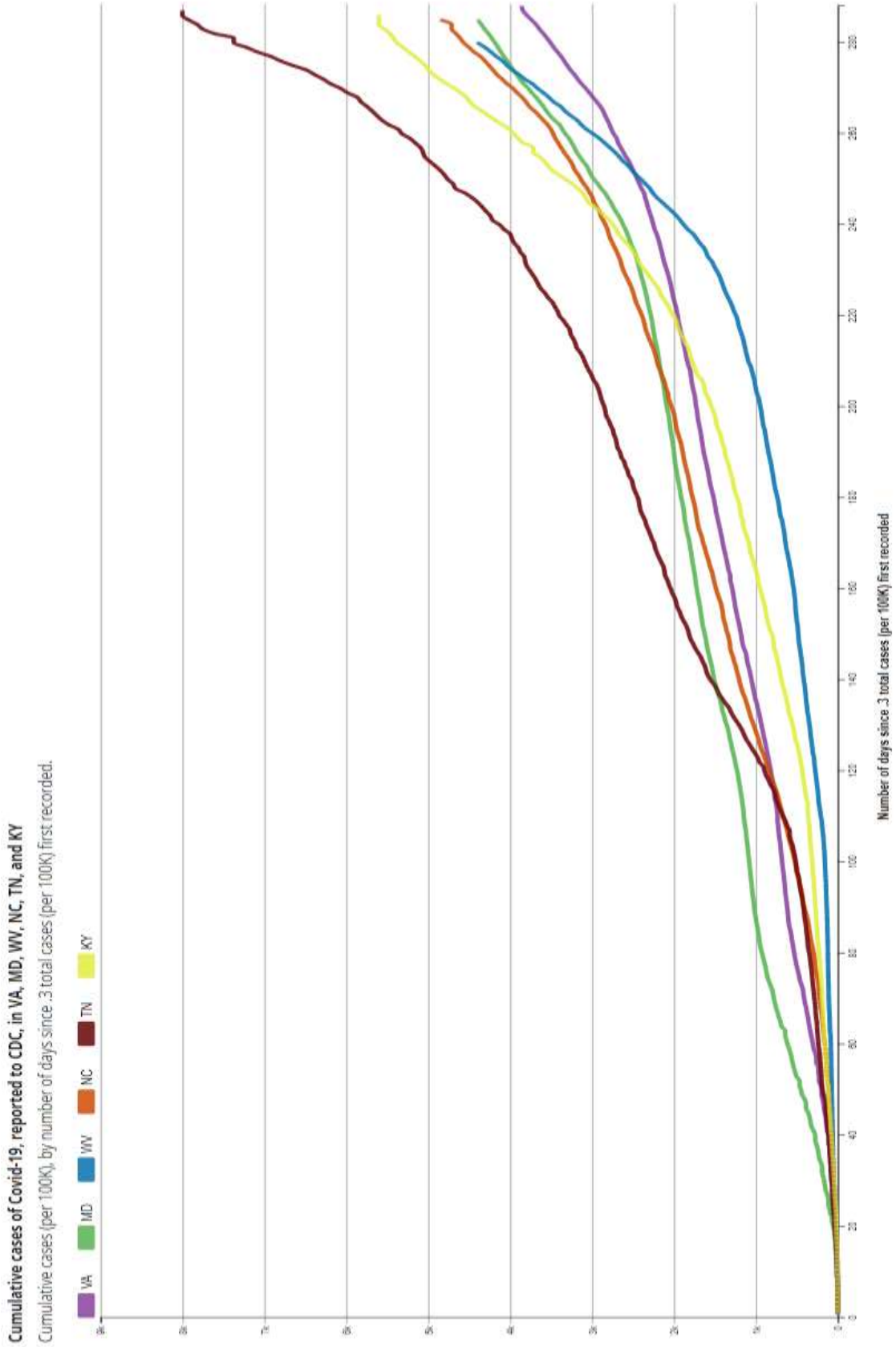
Data Table for Average Daily Cases per 100k in Last 7 Days

CDC | Updated: Dec 27 2020 2:05PM

State/Territory ‡	Average Daily Cases per 100k in Last 7 Days ‡
Tennessee	119.7
California	95.7
Arizona	88
Oklahoma	83.2
Indiana	72.5
West Virginia	71.4
Alabama	68.6
Utah	67.3
Arkansas	65.6
Nevada	64
Delaware	63.6
New York*	63.6
Pennsylvania	63.2
Georgia	62.6
Ohio	61.4
Massachusetts	59.7
Mississippi	57.9
Rhode Island	57.4
North Carolina	56.8
New Mexico	56.5
Idaho	53.7
South Carolina	50.9
New Jersey	50.6
New York City*	50.5
Kentucky	48
Florida	46.4
Kansas	45.4
New Hampshire	45.4
Illinois	44.8
Virginia	44.7
Nebraska	43.7
Louisiana	43.2
Texas	42.7
South Dakota	42.4
Colorado	42.2
Wyoming	40.9
Missouri	40.8
Connecticut	39.9
Maryland	38.7
Wisconsin	37.7
Montana	37.6
Iowa	37
Alaska	34.3
Maine	31.2
Minnesota	30.2
Michigan	29
District of Columbia	27.7
North Dakota	26.7
Washington	26.5
Oregon	22.1
Puerto Rico	21.4
Vermont	14.3
Virgin Islands	9.1
Hawaii	8.5
Guam	6.3
Northern Mariana Islands	1.8
American Samoa	0
Federated States of Micronesia	0
Palau	0
Republic of Marshall Islands	0

[82] https://covid.cdc.gov/covid-data-tracker/#cases_casesper100klast7days

Comparison of trends in COVID-19 cases by state:[83]



[83] https://covid.cdc.gov/covid-data-tracker/#compare-trends_newcases

D. SARS-CoV-2 and COVID-19, General Information, Studies, and Statistics.

1. General Information On Pandemics.[84]

"Viruses are constantly mutating. Those that trigger pandemics have enough novelty that the human immune system does not quickly recognize them as dangerous invaders. They force the body to create a brand-new defense, involving new antibodies and other immune system components that can react to and attack the foe. Large numbers of people get sick in the short term, and social factors such as crowding and the unavailability of medicine can drive those numbers even higher. Ultimately, in most cases, antibodies developed by the immune system to fight off the invader linger in enough of the affected population to confer longer-term immunity and limit person-to-person viral transmission. But that can take several years, and before it happens, havoc reigns.
….

Containment. The severe acute respiratory syndrome (SARS) epidemic of 2003 was caused not by an influenza virus but by a coronavirus, SARS-CoV, that is closely related to the cause of the current affliction, SARS-CoV-2. Of the seven known human coronaviruses, four circulate widely, causing up to a third of common colds. The one that caused the SARS outbreak was far more virulent. Thanks to aggressive epidemiological tactics such as isolating the sick, quarantining their contacts and implementing social controls, bad outbreaks were limited to a few locations such as Hong Kong and Toronto.

This containment was possible because sickness followed infection very quickly and obviously: almost all people with the virus had serious symptoms such as fever and trouble breathing. And they transmitted the virus after getting quite sick, not before. "Most patients with SARS were not that contagious until maybe a week after symptoms appeared," says epidemiologist Benjamin Cowling of the University of Hong Kong. "If they could be identified within that week and put into isolation with good infection control, there wouldn't be onward spread." Containment worked so well there were only 8,098 SARS cases globally and 774 deaths. The world has not seen a case since 2004.

Vaccine power. When a new H1N1 influenza virus, known as swine flu, caused a pandemic in 2009, "there was an alarm bell because this was a brand-new H1N1," Cowling says, and it was very similar to the 1918 killer. Swine flu proved less severe than feared. In part, Krammer says, "we were lucky because the pathogenicity of the virus wasn't very high." But another important reason was that six months after the virus appeared, scientists developed a vaccine for it.

Unlike measles or smallpox vaccines, which can confer long-term immunity, **flu vaccines offer only a few years of protection. Influenza viruses are slippery, mutating rapidly to escape immunity. As a result, the vaccines must be** updated every year and given regularly. But during a pandemic, even a short-term vaccine is a boon. The 2009 vaccine helped to temper a second wave of cases in

[84] https://www.scientificamerican.com/article/how-the-covid-19-pandemic-could-end1/

the winter. As a result, the virus much more rapidly went the way of the 1918 virus, becoming a widely circulating seasonal flu, from which many people are now protected either by flu shots or by antibodies from a previous infection.

Projections about how COVID-19 will play out are speculative, but the end game will most likely involve a mix of everything that checked past pandemics: Continued social-control measures to buy time, new antiviral medications to ease symptoms, and a vaccine. The exact formula—how long control measures such as social distancing must stay in place, for instance—depends in large part on how strictly people obey restrictions and how effectively governments respond. For example, containment measures that worked for COVID-19 in places such as Hong Kong and South Korea came far too late in Europe and the U.S. "The question of how the pandemic plays out is at least 50 percent social and political," Cobey says.

….

It will take a vaccine to stop transmission. That will take time—probably a year from now. Still, there is reason to think a vaccine could work effectively**.** Compared with flu viruses, coronaviruses don't have as many ways to interact with host cells.

"If that interaction goes away, [the virus] can't replicate anymore," Krammer says. "That's the advantage we have here." It is not clear whether a vaccine will confer long-term immunity as with measles or short-term immunity as with flu shots. But "any vaccine at all would be helpful at this point," says epidemiologist Aubree Gordon of the University of Michigan.

Unless a vaccine is administered to all of the world's eight billion inhabitants who are not currently sick or recovered, COVID-19 is likely to become endemic. It will circulate and make people sick seasonally—sometimes very sick. But if the virus stays in the human population long enough, it will start to infect children when they are young." (Emphasis added).

2. Transmission.

Modes of Transmission

"Infections with respiratory viruses are principally transmitted through three modes: contact, droplet, and airborne.

- Contact transmission is infection spread through direct contact with an infectious person (e.g., touching during a handshake) or with an article or surface that has become contaminated. The latter is sometimes referred to as "fomite transmission."
- Droplet transmission is infection spread through exposure to virus-containing respiratory droplets (i.e., larger and smaller droplets and particles) exhaled by an infectious person. Transmission is most likely to occur when someone is close to the infectious person, generally within about 6 feet.

- Airborne transmission is infection spread through exposure to those virus-containing respiratory droplets comprised of smaller droplets and particles that can remain suspended in the air over long distances (usually greater than 6 feet) and time (typically hours)."[85]

"The virus that causes COVID-19 is thought to spread mainly from person to person, mainly through respiratory droplets produced when an infected person coughs or sneezes. These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs. Spread is more likely when people are in close contact with one another (within about 6 feet). COVID-19 seems to be spreading easily and sustainably in the community ("community spread") in many affected geographic areas."[86]

"It may also be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes. This is not thought to be the main way the virus spreads; however, we are still learning more about this virus."[87]

Asymptomatic and Pre-symptomatic Transmission

"Increasing numbers of epidemiologic studies have documented SARS-CoV-2 transmission during the pre-symptomatic incubation period. Studies using RT-PCR detection have reported low cycle thresholds, indicating larger quantities of viral RNA, among people with asymptomatic and pre-symptomatic SARS-CoV-2 infection. Likewise in viral culture, viral growth has been observed in specimens obtained from patients with asymptomatic and pre-symptomatic infection. The proportion of SARS-CoV-2 transmission due to asymptomatic or pre-symptomatic infection compared with symptomatic infection is not entirely clear; however, recent studies do suggest that people who are not showing symptoms may transmit the virus.[88]

A meta-analysis estimated that the initial median R_0 [the basic reproduction number for the virus] for COVID-19 is 2.79 (meaning that one infected person will on average infect 2.79 others), although current estimates might be biased because of insufficient data.[89] The current best estimate of the CDC based on data through August 1, 2020 is an R_0 value of 2.5.[90]

Around one in five people are traditionally thought to be super-spreaders. These are people who seem to transmit a given infectious disease significantly more widely than most.[91]

The incubation period for COVID-19 is thought to extend to 14 days, with a median

[85] https://www.cdc.gov/coronavirus/2019-ncov/more/scientific-brief-sars-cov-2.html
[86] https://www.cdc.gov/coronavirus/2019-ncov/faq.html#How-COVID-19-Spreads
[87] https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-manufacturing-workers-employers.html
[88] https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html
[89] https://wwwnc.cdc.gov/eid/article/26/6/20-0495_article
[90] https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html
[91] https://newatlas.com/health-wellbeing/covid19-case-studies-coronavirus-superspreader-clusters-cdc-report/

time of 4-5 days from exposure to symptoms onset.[92]

Available data indicate that persons with mild to moderate COVID-19 remain infectious no longer than 10 days after symptom onset. Persons with more severe to critical illness or severe immunocompromise likely remain infectious no longer than 20 days after symptom onset.[93]

The CDC's current best estimate of the percentage of persons with positive COVID-19 infections that are asymptomatic is 40%.[94]

The CDC's current best estimate of the percentage of COVID-19 disease transmission occurring prior to symptom onset is 50%.[95]

"It is not yet known whether weather and temperature affect the spread of COVID-19. Some other viruses, like those that cause the common cold and flu, spread more during cold weather months but that does not mean it is impossible to become sick with these viruses during other months. There is much more to learn about the transmissibility, severity, and other features associated with COVID-19 and investigations are ongoing."[96] (Emphasis added).

Viral Shedding

"Viral shedding by asymptomatic people may represent 40–50% of total infections though some uncertainty remains regarding how much they contribute to totals. Viral shedding may antedate symptoms by up to 3+ days."[97]

"Viral shedding[98]…occurs when a virus is released from an infected host. Studying viral shedding is helpful in understanding how infectious diseases like COVID-19 spread.

Researchers often define the term across a spectrum, using modifiers like "low" and "high" to describe levels of viral shedding. Assessing levels of viral shedding helps researchers determine at what point individuals are most infectious.

For example, a recently published study[99] of 94 patients with COVID-19 suggests that those infected with the new strain of coronavirus have the highest levels of viral shedding right before showing symptoms. Other studies have shown that some individuals may continue shedding the virus even after their symptoms resolve, or

[92] https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html
[93] https://www.cdc.gov/coronavirus/2019-ncov/hcp/duration-isolation.html
[94] https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html
[95] *Id.*
[96] https://www.cdc.gov/coronavirus/2019-ncov/faq.html#Coronavirus-Disease-2019-Basics
[97] https://www.hopkinsguides.com/hopkins/view/Johns_Hopkins_ABX_Guide/540747/all/Coronavirus_COVID_19__SARS_CoV_2_
[98] https://achi.net/newsroom/defining-covid-19-terms-viral-shedding/
[99] https://www.nature.com/articles/s41591-020-0869-5

subside; one study[100] found that individuals with mild cases of the virus may continue viral shedding up to eight days after symptom resolution.

From a public health perspective, understanding viral shedding of COVID-19 is necessary to determine appropriate actions for virus mitigation. If viral shedding is indeed highest right before a person starts showing symptoms, robust contact tracing efforts to identify potential exposures is necessary to slow the further spread of COVID-19 in communities. Information about viral spread after symptom resolution also allows public health officials to determine appropriate measures for those who have recovered from COVID-19, including guidance on extended quarantine." (Emphasis added).

Infectious Dose and Viral Load

"Infectious respiratory diseases spread when a healthy person comes in contact with virus particles expelled by someone who is sick — usually through a cough or sneeze. The amount of particles a person is exposed to can affect how likely they are to become infected and, once infected, how severe the symptoms become.

The amount of virus necessary to make a person sick is called the infectious dose. Viruses with low infectious doses are especially contagious in populations without significant immunity. The minimum infectious dose of SARS-CoV-2, the virus that causes COVID-19, is unknown so far, but researchers suspect it is low. "The virus is spread through very, very casual interpersonal contact," W. David Hardy, a professor of infectious disease at Johns Hopkins University School of Medicine, told STAT.[101]

A high infectious dose may lead to a higher viral load, which can impact the severity of COVID-19 symptoms. Viral load is a measure of virus particles. It is the amount of virus present once a person has been infected and the virus has had time to replicate in their cells. With most viruses, higher viral loads are associated with worse outcomes.

One study[102] of COVID-19 patients in China found that those with more severe symptoms tended to have higher viral loads. 'It's not proven, but it would make sense that higher inoculating doses will lead to higher viral loads, and higher viral loads would translate into more pathogenic clinical courses,' said Dan Barouch, director of the Center for Virology and Vaccine Research at Beth Israel Deaconess Medical Center."[103] (Emphasis added).

3. Cross Border Transmission.

According to the Director-General of the World Health Organization, "This [SARS-

[100] https://www.healio.com/pulmonology/practice-management/news/online/%7B071c6a27-2c50-458f-9558-19b9f501df05%7D/patients-with-covid-19-may-shed-virus-after-symptom-resolution
[101] https://www.statnews.com/2020/04/14/how-much-of-the-coronavirus-does-it-take-to-make-you-sick/
[102] https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30196-1/fulltext
[103] https://www.statnews.com/2020/04/14/how-much-of-the-coronavirus-does-it-take-to-make-you-sick/

CoV-2] virus does not respect borders."[104] While "stay at home" orders were still in place in 17 states and the District of Columbia as of May 25, 2020, states began reopening over the summer, only to reinstate restrictions as case rates increased dramatically in the fall and early winter.[105]

Particularly in the construction industry, but in other mobile work crew industries as well, contractors from the states of Maryland, North Carolina, West Virginia, Tennessee, the District of Columbia, Georgia, Pennsylvania, and other states regularly work in Virginia, increasing the chance of virus spread across borders.[106] For instance, during calendar year 2019, contractors from the following states were inspected by VOSH:

Alabama (5)
California (2)
Delaware (3)
District of Columbia (11)
Florida (9)
Georgia (13)
Illinois (4)
Indiana (4)
Iowa (1)
Kentucky (2)
Maryland (66)
Michigan (2)
Minnesota (3)
Mississippi (1)
Missouri (5)
Nebraska (3)
New Hampshire (1)
New Jersey (1)
New York (1)
North Carolina (96)
Ohio (5)
Oklahoma (1)
Pennsylvania (11)
South Carolina (5)
Tennessee (22)
Texas (6)
West Virginia (11)
Wisconsin (2).

WSLS.com, Roanoke, VA, May 5, 2020, "25 COVID-19 cases connected to Cave Spring High School construction work"

"ROANOKE, Va. – More than two dozen coronavirus cases are connected to construction work at a local high school, according to Roanoke County Public Schools officials.

The president of Avis Construction, Troy Smith, spoke to the Roanoke County school board on Tuesday and reported as many as 25 cases of COVID-19 that are related to construction work at Cave Spring High School.

Smith told school board members that not all 25 cases are construction workers, but rather, some are family members of workers.

School officials told 10 News that most cases are in workers from different out-of-state subcontractors.

[104] https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---27-february-2020
[105] https://www.aarp.org/politics-society/government-elections/info-2020/coronavirus-state-restrictions.html
[106] https://www.kayak.com/travel-restrictions/united-states/

All work was halted at the Cave Spring High School construction site on Monday, per recommendation from the health department."[107] (Emphasis added).

4. Infection Fatality Rate.

Though there are limitations on the availability and accuracy of COVID-19 data around the country, researchers are conducting studies to determine a likely range of the "infection mortality rate" (IFR) of COVID-19. The infection fatality rate is the ratio of deaths divided by the number of actual infections with SARS-CoV-2.

A study by the University of Washington using data through April 20, 2020 calculated the U.S. "infection mortality rate" among symptomatic cases (IFR-S) to be 1.3%.[108] Another study calculated a global IFR of 1.04%.[109]

A study by the London School of Hygiene and Tropical Medicine estimated the infection fatality rate on the Diamond Princess Cruise Ship to be 1.2%.[110] Nearly the entire cruise ships 3,711 passengers and crew were tested.

A study[111] published in the International Journal of Infectious Diseases in December 2020, concluded: "Based on a systematic review and meta-analysis of published evidence on COVID-19 until July 2020, the IFR of the disease across populations is 0.68% (0.53%–0.82%). However, due to very high heterogeneity in the meta-analysis, it is difficult to know if this represents a completely unbiased point estimate. It is likely that, due to age and perhaps underlying comorbidities in the population, different places will experience different IFRs due to the disease. Given issues with mortality recording, it is also likely that this represents an underestimate of the true IFR figure.

[107] https://www.wsls.com/news/local/2020/05/06/25-covid-19-cases-connected-to-cave-spring-high-school-construction-work/

[108] https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2020.00455; Study assumptions: We make three assumptions for our analysis: (1) Errors in the numerator and the denominator lead to underreporting of true COVID-19 deaths and cases, respectively; error is smaller for deaths than for cases. (2) Both the errors are declining over time. (3) The errors in the denominator are declining at a faster rate than the error in the numerator.

Assumption #1 is self-evident; both the deaths and the actual cases are undercounted during the initial phase of the epidemic. Because deaths are much more visible events than infections, which, in the case of COVID-19, can go asymptomatic during the first few days of infection, we posit that, at any point in time, the errors in the denominator are larger than the errors in the numerator. Hence, this assumption leads to CFR estimates being larger than the IFR-S, which is typically believed to be true based on observed data.

Assumption #2 is our central assumption, which states that under some stationary processes of care delivery, health care supply, and reporting, which are all believed to be improving over time, the errors in both the numerator and the denominator are declining. It implies that we are improving in the measurement of both the numerator and denominator over time, albeit at different rates in different jurisdictions.

Assumption #3 posits that the error in the denominator is declining faster than the error in the numerator. This assumption indicates that the CFR rates, based on the number of cumulative COVID-19 deaths and the cumulative reported COVID-19 cases, are declining over time and are confirmed based on our observed data (described in detail below).

[109] https://www.medrxiv.org/content/10.1101/2020.05.11.20098780v1

[110] https://www.medrxiv.org/content/10.1101/2020.03.05.20031773v2

[111] *A systematic review and meta-analysis of published research data on COVID-19 infection fatality rates*, https://www.sciencedirect.com/science/article/pii/S1201971220321809?via%3Dihub

More research looking at age-stratified IFR is urgently needed to inform policymaking on this front."

The generally accepted approximate IFR-S of seasonal influenza is 0.1%.[112]

5. COVID-19 Comparisons to Seasonal Influenza.

Seasonal Influenza

"While seasonal influenza (flu) viruses are detected year-round in the United States, flu viruses are most common during the fall and winter. The exact timing and duration of flu seasons can vary, but influenza activity often begins to increase in October. Most of the time flu activity peaks between December and February, although activity can last as late as May."[113]

"Influenza activity in the United States during the 2018–2019 season began to increase in November and remained at high levels for several weeks during January–February. Influenza A viruses were the predominant circulating viruses last year. While influenza A (H1N1pdm09) viruses predominated from October 2018 – mid February 2019, influenza A (H3N2) viruses were more commonly reported starting in late February 2019. Influenza B viruses were not commonly reported among circulating viruses during the 2018–2019 season. The season had moderate severity based on levels of outpatient influenza-like illness, hospitalizations rates, and proportions of pneumonia and influenza-associated deaths.

CDC estimates that the burden of illness during the 2018–2019 season included an estimated 35.5 million people getting sick with influenza, 16.5 million people going to a health care provider for their illness, 490,600 hospitalizations, and 34,200 deaths from influenza (Table 1). The number of influenza-associated illnesses that occurred last season was similar to the estimated number of influenza-associated illnesses during the 2012–2013 influenza season when an estimated 34 million people had symptomatic influenza illness." (Emphasis added).

The effectiveness of the 2018-2019 influenza vaccine for all vaccine types against influenza A or B viruses was estimated by the CDC to be 29%.[114]

The mortality rate or death rate of the seasonal influenza in 2018 was approximately 0.1%.[115]

"According to the CDC, counted deaths during the peak week of the influenza seasons from 2013-2014 to 2019-2020 ranged from 351 (2015-2016, week 11 of 2016) to 1,626 (2017-2018, week 3 of 2018)."[116]

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[112] *Id.* referencing https://www.cdc.gov/flu/about/burden/2018-2019.html
[113] https://www.cdc.gov/flu/about/season/flu-season.htm
[114] https://www.cdc.gov/flu/vaccines-work/2018-2019.html
[115] https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2020.00455?utm_campaign=covid19fasttrack&utm_medium=press&utm_content=basu&utm_source=mediaadvisory& citing https://www.cdc.gov/flu/about/burden/2018-2019.html
[116] https://www.thedenverchannel.com/news/coronavirus/study-covid-19-10-to-40-times-deadlier-than-seasonal-flu

COVID-19

"The Centers for Disease Control and Prevention (CDC) today confirmed the first case of 2019 Novel Coronavirus (2019-nCoV) in the United States in the state of Washington. The patient recently returned from Wuhan, China, where an outbreak of pneumonia caused by this novel coronavirus has been ongoing since December 2019…. The patient from Washington with confirmed 2019-nCoV infection returned to the United States from Wuhan on January 15, 2020."[117] (Emphasis added).

"Officials in Santa Clara County, California, announced last night that at least two deaths in early February can now be attributed to COVID-19. Until now, the first US fatality from the pandemic coronavirus was assumed to be in the Seattle area on Feb 28, but postmortem testing on deaths from Feb 6 [2020] and Feb 17 now confirm that COVID-19 was spreading in the San Francisco Bay area weeks earlier than previously thought."[118]

"[As of May 20, 2020] The CDC's current "best guess" is that — in a scenario without any further social distancing or other efforts to control the spread of the virus — roughly 4 million patients would be hospitalized in the U.S. with COVID-19 and 500,000 would die over the course of the pandemic. That's according to the agency's new parameters that the Center for Public Integrity plugged into a simple epidemiological model.
….
The CDC document outlines five possible scenarios[119] for the future of the pandemic, one "best guess" and two better-case and two worse-case versions. All of them are "unmitigated," meaning they do not account for future social distancing, widespread mask usage or other efforts to contain the coronavirus.

State and local officials can use the scenarios as a baseline model against which to weigh different responses."[120] (Emphasis added).

"[As of December 23, 2020] This week's national ensemble forecast predicts that the number of newly reported COVID-19 deaths will likely increase over the next 4 weeks, with 16,400 to 27,600 new deaths likely to be reported in the week ending January 16, 2021. The national ensemble predicts that a total of 378,000 to 419,000 COVID-19 deaths will be reported by this date."[121]

"During the week ending April 21, 2020, 15,455 coronavirus-related deaths [occurred], which made the coronavirus' peak death rate 10 to 40 times higher than the one-week peak of the flu."[122] (Emphasis added).

Early studies indicate that COVID-19 "infection fatality rate" may be substantially

[117] https://www.cdc.gov/media/releases/2020/p0121-novel-coronavirus-travel-case.html
[118] https://www.cidrap.umn.edu/news-perspective/2020/04/coroner-first-us-covid-19-death-occurred-early-february
[119] https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html
[120] https://www.npr.org/sections/health-shots/2020/05/22/860981956/scientists-say-new-lower-cdc-estimates-for-severity-of-covid-19-are-optimistic
[121] https://www.cdc.gov/coronavirus/2019-ncov/covid-data/forecasting-us.html
[122] https://www.thedenverchannel.com/news/coronavirus/study-covid-19-10-to-40-times-deadlier-than-seasonal-flu

higher than the seasonal influenza. A study by the University of Washington using data through April 20, 2020 calculated the U.S. "infection mortality rate" among symptomatic cases (IFR-S) to be 1.3%[123] [13 times the seasonal influenza rate]. Another study calculated a global IFR of 1.04%[124] [10.4 times the seasonal influenza rate]. A study by the London School of Hygiene and Tropical Medicine estimated the infection fatality rate on the Diamond Princess Cruise Ship to be 1.2%[125] [12 times the seasonal influenza rate] Nearly the entire cruise ships 3,711 passengers and crew were tested.

A study[126] published in the International Journal of Infectious Diseases in December 2020, concluded: "Based on a systematic review and meta-analysis of published evidence on COVID-19 until July 2020, the IFR of the disease across populations is 0.68% (0.53%–0.82%). However, due to very high heterogeneity in the meta-analysis, it is difficult to know if this represents a completely unbiased point estimate. It is likely that, due to age and perhaps underlying comorbidities in the population, different places will experience different IFRs due to the disease. Given issues with mortality recording, it is also likely that this represents an underestimate of the true IFR figure. More research looking at age-stratified IFR is urgently needed to inform policymaking on this front."

6. Superspreader Cases.

"Superspreader Event": High SARS-CoV-2 Attack Rate Following Exposure at a Choir Practice — Skagit County, Washington, March, 2020[127]

[123] https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2020.00455; Study assumptions: We make three assumptions for our analysis: (1) Errors in the numerator and the denominator lead to underreporting of true COVID-19 deaths and cases, respectively; error is smaller for deaths than for cases. (2) Both the errors are declining over time. (3) The errors in the denominator are declining at a faster rate than the error in the numerator.

Assumption #1 is self-evident; both the deaths and the actual cases are undercounted during the initial phase of the epidemic. Because deaths are much more visible events than infections, which, in the case of COVID-19, can go asymptomatic during the first few days of infection, we posit that, at any point in time, the errors in the denominator are larger than the errors in the numerator. Hence, this assumption leads to CFR estimates being larger than the IFR-S, which is typically believed to be true based on observed data.

Assumption #2 is our central assumption, which states that under some stationary processes of care delivery, health care supply, and reporting, which are all believed to be improving over time, the errors in both the numerator and the denominator are declining. It implies that we are improving in the measurement of both the numerator and denominator over time, albeit at different rates in different jurisdictions.

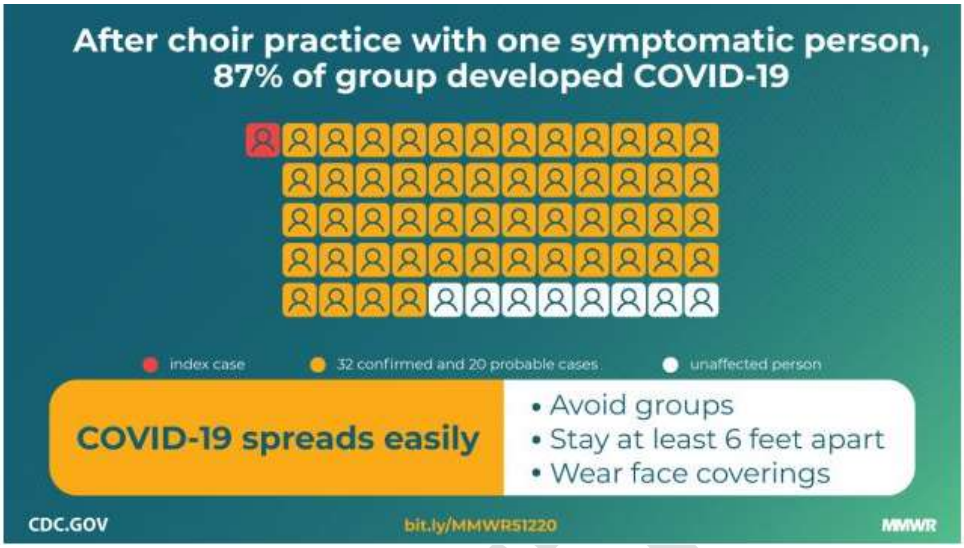
Assumption #3 posits that the error in the denominator is declining faster than the error in the numerator. This assumption indicates that the CFR rates, based on the number of cumulative COVID-19 deaths and the cumulative reported COVID-19 cases, are declining over time and are confirmed based on our observed data (described in detail below).

[124] https://www.medrxiv.org/content/10.1101/2020.05.11.20098780v1

[125] https://www.medrxiv.org/content/10.1101/2020.03.05.20031773v2

[126] *A systematic review and meta-analysis of published research data on COVID-19 infection fatality rates*, https://www.sciencedirect.com/science/article/pii/S1201971220321809?via%3Dihub

[127] https://www.cdc.gov/mmwr/volumes/69/wr/mm6919e6.htm



"Following a 2.5-hour choir practice on March 10, 2020 attended by 61 persons, including a symptomatic index patient, 32 confirmed and 20 probable secondary COVID-19 cases occurred (an attack virus rate of from 53.3% to 86.7%)[128]; three patients were hospitalized, and two died. Transmission was likely facilitated by close proximity (within 6 feet) during practice and augmented by the act of singing.

….

No choir member reported having had symptoms at the March 3 practice. One person at the March 10 practice had cold-like symptoms beginning March 7. This person, who had also attended the March 3 practice, had a positive laboratory result for SARS-CoV-2 by reverse transcription–polymerase chain reaction (RT-PCR) testing.

….

Aerosol emission during speech has been correlated with loudness of vocalization, and certain persons, who release an order of magnitude more particles than their peers, have been referred to as superemitters and have been hypothesized to contribute to superspreading events.[129]

….

The 2.5-hour singing practice provided several opportunities for droplet and fomite transmission, including members sitting close to one another, sharing snacks, and stacking chairs at the end of the practice. The act of singing, itself, might have contributed to transmission through emission of aerosols, which is affected by loudness of vocalization.

….

Certain persons, known as superemitters, who release more aerosol particles during speech than do their peers, might have contributed to this and previously reported COVID-19 superspreading events (2–5). These data demonstrate the high

[128] "The findings in this report are subject to at least two limitations. First, the seating chart was not reported because of concerns about patient privacy. However, with attack rates of 53.3% and 86.7% among confirmed and all cases, respectively, and one hour of the practice occurring outside of the seating arrangement, the seating chart does not add substantive additional information. Second, the 19 choir members classified as having probable cases did not seek testing to confirm their illness. One person classified as having probable COVID-19 did seek testing 10 days after symptom onset and received a negative test result. It is possible that persons designated as having probable cases had another illness." *Id.*

[129] *Id.*

transmissibility of SARS-CoV-2 and the possibility of superemitters contributing to broad transmission in certain unique activities and circumstances.

….

It is recommended that persons avoid face-to-face contact with others, not gather in groups, avoid crowded places, maintain physical distancing of at least 6 feet to reduce transmission, and wear cloth face coverings in public settings where other social distancing measures are difficult to maintain."[130]

High COVID-19 Attack Rate Among Attendees at Events at a Church — Arkansas, March 2020[131]

On March 16, 2020, the day that national social distancing guidelines were released (1), the Arkansas Department of Health (ADH) was notified of two cases of coronavirus disease 2019 (COVID-19) from a rural county of approximately 25,000 persons; these cases were the first identified in this county. The two cases occurred in a husband and wife; the husband is the pastor at a local church.

During March 6–8, the church hosted a 3-day children's event which consisted of two separate 1.5-hour indoor sessions (one on March 6 and one on March 7) and two, 1-hour indoor sessions during normal church services on March 8. This event was led by two guests from another state. During each session, children participated in competitions to collect offerings by hand from adults, resulting in brief close contact among nearly all children and attending adults.

On March 7, food prepared by church members was served buffet-style. A separate Bible study event was held March 11; the pastor reported most attendees sat apart from one another in a large room at this event. Most children and some adults participated in singing during the children's event; no singing occurred during the March 11 Bible study. Among all 94 persons who might have attended any of the events, 19 (20%) attended both the children's event and Bible study.

During the investigation, two church participants who attended the March 6–8 children's event were found to have had onset of symptoms on March 6 and 7; these represent the primary cases and likely were the source of infection of other church attendees. The two out-of-state guests developed respiratory symptoms during March 9–10 and later received diagnoses of laboratory-confirmed COVID-19, suggesting that exposure to the primary cases resulted in their infections. The two primary cases were not linked except through the church; the persons lived locally and reported no travel and had no known contact with a traveler or anyone with confirmed COVID-

[130] *Id.*

[131] https://www.cdc.gov/mmwr/volumes/69/wr/mm6920e2.htm?s_cid=mm6920e2_w

The findings in this report are subject to at least four limitations. First, some infected persons might have been missed because they did not seek testing, were ineligible for testing based on criteria at the time, or were unable to access testing. Second, although no previous cases had been reported from this county, undetected low-level community transmission was likely, and some patients in this cluster might have had exposures outside the church. Third, risk of exposure likely varied among attendees but could not be characterized because data regarding individual behaviors (e.g., shaking hands or hugging) were not collected. Finally, the number of cases beyond the cohort of church attendees likely is undercounted because tracking out-of-state transmission was not possible, and patients might not have identified church members as their source of exposure.

19. Patient interviews revealed no additional common exposures among church attendees.

The husband and wife were the first to be recognized by ADH among the 35 patients with laboratory-confirmed COVID-19 associated with church attendance identified through April 22; their illnesses represent the index cases. During the investigation, two persons who were symptomatic (not the husband and wife) during March 6–8 were identified; these are considered the primary cases because they likely initiated the chain of transmission among church attendees.

The estimated attack rate ranged from 38% (35 cases among all 92 church event attendees) to 78% (35 cases among 45 church event attendees who were tested for SARS-CoV-2).

During contact tracing, at least 26 additional persons with confirmed COVID-19 cases were identified among community members who reported contact with the church attendees and likely were infected by them; one of the additional persons was hospitalized and subsequently died.

Community Transmission of SARS-CoV-2 at Two Family Gatherings — Chicago, Illinois, February–March 2020[132]

Most early reports of person-to-person SARS-CoV-2 transmission have been among household contacts, where the secondary attack rate has been estimated to exceed 10% (1), in health care facilities (2), and in congregate settings (3). However, widespread community transmission, as is currently being observed in the United States, requires more expansive transmission events between non-household contacts.

This report describes the cluster of 16 cases[133] of confirmed or probable COVID-19, including three deaths, likely resulting from transmission of SARS-CoV-2 at two family gatherings (a funeral and a birthday party).

The median interval from last contact with a patient with confirmed or probable COVID-19 to first symptom onset was 4 days. Within 3 weeks after mild respiratory symptoms were noted in the index patient, 15 other persons were likely infected with SARS-CoV-2, including three who died. Patient A1.1, the index patient, was apparently able to transmit infection to 10 other persons, despite having no household

[132] *Id.*

[133] The findings in this investigation are subject to at least three limitations. First, lack of laboratory testing for probable cases means some probable COVID-19 patients might have instead experienced unrelated illnesses, although influenza-like illness was declining in Chicago at the time. Second, phylogenetic data, which could confirm presumed epidemiologic linkages, were unavailable. For example, patient B3.1 experienced exposure to two patients with confirmed COVID-19 in this cluster, and the causative exposure was presumed based on expected incubation periods. Patient D3.1 was a health care professional, and, despite not seeing any patients with known COVID-19, might have acquired SARS-CoV-2 during clinical practice rather than through contact with members of this cluster. Similarly, other members of the cluster might have experienced community exposures to SARS-CoV-2, although these transmission events occurred before widespread community transmission of SARS-CoV-2 in Chicago. Finally, despite intensive epidemiologic investigation, not every confirmed or probable case related to this cluster might have been detected. Persons who did not display symptoms were not evaluated for COVID-19, which, given increasing evidence of substantial asymptomatic infection (9), means the size of this cluster might be underestimated. *Id.*

contacts and experiencing only mild symptoms for which medical care was not sought (patient A1.1 was only tested later as part of this epidemiologic investigation).

Identifying and Interrupting Superspreading Events—Implications for Control of Severe Acute Respiratory Syndrome Coronavirus 2[134]

Severe acute respiratory syndrome (SARS) coronavirus 2 (SARS-CoV-2) continues to spread (1). Although we still have limited information on the epidemiology of coronavirus disease (COVID-19), there have been multiple reports of superspreading events (SSEs)

SSEs highlight a major limitation of the concept of R_0. The basic reproductive number R0, when presented as a mean or median value, does not capture the heterogeneity of transmission among infected persons (16); 2 pathogens with identical R_0 estimates may have markedly different patterns of transmission. Furthermore, the goal of a public health response is to drive the reproductive number to a value <1, something that might not be possible in some situations without better prevention, recognition, and response to SSEs.

7. COVID-19 Pandemic Planning.

Table 1. Parameter Values that vary among the five COVID-19 Pandemic Planning Scenarios.[135]

The scenarios are intended to advance public health preparedness and planning. They are not predictions or estimates of the expected impact of COVID-19.

Scenario 5: Parameter values for disease severity, viral transmissibility, and pre-symptomatic and asymptomatic disease transmission that represent the best estimate, based on the latest surveillance data and scientific knowledge. Parameter values are based on data received by CDC through August 8, 2020.

Parameter	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5: Current Best Estimate
R_0*	2.0		4.0		2.5
Infection Fatality Ratio†	0-19 years: 0.00002 20-49 years: 0.00007 50-69 years: 0.0025 70+ years: 0.028		0-19 years: 0.0001 20-49 years: 0.0003 50-69 years: 0.010 70+ years: 0.093		0-19 years: 0.00003 20-49 years: 0.0002 50-69 years: 0.005 70+ years: 0.054

[134] https://wwwnc.cdc.gov/eid/article/26/6/20-0495_article
[135] https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html

Parameter	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5: Current Best Estimate
Percent of infections that are asymptomatic[§]	10%	70%	10%	70%	40%
Infectiousness of asymptomatic individuals relative to symptomatic[¶]	25%	100%	25%	100%	75%
Percentage of transmission occurring prior to symptom onset	30%	70%	30%	70%	50%

*The best estimate representative of the point estimates of R_0 from the following sources:

From Table 2: CDC Parameter Values Common to the Five COVID-19 Pandemic Planning Scenarios.[136]

The parameter values are likely to change as we obtain additional data about disease severity and viral transmissibility of COVID-19.

Parameter values are based on data received by CDC through August 8, 2020, including COVID-19 Case Surveillance Public Use Data (https://data.cdc.gov/Case-Surveillance/COVID-19-Case-Surveillance-Public-Use-Data/vbim-akqf); data from the Hospitalization Surveillance Network (COVID-NET) (through August 1); and data from Data Collation and Integration for Public Health Event Response (*DCIPHER*).

Pre-existing immunity Assumption, ASPR and CDC	No pre-existing immunity before the pandemic began in 2019. It is assumed that all members of the U.S. population were susceptible to infection prior to the pandemic.
Time from exposure to symptom onset[*]	~6 days (mean)
Time from symptom onset in an individual and symptom onset of a second person infected by that individual[†]	~6 days (mean)
Mean ratio of estimated infections to reported case counts, Overall (range)[§]	11 (6, 24)
Parameter Values Related to Healthcare Usage	

[136] https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html

Median number of days from symptom onset to SARS-CoV-2 test among SARS-CoV-2 positive patients (interquartile range)[¶]	Overall: 3 (1, 6) days
Median number of days from symptom onset to hospitalization (interquartile range)[**]	18-49 years: 6 (3, 10) days 50-64 years: 6 (2, 10) days ≥65 years: 4 (1, 9) days
Median number of days of hospitalization among those not admitted to ICU (interquartile range) [††]	18-49 years: 3 (2, 5) days 50-64 years: 4 (2, 7) days ≥65 years: 6 (3, 10) days
Median number of days of hospitalization among those admitted to ICU (interquartile range)[††,§§]	18-49 years: 11 (6, 20) days 50-64 years: 14 (8, 25) days ≥65 years: 12 (6, 20) days
Percent admitted to ICU among those hospitalized[††]	18-49 years: 23.8% 50-64 years: 36.1% ≥65 years: 35.3%
Percent on mechanical ventilation among those hospitalized. Includes both non-ICU and ICU admissions[††]	18-49 years: 12.0% 50-64 years: 22.1% ≥65 years: 21.1%
Percent that die among those hospitalized. Includes both non-ICU and ICU admissions[††]	18-49 years: 2.4% 50-64 years: 10.0% ≥65 years: 26.6%
Median number of days of mechanical ventilation (interquartile range)[**]	Overall: 6 (2, 12) days
Median number of days from symptom onset to death (interquartile range)[**]	18-49 years: 15 (9, 25) days 50-64 years: 17 (10, 26) days ≥65 years: 13 (8, 21) days
Median number of days from death to reporting (interquartile range)[¶¶]	18-49 years: 19 (5, 45) days 50-64 years: 21 (6, 46) days ≥65 years: 19 (5, 44) days

8. Community or "Herd" Immunity.

"Community immunity [or herd immunity]: A situation in which a sufficient proportion of a population is immune to an infectious disease (through vaccination and/or prior illness) to make its spread from person to person unlikely. Even individuals not vaccinated (such as newborns and those with chronic illnesses) are offered some protection because the disease has little opportunity to spread within the community…."[137]

"Although more than 2.5 million confirmed cases of COVID-19 have been reported worldwide, studies suggest that (as of early April 2020) no more than 2-4% of any country's population has been infected with SARS-CoV-2 (the coronavirus that causes COVID-19). Even in hotspots like New York City that have been hit hardest by the pandemic, initial studies suggest that perhaps 15-21% of people have been exposed so far. In getting to that level of exposure, more than 17,500 of the 8.4 million people in New York City (about 1 in every 500 [480] New Yorkers) have died, with the overall death rate in the city suggesting deaths may be undercounted and mortality may be even higher. [more recent data indicate that as of May 24, 2020, New York City has suffered 16,469 confirmed COVID-19 deaths (i.e., positive laboratory test) and another 4,747 probable deaths (i.e., cause of death reported as "COVID-19" or equivalent, but no positive laboratory test) for a total of 21,216 deaths, about 1 in every 395 New Yorkers].[138]
….
To reach herd immunity for COVID-19, likely 70% or more of the population would need to be immune. Without a vaccine, over 200 million Americans would have to get infected before we reach this threshold. Put another way, even if the current pace of the COVID-19 pandemic continues in the United States – with over 25,000 confirmed cases a day – it will be well into 2021 before we reach herd immunity."[139] (Emphasis added).

Nypost.com, Dr. Fauci says COVID-19 herd immunity may take 90%[140] to be infected or vaccinated:

> "Dr. Anthony Fauci now says as much as 90 percent of the population may need to get vaccinated or infected to achieve herd immunity against COVID-19 — admitting in a new interview that he has been intentionally raising the bar based, in part, on what he thinks the country is ready to hear.
>
> "We really don't know what the real number is," the nation's top infectious disease expert told the New York Times.
>
> "I think the real range is somewhere between 70 to 90 percent. But, I'm not going to say 90 percent."

[137] https://www.cdc.gov/vaccines/terms/glossary.html#commimmunity
[138] https://www1.nyc.gov/site/doh/covid/covid-19-data.page
[139] https://coronavirus.jhu.edu/from-our-experts/early-herd-immunity-against-covid-19-a-dangerous-misconception
[140] https://nypost.com/2020/12/24/fauci-covid-herd-immunity-requires-90-to-be-infected-or-vaccinated/

> The director of the National Institute of Allergy and Infectious Diseases acknowledged that he's been intentionally upping that number as science's understanding of the virus has changed — and as Americans have become more confident in coronavirus vaccines.
>
> ….
>
> He said he's comfortable drawing the line at 90 percent herd immunity because he doesn't believe the virus is more infectious than the measles, which falls in that range.
>
> "I'd bet my house that COVID isn't as contagious as measles," he said.
>
> Around 46 percent of Americans plan to take the vaccine at the earliest available opportunity, while 32 percent are willing to wait for others to get the shot first, according to a recent USA Today-Suffolk University survey."

Latimes.com, December 26, 2020. Can COVID-19 vaccines get us to herd immunity? 'The jury is definitely still out':[141]

> The aim of the vaccination campaign against COVID-19 is herd immunity — the point at which so few people are susceptible to infection that the virus runs out of places to go.
>
> In the early days of the pandemic, epidemiologists estimated that would require inoculating about two-thirds of the U.S. population.
>
> Now many of those same experts say that figure is almost certainly too low.
>
> 'If you really want true herd immunity, where you get a blanket of protection over the country … you want about 75 to 85% of the country to get vaccinated,' Dr. Anthony Fauci, the nation's top infectious-disease official, told a reporter last week. 'I would say even closer to 85%.'
>
> The shift reflects a deeper understanding of how the virus spreads — that it jumps from one person to another more easily than once thought.
>
> The question of how many people must be vaccinated is of crucial importance as the world embarks on the biggest inoculation campaign in decades.
>
> The goal of vaccination isn't just to protect the individual who receives it but also to drape a fire blanket over a large enough portion of the population that the fire begins running out of fuel.
>
> If too few people are vaccinated, the virus will keep finding enough new hosts to propagate itself — and continue to stress the healthcare system, delay economic recovery, necessitate social distancing and potentially surge again if vaccines lose effectiveness over time.

[141] https://www.yahoo.com/now/covid-19-vaccines-us-herd-110023026.html

Whatever the threshold for herd immunity, public health officials face a substantial challenge.

An early December poll from the Associated Press-NORC Center for Public Affairs Research found that 46% of American adults planned to get vaccinated while 26% would decline and 27% were still undecided.

One group of researchers found that anti-vaccination messaging on social media has tripled since the start of the pandemic.

A particular obstacle could be vaccinating children and teenagers, a group that has not been hit especially hard by the pandemic and for which vaccines are still being tested. But at 22% of the U.S. population, they are important to any effort to achieve herd immunity and return to normal life.

When epidemiologists first aimed to model how many people would need to be vaccinated in order to drive the coronavirus toward extinction, they compared early transmission trends to those of other recent flu pandemics.

They noted how the coronavirus had a longer incubation period, more asymptomatic spread and higher contagion — estimating that the pandemic would probably drag on for 18 to 24 months.

"It likely won't be halted until 60% to 70% of the population is immune," said a report published by infectious-disease experts in April.

There are two paths to immunity: becoming infected with the virus and recovering, or getting vaccinated. Neither is a guarantee.

Based on data from clinical trials showing that the efficacy of the two authorized vaccines — from Pfizer and Moderna — is excellent but still imperfect, the threshold for herd immunity rises to around 74%.

But experts say even that calculation is still too simple.

"Those numbers are useful for thought experiments, but they don't represent what's likely to be the way we control the virus or its impacts," said Harvard epidemiologist Marc Lipsitch. "Offering a kind of magic number requires some very strong assumptions about these vaccines."

Many factors can come into play. If the virus becomes even more transmissible, the threshold for herd immunity would increase.

The targets could vary by location. In sparsely populated places where people adhere to social distancing guidelines, fewer people would have to be vaccinated to burn out the virus.

'It's going to be the sort of thing that we're studying for a very long time to come,' said William Hanage, an epidemiologist at the Center for

Communicable Disease Dynamics at Harvard.

Then there are the vaccines themselves.

They were authorized based on rapid-fire clinical trials that showed recipients were highly unlikely to develop symptoms of COVID-19 — but did not determine whether the vaccines actually prevent people from becoming infected with the virus or transmitting it.

The degree to which the vaccines prevent transmission matters greatly in the equation for calculating herd immunity. In a bad-case scenario, the vaccines do so little to stop transmissions that herd immunity simply can't be achieved through vaccination alone.

"At the moment, the jury is definitely still out," Lipsitch said. "If I had to guess, there will be a component of herd immunity — I just don't know how dramatic it will be."

It could turn out that reaching herd immunity depends not only on how many people are vaccinated but also which people. Inoculating those most likely to spread it — people who live or work in close quarters, for example — may do much more to contain the pandemic than vaccinating people who live in relative seclusion.

Given all these unknowns, Fauci brought his estimate to 85% — and has said it could be even higher.

The costs of not achieving herd immunity are substantial. If the virus continues to circulate broadly, even some people who are vaccinated will develop COVID-19. Hospitals will continue to confront surges of the virus, depleting their resources and compromising their ability to treat heart attacks, strokes and other emergencies.

Meanwhile, overall quality of life would continue to suffer. Schools, offices and restaurants would remain closed even for people who have been vaccinated.

Experts say that until the virus is circulating at extraordinarily low levels — such that the risk of becoming infected is close to zero — social distancing and mask-wearing are here to stay.

The final answer to the question of how many people need to be vaccinated won't be known until herd immunity is actually achieved. When epidemiologists start to see the test positivity rate falling to extremely low numbers, that's how they'll know the campaign is working.

But with the exception of smallpox, no virus that afflicts humans has ever been wiped out completely. Experts have been struggling with polio for decades, lately in conflict regions where vaccination campaigns have been disrupted.

> They emphasize that in the age of globalization, herd immunity must eventually take into account almost every corner of the earth — a pathogen anywhere remains a threat everywhere.
>
> 'I think it's extremely unlikely that we would be able to eradicate this virus,' Hanage said. 'In reality, we have to accept that.'
>
> 'However, we should be able to get to a point where we are going to be able to live without it markedly damaging our lives, without leading to surges that damage our healthcare, or large excessive mortality — and that is what we are seeking to achieve.'" (Emphasis added).

As of December 29, 2020, the CDC says:

> "Experts do not know what percentage of people would need to get vaccinated to achieve herd immunity to COVID-19. Herd immunity is a term used to describe when enough people have protection—either from previous infection or vaccination—that it is unlikely a virus or bacteria can spread and cause disease. As a result, everyone within the community is protected even if some people don't have any protection themselves. The percentage of people who need to have protection in order to achieve herd immunity varies by disease."[142]

9. COVID-19 Virus Mutations.

Depending on the level of contagiousness of COVID-19 expressed in the R_0[143] value, "the threshold for combined [COVID-19] vaccine efficacy and herd immunity needed for disease extinction" is estimated between 55% and 82% "(i.e., >82% of the population has to be immune, through either vaccination or prior infection, to achieve herd immunity to stop transmission).[144]

"The new [SARS-CoV-2] coronavirus is an RNA virus: a collection of genetic material packed inside a protein shell. Once an RNA virus makes contact with a host, it starts to make new copies of itself that can go on to infect other cells.

RNA viruses, like the flu and measles, are more prone to changes and mutations compared with DNA viruses, such as herpes, smallpox, and human papillomavirus

[142] https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html

[143] "The basic reproduction number (R_0), pronounced "R naught," is intended to be an indicator of the contagiousness or transmissibility of infectious and parasitic agents…. R_0 has been described as being one of the fundamental and most often used metrics for the study of infectious disease dynamics (7–12). An R_0 for an infectious disease event is generally reported as a single numeric value or low–high range, and the interpretation is typically presented as straightforward; an outbreak is expected to continue if R_0 has a value >1 and to end if R_0 is <1 (13). The potential size of an outbreak or epidemic often is based on the magnitude of the R_0 value for that event (10), and R_0 can be used to estimate the proportion of the population that must be vaccinated to eliminate an infection from that population (14,15). R_0 values have been published for measles, polio, influenza, Ebola virus disease, HIV disease, a diversity of vectorborne infectious diseases, and many other communicable diseases (14,16–18). https://wwwnc.cdc.gov/eid/article/25/1/17-1901_article

[144] https://wwwnc.cdc.gov/eid/article/26/7/20-0282_article#suggestedcitation

(HPV).

'In the world of RNA viruses, change is the norm. We expect RNA viruses to change frequently. That's just their nature,' said Dr. Mark Schleiss, a pediatric infectious disease specialist and investigator with the Institute for Molecular Virology at the University of Minnesota.

SARS-CoV-2 is no exception, and over the past few months it has been mutating. But the virus has mutated at a very slow pace. And when it does mutate, the new copies aren't far off from the original virus.

'The sequences of the original isolates from China are very close to those in viruses circulating in the U.S. and the rest of the world,' said Dr. John Rose, a senior research scientist in the department of pathology at Yale Medicine who's helping develop a COVID-19 vaccine.

….

Early research from scientists at Los Alamos National Laboratory[145] shows that SARS-CoV-2 has mutated into a new form that may be more contagious.

The new strain is responsible for the vast majority of infections reported around the world since mid-March, according to the new study published in the preprint research website BioRxiv Thursday.

In total, the researchers identified 14 strains of COVID-19 and released their findings to help those working on vaccines and treatments.

That being said, the new dominant strain identified does seem to be more infectious in laboratory settings.

But scientists are now trying to understand how the variation behaves in the body — which may be very different from lab settings. Additionally, the study is in preprint, which means it hasn't yet been fully peer-reviewed.

It's also unclear whether the new mutation infects and sickens people differently. At this time, the illness and hospitalization rates caused by the new variation seems to be similar."[146]

Forbes.com, December 29, 2020. First U.S. Case Of New Covid Mutation[147] Discovered In Colorado:

> "A new, highly contagious coronavirus variant that was first identified in Britain has reached the United States, officials in Colorado confirmed Tuesday, reporting the first known U.S. case of the strain more than two weeks after it was discovered — a worrying development as Covid-19 infections and

[145] https://www.biorxiv.org/content/10.1101/2020.04.29.069054v1
[146] https://www.healthline.com/health-news/what-to-know-about-mutation-and-covid-19#The-new-coronavirus-is-mutating,-but-very-slowly
[147] https://www.forbes.com/sites/joewalsh/2021/12/29/first-us-case-of-new-covid-mutation-discovered-in-colorado/?sh=5560175e1d79

deaths climb nationwide.

The variant was discovered in a man in his 20s who lives in Elbert County, a rural area near Denver, Gov. Jared Polis (D-Colo.) said in a tweet Tuesday afternoon.

The man has no travel history, Polis said, placing him at odds with many other patients in Europe who appeared to contract the variant while traveling in the United Kingdom.

….

Researchers believe this new coronavirus variant — which U.K. officials disclosed earlier this month — is about 56% more contagious than other versions of the virus, an alarming figure even though it doesn't appear to lead to deadlier infections. As of last week, the variant was already responsible for the majority of London's Covid-19 infections, and officials have partly blamed it for a recent spike in U.K. Covid-19 cases that has forced much of the country back into strict lockdowns. Dozens of countries have banned or restricted travel from the United Kingdom in response, including the United States, which began requiring all U.K. travelers to show a negative coronavirus test before flying to the U.S. this week.

….

Most infectious disease experts aren't surprised to see the new variant arrive in the United States. Last week, Dr. Anthony Fauci told ABC News it's "certainly possible" the mutation was already present in the country. But experts fear a more transmissible form of Covid-19 could make controlling the virus' spread even more difficult, adding to an already-dire surge in cases throughout the United States." (Emphasis added).

10. COVID-19 Vaccine Development and Deployment.

How COVID-19 Vaccines Work[148]

"COVID-19 vaccines help our bodies develop immunity to the virus that causes COVID-19 without us having to get the illness. Different types of vaccines work in different ways to offer protection, but with all types of vaccines, the body is left with a supply of "memory" T-lymphocytes as well as B-lymphocytes that will remember how to fight that virus in the future.

It typically takes a few weeks for the body to produce T-lymphocytes and B-lymphocytes after vaccination. Therefore, it is possible that a person could be infected with the virus that causes COVID-19 just before or just after vaccination and then get sick because the vaccine did not have enough time to provide protection.

Sometimes after vaccination, the process of building immunity can cause symptoms, such as fever. These symptoms are normal and are a sign that the body is building

[148] https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/how-they-work.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fvaccines%2Fabout-vaccines%2Fhow-they-work.html

immunity."

Authorized Vaccines

Currently, two vaccines are authorized and recommended to prevent COVID-19:[149]

- Pfizer-BioNTech COVID-19 vaccine[150]

  "Based on evidence from clinical trials, the Pfizer-BioNTech vaccine was 95% effective at preventing laboratory-confirmed COVID-19 illness in people without evidence of previous infection."

- Moderna's COVID-19 vaccine[151]

  "Based on evidence from clinical trials, the Moderna vaccine was 94.1% effective at preventing laboratory-confirmed COVID-19 illness in people who received two doses who had no evidence of being previously infected."

As of December 28, 2020, large-scale (Phase 3) clinical trials are in progress or being planned for three COVID-19 vaccines in the United States:

- AstraZeneca's COVID-19 vaccine
- Janssen's COVID-19 vaccine
- Novavax's COVID-19 vaccine

Cost is not an obstacle to getting vaccinated against COVID-19

Vaccine doses purchased with U.S. taxpayer dollars will be given to the American people at no cost. However, vaccination providers may be able to charge administration fees for giving the shot. Vaccination providers can get this fee reimbursed by the patient's public or private insurance company or, for uninsured patients, by the Health Resources and Services Administration's Provider Relief Fund.[152]

Previously infected people and access to a COVID-19 vaccine

COVID-19 vaccination should be offered to previously infected persons. No antibody test is needed. "However, anyone currently infected with COVID-19 should wait to get vaccinated until after their illness has resolved and after they have met the criteria to discontinue isolation.

Additionally, current evidence suggests that reinfection with the virus that causes COVID-19 is uncommon in the 90 days after initial infection. Therefore, people with a recent infection may delay vaccination until the end of that 90-day period if

[149] https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines.html
[150] https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/Pfizer-BioNTech.html
[151] https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/Moderna.html
[152] https://www.cdc.gov/coronavirus/2019-ncov/vaccines/8-things.html

desired."[153]

How long does immunity last

"The protection someone gains from having an infection (called natural immunity) varies depending on the disease, and it varies from person to person. Since this virus is new, we don't know how long natural immunity might last. Current evidence suggests that reinfection with the virus that causes COVID-19 is uncommon in the 90 days after initial infection.

Regarding vaccination, we won't know how long immunity lasts until we have a vaccine and more data on how well it works.

Both natural immunity and vaccine-induced immunity are important aspects of COVID-19 that experts are trying to learn more about, and CDC will keep the public informed as new evidence becomes available."[154]

Continued need to wear face covering and practice physical distancing after vaccination

As of December 29, 2020, the CDC says:

"While experts learn more about the protection that COVID-19 vaccines provide under real-life conditions, it will be important for everyone to continue using all the tools available to us to help stop this pandemic, like covering your mouth and nose with a mask, washing hands often, and staying at least 6 feet away from others. Together, COVID-19 vaccination and following CDC's recommendations for how to protect yourself and others will offer the best protection from getting and spreading COVID-19. Experts need to understand more about the protection that COVID-19 vaccines provide before deciding to change recommendations on steps everyone should take to slow the spread of the virus that causes COVID-19. Other factors, including how many people get vaccinated and how the virus is spreading in communities, will also affect this decision.

….

There is not enough information currently available to say if or when CDC will stop recommending that people wear masks and avoid close contact with others to help prevent the spread of the virus that causes COVID-19. Experts need to understand more about the protection that COVID-19 vaccines provide before making that decision. Other factors, including how many people get vaccinated and how the virus is spreading in communities, will also affect this decision."[155] (Emphasis added).

Vaccine rollout and timeline

ABC News, December 30, 2020.

[153] https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html
[154] https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html
[155] https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html

“The U.S. COVID-19 vaccine rollout moved slower than expected this month,…
vaccine experts and public health officials warned the bigger test will come next year when inventory finally expands and the broader public raises their hands for a shot.

‘It's really difficult to administer every dose when you are prioritizing it and trying to avoid waste,’ said Claire Hannan, executive director of the Association of Immunization Managers.

‘But when we get into a position of mass clinics and everyone has access, we'll be much more efficient in getting it out,’ she said.

[The federal government] initially pledged 300 million doses by January 2021 when announcing Operation Warp Speed, then later this fall dropped the estimate to 100 million. After Pfizer adjusted its production estimates, Health Secretary Alex Azar promised 40 million doses on hand and 20 million vaccinations by the end of the year.

Instead, the administration was on track to ship those 20 million doses by the first week of January -- enough for first doses in the two-dose vaccine -- with only 2.6 million vaccinations recorded by the federal government.
….
Vaccine experts and public health officials said they aren't ready to sound the alarms just yet, but they are citing numerous smaller logistical challenges that have complicated the rollout: a vaccine that has specific handling requirements, and hospitals that must stagger injections for front-line hospital employees based on the latest shipment numbers.

Holidays and snowstorms haven't helped, and a federally run partnership with major pharmacies to deliver vaccines in nursing homes only just got started. Also, states participating in that program were required to hold some doses in reserve.

‘Receiving, preparing and administering vaccines takes time,’ said Kris Ehresmann, director of the infectious disease division at the Minnesota Department of Health.

‘I really do expect next week, when the holidays are over, for those numbers to rapidly jump as jurisdictions move ahead quickly to protect their health care personnel, and also long-term care facility residents,’ said Dr. Nancy Messonnier, director of the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention.

Blaire Bryant, associate legislative director for health at the National Association of Counties, agreed that the slower-than-expected rollout isn't a problem yet. But counties are concerned about whether there's enough money to see it through a nationwide rollout in spring, she said.

The federal government in recent months has sent $340 million to the states, but that money has been slow to trickle down as cash-strapped states sort through competing priorities, creating what Bryant called a "barrier" that could be addressed with direct, flexible cash grants. On Sunday, Trump signed a $900 billion COVID relief bill that included more than $8 billion for vaccine distribution.

Bryant said many overwhelmed local communities also could use help to support public messaging on the vaccine, as well as more details on what to expect in coming weeks. Initial allotment was based on each state's adult population. It's not known whether federal officials could change that formula to account for outbreaks, or whether a community could get to pick the vaccine of their choice.

….

Hannan, from the Association of Immunization Managers, agreed that expanding the vaccine rollout behind health care personnel was her biggest concern. By the time hospitals and nursing homes are covered and people over the age of 65 and essential workers are invited to get a shot, there will be less concern about fair allocation. But the government will need to have enrolled enough providers to roll it out nationwide next spring.

That means enlisting primary care physicians, local pharmacies and others to jump on board with federal requirements that show they can store, handle and administer the vaccines properly."

U.S. Population

There are over 329,000,000 people living in the United States.[156]

Vaccine deployment

Successful deployment of a COVID-19 vaccine will depend on the willingness of the U. S. population to actually take the vaccine. In a Reuters' survey[157] of 4,428 U.S. adults taken between May 13 and May 19:

"Fourteen percent of respondents said they were not at all interested in taking a vaccine, and 10% said they were not very interested. Another 11% were unsure.

….

Overall, 84% of respondents said vaccines for diseases such as measles are safe for both adults and children, suggesting that people hesitant to take a coronavirus vaccine might reconsider, depending on safety assurances they receive. For example, among those who said they were "not very" interested in taking the vaccine, 29% said they would be more interested if the FDA

[156] https://www.census.gov/popclock/

[157] https://www.reuters.com/article/us-health-coronavirus-vaccine-poll-exclu/exclusive-a-quarter-of-americans-are-hesitant-about-a-coronavirus-vaccine-reuters-ipsos-poll-idUSKBN22X19G

approved it.

….

In addition, misinformation about vaccines has grown more prevalent on social media during the pandemic, according to academic researchers.

'It's not surprising a significant percentage of Americans are not going to take the vaccine because of the terrible messaging we've had, the absence of a communication plan around the vaccine and this very aggressive anti-vaccine movement,' said Peter Hotez, dean of the National School of Tropical Medicine at Baylor College of Medicine, where he is developing a vaccine.

….

The Reuters/Ipsos poll was conducted online, in English, throughout the United States and had a credibility interval, a measure of precision, of plus or minus 2 percentage points."[158]

VCU.edu, December 14, 2020. Study[159] finds more than half of respondents are unlikely to get COVID-19 vaccine under emergency use authorization:

"A new study led by a Virginia Commonwealth University professor is among the first to examine the psychological and social predictors of U.S. adults' willingness to get a future COVID-19 vaccine and whether these predictors differ under an emergency use authorization release of the vaccine.

The study, "Willingness to Get the COVID-19 Vaccine with and without Emergency Use Authorization," will be published in the American Journal of Infection Control. It involved a survey of 788 U.S. adults, and found that 59.9% of respondents were definitely or probably planning to receive a future coronavirus vaccine, while 18.8% were neutral and 21.3% were probably or definitely not planning to get it.

When asked if they would get the vaccine under an emergency use authorization, 46.9% of respondents said they were definitely, likely, or somewhat willing to do so; while 53.1% said they were definitely, likely, or somewhat unwilling to do so.

"The biggest issue coming out of this study is that participants seemed worried about receiving the COVID-19 vaccine under emergency use authorization," said lead author Jeanine Guidry, Ph.D., an assistant professor in the Richard T. Robertson School of Media and Culture in the College of Humanities and Sciences and director of the Media+Health Lab at VCU.

The study found that concerns about side effects were a significant barrier, Guidry noted.

[158] *Id.*

[159] https://news.vcu.edu/article/Study_finds_more_than_half_of_respondents_are_unlikely_to_get

"[Such concerns are] not unusual," she said, "but we now also know that two of the vaccines — Pfizer and Moderna — may have some expected side effects ... [and that] may make people hesitate to get the vaccine."

The study also found troubling disparities among demographic groups. For example, younger respondents were more likely than older respondents to express a willingness to get the vaccine. And it found that white respondents were more likely than Black respondents to be willing to get the vaccine, either under emergency use authorization or regular Food and Drug Administration approval.

"That is something researchers have found in other previous vaccine studies as well, but it is more worrying with COVID-19 because we know that Black Americans are infected with COVID-19 significantly more frequently than white Americans, and they are also more likely to die from the virus," Guidry said.

"Unfortunately, there is history of medical mistreatment of African Americans and individuals from low-income communities in the U.S.," said co-author Bernard Fuemmeler, Ph.D., a professor in the Department of Health Behavior and Policy in the VCU School of Medicine.

"Against this backdrop it is understandable that mistrust among certain communities will be an issue to contend with as we hope to make progress in delivering the vaccine to those most in need," Fuemmeler said. "It starts with recognizing this history and providing people with the information they desire to alleviate their justifiable wariness about the vaccine."

The researchers found that significant predictors of a willingness to get the coronavirus vaccine included education level and having health insurance, as well as a high-perceived susceptibility to COVID-19. Predictors of a willingness to get the vaccine under an emergency use authorization included age and race/ethnicity." (Emphasis added).

NPR.org, December 15, 2020. Poll:[160] Americans Are Growing Less Reluctant To Take COVID-19 Vaccine:

"Now that federal regulators have authorized one COVID-19 vaccine for emergency use in the U.S. — and appear close to authorizing another — it seems Americans are growing less reluctant about receiving an inoculation themselves. The Kaiser Family Foundation, or KFF, released a poll Tuesday showing a significant leap in the number of people saying they definitely or probably would get vaccinated.

About 71% of respondents to the late November and early December survey said they would get a vaccine, up from 63% in an August/September poll.

[160] https://www.npr.org/sections/coronavirus-live-updates/2020/12/15/946761737/poll-americans-are-growing-less-reluctant-to-take-covid-19-vaccine

KFF says the increase was evident across all racial and ethnic groups surveyed, as well as both Democrats and Republicans.

Of course, since the previous poll, there have been important advances in the development of a vaccine for COVID-19, which has cost more than 300,000 lives in the U.S."

E. Virginia VWCC and VOSH Statistics.

1. Virginia Workers Compensation Statistics as of May 31, 2020.[161]

Since February, 2020, the Virginia Workers' Compensation Commission received 3,154 COVID-19 related claims as of May 31, 2020 in a wide variety of occupational settings, representing a nearly 44.5% increase in claims over a 20 day period since May 11, 2020 (2,182 claims).

NOTE 1: Individual private self-insurers are not included in these statistics.

NOTE 2: Most but not all claims are assigned a NAICS code (North American Industrial Classification Code). As of May 31, 2020, 18.4 % (581 claims) of claims were not assigned a NAICS code. A cursory review of the non-NAICS claims revealed that a significant number were in healthcare or long term care environments.

NOTE 3: Workers classified as independent contractors are not included in these statistics. There is a practice known as "misclassification"[162] of employees as independent contractors that has been found to be prevalent in certain industries[163] in Virginia that impacts the ability to obtain accurate workers' compensation data.

The following industries had 10 or more claims filed as of May 31, 2020:

[161] Virginia Department of Human Resources Workers' Compensation Statistics as of May 31, 2020.
As of May 31, 2020, the Virginia Department of Human Resource Management (DHRM) Workers' Compensation Division has received 42 claims involving COVID-19 exposure. Agencies involved included: Library of Virginia, State Corporation Commission, Virginia Alcoholic Beverage Control Authority, Virginia Commonwealth University, Virginia Department of Agriculture and Consumer Services, Virginia Department of Behavioral Health and Developmental Services, Virginia Department of Corrections, Virginia Department of Forestry, Virginia Department of Game and Inland Fisheries, Virginia Department of Health, Virginia Department of Juvenile Justice, Virginia Department of Military Affairs, Virginia Department of Motor Vehicles, and Virginia State Police.

[162] https://www.doli.virginia.gov/vosh-programs/misclassification-in-the-workplace/

[163] http://www.dpor.virginia.gov/uploadedFiles/MainSite/Content/Licensees/JLARC_Employee%20Misclassification%20Report%20(2012).pdf

NAICS[164]	Industry
No NAICS	Restaurant: Fast Food (70)
322299	All Other Converted Paper Product Manufacturing (25)
445110	Supermarkets and Other Grocery (except Convenience) Stores (14)
452990	All Other General Merchandise Stores (11)
488119	Other Airport Operations (13)
531	Real Estate (33)
54151	Computer Programming (541511) and Design (541512) (13)
561320	Temporary Help Services (12)
561720	Janitorial Services (25)
621111	Offices of Physicians (except Mental Health Specialists) (97)
621498	All Other Outpatient Care Centers (33)
621511	Medical Laboratories (17)
621512	Diagnostic Imaging Centers (16)
621610	Home Health Care Services (12)
621999	All Other Miscellaneous Ambulatory Health Care Services (29)
622110	General Medical and Surgical Hospitals (457)
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals (40)
623311	Continuing Care Retirement Communities (79) (See NOTE 2 above)
721110	Hotels (except Casino Hotels) and Motels (18)
722310	Food Service Contractors (13)
921190	Other General Government Support (317)
922120	Police Protection (106)
922160	Fire Protection (125)
922190	Other Justice, Public Order, and Safety Activities (941)

2. Virginia Workers Compensation Statistics as of November 30, 2020.

Since February, 2020, the Virginia Workers' Compensation Commission received 9,773 COVID-19 related claims as of November 30, 2020.

[164] North American Industrial Classification System, https://www.census.gov/eos/www/naics/

VWCC Reports Nineteen (19) Employee Deaths as of November 30, 2020

Date of Injury	Manual Classification Code	Year Of Birth	Date Death	Industry Code	Industry Code Description
3/23/2020	HOTEL: ALL OTHER EMPLOYEES & SALESPERSONS, DRIVERS	1963	4/3/2020	721110	Hotels (except Casino Hotels) and Motels
3/28/2020	CONVALESCENT OR NURSING HOME-ALL EMPLOYEES	1951	4/7/2020	621610	Home Health Care Services
3/20/2020	HOTEL: ALL OTHER EMPLOYEES & SALESPERSONS, DRIVERS	1969	4/9/2020	721110	Hotels (except Casino Hotels) and Motels
4/8/2020	RETIREMENT LIVING CENTERS: FOOD SERVICE EMPLOYEES	1946	4/12/2020	623311	Continuing Care Retirement Communities
4/13/2020	NOT AVAILABLE	1979	4/20/2020	237990	Other Heavy and Civil Engineering Construction
4/24/2020	NOT AVAILABLE	1963	5/5/2020	621112	Offices of Physicians, Mental Health Specialists)
3/31/2020	NOT AVAILABLE	1966	5/11/2020	453998	All Other Miscellaneous Store Retailers (except Tobacco Stores)
5/3/2020	NOT AVAILABLE	1958	5/19/2020	621610	Home Health Care Services
5/22/2020	CARPENTRY NOC	1975	5/22/2020	561110	Office Administrative Services
4/1/2020	STORE: MEAT, GROCERY AND PROVISION STORES COMBINED-RETAIL NOC	1961	5/24/2020	445110	Supermarkets and Other Grocery (except Convenience) Stores
6/2/2020	JANITORIAL SERVICES BY CONTRACTORS - NO WINDOW CLEANING ABOVE GROUND LEVEL & DRIVERS	1963	6/8/2020	722310	Food Service Contractors
5/28/2020	HOSPITAL: PROFESSIONAL EMPLOYEES	1969	7/14/2020	622210	Psychiatric and Substance Abuse Hospitals
5/11/2020	PHYSICIAN & CLERICAL	1959	7/19/2020	621111	Offices of Physicians (except Mental Health Specialists)
8/7/2020	NOT AVAILABLE	1945	8/13/2020	325613	Surface Active Agent Manufacturing
7/16/2020	MUNICIPAL, TOWNSHIP, COUNTY OR STATE EMPLOYEE NOC	1945	8/16/2020	922190	Other Justice, Public Order, and Safety Activities

9/10/2020	PLASTICS MANUFACTURING: MOLDED PRODUCTS NOC	1957	9/11/2020	325212	Synthetic Rubber Manufacturing
9/24/2020	COLLEGE: ALL OTHER EMPLOYEES	1950	10/4/2020	722310	Food Service Contractors
9/25/2020	RENDERING WORKS NOC & DRIVERS	1951	11/3/2020	311613	Rendering and Meat Byproduct Processing
11/29/2020	FIREFIGHTERS & DRIVERS	1960	11/29/2020	922190	Other Justice, Public Order, and Safety Activities

3. Deaths, Hospitalizations, and Employee Complaints reported to the Virginia Department of Labor and Industry.

Pursuant to Va. Code §40.1-51.1.D,[165] employers must report employee deaths and hospitalizations to DOLI.

NOTE: The VOSH Program has investigated an average of 37 annual work-related[166] employee deaths over the last five calendar years. The 30 COVID-19 death notifications so far in 2020 would represent 81% of the deaths investigated by VOSH in an average year.

Fatalities through December 25, 2020:

Fatalities - *Calendar Year*	2019	2020	%
Total	38	53	15
COVID-19	0	30	*57%*
Fall		7	*13%*
Struck-By		10	*19%*
Caught-in		5	*9%*
Electrocution		1	*2%*

[165] https://law.lis.virginia.gov/vacode/40.1-51.1/

[166] NOTE: The VOSH Program will ultimately make a determination as to whether an employee's death due to COVID-19 was work-related or not. An infectious disease such as COVID-19 presents additional difficulties to investigators when it comes to determining work-relatedness.

SUMMARY | VOSH COVID-19 RESPONSE

Dates	11/20/20	11/27/20	12/4/20	12/11/20	12/18/20	12/25/20	Total	
Phone Calls								
Total Phone Calls	195	110	150	171	204	121	10032	
UPAs Complaints | OIS Statewide	35	24	31	41	39	15	1509	*
# Inspections	5	3	2	3	2	2	101	**
Complaints, Referrals, Hospitalizations & Fatalities								
# Hospitalizations	2	0	1	0	0	0	60	***
Inspection	0	0	0	0	0	0	20	
RRI	2	0	1	0	0	0	30	
Fatalities/Workplace deaths	0	1	0	1	0	0	30	
# of Emails forwarded to Regional/Field Offices from MF								
COVID-19 positive Cases Reports (ETS) | Complaints	20	20	10	11	10	5	559	
(does not include reports submitted by phone in the Regional Offices).								
# REDCAP Notifications *(Launched 09/28/20)*	1219	980	1685	1718	1470	1201	11923	
# REDCAP Notifications (3 or more cases reported)	245	228	365	428	354	331	2823	****

** **Time Range:** 01/01/2020 to 12/25/2020 |UPA numbers may change as Regions update the system.*

***Inspections opened (Total: 101 - Draft + Final)*

****There are Employers submitting multiple notifications. Some of the hospitalizations reported to VOSH later resulted in fatalities.*

****

331 *of the 1201 notifications were reports of more than 3 cases.*

Top 3 Health Districts Reporting Cases

Fairfax County | Loundoun City | Richmond City

NOTE: "UPA" means unprogrammed activity (complaints, referrals, fatalities, hospitalizations).
"MF" means Occupational Safety Compliance Director Marta Fernandes

4. VOSH Inspection and Citation History.

NOTE: See ATTACHMENT F for VOSH Investigation and Inspection Procedures.

See ATTACHMENT H for a list of VOSH Violations Issued in COVID-19 Cases Opened from February 1, 2020 to December 30, 2020.

Through December 30, 2020, VOSH has conducted 94 COVID-19 inspections:

Inspections in Progress	43
[Citations pending HQ/Legal Review: 10]	
[Employee deaths: 8]	
Inspections Closed with No Violations	25
[Employee deaths: 7]	
Inspections with Violations	26
[Inspections with Violations Settled: 15]	
[Inspections with Violations Contested: 7]	
[Employee deaths: 6]	
Total Inspections	94

Violation Types	
Serious	29 (50.0%)
Other-than-serious	29 (50.0%)
Willful	0
Repeat	0
Total Violations	58

a. Pre-ETS Inspection Statistics – Cases Opened Prior to July 27, 2020.

Inspections in Progress	0
Inspections Closed with No Violations	18
Inspections with Violations	17
Total Inspections	35

Violation Types	
Serious	18 (48.6%)
Other-than-serious	19 (51.4%)
Willful	0
Repeat	0
Total Violations	37

b. Post-ETS Inspection Statistics – Cases Opened on or After July 27, 2020.

Inspections in Progress		43
[Citations pending HQ/Legal Review: 10]		
Inspections Closed with No Violations		7
Inspections with Violations		9
Total Inspections		59
Violation Types		
Serious	11 (52.4%)	
Other-than-serious	10 (47.6%)	
Willful	0	
Repeat	0	
Total Violations	21	

c. Inspection Statistics for Very High and High Risk.[167]

Inspections in Progress		9
Inspections Closed with No Violations		9
Inspections with Violations		15
Total Inspections		33
Violation Types		
Serious	19 (52.8%)	
Other-than-serious	17 (47.2%)	
Willful	0	
Repeat	0	
Total Violations	36	

d. Inspection Statistics for Medium Risk.[168]

Inspections in Progress		34
Inspections Closed with No Violations		15
Inspections with Violations		11
Total Inspections		60

[167] Classification of risk for these inspections was based solely on NAICS and the relative likelihood that the employer's hazards and job tasks fell within the definitions for the various risk categories (very high, high, medium and lower).

It is recognized that various hazards or job tasks at the same place of employment can be designated as very high, high, medium, or lower exposure risk for purposes of application of the requirements of this standard. It is further recognized that various required job tasks prohibit an employee from being able to observe physical distancing from other persons. 16VAC25-220-10.

[168] *Id.*

Violation Types	
Serious	10 (45.5%)
Other-than-serious	12 (54.5%)
Willful	0
Repeat	0
Total Violations	22

f. Inspection Statistics for Lower Risk.[169]

Inspections in Progress	0
Inspections Closed with No Violations	1
Inspections with Violations	0
Total Inspections	1
Violation Types	
Serious	0
Other-than-serious	0
Willful	0
Repeat	0
Total Violations	1

g. Inspection Statistics by NAICS.[170]

11: Agriculture, Forestry, Fishing and Hunting	4
21-23: Mining, Quarrying, and Oil and Gas Extraction; Utilities; Construction	2
31-33: Manufacturing	15
42: Wholesale Trade	2
44-45: Retail Trade	8
48-49: Transportation and Warehousing	5
51: Information	1
53: Real Estate and Rental and Leasing	3
54: Professional, Scientific, and Technical Services	8
62: Health Care and Social Assistance	31
72: Accommodation and Food Services	6
81: Other Services (except Public Administration)	3
92: Public Administration	6

[169] *Id.*
[170] North America Industrial Classification System.

COVID-19 Inspections Conducted From January 1, 2020 to December 30, 2020

Site NAICS	NAICS Description	Insp With Viols Issued	No Citations Issued	Insp In Progress	Insp Closed	Very High or High	Medium	Lower	Employee Death	Entry Date
	NAICS Sector 11: Agriculture, Forestry, Fishing and Hunting									
111998	All Other Miscellaneous Crop Farming			1			1			09/18/2020
111421	Nursery and Tree Production			1			1			09/18/2020
114111	Finfish Fishing			1			1			10/30/2020
115114	Postharvest Crop Activities (except Cotton Ginning)			1			1			09/01/2020
	NAICS Sector 21-23: Mining, Quarrying, and Oil and Gas Extraction; Utilities; Construction									
221310	Water Supply and Irrigation Systems		1		1		1		1	06/02/2020
236118	Residential Remodelers		1		1		1			11/12/2020
	NAICS Sector 31-33: Manufacturing									
311612	Meat Processed from Carcasses		1		1		1			05/20/2020
311612	Meat Processed from Carcasses			1			1			09/22/2020
311613	Rendering and Meat Byproduct Processing			1			1			10/30/2020
311615	Poultry Processing		1		1		1		1	04/28/2020
311812	Commercial Bakeries		1		1		1			06/24/2020
311821	Cookie and Cracker Manufacturing			1			1			09/01/2020
314110	Carpet and Rug Mills			1			1			08/07/2020
321212	Softwood Veneer and Plywood Manufacturing			1			1		1	10/23/2020
321999	All Other Miscellaneous Wood Product Manufacturing			1			1			11/24/2020
326291	Rubber Product Manufacturing for Mechanical Use			1			1			10/29/2020
327390	Other Concrete Product Manufacturing		1		1		1		1	07/15/2020
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing			1			1			10/07/2020
333991	Power-Driven Handtool Manufacturing			1			1			09/30/2020
336211	Motor Vehicle Body Manufacturing			1			1			10/20/2020
337110	Wood Kitchen Cabinet and Countertop Manufacturing			1			1			12/22/2020
	NAICS Sector 42: Wholesale Trade									

423910	Sporting and Recreational Goods and Supplies Merchant Wholesalers			1			1			11/16/2020
424410	General Line Grocery Merchant Wholesalers	1			1		1			07/31/2020
	NAICS Sector 44-45: Retail Trade									
444110	Home Centers			1			1			10/19/2020
441120	Used Car Dealers		1		1		1		1	06/18/2020
441222	Boat Dealers			1			1			08/28/2020
441228	Motorcycle, ATV, and All Other Motor Vehicle Dealers		1		1		1			11/23/2020
441310	Automotive Parts and Accessories Stores			1			1			11/18/2020
442110	Furniture Stores			1			1		1	08/11/2020
453910	Pet and Pet Supplies Stores	1					1			11/02/2020
453998	All Other Miscellaneous Store Retailers (except Tobacco Stores)			1			1			12/14/2020
	NAICS Sector 48-49: Transportation and Warehousing									
485113	Bus and Other Motor Vehicle Transit Systems		1		1		1			06/08/2020
485310	Taxi Service	1			1		1			06/29/2020
488119	Other Airport Operations		1		1		1		1	04/29/2020
492110	Couriers and Express Delivery Services		1		1		1			10/30/2020
492110	Couriers and Express Delivery Services	1					1			10/30/2020
	NAICS Sector 51: Information									
519120	Libraries and Archives			1			1			09/14/2020
	NAICS Sector 53: Real Estate and Rental and Leasing									
531110	Lessors of Residential Buildings and Dwellings		1		1		1		1	05/26/2020
541350	Building Inspection Services		1		1		1			07/10/2020
541519	Other Computer Related Services		1		1		1			04/29/2020
	NAICS Sector 54: Professional, Scientific, and Technical Services									
561110	Office Administrative Services	1			1			1		08/12/2020
561422	Telemarketing Bureaus and Other Contact Centers	1					1		1	05/13/2020
561612	Security Guards and Patrol Services			1			1			10/30/2020
561612	Security Guards and Patrol Services			1		1			1	09/10/2020
561720	Janitorial Services			1			1			11/09/2020

561720	Janitorial Services	1			1	1				06/26/2020
561720	Janitorial Services		1		1	1				07/16/2020
562910	Remediation Services			1			1			10/02/2020
	NAICS Sector 62: Health Care and Social Assistance									
621210	Offices of Dentists	1			1	1				09/25/2020
621310	Offices of Chiropractors			1			1			10/28/2020
621310	Offices of Chiropractors			1			1			12/10/2020
621330	Offices of Mental Health Practitioners (except Physicians)			1		1				10/15/2020
622110	General Medical and Surgical Hospitals	1			1	1				05/29/2020
622110	General Medical and Surgical Hospitals			1		1				08/12/2020
621420	Outpatient Mental Health and Substance Abuse Centers		1		1		1			11/19/2020
621491	HMO Medical Centers	1			1	1				05/20/2020
621498	All Other Outpatient Care Centers	1			1	1				06/16/2020
621610	Home Health Care Services		1		1	1				05/13/2020
621610	Home Health Care Services	1				1			1	05/20/2020
622110	General Medical and Surgical Hospitals		1		1	1				08/11/2020
622110	General Medical and Surgical Hospitals			1		1				10/30/2020
622110	General Medical and Surgical Hospitals	1			1	1				05/08/2020
622210	Psychiatric and Substance Abuse Hospitals			1		1			1	09/06/2020
622310	Nursing Care Facilities (Skilled Nursing Facilities)		1		1	1				08/13/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)	1				1				08/04/2020
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals	1				1				07/02/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)			1		1			1	11/24/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)		1		1	1				07/02/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)			1		1			1	07/27/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)	1			1	1				07/06/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)			1		1				12/11/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)	1				1				07/02/2020

623110	Nursing Care Facilities (Skilled Nursing Facilities)		1		1	1			1	06/23/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)	1				1			1	04/30/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)		1		1	1				06/08/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)		1		1	1				05/06/2020
623110	Nursing Care Facilities (Skilled Nursing Facilities)	1				1			1	05/05/2020
623311	Continuing Care Retirement Communities	1				1			1	04/27/2020
623312	Assisted Living Facilities for the Elderly	1			1	1				08/07/2020
	NAICS 72: Accommodation and Food Services									
721110	Hotels (except Casino Hotels) and Motels	1			1		1		1	06/01/2020
722310	Food Service Contractors		1		1	1				07/06/2020
722511	Full-Service Restaurants			1			1			10/27/2020
722511	Full-Service Restaurants			1			1			10/08/2020
722511	Full-Service Restaurants			1			1			08/20/2020
722515	Snack and Nonalcoholic Beverage Bars		1		1		1			09/22/2020
	NAICS 81: Other Services (except Public Administration)									
811192	Car Washes	1			1		1			07/17/2020
812112	Beauty Salons	1			1		1			10/28/2020
812199	Other Personal Care Services	1					1			12/03/2020
	NAICS Sector 92: Public Administration									
921190	Other General Government Support			1			1		1	08/25/2020
922120	Police Protection	1			1		1			06/30/2020
922140	Correctional Institutions			1			1		1	09/09/2020
922160	Fire Protection			1		1				11/19/2020
923120	Administration of Public Health Programs			1			1			08/25/2020
923120	Administration of Public Health Programs			1			1			08/25/2020
Total Inspections: 94		**26**	**25**	**43**	**40**	**33**	**60**	**1**	**21**	
		27.7%	**26.6%**	**45.7%**						

SOURCE:
OSHA Information System Scan Detail Report: Time run: 12/30/2020 8:08:38 AM

V. Economic and Workplace Impacts.

A. Economic Impact Analysis.

An economic impact analysis (EIA) meeting the requirements of Va. Code §2.2-4007.04[171] will be issued no later than January 11, 2021. The EIA is being prepared by Chmura Economics & Analytics, a nationally recognized economic consulting firm.[172]

[TO BE PROVIDED ON OR BEFORE JANUARY 11, 2021]

B. Impact on Employers.

Employers will have to familiarize themselves with the differences between the final standard and the ETS that was in effect from July 27, 2020 to January 26, 2021. Certain employers will have to train employees on the requirements of the standard based on the risk levels for its employees (see IV. Summary of Final Standard and attached text of final standard).

The Department will significantly supplement its COVID-19 webpage with education, training, and outreach materials that will assist employers and employees in complying with the final standard.

Employers should benefit from reductions in injuries, illnesses, and fatalities associated with employee exposure to SARS-CoV-2 and COVID-19 related hazards which would be addressed by any comprehensive regulation.

In addition, there may be an ancillary benefit to those employers whose establishments are frequented by the general public who may take some level of confidence in the safety and health of the physical establishment because of the requirements of this emergency temporary standard/emergency regulation.

C. Impact on Employees.

1. Vulnerabilities of Virginia's Workforce to SARS-CoV-2 and COVID-19 Hazards.

Those employees at high-risk for severe illness from COVID-19 are[173]:

Older adults:

[171] https://law.lis.virginia.gov/vacode/title2.2/chapter40/section2.2-4007.04/
[172] http://www.chmuraecon.com/
[173] https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-at-higher-risk.html

Compared to younger adults, older adults are more likely to require hospitalization if they get COVID-19

	Hospitalization[1]	Death[2]
18-29 years	Comparison Group	Comparison Group
30-39 years	2x higher	4x higher
40-49 years	3x higher	10x higher
50-64 years	4x higher	30x higher
65-74 years	5x higher	90x higher
75-84 years	8x higher	220x higher
85+ years	13x higher	630x higher

Adults of any age with certain underlying medical conditions are at increased risk for severe illness from the virus that causes COVID-19. Severe illness from COVID-19 is defined as hospitalization, admission to the ICU, intubation or mechanical ventilation, or death.

Adults of any age with the following conditions are at increased risk of severe illness from the virus that causes COVID-19:

- Cancer
- Chronic kidney disease
- COPD (chronic obstructive pulmonary disease)
- Down Syndrome
- Heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies
- Immunocompromised state (weakened immune system) from solid organ transplant
- Obesity (body mass index [BMI] of 30 kg/m2 or higher but < 40 kg/m2)
- Severe Obesity (BMI ≥ 40 kg/m2)
- Pregnancy
- Sickle cell disease
- Smoking
- Type 2 diabetes mellitus

COVID-19 is a new disease. Currently there are limited data and information about the impact of many underlying medical conditions on the risk for severe illness from COVID-19. Based on what we know at this time, adults of any age with the following conditions might be at an increased risk for severe illness from the virus that causes COVID-19:

- Asthma (moderate-to-severe)
- Cerebrovascular disease (affects blood vessels and blood supply to the brain)
- Cystic fibrosis
- Hypertension or high blood pressure
- Immunocompromised state (weakened immune system) from blood or bone marrow transplant, immune deficiencies, HIV, use of corticosteroids, or use of other immune weakening medicines
- Neurologic conditions, such as dementia
- Liver disease
- Overweight (BMI > 25 kg/m2, but < 30 kg/m2)
- Pulmonary fibrosis (having damaged or scarred lung tissues)
- Thalassemia (a type of blood disorder)
- Type 1 diabetes mellitus[174]

2. National and Virginia Statistics.

Based on U. S. Census figures, "In 1998, adults ages 55 and older represented 12 percent of the American workforce. Twenty years later, this group represents 23 percent of the workforce, the largest labor force share of any age group. By 2028, nearly one in three people between the ages of 65 and 74 are expected to remain in the labor force, and more than 12 percent of people 75 and older will still be working, roughly tripling the rate at which the oldest Americans were working two decades ago."[175]

NOTE: In 2008, the labor force participation rate for employees 65 and older in Virginia was 16%.[176] In 2017 the U.S. Senate's Special Committee on Aging noted that the average labor force participation rate of employees 65 years and older in the South Atlantic states, including Virginia, was 17.9%.[177]

The U.S. Census estimates that Virginia's population as of July 1, 2019 was 8,535,519, and that 15.4% (1,314,469) of Virginia's population was 65 years or older.[178]

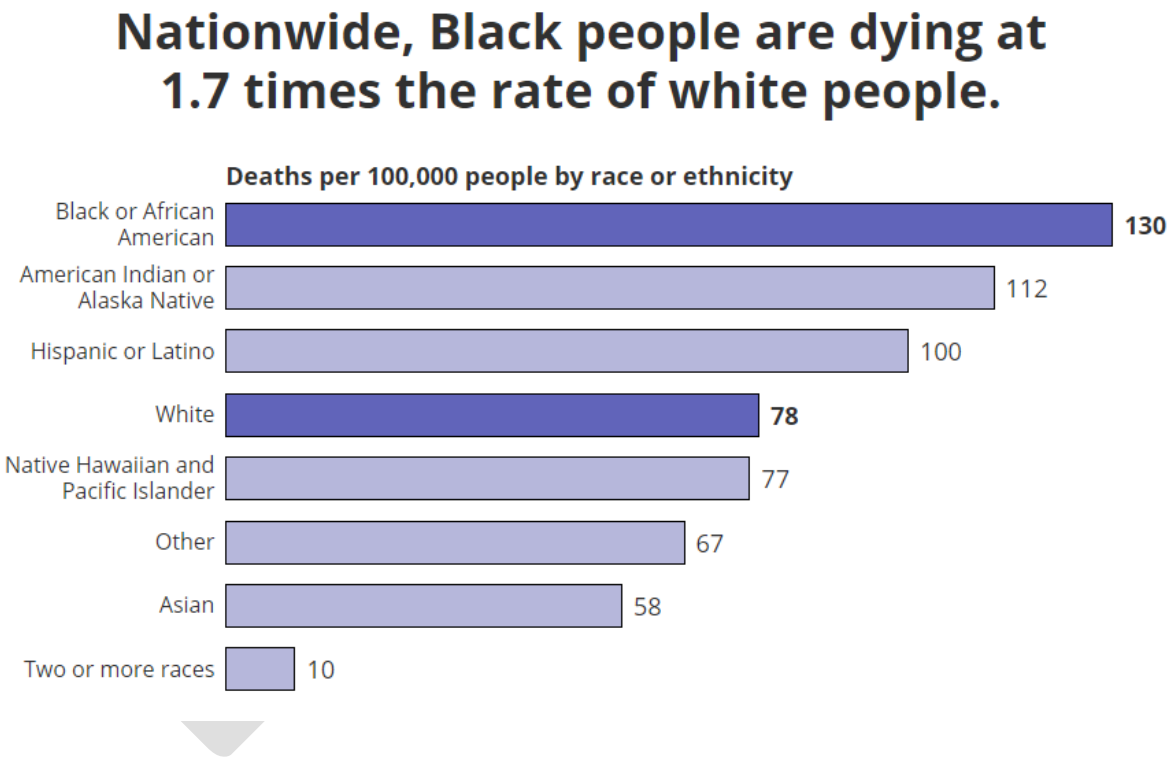
A labor force participation rate for those 65 and older in Virginia of 17.9% would equate to 235,289 elderly employees.

[174] https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fneed-extra-precautions%2Fgroups-at-higher-risk.html
[175] https://www.seniorliving.org/research/senior-employment-outlook-covid/
[176] http://sfc.virginia.gov/pdf/health/2008%20Session/August%2020%20mtg/HHR%20-%20Perrone%20-%20UVA%20-%208.20.08%20(B&W).pdf
[177] https://www.aging.senate.gov/imo/media/doc/Aging%20Workforce%20Report%20FINAL.pdf, p. 12.
[178] https://www.census.gov/quickfacts/fact/table/VA#

A study by SeniorLiving.Org looked "at the jobs that are most common for seniors, how have their labor force participation rates changed over time, and what impacts might arise from the COVID-19 crisis." Key findings include:

- In all 50 states and the District of Columbia, at least 20 percent of adults ages 65 to 74 are in the workforce. In seven states, more than 30 percent are working.
- Since 2013, 46 of 51 had seen increases in workforce participation of 75-and-older residents. Seven states posted 20 percent gains, including Vermont, West Virginia, Maine, Georgia, Michigan, Rhode Island and Connecticut.
- Seniors represent significant portions of the workforce for many professions that require close contact with others, including bus drivers, ushers, ticket takers, taxi drivers, street vendors, chiropractors, dentists, barbers, etc.

Additionally, current data suggest a disproportionate burden of illness and death among racial and ethnic minority groups.[179]



The CDC postulates that part of the reason for this disparity is that some racial and ethnic minority groups are disproportionately represented in essential work settings such as healthcare facilities, farms, factories, grocery stores, and public transportation.

Other factors postulated include the disproportionate lack of access to healthcare and health insurance, language barriers, discrimination, financial status, serious underlying health conditions, stigmatization, and other systemic inequalities.[180]

[179] https://covidtracking.com/race
[180] https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/racial-ethnic-minorities.html

Almost 40% of the population of Virginia are from a racial minority.[181]

The Bureau of Labor Statistics (BLS) conducted an analysis of employment statistics entitled "How many workers are employed in sectors directly affected by COVID-19 shutdowns, where do they work, and how much do they earn?[182] The report looked at "six of the most directly exposed sectors include: Restaurants and Bars, Travel and Transportation, Entertainment (e.g., casinos and amusement parks), Personal Services (e.g., dentists, daycare providers, barbers), other sensitive Retail (e.g., department stores and car dealers), and sensitive Manufacturing (e.g., aircraft and car manufacturing)."

In all, 20.4 percent of all workers are employed in industries most immediately affected by the COVID-19 shutdowns"[183]:

Table 1. Industry statistics, by firm size class

Firm size (number of employees)	Total	All other	Most exposed sectors						
			Restaurants and bars	Travel and transportation	Entertainment	Personal services	Other sensitive retail	Sensitive manufacturing	Most exposed sectors combined
Employment levels in June 2019 (thousands)									
10 or less	14,139.9	10,813.4	1,124.6	140.1	209.2	845.7	779.8	227.1	3,326.5
11 to 50	22,257.7	14,994.6	4,022.0	545.2	541.1	743.5	961.4	449.9	7,263.1
51 to 100	10,572.4	7,644.2	1,533.8	198.5	294.7	100.9	556.5	243.8	2,928.2
101 to 500	25,483.5	20,893.5	1,668.0	558.9	642.0	146.2	830.9	744.0	4,590.0
More than 500	77,528.8	65,076.8	3,925.1	2,050.6	957.0	249.9	3,419.9	1,849.5	12,452.0
Total	149,982.3	119,422.5	12,273.5	3,493.3	2,644.0	2,086.2	6,548.5	3,514.3	30,559.8
Total wages paid in second quarter 2019 (billions of dollars)									
10 or less	$144.894	$120.886	$5.183	$0.926	$1.951	$7.731	$5.844	$2.373	$24.008
11 to 50	242.971	194.789	19.428	3.350	2.581	7.412	9.954	5.457	48.182
51 to 100	132.246	108.932	8.192	1.674	1.649	1.010	7.550	3.239	23.314
101 to 500	358.286	314.502	8.519	5.413	5.783	1.453	12.052	10.564	43.784

[181] https://www.census.gov/quickfacts/VA
[182] https://www.bls.gov/opub/mlr/2020/article/covid-19-shutdowns.htm
[183] *Id.*

Table 1. Industry statistics, by firm size class

Firm size (number of employees)	Total	All other	Most exposed sectors						
			Restaurants and bars	Travel and transportation	Entertainment	Personal services	Other sensitive retail	Sensitive manufacturing	Most exposed sectors combined
More than 500	1,240.032	1,121.793	20.876	27.118	8.879	2.259	24.403	34.704	118.239
Total	2,118.429	1,860.902	62.198	38.481	20.843	19.865	59.803	56.337	257.527

Note: Firms are identified by Employer Identification Number.

Source: Authors' calculations based on U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data for June and second quarter 2019. The North American Industry Classification System codes used to define the most exposed sectors can be found in Joseph S. Vavra, "Shutdown sectors represent large share of all U.S. employment" (Chicago, IL: Becker Friedman Institute for Economics at the University of Chicago, March 31, 2020), https://bfi.uchicago.edu/insight/blog/key-economic-facts-about-covid-19/.

"Older adults make up a large percentage of many of the jobs in these industries. For example, nearly half of bus drivers are older than 55, while almost 1 in 5 ticket takers and ushers are 65 or older. And although the BLS didn't specifically call them out, farmers have also been impacted by the toll of the virus, with both prices of commodities and consumption declining. The median age of farmers and ranchers in the U.S. is 56.1 years old."[184]

[184] https://www.seniorliving.org/research/senior-employment-outlook-covid/

"When it comes to specific job titles, a few roles are much more common for older adults than for others. For example, nearly 80 percent of funeral service managers are 55 and older, compared to much more physical roles like fence builders (7.3 percent) or lifeguards (5.8 percent)."[185]

Percentage of workers 55 and older by job and age group (Top 10)

Age Group: 55-64

Heat treating equipment setters and operators	50%
Cleaning, washing and metal pickling equipment operators	50%
Financial examiners	48%
Funeral service managers	46%
Agricultural inspectors	44%
Electrical / electronics installers / repairers (transportation equipment)	43%
Furnace, kiln, oven, drier and kettle operators	41%
Atmospheric and space scientists	40%
Model makers and patternmakers (metal and plastic)	40%
Textile machine setters and operators	40%

Age Group: 65+

Shoe and leather workers and repairers	43%
Motor vehicle operators	39%
Legislators	37%
Models, demonstrators and product promoters	34%
Embalmers and funeral attendants	33%
Funeral service managers	31%
Farmers and ranchers	31%
Etchers and engravers	25%
Crossing guards	25%
Nuclear engineers	25%

[185] *Id.*

Finally, the CDC conducted a study of "Selected health conditions and risk factors, by age: United States, selected years 1988–1994 through 2015–2016"[186] of the general population. Although the working population of the country is only a subset of the totals for the table, the data nonetheless demonstrates the significant risk that SARS-CoV-2 and COVID-19 related hazards pose to the U.S. and Virginia workers. Using the age adjusted statistical totals:

- 14.7% of the population suffer from diabetes,
- 12.2% from high cholesterol
- 30.2% suffer from hypertension
- 39.7% suffer from obesity

Table 21. Selected health conditions and risk factors, by age: United States, selected years 1988–1994 through 2015–2016

Excel version (with more data years and standard errors when available): *https://www.cdc.gov/nchs/hus/contents2018.htm#Table_021.*

[Data are based on interviews, physical examinations, and laboratory data of a sample of the civilian noninstitutionalized population]

Health condition	1988–1994	1999–2000	2001–2002	2003–2004	2005–2006	2007–2008	2009–2010	2011–2012	2013–2014	2015–2016
Diabetes[1]					Percent of adults aged 20 and over					
Total, age-adjusted[2]	8.8	10.0	11.6	11.8	11.5	12.6	12.5	12.7	13.1	14.7
Total, crude	8.3	9.6	11.2	11.8	11.9	13.0	13.2	13.4	14.0	16.0
Hypercholesterolemia[3]										
Total, age-adjusted[4]	22.8	25.5	24.6	27.9	27.4	27.6	27.2	28.2	27.4	26.9
Total, crude	21.5	24.5	24.2	27.9	28.1	28.8	28.6	30.4	29.3	29.6
High total cholesterol[5]										
Total, age-adjusted[4]	20.8	18.3	16.5	16.9	15.6	14.2	13.2	12.7	11.1	12.2
Total, crude	19.6	17.7	16.4	17.0	15.9	14.6	13.6	13.1	11.1	12.5
Hypertension[6]										
Total, age-adjusted[4]	25.5	30.0	29.7	32.1	30.5	31.2	30.0	30.0	30.8	30.2
Total, crude	24.1	28.9	28.9	32.5	31.7	32.6	31.9	32.5	33.5	33.2
Uncontrolled high blood pressure among persons with hypertension[7]										
Total, age-adjusted[4]	77.2	71.9	68.3	63.8	63.0	56.2	55.7	54.6	51.3	59.7
Total, crude	73.9	69.1	65.4	60.8	56.6	51.8	46.7	48.0	46.1	51.5
Overweight or obesity[8]										
Total, age-adjusted[4]	56.0	64.5	65.6	66.4	66.9	68.1	68.8	68.6	70.4	71.3
Total, crude	54.9	64.1	65.6	66.5	67.3	68.3	69.2	69.0	70.7	71.6
Obesity[9]										
Total, age-adjusted[4]	22.9	30.5	30.5	32.3	34.4	33.7	35.7	34.9	37.8	39.7
Total, crude	22.3	30.3	30.6	32.3	34.7	33.9	35.9	35.1	37.9	39.8
Untreated dental caries[10]										
Total, age-adjusted[4]	27.7	24.4	21.3	29.8	24.4	21.7	---	25.5	31.5	26.1
Total, crude	28.2	25.0	21.7	30.2	24.5	21.8	---	25.5	31.3	25.9
Obesity[11]					Percent of persons under age 20					
2–5 years	7.2	10.3	10.6	14.0	11.0	10.1	12.1	8.4	9.4	13.9
6–11 years	11.3	15.1	16.3	18.8	15.1	19.6	18.0	17.7	17.4	18.4
12–19 years	10.5	14.8	16.7	17.4	17.8	18.1	18.4	20.5	20.6	20.6
Untreated dental caries[10]										
5–19 years	24.3	23.6	21.2	25.6	16.2	16.9	14.6	17.5	19.6	14.3

[186] https://www.cdc.gov/nchs/data/hus/2018/021.pdf

3. Virginia Statistics.

Virginia's Adult Reported Diabetes Rate in 2019 was 10.5%.[187]

Virginia's Hypertension Rate in 2015 was 33.2%[188]

Virginia's Adult Reported High Cholesterol Rate[189] in 2019 was 33%.[190]

Virginia's Adult Reported Obesity Rate[191] in 2019 was 30.3%.[192]

All employees, but particularly those in high risk age and medical categories, would benefit from increased safety and health protections provided by a comprehensive regulation to address SARS-CoV-2 and COVID-19 related hazards. Employees in the affected industries would have to be trained on the requirements of any new regulation.

D. Impact on the Department of Labor and Industry.

No significant impact is anticipated on the Department. VOSH employees would be trained on the requirements of any new regulation. A VOSH Compliance Directive on Inspection and Enforcement Procedures would be developed by staff. Training and outreach products would be developed by VOSH Cooperative Programs staff and made available to the regulated community, employees, and the general public:

- COVID-19 Training PowerPoint for Employers and Employees with an included training certification form
- Final Standard Training PowerPoint that explains the elements of the standard with an included training certification form
- FAQs about the standard
- Infectious Disease Preparedness and Response Plan Template
- Training PowerPoint on how to develop an Infectious Disease Preparedness and Response Plan Template with an included training certification form

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[187] https://www.americashealthrankings.org/explore/annual/measure/High_Chol/state/VA
[188] https://www.vdh.virginia.gov/content/uploads/sites/65/2018/05/VA-Heart-Disease-FactSheetFINAL.pdf
[189] Percentage of adults who reported having their cholesterol checked and were told by a health professional that it was high.
[190] https://www.americashealthrankings.org/explore/annual/measure/High_Chol/state/VA
[191] Percentage of adults with a body mass index of 30.0 or higher based on reported height and weight (pre-2011 BRFSS methodology).
[192] https://www.americashealthrankings.org/learn/reports/2019-annual-report/state-summaries-virginia

RECOMMENDED ACTION

Staff of the Department of Labor and Industry recommends that the Safety and Health Codes Board consider for adoption the final standard, 16VAC25-220, Infectious Disease Prevention of the SARS-CoV-2 That Causes COVID-19.

The Department also recommends that the Board state in any motion it may make to amend this regulation that it will receive, consider and respond to petitions by any interested person at any time with respect to reconsideration or revision of this or any other regulation.

ATTACHMENT A: INDUSTRY SPECIFIC INFORMATION

The following is not intended to be an exhaustive list of all industries or job tasks with potential COVID-19 exposure risks (i.e., "very high," "high," "medium," "lower"), but does provide a broad overview of the types of job tasks and hazards that expose employees to the various levels of COVID-19 exposure risk. The following also provides statistics and reports on work-related COVID-19 infections, non-fatal illnesses, hospitalizations, and deaths.

Reference to non-employee infections, non-fatal illnesses, hospitalizations, and deaths are provided to demonstrate the actual and potential exposure for employees at work whose job tasks involved close contact inside 6 feet with other COVID-19 infected employees and non-employees.

1. Meat and Poultry Processing.

The meat and poultry processing work environment contains various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:
"Multiple outbreaks of COVID-19 among meat and poultry processing facility workers have occurred in the United States recently.
….
Workers involved in meat and poultry processing are not exposed to SARS-CoV-2 through the meat products they handle. However, their work environments—processing lines and other areas in busy plants where they have **close contact** with coworkers and supervisors—may contribute substantially to their potential exposures. The risk of occupational transmission of SARS-CoV-2 depends on several factors.

Some of these factors are described in the U.S. Department of Labor and U.S. Department of and Health and Human Services' booklet "Guidance on Preparing Workplaces for COVID-19.[193]" Distinctive factors that affect workers' risk for exposure to SARS-CoV-2 in meat and poultry processing workplaces include:

- Distance between workers – meat and poultry processing workers often work **close** to one another on processing lines. Workers may also be near one another at other times, such as when clocking in or out, during breaks, or in locker/changing rooms.

- Duration of contact – meat and poultry processing workers often have **prolonged closeness** to coworkers (e.g., for 10-12 hours per shift). Continued contact with potentially infectious individuals increases the risk of SARS-CoV-2 transmission.

- Type of contact – meat and poultry processing workers may be exposed to the infectious virus through respiratory droplets in the air – for example, when workers in the plant who have the virus cough or sneeze. It is also possible that exposure could occur from contact with contaminated surfaces or objects, such as tools, workstations, or break room tables. Shared spaces such as break rooms, locker rooms, and entrances/exits to the facility may contribute to their risk.

- Other distinctive factors that may increase risk among these workers include:

[193] https://www.osha.gov/Publications/OSHA3990.pdf

- A common practice at some workplaces of sharing transportation such as ride-share vans or shuttle vehicles, car-pools, and public transportation.
- Frequent contact with fellow workers in community settings in areas where there is ongoing community transmission.[194]

(Emphasis added).

Meat and Poultry Processing COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Newsobserver.com, May 23, 2020, "Coronavirus outbreaks at processors force NC farmers to start killing 1.5M chickens"

> "[North Carolina] Agriculture officials said Thursday that 2,006 workers in 26 processing plants across the state have tested positive for coronavirus. Although some plants have closed temporarily to clean and disinfect, none have shut down in North Carolina."[195]

Virginia Mercury.com, May 5, 2020, "COVID-19 cases keep climbing at Virginia poultry plants; some members of Congress seek better protections"

> "COVID-19 cases continue to rise at Virginia's Eastern Shore poultry plants, with Gov. Ralph Northam on Monday reporting more than 260 cases associated with two facilities run by Tyson Foods and Perdue Farms in Accomack County.
>
> 'We are also still closely tracking cases in the Shenandoah Valley, which has a large number of plants — cases that have increased as well, but the increase is smaller and could be leveling off,' said Northam. 'Our focus right now remains on the Shore.'
>
> Poultry plant-related cases now represent about 60 percent of Accomack's confirmed cases, which according to the Virginia Department of Health totaled 425 Monday. Twenty-one people in the county have been hospitalized, and six have died. How much testing has been conducted is unclear."[196]

CDC, May 8, 2020, "COVID-19 Among Workers in Meat and Poultry Processing Facilities — 19 States, April 2020"

> "Persons in congregate work and residential locations are at increased risk for transmission and acquisition of respiratory infections.
> ….
> Factors potentially affecting risk for infection include difficulties with workplace physical distancing and hygiene and crowded living and transportation conditions.
> ….

[194] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/meat-poultry-processing-workers-employers.html
[195] https://www.newsobserver.com/news/business/article242944156.html
[196] https://www.nbc12.com/2020/05/05/covid-cases-keep-climbing-virginia-poultry-plants-some-members-congress-seek-better-protections/

Among workers, socioeconomic challenges might contribute to working while feeling ill, particularly if there are management practices such as bonuses that incentivize attendance.

….

By April 27, CDC had received aggregate data on COVID-19 cases from 19 of 23 states reporting at least one case related to this industry; there were 115 meat or poultry processing facilities with COVID-19 cases, including 4,913 workers with diagnosed COVID-19 (Table 1). Among 17 states reporting the number of workers in their affected facilities, 3.0% of 130,578 workers received diagnoses of COVID-19. The percentage of workers with diagnosed COVID-19 ranged from 0.6% to 18.2%. Twenty COVID-19–related deaths were reported among workers.

….

Sociocultural and economic challenges to COVID-19 prevention in meat and poultry processing facilities (Table 2) include accommodating the needs of workers from diverse backgrounds who speak different primary languages; one facility reported a workforce with 40 primary languages. This necessitates innovative approaches to educating and training employees and supervisors on safety and health information.

In addition, some employees were incentivized to work while ill as a result of medical leave and disability policies and attendance bonuses that could encourage working while experiencing symptoms.

Finally, many workers live in crowded, multigenerational settings and sometimes share transportation to and from work, contributing to increased risk for transmission of COVID-19 outside the facility itself. Changing transportation to and from the facilities to increase the number of vehicles and reduce the number of passengers per vehicle helped maintain physical distancing in some facilities.

Cases of COVID-19 have been observed in other congregate settings, including long-term care facilities (5), acute care hospitals (6), correctional facilities (7), and homeless shelters (8). Similarly, the crowded conditions for workers in meat and poultry processing facilities could result in high risk for SARS-CoV-2 transmission.

Respiratory disease outbreaks in this type of setting demonstrate the need for heightened attention to worker safety (9). However, COVID-19 among workers in meat and processing facilities could be due to viral transmission at the workplace or in the community."[197]

2. Seafood Processing.

The seafood processing work environment contains various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

"During 2011-2017, seafood processing workers had the highest injury/illness rate of any U.S. maritime workers at 6,670 injuries/illnesses per 100,000 workers. Occupational hazards in this industry include exposures to biological aerosols containing allergens, microorganisms, and toxins; bacteria and parasites; excessive noise levels; low temperatures; poor workplace

[197] https://www.cdc.gov/mmwr/volumes/69/wr/mm6918e3.htm

organization; poor ergonomics; and contact with machinery and equipment."[198]

[CDC photo of seafood processing employees working in close proximity to each other] Seafood processing worker transporting fresh mackerel while the production line prepares fish in the background.[199]

Seafood Processing COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Seafoodsource.com, Louisiana, May 21, 2020,

> "Around 100 people at three crawfish farms in Louisiana have tested positive for COVID-19, state health officials announced earlier this week.
>
> The Louisiana Department of Health declined to name the three crawfish farms, citing "active, evolving, protected investigations," according to The Advocate.
>
> Louisiana Office of Public Health Assistant Secretary Alex Billioux said the outbreaks were concentrated among migrant workers living in dormitory-like settings. The local crawfish industry is highly reliant on workers – many from Mexico – who use H-2B visas to live and work temporarily in the United States. According to Louisiana State University Assistant Professor of Agriculture Economics and Agribusiness Maria Bampasidou, a review of federal data showed Louisiana had 31 seafood processing facilities file for H-2B visas. Collectively, they received nearly all of the 1,467 positions they applied for. The workers live in trailers or bunkhouses provided by

[198] https://www.cdc.gov/niosh/programs/cmshs/seafood_processing.html
[199] *Id.*

employers in exchange for a cut of workers' paychecks, depending on the type of visa, according to *The Advocate*.

David Savoy, the operator of a crawfish farm and processing facility near Church Point, Louisiana, said working and living conditions are tight in most of the industry's facilities.

'It's like a house with a family in it,' Savoy said. 'If one person gets it, there's a good chance everyone's going to get sick. That's just the reality of the situation.'"[200]

Newscentermaine.com, Portland, ME, May 18, 2020, "Bristol Seafood voluntarily closes after workers test positive for COVID-19"

"Bristol Seafood announced Monday it is voluntarily pausing production in its Portland Fish Pier processing plant after identifying confirmed positive cases of COVID-19 among staff members.

The Maine Center for Disease Control (Maine CDC) Director Dr. Nirav Shah said in the daily coronavirus briefing Monday that they began working with the company over the weekend to investigate the outbreak and collect additional samples for testing."[201]

KATU.com, Astoria, OR, May 4, 2020, "11 at Astoria seafood facility test positive for coronavirus"

"Eleven employees at a seafood processing plant in Astoria have tested positive for COVID-19, health officials said Monday.

The Clatsop County Public Health investigation started Friday when they learned an employee at Bornstein Seafood facility tested positive for the novel coronavirus, COVID-19. They ran tests on 35 other employees and found that 11 others had the virus.

The county is working closely with the facility to test the rest of the company's workforce and started contact tracing with those people who tested positive.

Borstein's facility in Astoria is closed until further notice. The company also said its employees were told to self-isolate at home while they work with public health officials.

'The 11 positive cases reported Monday included four women (one aged 30-39 and three aged 40 to 49) and seven men (two aged 30 to 39, four aged 50 to 59 and one aged 60 to 69),' Clatsop County Public Health said."[202]

[200] https://www.seafoodsource.com/news/supply-trade/covid-19-outbreak-sickens-100-workers-in-louisiana-crawfish-industry
[201] https://www.newscentermaine.com/article/news/health/coronavirus/bristol-seafood-voluntarily-closes-after-workers-test-positive-for-covid-19/97-6dbe22cd-1014-474e-9152-c054c42d5cb6
[202] https://katu.com/news/local/11-employees-at-astoria-borstein-seafood-processing-facility-test-positive-for-covid-19-closure

3. Food Processing.

The food processing work environment contains various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

To the extent that food processing employees "…work environments—processing lines and other areas in busy plants where they have close contact with coworkers and supervisors" mirror those in the meat and poultry processing industries, they are exposed to the same hazards and undertake the same job tasks that result in "medium" and "low" risk exposures.

Food Processing COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Martinsvillebulletin.com, Martinsville, VA, May 27, 2020, "Monogram Snacks in Henry County will shut down voluntarily for COVID-19 testing after positive tests lead to complaints about employee's safety filed with state and OSHA"

> "Angela Hairston's brother is living in isolation at a hotel, separated from his 81-year-old mother at their home in Henry County. **He is listed statistically as a "confirmed COVID-19 male, 56 years old," along with five of his coworkers at Monogram Snacks in Martinsville.**
>
> But Hairston's brother not only contracted the coronavirus, **he also continued to work after being tested because he said he feared loss of income or being fired by Monogram if he didn't.**
> ….
> The Bulletin obtained a copy of the complaint alleging "unsafe work practices and a lack of appropriate safeguards to prevent employee injuries."
>
> The complaint also alleges several employees, including Hairston's brother, have been injured on the job and that "workers are reluctant to raise concerns about conditions and procedures that they consider to be potentially hazardous with supervisors because of a fear of retaliation due to the overall company culture."
>
> Said Hairston: 'OSHA did not appear to address those concerns, and the conditions … deteriorated further in the midst of COVID-19. My brother lives with my mother, who is 81 years old and has a number of chronic health issues. Due to her age and underlying medical conditions, she is in the high-risk category for severe illness from COVID-19 … and the virus … could be deadly given her underlying health issues.'
>
> Monogram Foods Communications Coordinator Sally Vaughan released a statement late Tuesday in which she praised the management and employees.
>
> 'To date, our leaders and team members at our Martinsville, Virginia plant have done an incredible job preventing the spread of COVID-19 by implementing and executing our practices and protocols and providing constant oversight on risk reduction and mitigation,' Vaughan said**. 'Less than 1% of our nearly 650 team members at Martinsville have tested positive for COVID-19 during the pandemic.'**

> Monogram Foods employs 630 people in three manufacturing centers on a 54-acre site at the Patriot Centre Industrial Park in Henry County. The company produces prepackaged snacks.
> ….
> On May 12, Roanoke Regional Health Director Paul Saunier notified Hairston by letter of the findings by VOSH.
>
> 'Based on the employer's investigation results and the documentation the employer has provided to our agency, the employer is operating in accordance with the Governor's Executive Orders and is implementing appropriate preventive measures,' Saunier wrote. "VOSH has determined that the investigation can now be closed."
>
> Hairston wrote back to Saunier that she was appalled that VOSH would accept statements made by Luffman without verifying them, so she took her concerns to her Facebook page.
>
> On May 19, Saunier notified Hairston that VOSH had opened a second investigation on Monogram Snacks."[203]

Oregonlive.com, Vancouver, WA, May 22, 2020, "Vancouver frozen fruit processor reports 27 coronavirus cases"

> "A Vancouver food processing company says 27 of its employees have COVID-19. It may be the Portland area's biggest workplace outbreak reported thus far, excluding the healthcare sector.
>
> Josh Hinerfeld, CEO of Firestone Pacific Foods, said the company had its first confirmed case midday Sunday and learned of two more later that afternoon. The Vancouver plant shut down Monday but the infection total has now grown to 27, including 17 new cases Friday.
> ….
> Firestone processes frozen fruit."[204]

Vadogwood.com, Virginia, May 21, 2020, "Here Are All the Virginia Factories With Coronavirus Outbreaks"

> "At least seven workers at the facility in Chesterfield County have tested positive for COVID-19 and are now in quarantine at home, WRIC-TV in Richmond reported. A spokesperson for Maruchan Virginia Inc., which is a subsidiary of Toyo Suisan Kaisha Ltd in Tokyo, told the news station that the factory remains open despite the positive cases."[205]
>
> "We can confirm the Maruchan Virginia report about employees testing positive for

[203] https://www.martinsvillebulletin.com/news/local/monogram-snacks-in-henry-county-will-shut-down-voluntarily-for-covid-19-testing-after-positive/article_665228f4-4673-59d4-b5a5-d19824a49ac0.html
[204] https://www.oregonlive.com/business/2020/05/vancouver-frozen-fruit-processor-reports-10-coronavirus-cases.html
[205] https://www.ktvu.com/news/coronavirus-outbreak-at-maruchan-ramen-noodle-factory-sickens-at-least-7-workers-in-virginia

COVID-19 at their Chesterfield facility," Chesterfield Health District Director Dr. Alexander Samuel said in a statement to Fox5."[206]

Oregonlive.com, Albany, OR, May 12, 2020, "Oregon cites National Frozen Foods, site of coronavirus outbreak, for unsafe practices"

"Oregon regulators cited an Albany fruit and vegetable processor Monday for safety violations after a coronavirus outbreak there infected at least 34.

National Frozen Foods faces a $2,000 penalty for failing to adopt practices to enable workers to stay at least six feet apart from one another.

….

[Oregon] OSHA said it inspected the Albany plant on April 20 in response to worker complaints. The regulatory agency said National Frozen Food allowed employees on frozen packaging lines to work within two to four feet of one another."[207]

4. Healthcare, Nursing Home Care,[208] and Long Term Care.[209]

The healthcare, nursing home care and long term care work environment contains various hazards and job tasks which present the full spectrum or exposure risks (Very high, High, Medium, Lower):

Very high – "Performing aerosol-generating procedures (e.g., intubation, cough induction procedures, bronchoscopies, some dental procedures and exams, or invasive specimen collection) on known or suspected COVID-19 patients. Collecting or handling specimens from known or suspected COVID-19 patients."[210]

High – "Entering a known or suspected COVID-19 patient's room. Providing care for a known or suspected COVID-19 patient not involving aerosol-generating procedures."[211]

Medium – "Providing care to the general public who are not known or suspected COVID-19 patients. Working at busy staff work areas within a healthcare facility."[212]

Lower – "Performing administrative duties in non-public areas of healthcare facilities, away from other staff members."[213]

[206] https://www.fox5dc.com/news/health-officials-cant-provide-updates-on-covid-19-outbreak-at-virginia-maruchan-ramen-factory

[207] https://www.oregonlive.com/business/2020/05/oregon-cites-national-frozen-foods-site-of-coronavirus-outbreak-for-unsafe-practices.html

[208] OSHA publication "COVID-19 Guidance for Nursing Home and Long-Term Care Facility Workers" references "OSHA's COVID-19 guidance for healthcare workers and employers."

[209] *Id.*

[210] https://www.osha.gov/SLTC/covid-19/healthcare-workers.html

[211] *Id.*

[212] *Id.*

[213] *Id.*

Healthcare, Nursing Home Care and Long Term Care COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

CDC.gov, May 31, 2020, "Cases & Deaths among Healthcare Personnel [HCP]"

> "Data were collected from 1,417,310 people, but healthcare personnel status was only available for 304,479 (21.5%) people. For the 66,447 cases of COVID-19 among healthcare personnel, death status was only available for 37,485 (56.4%).
>
> Cases among HCP: 66,447
>
> Deaths among HCP: 318"[214]

Usatoday.com, April 13, 2020, referencing *Cincinnati Enquirer* story, "Health care workers in Ohio are testing positive for COVID-19 at an alarming rate"

> "More than **1,300 health care workers in Ohio have tested positive for the novel coronavirus since the pandemic began, accounting for about 1 of every 5 positive tests in the state.**
>
> But Ohio's public health officials aren't talking about where all those employees work, how they're doing now or how many may have been infected in "hot spots," or clusters of positive tests.
>
> State and local health departments, the Ohio Hospital Association, the Health Collaborative of Greater Cincinnati and the hospitals themselves all have refused to provide details beyond a statewide total.
>
> The reason? Most say revealing more information could jeopardize the privacy of infected employees.
>
> They say more specific numbers for hospitals, or even for entire cities or counties, could allow someone to figure out who got sick, thereby violating the workers' privacy rights.
> ….
> Not everyone thinks the secrecy is a good idea. Shortages of protective equipment and tests, along with the daily challenges of coping with a pandemic, mean health care workers are at significant risk every time they go to work.
>
> More information about what's happening in those workplaces, some say, could identify locations that need additional help and resources protecting the people who work there.
>
> 'From a health care worker perspective, I think those numbers can be beneficial,' said Michelle Thoman, president of the Registered Nurses Association at the University of Cincinnati Medical Center. 'If you see that numbers in your facility or hospital are

[214] https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html

climbing, you can be prepared for that.'"[215] (Emphasis added).

WRIC.com, Richmond, VA, April 30, 2020, "Canterbury Rehabilitation & Healthcare Center reports 50th COVID-19 death"

> "Officials at Canterbury Rehabilitation & Healthcare Center in Henrico County today reported the facility's 50th coronavirus-related death. The resident died yesterday in a hospital.
>
> Canterbury officials also reported that 51 patients who previously tested positive for COVID-19 have fully recovered. A cluster of COVID-19 deaths and infections have been reported at Canterbury Rehabilitation & Healthcare Center since the outbreak began.
>
> More than 100 residents and staff members have tested positive for the virus, making Canterbury one of the worst clusters of cases in the United States. Recent reports obtained by 8News state that Canterbury is certified as a 190-bed facility.[216]
>
> Beginning April 1, 2020, the Virginia Department of Health (VDH) conducted an assessment of the Canterbury Rehabilitation facility and of the 141 residents, 91 tested positive for COVID-19 (64.5%).[217]

CDC, March 27, 2020, "COVID-19 in a Long-Term Care Facility — King County, Washington, February 27–March 9, 2020"

> "On February 28, 2020, a case of coronavirus disease (COVID-19) was identified in a woman resident of a long-term care skilled nursing facility (facility A) in King County, Washington.* Epidemiologic investigation of facility A identified 129 cases of COVID-19 associated with facility A, including 81 of the residents, 34 staff members, and 14 visitors; 23 persons died. Limitations in effective infection control and prevention and staff members working in multiple facilities contributed to intra- and inter-facility spread.
>
> COVID-19 can spread rapidly in long-term residential care facilities, and persons with chronic underlying medical conditions are at greater risk for COVID-19–associated severe disease and death. Long-term care facilities should take proactive steps to protect the health of residents and preserve the health care workforce by identifying and excluding potentially infected staff members and visitors, ensuring early recognition of potentially infected patients, and implementing appropriate infection control measures.
>
> ….
>
> Reported symptom onset dates for facility residents and staff members ranged from February 16 to March 5. The median patient age was 81 years (range = 54–100 years) among facility residents, 42.5 years (range = 22–79 years) among staff members, and

[215] https://www.usatoday.com/story/news/nation/2020/04/13/ohio-health-care-workers-test-positive-covid-19-alarming-rate/2981253001/
[216] https://www.wric.com/health/coronavirus/canterbury-rehabilitation-healthcare-center-reports-50th-covid-19-death/
[217] https://www.vdh.virginia.gov/content/uploads/sites/96/2020/05/Canterbury-04-16-2020-COVID-Focus-POC.pdf

62.5 years (range = 52–88 years) among visitors; 84 (65.1%) patients were women (Table). Overall, 56.8% of facility A residents, 35.7% of visitors, and 5.9% of staff members with COVID-19 were hospitalized.

Preliminary case fatality rates among residents and visitors as of March 9 were 27.2% and 7.1%, respectively; no deaths occurred among staff members. The most common chronic underlying conditions among facility residents were hypertension (69.1%), cardiac disease (56.8%), renal disease (43.2%), diabetes (37.0%), obesity (33.3%), and pulmonary disease (32.1%). Six residents and one visitor had hypertension as their only chronic underlying condition.

….

Information received from the survey and on-site visits identified factors that likely contributed to the vulnerability of these facilities, including 1) staff members who worked while symptomatic; 2) staff members who worked in more than one facility; 3) inadequate familiarity and adherence to standard, droplet, and contact precautions and eye protection recommendations; 4) challenges to implementing infection control practices including inadequate supplies of PPE and other items (e.g., alcohol-based hand sanitizer) §; 5) delayed recognition of cases because of low index of suspicion, limited testing availability, and difficulty identifying persons with COVID-19 based on signs and symptoms alone.

….

The findings in this report suggest that once COVID-19 has been introduced into a long-term care facility, it has the potential to result in high attack rates among residents, staff members, and visitors."[218]

5. Dental Services.

Dental work environment contains various hazards and job tasks which present "high", "medium" (close contact), and "lower" risk exposures:

"The practice of dentistry involves the use of rotary dental and surgical instruments, such as handpieces or ultrasonic scalers and air-water syringes. These instruments create a visible spray that can contain particle droplets of water, saliva, blood, microorganisms, and other debris. Surgical masks protect mucous membranes of the mouth and nose from droplet spatter, but they do not provide complete protection against inhalation of airborne infectious agents. There are currently no data available to assess the risk of SARS-CoV-2 transmission during dental practice."[219]

Dentist Offices COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

NBCbayarea.com, May, 14, 2020, "Potential COVID Aerosol Hazards in the Dentist Chair"

"'I can't express enough how dangerous it is in a dental office right now, we have the ability to be asymptomatic and spread this to other people as much as

[218] https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e1.htm?s_cid=mm6912e1_w
[219] https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html

we're looking out for our own safety,' said Cindi Roddan, a dental hygienist, adding, 'Everything that we do in dentistry creates aerosols. It is so dangerous.'

Dental Hygienist Tops List of Jobs Exposed to Disease. Dental hygienists are potentially exposed to disease on a daily basis, according to federal employment data. Professions are ranked on a scale in which 100 represents daily contact, 75 is weekly, 50 is monthly and 25 is daily.

Occupation	Context
Dental Hygienists	100
Acute Care Nurses	100
Family and General Practitioners	100
Internists, General	100
Critical Care Nurses	99
Hospitalists	99
Oral and Maxillofacial Surgeons	99
Respiratory Therapists	98
Respiratory Therapy Technicians	98
Anesthesiologist Assistants	97
Occupational Therapy Aides	97
Orderlies	97
Dental Assistants	96
Medical and Clinical Laboratory Technologists	96
Nurse Anesthetists	96
Urologists	96
Allergists and Immunologists	95
Dentists, General	95
Radiation Therapists	95
Registered Nurses	95

Table: Sean Myers/NBC Bay Area • Source: the National Center for O*NET Development • Created with Datawrapper

High speed drills, ultrasonic scalers and air-water syringes are the tools used in dentistry. According to the Centers for Disease Control they are also potent spreaders of coronavirus because they "create a visible spray that contains large droplets of water, saliva, blood, microorganisms and other debris."

If a patient is infected with the COVID-19 virus, even if they show no symptoms, those aerosols can contain enough of the virus to infect a dental hygienist, or even the next patient who sits in the dental chair." (Emphasis added).

Dental-tribune.com, Jakarta, Indonesia, April 16, 2020, "Dentists in Indonesia are dying from COVID-19"

"The Indonesian Medical Association has confirmed that 24 medical professionals have died in the country from COVID-19, six of whom were dentists. Not all of those who died were working on the front line in the battle against the illness. The government's COVID-19 response team has called on the health ministry to protect

doctors and dentists by advising them to close their practices."[220]

Bridgemi.com, April 10, 2020, Michigan, "Ascension doctor becomes 7th Michigan health care worker to die of coronavirus"[221]

> "Seven health care workers in southeast Michigan have now died from complications of the coronavirus, including a doctor at Ascension Macomb Hospital who graduated from Wayne State University.
> ….
> One of them was Dr. Chris Firlit, a 37-year-old husband and father of three. Firlit was a member of the Wayne State University's class of 2018, and lived in Berkley.
>
> Firlit was a senior resident in the oral maxillofacial surgery program at Ascension Macomb Hospital. Wayne State announced his death Tuesday and said he had died this week, but did not provide the exact date."

Docseducation.com, April 9, 2020, "The Pandemic and the Dentist"[222]

> "Risk to the Dental Professional
> ….
> The dental professional is particularly at risk if one is working on an infected patient or an asymptomatic carrier because of close contact with the patient and the risk of blood, saliva and droplet exposure. In Italy, there were 7 dental professionals who died of COVID-19 during the pandemic."

Medrxiv.org, April 5, 2020, "Physician Deaths from Corona Virus Disease (COVID-19)"[223]

> "RESULTS: We found 198 physician deaths from COVID-19, but complete details were missing for 49 individuals. The average age of the physicians that died was 63.4 years (range 28 to 90 years) and the median age was 66 years of age. Ninety percent of the deceased physicians were male (175/194). General practitioners and emergency room doctors (78/192), respirologists (5/192), internal medicine specialists (11/192) and anesthesiologists (6/192) comprised 52% of those dying. Two percent of the deceased were epidemiologists (4/192), 2% were infectious disease specialists (4/192), **5% were dentists (9/192),** 4% were ENT (8/192), and 4% were ophthalmologists (7/192). The countries with the most reported physician deaths were Italy (79/198), Iran (43/198), China (16/198), Philippines (14/198), United States (9/192) and Indonesia (7/192)." (Emphasis added).

[220] https://www.dental-tribune.com/news/dentists-in-indonesia-are-dying-from-covid-19/
[221] https://www.bridgemi.com/michigan-health-watch/ascension-doctor-becomes-7th-michigan-health-care-worker-die-coronavirus
[222] https://www.docseducation.com/blog/pandemic-and-dentist
[223] https://www.medrxiv.org/content/10.1101/2020.04.05.20054494v1.full.pdf

6. Morgue and Mortuary Services

The morgue and mortuary services work environment contains various hazards and job tasks which can present risk exposures at all levels:

Very high – "Morgue workers performing autopsies, which generally involve aerosol-generating procedures, on the bodies of people who are known to have, or suspected of having, COVID-19 at the time of their death."[224]

High – "Mortuary workers involved in preparing (e.g., for burial or cremation) the bodies of people who are known to have, or suspected of having, COVID-19 at the time of their death."[225]

Medium – "Medium exposure risk jobs include those that require frequent and/or close contact with (i.e., within 6 feet of) people who may be infected with SARS-CoV-2, but who are not known or suspected COVID-19 patients….In areas where there is ongoing community transmission, workers in this category may have contact with the general public [funerals] (e.g., schools, high-population-density work environments, some high-volume retail settings)."[226]

Lower – "Lower exposure risk (caution) jobs are those that do not require contact with people known to be, or suspected of being, infected with SARS-CoV-2 nor frequent close contact with (i.e., within 6 feet of) the general public. Workers in this category have minimal occupational contact with the public and other coworkers [administrative services associated with funerals]."[227]

Morgue and Mortuary Services COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Tuscon.com, Tucson, AZ, May 2, 2020, "Illnesses at Tucson funeral home highlight risks to 'last responders' during pandemic"

> "Numerous employees at a Tucson funeral home contracted coronavirus, but experts say it is unlikely they were infected by the body of a COVID-19 victim.
>
> Adair Funeral Homes temporarily closed its Dodge Chapel after "a number" of staff members fell ill and were sent home to recover in self-quarantine, according to a written statement from the company.
>
> The incident highlights lingering questions about how the virus is transmitted, and it underscores the essential work still being done by so-called "last responders" in the community's morgues and mortuaries.

[224] https://www.osha.gov/Publications/OSHA3990.pdf at page 19.
[225] *Id.*
[226] *Id.* at page 20.
[227] *Id.* at page 20.

'They really are heroes, but they don't get the recognition they deserve, because it's death and nobody wants to talk about that,' said Judith Stapley, executive director of the Arizona State Board of Funeral Directors and Embalmers.

Adair did not identify the suspected source of the outbreak. It's unclear if the Dodge Chapel has handled any of the more than 80 people who have died from the coronavirus in Pima County.

Dr. Greg Hess, chief medical examiner for the county, said it is doubtful the outbreak at the mortuary came from a corpse.

'Are we hearing that someone has contracted COVID from a dead body? We're not,' Hess said. 'It's possible, but honestly there is a much greater risk of contracting it from somewhere else.'"[228]

CDC.gov, "Community Transmission of SARS-CoV-2 at Two Family Gatherings [including a Funeral]" — Chicago, Illinois, February–March 2020
"Most early reports of person-to-person SARS-CoV-2 transmission have been among household contacts, where the secondary attack rate has been estimated to exceed 10% (1), in health care facilities (2), and in congregate settings (3).

However, widespread community transmission, as is currently being observed in the United States, requires more expansive transmission events between non-household contacts. In February and March 2020, the Chicago Department of Public Health (CDPH) investigated a large, multifamily cluster of COVID-19. Patients with confirmed COVID-19 and their close contacts were interviewed to better understand non-household, community transmission of SARS-CoV-2. This report describes the cluster of 16 cases of confirmed or probable COVID-19, including three deaths, likely resulting from transmission of SARS-CoV-2 at two family gatherings (a funeral and a birthday party)."[229] (Emphasis added).

7. Veterinary Services.

The veterinary work environment contains various hazards and job tasks which present "medium" (close contact), and "lower" risk exposures:

[228] https://tucson.com/news/local/illnesses-at-tucson-funeral-home-highlight-risks-to-last-responders-during-pandemic/article_e0ea6dbc-721b-5b46-a30b-609fcdd9ae5a.html
[229] https://www.cdc.gov/mmwr/volumes/69/wr/mm6915e1.htm?s_cid=mm6915e1_w
"The findings in this investigation are subject to at least three limitations. First, lack of laboratory testing for probable cases means some probable COVID-19 patients might have instead experienced unrelated illnesses, although influenza-like illness was declining in Chicago at the time. Second, phylogenetic data, which could confirm presumed epidemiologic linkages, were unavailable. For example, patient B3.1 experienced exposure to two patients with confirmed COVID-19 in this cluster, and the causative exposure was presumed based on expected incubation periods. Patient D3.1 was a health care professional, and, despite not seeing any patients with known COVID-19, might have acquired SARS-CoV-2 during clinical practice rather than through contact with members of this cluster. Similarly, other members of the cluster might have experienced community exposures to SARS-CoV-2, although these transmission events occurred before widespread community transmission of SARS-CoV-2 in Chicago. Finally, despite intensive epidemiologic investigation, not every confirmed or probable case related to this cluster might have been detected. Persons who did not display symptoms were not evaluated for COVID-19, which, given increasing evidence of substantial asymptomatic infection (9), means the size of this cluster might be underestimated." *Id.*

"The greatest risk of COVID-19 exposure to staff at veterinary clinics comes from person-to-person transmission through respiratory droplets from coughing, sneezing, or talking, which is the main way SARS-CoV-2 spreads.
….
We are still learning about this novel zoonotic virus, and it appears that in some rare situations, human to animal transmission can occur.

CDC is aware of a small number animals, including dogs and cats, to be infected with SARS-CoV-2 after close contact with people with COVID-19. The United States Department of Agriculture (USDA) and CDC recently reported confirmed infection with SARS-CoV-2 in two pet cats with mild respiratory illness in New York, which were the first confirmed cases of SARS-CoV-2 infections in companion animals in the United States. Both cats are expected to recover. The cats had close contact with people confirmed or suspected to have COVID-19, suggesting human-to-cat spread. Further studies are needed to understand if and how different animals could be affected by SARS-CoV-2.

Limited information is available to characterize the spectrum of clinical illness associated with SARS-CoV-2 infection in animals. Clinical signs thought to be compatible with SARS-CoV-2 infection in animals include fever, coughing, difficulty breathing or shortness of breath, lethargy, sneezing, nasal/ocular discharge, vomiting, and diarrhea.
….
If a pet owner currently has respiratory symptoms or is a suspected of or confirmed to have COVID-19, they should not visit the veterinary facility. Consider whether a telemedicine consult is appropriate. If possible, a healthy friend or family member from outside their household should bring the animal to the veterinary clinic. The clinic should use all appropriate precautions to minimize contact with the person bringing the animal to the clinic. If there is an emergency with the animal, the animal should not be denied care.

If a pet owner is suspected or confirmed to have COVID-19 and must bring their pet to the clinic, the following actions should be taken:

- Communicate via phone call or video chat to maintain social distancing.
- Retrieve the animal from the owner's vehicle (also called curbside) to prevent the owner from having to enter the clinic or hospital.
- Maintain social distancing and PPE recommendations when interacting with clients.
- Request smaller animals be brought in a plastic carrier to facilitate disinfection of the carrier after use. Also advise the owner to leave all non-essential items at home to avoid unnecessary opportunities for additional exposure.[230]

Veterinary COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Avma.org, May 29, 2020, "Remembering veterinarians who have died during the pandemic:"

"Wildlife, avian veterinarian honored. Dr. Peter Sakas (Illinois '83), a staff

[230] https://www.cdc.gov/coronavirus/2019-ncov/community/veterinarians.html

veterinarian at the Animal Hospital and Bird Medical Center in Niles, Illinois, died on March 30 of COVID-19. In his work, he focused on wildlife veterinary medicine. Those who knew him say he was charismatic, had a big personality, and cared deeply for his clients and their animals.

….

'There has been a lot of attention on human health care front-line workers, but I think people often forget that veterinarians are front-line health care workers too,' Dr. Courtney Sakas said. 'My father told us that he was never going to retire because he loved his job so much. I knew he was going to continue working as long as he possibly could to keep caring for the clients and animals he loved, even if it meant putting himself at risk.'"[231]

"A community-focused veterinarian celebrated. Dr. Julie R. Butler (Cornell '83), founder of 145th Street Animal Hospital in the Harlem neighborhood of New York City, died on April 4. In her personal life, Dr. Butler was an advocate of the arts who made an excellent lemon meringue pie.

….

In her professional life, Dr. Butler was the kind of veterinarian who never turned away an animal.

Dr. Butler was the co-founder of New York Save Animals in Veterinary Emergency, a nonprofit organization that provides financial assistance for pets who need emergency care. She also served as past president of the VMA of New York City. She spent over 30 years serving the Harlem community, and she used her experience to educate and mentor other veterinary professionals.

Kylie Lang, a veterinary technician, said Dr. Butler was a role model who made work enjoyable."[232]

8. Hand Labor Operations in Agriculture.

Hand labor operations in agriculture contain various hazards and job tasks which present "medium" (close contact), and "lower" risk exposures:

Northcarolinahealthnews.org, March 13, 2020, "For migrant workers in NC, coronavirus may be hard to avoid"

"As the growing season ramps up in North Carolina, agencies that care for and about migrant and seasonal farmworkers are hastily preparing to screen and educate them about coronavirus.

Migrant workers aren't especially susceptible to coronavirus, but their living conditions during the growing season — trailers and rooms that house many workers — could put them at greater risk of catching the virus, which spreads through droplets, close contact and surfaces.

….

[231] https://www.avma.org/javma-news/2020-07-01/remembering-veterinarians-who-have-died-during-pandemic
[232] *Id.*

'They all share the same bathroom, they all share the same kitchen, they're all usually within the same living area,' said Amy Elkins, an outreach worker at North Carolina Farmworkers' Project, a Benson-based organization that serves an average of 3,000 migrant and seasonal workers a year. 'So if we have one case inside a camp, it is most likely that everyone is going to be infected.'

….

Her colleague, Janeth Tapia, the organization's outreach coordinator, said that migrant farmworkers are used to working through illness and are reluctant to reveal that they are sick for fear of being sent to their home countries before the end of the growing season.

'That's something we see a lot,' Elkins said. 'We'll have someone who just gets pneumonia or hurts their foot and can't work. The farmer will give them one or two days and (if the employee does not recover) he's on a bus back to Mexico.'[233]

Hand Labor Operations Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Bloomberg.com, May 29, 2020, "Every Single Worker Has Covid at One U.S. Farm on Eve of Harvest"

"One farm in Tennessee distributed Covid-19 tests to all of its workers after an employee came down with the virus. It turned out that every single one of its roughly 200 employees had been infected.

In New Jersey, more than 50 workers had the virus at a farm in Gloucester County, adding to nearly 60 who fell ill in neighboring Salem County. Washington state's Yakima County, an agricultural area that produces apples, cherries, pears and most of the nation's hops, has the highest per capita infection rate of any county on the West Coast.

The outbreaks underscore the latest pandemic threat to food supply: Farm workers are getting sick and spreading the illness just as the U.S. heads into the peak of the summer produce season. In all likelihood, the cases will keep climbing as more than half a million seasonal employees crowd onto buses to move among farms across the country and get housed together in cramped bunkhouse-style dormitories.

….

The early outbreaks are already starting to draw comparisons to the infections that plunged the U.S. meat industry into crisis over the past few months. Analysts and experts are warning that thousands of farm workers are vulnerable to contracting the disease.

….

Unlike grain crops that rely on machinery, America's fruits and vegetables are

[233] https://www.northcarolinahealthnews.org/2020/03/13/for-migrant-workers-in-nc-coronavirus-may-be-hard-to-avoid/

mostly picked and packed by hand, in long shifts out in the open -- a typically undesirable job in major economies. So the position typically goes to immigrants, who make up about three quarters of U.S. farm workers.

A workforce of seasonal migrants travels across the nation, following harvest patterns. Most come from Mexico and Latin America through key entry points like southern California, and go further by bus, often for hours, sometimes for days.

There are as many as 2.7 million hired farm workers in the U.S., including migrant, seasonal, year-round and guest-program workers, according to the Migrant Clinicians Network. While many migrants have their permanent residence in the U.S., moving from location to location during the warmer months, others enter through the federal H2A visa program. Still, roughly half of hired crop farmworkers lack legal immigration status, according to the U.S. Department of Agriculture.

These are some of the most vulnerable populations in the U.S., subjected to tough working conditions for little pay and meager benefits. Most don't have access to adequate health care. Many don't speak English.

Without them, it would be nearly impossible to keep America's produce aisles filled. And yet, there's no one collecting national numbers on how many are falling sick.

'There is woefully inadequate surveillance of what's happening with Covid-19 and farm workers," said Erik Nicholson, a national vice president for the United Farm Workers. "There is no central reporting, which is crazy because these are essential businesses.'"[234] (Emphasis added).

WBGO.org, New Jersey, May 12, 2020, "Coronavirus update: Cases spike among farmworkers"

"More than half the seasonal workers at a South Jersey farm have tested positive for COVID-19, raising fears of an unchecked outbreak ahead of the blueberry and other harvests.

At least 59 migrant workers at a farm in Upper Pittsgrove, in rural Salem County, have been infected, NJ Spotlight reported Monday. The news came just as the state Department of Health and local federally qualified health centers prepared to launch a testing program for all such workers.

Upper Pittsgrove Mayor Jack Cimprich said he didn't know how the farmer was isolating infected workers in camp dormitories, dining halls and fields. "I wouldn't be surprised, in fact, if it hasn't spread to the whole group," he told NJ Spotlight.

[234] https://www.bloomberg.com/news/articles/2020-05-29/every-single-worker-has-covid-at-one-u-s-farm-on-eve-of-harvest

Several thousand migrant farmworkers — many from Mexico, Hati, Puerto Rico and Central America — come to the region for the spring and summer harvests. One immigrant advocate interviewed by the outlet called the rise in cases among workers "a potential crisis."[235]

9. Correctional and Detention Facilities.

The correctional and detention facilities work environments contain various hazards and job tasks which present, high, medium (close contact) to lower risk exposures:

NOTE: Virginia correctional facilities have clinics that provide certain medical services to inmates.

"Correctional and detention facilities face challenges in controlling the spread of infectious diseases because of crowded, shared environments and potential introductions by staff members and new intakes.
….
An estimated 2.1 million U.S. adults are housed within approximately 5,000 correctional and detention facilities on any given day (1). Many facilities face significant challenges in controlling the spread of highly infectious pathogens such as SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19).

Such challenges include crowded dormitories, shared lavatories, limited medical and isolation resources, daily entry and exit of staff members and visitors, continual introduction of newly incarcerated or detained persons, and transport of incarcerated or detained persons in multiperson vehicles for court-related, medical, or security reasons (2,3). During April 22–28, 2020, aggregate data on COVID-19 cases were reported to CDC by 37 of 54 state and territorial health department jurisdictions.

Thirty-two (86%) jurisdictions reported at least one laboratory-confirmed case from a total of 420 correctional and detention facilities. Among these facilities, COVID-19 was diagnosed in 4,893 incarcerated or detained persons and 2,778 facility staff members, resulting in 88 deaths in incarcerated or detained persons and 15 deaths among staff members. Prompt identification of COVID-19 cases and consistent application of prevention measures, such as symptom screening and quarantine, are critical to protecting incarcerated and detained persons and staff members.
….
Approximately one half of facilities with COVID-19 cases reported them among staff members but not among incarcerated persons.[236]

Correctional Facility and Detention Center COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

[235] https://www.wbgo.org/post/coronavirus-update-cases-spike-among-farmworkers-nj-curbs-wave-parades#stream/0
[236] https://www.cdc.gov/mmwr/volumes/69/wr/mm6919e1.htm

The Virginia Department of Corrections website[237] as of Noon, May 29, 2020, Cases by location, reports that 132 staff and contractors (active cases), and 1,171 offenders have tested positive COVID-19. Seven (7) offenders have died:

LOCATION	OFFENDERS ON-SITE	OFFENDERS IN HOSPITALS	DEATH OF COVID-19 POSITIVE OFFENDER	TOTAL POSITIVE OFFENDERS onsite + hospital + deaths + releases + recovered + transfers in - transfers out	STAFF active cases including employees & contractors
Appalachian Men's CCAP	0	0	0	0	0
Augusta Correctional Center	0	0	0	0	1
Baskerville Correctional Center	0	0	0	0	1
Bland Correctional Center	0	0	0	0	0
Brunswick CCAP	0	0	0	0	0
Buckingham Correctional Center	44	2	3	113	8
Caroline Correctional Unit	0	0	0	0	0
Central Virginia Correctional Unit #13	1	0	0	57	2
Chesterfield Women's CCAP	0	0	0	0	0
Coffeewood Correctional Center	0	0	0	0	0
Cold Springs CCAP	0	0	0	0	0
Cold Springs Correctional Unit #10	0	0	0	0	0
Deerfield Correctional Center (includes Deerfield Work Centers)	20	1	1	78	3
Dillwyn Correctional Center	121	2	1	322	9
Fluvanna Correctional Center for Women	0	0	0	0	0
Green Rock Correctional Center	0	0	0	0	0
Greensville Correctional Center (includes Greensville Work Center)	190	2	0	193	53
Halifax Correctional Unit	0	0	0	0	0
Harrisonburg Men's CCAP	5	0	0	26	1
Haynesville Correctional Center	114	3	0	246	9
Haynesville Correctional Unit #17	0	0	0	0	0

[237] https://www.vadoc.virginia.gov/news-press-releases/2020/covid-19-updates/

LOCATION	OFFENDERS ON-SITE	OFFENDERS IN HOSPITALS	DEATH OF COVID-19 POSITIVE OFFENDER	TOTAL POSITIVE OFFENDERS onsite + hospital + deaths + releases + recovered + transfers in - transfers out	STAFF active cases including employees & contractors
Indian Creek Correctional Center	0	0	0	0	1
Keen Mountain Correctional Center	0	0	0	0	0
Lawrenceville Correctional Center	0	0	0	0	0
Lunenburg Correctional Center	0	0	0	0	0
Marion Correctional Treatment Center	0	0	0	0	0
Nottoway Correctional Center (includes Nottoway Work Center)	0	0	0	0	4
Patrick Henry Correctional Unit	0	0	0	0	0
Pocahontas State Correctional Center	0	0	0	0	0
Red Onion State Prison	0	0	0	0	0
River North Correctional Center	0	0	0	0	1
Rustburg Correctional Unit	0	0	0	0	0
St. Brides Correctional Center	0	0	0	0	1
Stafford Men's CCAP	0	0	0	0	0
State Farm Correctional Complex	19	1	0	20	17
Sussex I State Prison	0	0	0	0	3
Sussex II State Prison	23	1	1	71	7
Virginia Correctional Center for Women (includes State Farm Work Center)	2	0	1	45	9
Wallens Ridge State Prison	0	0	0	0	2
Wise Correctional Unit	0	0	0	0	0
Probation & Parole — Eastern Region	n/a	n/a	n/a	n/a	0
Probation & Parole — Central Region	n/a	n/a	n/a	n/a	0
Probation & Parole — Western Region	n/a	n/a	n/a	n/a	0
Administration & Operations	n/a	n/a	n/a	n/a	0
TOTALS	**539**	**12**	**7**	**1171**	**132**

Rrjva.org, Riverside Regional Jail, May 28, 2020, "COVID-19 Information as of May 28, 2020"

"Current Statistics:

Currently we have 45 positive cases of COVID-19 in the inmate population, We also have seven (7) staff members who have tested positive.
….
We have designated several living areas for quarantine. When inmates are initially booked in, they are placed in precautionary quarantine for 14 days. Once they are cleared, they are moved to general population.

Should an inmate test positive in general population, all inmates and staff that have been in contact are isolated and tested. If a significant number of inmates in that area were exposed, the entire living area is placed on isolation.

Staff that test positive are placed on leave until cleared by a physician."[238]

Usatoday.com, April 27, 2020, "Isolated and scared: The plight of juveniles locked up during the coronavirus pandemic"

"Arjanae Avula talks to her younger brother twice a week. Phone calls last about three minutes before they're cut off. During their last conversation, she said, he was crying.
….
Her 18-year-old brother is at Bon Air Juvenile Correctional Center, a coronavirus hot spot near Richmond, Virginia, where 27 youths and 10 employees have tested positive for COVID-19."

This photo shows the Bon Air Juvenile Correctional Center in Bon Air, Va., Tuesday, April 21, 2020. The Virginia Department of Corrections said Monday that it will dramatically increase testing of inmates as the state struggles to control the spread of the coronavirus in prisons across the state. *Steve Helber, AP*

[238] https://rrjva.org/wp/covid-19/

10. Manufacturing

"The manufacturing work environment—production or assembly lines and other areas in busy plants where workers have close contact with coworkers and supervisors [medium risk exposure] — may contribute substantially to workers' potential exposures. The risk of occupational transmission of SARS-CoV-2 depends on several factors. (Emphasis added).

….

Distinctive factors that affect workers' risk for exposure to SARS-CoV-2 in manufacturing workplaces include:

- Distance between workers – Manufacturing workers often work close to one another on production or assembly lines. Workers may also be near one another at other times, such as when clocking in or out, during breaks, or in locker/changing rooms.
- Duration of contact – Manufacturing workers often have prolonged closeness to coworkers (e.g., for 8–12 hours per shift). Continued contact with potentially infectious individuals increases the risk of SARS-CoV-2 transmission.
- Type of contact – Manufacturing workers may be exposed to the infectious virus through respiratory droplets in the air—for example, when workers in a plant who have the virus cough or sneeze. It is also possible that exposure could occur from contact with contaminated surfaces or objects, such as tools, workstations, or break room tables. Shared spaces such as break rooms, locker rooms, and entrances/exits to the facility may contribute to their risk.
- Other distinctive factors that may increase risk among these workers include:
  ◦A common practice at some workplaces of sharing transportation such as ride-share vans or shuttle vehicles, car-pools, and public transportation
- Frequent contact with fellow workers in community settings in areas where there is ongoing community transmission"[239]

Manufacturing COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

NBCnews.com, May 16, 2020, "Midwest manufacturing workers sound alarm over COVID-19 outbreaks"

> "But outbreaks at manufacturing facilities that make everything from wind turbine parts to soap have also sickened scores of workers while garnering far less attention.
>
> ….
>
> TPI Composites, a manufacturer of wind blades, shut down its Newton, Iowa, facility after approximately 20 percent of employees tested positive for the

[239] https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-manufacturing-workers-employers.html

coronavirus, according to a May 2 news release.[240] At least one worker has died.

….

Kyle Brown, 54, worked at TPI Composites for eight years, most recently in the maintenance department, his wife, Pamela Dennen, told NBC News in a phone interview. Brown died from COVID-19 on April 29.

….

Almost 500 miles away in Grand Forks, North Dakota, workers said they were ignored in March when they raised alarms about safety conditions at LM Wind Power, a General Electric-owned plant that produces wind turbine blades, according to the company's website. Weeks later, 145 people tested positive for COVID-19, according to the North Dakota Department of Health. Fifteen of those employees live outside of North Dakota, while 130 are North Dakota residents, the department told NBC News. At least one employee from the plant has died, but GE did not confirm whether it was related to the coronavirus.

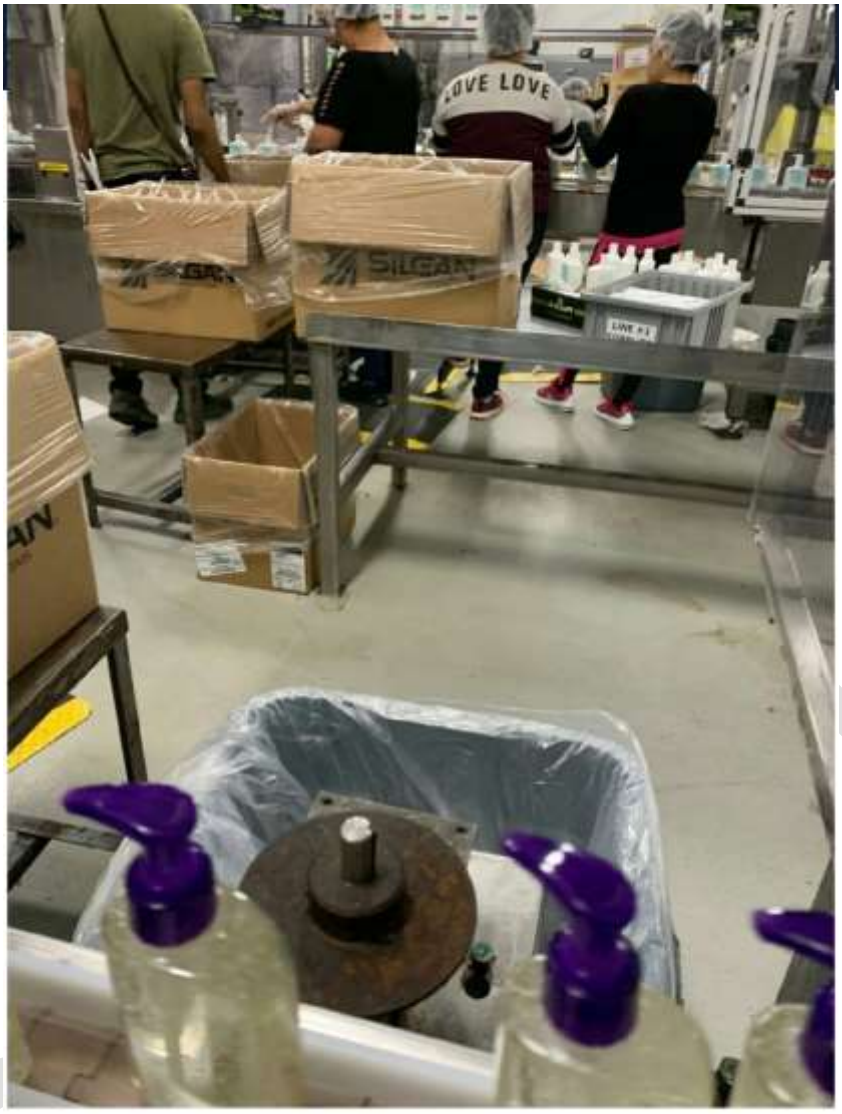
….

Three weeks after Boushee raised concerns, the outbreak at LM Wind Power was so widespread that North Dakota's Department of Health issued an executive order mandating all plant employees remain under quarantine for two weeks."[241] (Emphasis added).

[240] https://www.nbcnews.com/news/us-news/midwest-manufacturing-workers-sound-alarm-over-covid-19-outbreaks-n1207391

"TPI Composites, Inc. Provides Update on COVID-19 Testing Results of Its Newton, Iowa Associates
May 2, 2020. SCOTTSDALE, Ariz., May 02, 2020 (GLOBE NEWSWIRE) -- TPI Composites, Inc. (Nasdaq: TPIC), the only independent manufacturer of composite wind blades with a global footprint, announced today that it has completed COVID-19 testing on nearly all of its Newton, Iowa associates. Following an increase in COVID-19 cases in Jasper, Marshall, and Polk counties, as well as a significant number of positive cases in our plant in Newton, Iowa, and in collaboration with the State of Iowa, TPI proactively conducted mandatory COVID-19 testing for nearly all of its associates at its Newton facility on April 25, 2020. During this time, TPI paused production and undertook another deep clean of the facility. TPI also provided all associates' family members with surgical masks to help prevent further community spread, and offered hotel rooms to associates who tested negative to allow for isolation. TPI has received the majority of the test results and approximately 20% of its Newton associates have tested positive to date, which is representative of test results in the broader community."

[241] https://www.nbcnews.com/news/us-news/midwest-manufacturing-workers-sound-alarm-over-covid-19-outbreaks-n1207391



Workers are shown on the manufacturing line at Voyant Beauty in late March. The company makes soaps, lotions and beauty products for major brands in Countryside, Illinois. One temporary worker from Voyant has died from COVID-19, and others said the company hasn't done enough to keep them safe. Chicago Workers Collaborative

Above photo: "Workers are shown on the manufacturing line at Voyant Beauty in late March. The company makes soaps, lotions and beauty products for major brands in Countryside, Illinois. One temporary worker from Voyant has died from COVID-19, and others said the company hasn't done enough to keep them safe." (Emphasis added).

11. Construction.

The construction work environment contains various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

"Potential sources of exposure include having close contact with a coworker or member of the public who is ill with COVID-19 and touching your nose, mouth, or eyes after touching surfaces contaminated with the virus or handling items that others

infected with COVID-19 have touched."[242] (Emphasis added).

[Excerpt from April 27, 2020 NABTU (North American Building Trades Unions) and CPWR (CPWR – The Center for Construction Research and Training) COVID-19 Standards for U.S. Construction Sites]

"Respiratory protection: If workers need to be near each other to perform tasks or when working in close quarters, such as confined space work, they should wear a NIOSH-approved respirator implemented under a full respiratory protection program. NIOSH-approved respirators include filtering facepiece and elastomeric negative or positive pressure half or full facepiece respirators equipped with N95, N99, N100, R95, P95, P99, or P100 filters. Cloth face coverings are not respirators and do not replace physical distancing or respirators required when workers are in close proximity. However, cloth face coverings should be provided in other circumstances when required or recommended by state or local governments."[243]

[Excerpt from April 30, 2020 Associated General Contractors (AGC) response to "NABTU COVID-19 Standards for U.S. Construction Sites"]

"Required Use of Respirators

In accordance with recent guidance issued by the CDC and OSHA, AGC recognizes that requiring workers to cover their mouths and noses will help with preventing the spread of COVID-19. Both agencies have recommended face coverings and/or face masks and not necessarily respiratory protection when social distancing cannot be achieved. It is our concern that the requirement, or mandate, to use respiratory protection will significantly increase the number of contractors who will be required to implement and maintain a written respiratory protection program as nearly every construction worker will, at some point, be required to work within six feet of a coworker to complete an assigned task.

Based on our review of the OSHA Guidance for Preparing Workplaces for COVID-19, which was prepared in partnership with the Department of Health and Human Services, construction would be considered low risk for most operations/tasks. According to the guidance, additional PPE is not recommended for workers in the low exposure risk group. It advises that workers in low risk occupations should continue to use the PPE, if any, that they would ordinarily use for other job tasks. And while some operations/tasks may fall into the medium risk category, the recommended PPE for this category does not specifically state respiratory protection must be worn. In fact, the OSHA guidance states that only in rare situations would workers in this risk category be required to use respirators. It is our belief that this level of protection is unnecessary, and that contractors allowing the use of some form of face covering or face mask will provide adequate protection to affected workers."[244] (Emphasis added).

[242] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/construction-workers.html
[243] https://www.cpwr.com/sites/default/files/NABTU_CPWR_Standards_COVID-19.pdf
[244] https://www.agc.org/sites/default/files/Files/Safety%20%26%20Health/NABTU%20Covid%204.30.20.pdf

Construction COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

NOTE: Reports are limited to Virginia and states contiguous to or near Virginia: North Carolina, Washington, DC, Maryland, West Virginia, Georgia, Pennsylvania, and Tennessee as construction contractors from those states are known to regularly conduct work in Virginia.

Charlotte Observer, May 22, 2020, "38 test positive for COVID-19 at uptown tower construction site, prompting a shutdown"

> "Thirty-eight workers at the construction site for an uptown apartment tower have tested positive for the coronavirus and the project has shut down temporarily, the general contractor said Friday.
>
> As a result of the spike in cases, most of which occurred in the past week, Hoar Construction decided to shut down the job site until June 1, Randall Curtis, the company's executive vice president and chief operating officer, said in a statement.
>
> While it is closed, Curtis said, Hoar will conduct a deep cleaning and sterilization of the site, which is along North College Street between 8th and 9th streets. Hoar will work with a third-party company to beef up screening on the site when it reopens, he said."
> ….
> It's the latest outbreak at a Charlotte construction site, after the general contractor for the expansion of the Charlotte Convention Center confirmed four positive COVID-19 cases on that site earlier this week.
> ….
> Curtis said up until now, Hoar has recommended the use of face coverings, but will now require it for all employees on the site. He said the company has taken a number of measures, including screening employees prior to entering the jobsite, adding handwashing and sanitation stations, and putting up social distancing markers."[245]

Newschannel5.com, Nashville, TN, May 21, 2020, "Mass testing at construction site reveals 74 workers with COVID-19"

> "Mass testing of workers at a Nashville construction site has revealed more than 70 cases of COVID-19. The Metro Health Department is monitoring the site on the campus of Montgomery Bell Academy, a prominent private school off West End Avenue. General Contractor Brasfield & Gorrie is overseeing construction of an athletic facility on the campus.
>
> Emails obtained by News Channel 5 Investigates reveal the "first positive

[245] https://www.charlotteobserver.com/news/business/biz-columns-blogs/development/article242928141.html

> case" on the site was discovered earlier this month. In one email, General Contractor Brasfield & Gorrie "confirmed multiple positive cases of COVID-19 among our subcontractor employees."
>
> The contractor then closed the site for five days for cleaning and testing of workers."[246]

WataugaDemocrat.com, Boone, NC, May 14, 2020, "16 App State construction workers test positive for COVID-19"

> "Appalachian State announced on May 14 that 16 subcontracted workers for a campus construction project have tested positive for COVID-19. The workers are not Watauga County residents."[247]

Baltimore Sun, Baltimore, MD, "As construction in Maryland continues amid coronavirus, some are grateful for work while others worry about safety"

> "They're staggering workers, trying to make sure there are fewer electricians, laborers and contractors on building sites at the same time. They're using video when possible to conduct meetings and site visits. But in the world of construction, workers don't always have masks, and they're almost all using the same portable toilets.
> ….
> The state health department said it does not track the number of cases on construction sites, but the Department of General Services said five construction sites are shut down due to possible COVID-19 threats.

WAMU.org, Washington, DC, May 6, 2020, "Construction Stops In Parts of the Air and Space Museum After Workers Contract COVID-19"

> "Four construction workers at the Smithsonian's National Air and Space Museum have tested positive for COVID-19, leading parts of the site to shutter for a "deep cleaning," the Huffington Post reports."[248]

WSLS.com, Roanoke, VA, May 5, 2020, "25 COVID-19 cases connected to Cave Spring High School construction work"

> "ROANOKE, Va. – More than two dozen coronavirus cases are connected to construction work at a local high school, according to Roanoke County Public Schools officials.
>
> The president of Avis Construction, Troy Smith, spoke to the Roanoke County school board on Tuesday and reported as many as 25 cases of COVID-19 that are related to construction work at Cave Spring High School.

[246] https://www.newschannel5.com/news/newschannel-5-investigates/mass-testing-at-construction-site-reveals-74-workers-with-covid-19
[247] https://www.wataugademocrat.com/covid19/16-app-state-construction-workers-test-positive-for-covid-19/article_303494af-b54d-57f6-8b59-1d75b50b5843.html
[248] https://wamu.org/story/20/05/04/coronavirus-latest-dc-maryland-virginia-week-of-may4/#smithsonian

Smith told school board members that not all 25 cases are construction workers, but rather, some are family members of workers.

School officials told 10 News that most cases are in workers from different out-of-state subcontractors.

All work was halted at the Cave Spring High School construction site on Monday, per recommendation from the health department."[249]
(Emphasis added).

DCist.com, Washington, DC, April 30, 2020, "More COVID-19 Cases Reported At D.C. Construction Sites"

"More than a dozen COVID-19 cases have been reported at a residential construction site in Navy Yard, and it's not the only site with concerns. Fears over the virus spreading further at the renovation of a congressional office building could lead to a shorter workweek at the site to prevent the spread of the virus.

There have been between 14 and 18 positive COVID cases among construction workers at D.C. Crossing, an 818-unit residential building under construction in Navy Yard, a source tells DCist. (The source asked for anonymity to protect workers at the site who shared information.) A spokesperson for the Maryland-based Clark Construction Group, which is helming the project, confirmed that there had been positive cases in mid-April, but the infected workers had not been at the worksite since. The spokesperson did not confirm how many positive cases there had been.

'In each instance, Clark quickly performed contact tracing to identify areas of the project and workers that may have been impacted. We have kept the subcontractors and the developer informed of each confirmed case. We have worked with leadership from our subcontracting partners to ensure that workers who may have had contact with the affected individuals have taken appropriate measures in accordance with guidance provided by the CDC, including self-quarantining,' the spokesperson said.

'Through our thorough contact tracing and investigation, we have not been able to confirm where the individuals contracted COVID-19,' they added.
….
Over at the Cannon House Office Building, where Clark Construction is conducting an extensive renovation of the 120-year-old building, the possibility of two new positive cases has forced the contractor to close the site from Thursday through Sunday.
….
At least 11 workers at the Cannon House Office Building project have tested

[249] https://www.wsls.com/news/local/2020/05/06/25-covid-19-cases-connected-to-cave-spring-high-school-construction-work/

positive for COVID-19 so far, as DCist reported last week."[250]

Newsbreak.com, Baltimore, MD, "Worker at Havre de Grace school construction site dies from coronavirus; site shut down day prior when he tested positive"

> "Harford County schools and the company managing construction of the new Havre de Grace Middle/High School building shut down the site earlier this week after learning a contracted worker tested positive for the novel coronavirus. The worker died the next day."[251]

WJBF.com, April 16, 2020, "Plant Vogtle asking employees to voluntarily stay home amid COVID-19 outbreak"

> "Augusta, Ga. (WJBF) – Representatives at Plant Vogtle tell WJBF they have seen an increase recently in positive COVID-19 cases among the workforce at Units 3 and 4 with over 40 positive test results so far. As a result, Georgia Power is asking for volunteers among the craft worker ranks to stay at home during this COVID crisis."[252] (Emphasis added).

12. Air Transportation.

The air transportation work environment contains various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

"As a customer service representative or gate agent, potential sources of exposure could include assisting a person with COVID-19 in close contact or by touching your mouth, nose, or eyes; or handling passenger items, such as baggage, boarding passes, identification documents, credit cards, and mobile devices."[253] (Emphasis added).

"For baggage or cargo handlers, while the general risk remains low, potential sources of exposure could include surfaces touched or handled by a person with COVID-19 or by touching your mouth, nose, or eyes."[254] (Emphasis added).

"As an airport custodial staff, while the general risk remains low, potential sources of exposure could include handling solid waste or cleaning public facilities (such as waste bins, tables, chairs, basins, toilets) with which a person with COVID-19 has interacted or by touching your mouth, nose, or eyes."[255] (Emphasis added).

"As an airport passenger service worker, potential sources of exposure can occur from assisting, transporting, or escorting a person with COVID-19 and their belongings or by touching your mouth, nose, or eyes."[256]

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[250] https://dcist.com/story/20/04/30/more-covid-19-cases-reported-at-d-c-construction-sites/
[251] https://www.baltimoresun.com/coronavirus/cng-ag-hdg-school-covid-death-20200410-tuzdevg2s5ghjhdqngy6bdkw3u-story.html
[252] https://www.wjbf.com/csra-news/plant-vogtle-asking-employees-to-voluntarily-stay-home-amid-covid-19-outbreak/
[253] https://www.cdc.gov/coronavirus/2019-ncov/community/airport-customer-factsheet.html
[254] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/airport-baggage-cargo-handlers.html
[255] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/airport-custodial-staff.html
[256] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/airport-passenger-assistance-workers.html

"As an aircraft maintenance worker, you could be exposed to COVID-19 in situations such as when you have close contact with someone with COVID-19, when you touch surfaces while repairing aircraft interiors and lavatories that have been touched or handled by a person with COVID-19, or by touching your mouth, nose, or eyes."[257] (Emphasis added).

"As an airline catering kitchen worker, you could be exposed to COVID-19 in situations such as having close contact with someone with COVID-19 or touching your mouth, nose, or eyes after handling frequently touched items used by someone with COVID-19 such as catering or food service carts or solid waste."[258] (Emphasis added).

"As an airline catering truck driver or helper, you could be exposed to COVID-19 in situations such as having close contact with someone with COVID-19 or touching your mouth, nose, or eyes after handling frequently touched items used by someone with COVID-19 such as catering and food service carts, used non-disposable food service items (e.g., utensils and serving trays), and solid waste."[259] (Emphasis added).

"As an airport retail or food service worker, potential sources of exposure can occur while working in an airport store, bar, restaurant, or food concession stand if you are if in close contact with someone with COVID-19 or by touching your mouth, nose, or eyes after handling items used by someone with COVID-19."[260] (Emphasis added).

Air Transportation COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Travelandleisure.com, March 27, 2020, "American and United Airlines Both Lose Employees to Coronavirus in Same Week"

> "Both American and United Airlines lost employees this week due to complications from the coronavirus. American Airlines flight attendants received the news of the death of their colleague — Paul Frishkorn — on Thursday evening in a joint letter from the airline's senior VP of flight service and presidents of the Association of Professional Flight Attendants (APFA).
>
> A spokesperson for United also confirmed the death of their employee — Carlos Consuegra, a United ramp worker at Newark Liberty Airport — to T+L. Consuegra passed away earlier this week.[261]

The 65-year-old Philadelphia-based flight attendant had worked with American Airlines since 1997. He had been twice honored as one of the airline's Flight Service

[257] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/aircraft-maintenance-workers.html
[258] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/airline-catering-kitchen-workers.html
[259] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/airline-catering-truck-drivers.html
[260] https://www.cdc.gov/coronavirus/2019-ncov/community/airport-retail-factsheet.html
[261] https://www.travelandleisure.com/airlines-airports/american-united-airlines-confirm-employee-deaths-coronavirus

Champions for excellent customer service. He was also a union representative with the APFA.

NBCnews.com, April 29, 2020, "TSA says 500 of its employees have tested positive for COVID-19"

> "Five hundred people who work for the Transportation Security Administration have tested positive for COVID-19, including four people who died from the disease, the agency said Wednesday.
>
> Of the 500 who tested positive, 208 recovered from the illness caused by the coronavirus, the agency said in a statement.
>
> Almost 40 percent of positive cases were found in employees working in the three major airports serving the greater New York City region."[262]

USAToday.com, May 3, 2020, "COVID-19 deaths among FedEx workers in Newark leave families, employees questioning company's response"

> "Pamela Pope spent her days doing a mix of work at FedEx's Newark Liberty International Airport facility, from office work to deliveries and helping unload cargo from the dozens of planes flying in and out every day. It was a job she loved, and one the 56-year-old from Neptune, New Jersey, had done for more than half her life.
> ….
> Pope died of coronavirus on April 25, her sister said.
>
> The day prior, eight FedEx Express domestic workers' deaths were cited in an internal document obtained by the Memphis Commercial Appeal and Bergen Record.
>
> At least five fatalities have occurred in Newark, according to family members who spoke with reporters from both newspapers. The death of a sixth person, identified as a FedEx Newark worker on her personal LinkedIn and Facebook accounts, was also attributed to COVID-19 complications in the social media posts of family members. Attempts to reach that family were unsuccessful."[263]

Tsa.gov, May 31, 2020, "TSA Confirmed COVID-19 Cases"

> "Overall, TSA has had 621 federal employees test positive for COVID-19. 423 employees have recovered, and 6 have unfortunately died as a result of the virus. We have also been notified that one screening contractor has passed away due to the virus."[264]

[262] https://www.nbcboston.com/news/national-international/tsa-says-500-of-its-employees-have-tested-positive-for-covid-19/2115915/
[263] https://www.usatoday.com/story/news/nation/2020/05/02/coronavirus-least-8-fatal-cases-fedex-workers-complaints-mount/3071150001/
[264] https://www.tsa.gov/coronavirus

UPDATE: January 4, 2020[265]

"Since the beginning of the pandemic, TSA has cumulatively had 5,154 federal employees test positive for COVID-19. 4,303 employees have recovered, and 12 have unfortunately died after contracting the virus. We have also been notified that one screening contractor has passed away due to the virus."

13. Ground Transportation.

The ground transportation work environment contains various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

Long-haul Truck Drivers – "As a long-haul truck driver, you spend many hours alone in the cab of your truck. However, there are times when you will be at increased risk of exposure to COVID-19. For long-haul truck drivers, potential sources of exposure include having close contact with truck stop attendants, store workers, dock workers, other truck drivers, or others with COVID-19, and touching your nose, mouth, or eyes after contacting surfaces touched or handled by a person with COVID-19."[266] (Emphasis added).

Bus Transit Operators – "For bus transit operators, potential sources of exposure include having close contact with a bus passenger with COVID-19, by contacting surfaces touched or handled by a person with COVID-19, or by touching your mouth, nose, or eyes.[267] (Emphasis added).

Rail Transit Operators – "For rail transit operators, potential sources of exposure include having close contact with a passenger with COVID-19, by contacting surfaces touched or handled by a person with COVID-19, or by touching your mouth, nose, or eyes."[268] (Emphasis added).

Transit Maintenance Workers – "For transit maintenance workers, potential sources of exposure include close contact with a coworker with COVID-19, contacting surfaces touched or handled by a person with COVID-19, or by touching your mouth, nose, or eyes."[269] (Emphasis added).

Transit Station Workers – "For transit station workers, potential sources of exposure include having close contact with a transit passenger with COVID-19, by touching surfaces contaminated with coronavirus, or by touching your mouth, nose, or eyes."[270] (Emphasis added).

Mail and Parcel Delivery Workers – "As a mail and parcel delivery driver, potential sources of exposure include having close contact with co-workers or delivery recipients, or when you touch surfaces touched or handled by a person who has

[265] https://www.tsa.gov/coronavirus
[266] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/long-haul-trucking.html
[267] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/bus-transit-operator.html
[268] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/rail-transit-operator.html
[269] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/transit-maintenance-worker.html
[270] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/transit-station-workers.html

COVID-19."[271] (Emphasis added).

Rideshare, Taxi, Limo, and other Passenger Drivers-for-Hire – "As a driver-for-hire, potential sources of exposure include having close contact with passengers with COVID-19, or touching surfaces touched or handled by a person with COVID-19."[272] (Emphasis added).

Food and Grocery Pick-up and Delivery Drivers – "Potential sources of exposure include having close contact with individuals with COVID-19 when picking up or delivering food or groceries, or by touching surfaces touched or handled by a person with COVID-19." [273] (Emphasis added).

"Coronavirus in the United States—Considerations for Travelers
….
Travel increases your chances of getting and spreading COVID-19. We don't know if one type of travel is safer than others; however, airports, bus stations, train stations, and rest stops are all places travelers can be exposed to the virus in the air and on surfaces. These are also places where it can be hard to social distance (keep 6 feet apart from other people)….

- Air travel: Air travel requires spending time in security lines and airport terminals, which can bring you in close contact with other people and frequently touched surfaces. Most viruses and other germs do not spread easily on flights because of how air circulates and is filtered on airplanes. However, social distancing is difficult on crowded flights, and you may have to sit near others (within 6 feet), sometimes for hours. This may increase your risk for exposure to the virus that causes COVID-19.
- Bus or train travel: Traveling on buses and trains for any length of time can involve sitting or standing within 6 feet of others…."[274] (Emphasis added).

Ground Transportation COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Thecity.nyc, New York City, April 7, 2020 "Bus Drivers Hardest Hit by Deaths as COVID-19 Devastates MTA"

> "For 15 years, Ernesto Hernandez drove MTA buses around his home borough of Brooklyn, based out of the Jackie Gleason depot in Sunset Park.
> ….
> Hernandez, 57, kept that routine, his son said, until he started to feel lousy on March 20. 'He thought it was allergies,' Jimenez said. A little more than a week later, Hernandez became one of the MTA's first COVID-19 fatalities

[271] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/mail-parcel-drivers.html
[272] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/rideshare-drivers-for-hire.html
[273] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/food-grocery-drivers.html
[274] https://www.cdc.gov/coronavirus/2019-ncov/travelers/travel-in-the-us.html

during the pandemic — and one of seven bus operators, so far, to die from coronavirus.

Among the at least 33 subway and bus workers who have died from COVID-19, the MTA's bus drivers have taken the biggest hit in an agency with more than 74,000 employees.

By comparison, the NYPD has lost 13 members to COVID-19 from a workforce of more than 55,000 people, while the FDNY has suffered two deaths among its more than 40,000 employees."[275] (Emphasis added).

Theguardian.com, April 20, 2020, "Revealed: nearly 100 US transit workers have died of Covid-19 amid lack of basic protections"

"Interviews with union officials, workers and transit authorities in a dozen major cities reveal that:

- At least 94 transit workers have succumbed to coronavirus, according to two national transit unions, New York City transit officials, and workers in New Orleans. This number includes many kinds of workers who keep transit systems running, from mechanics and maintenance workers to bus and subway operators. The number of all transit workers who have died of coronavirus across the US is likely higher.

- The New York City area has seen the majority of American transit worker deaths, with 68 fatalities among employees of the Metropolitan Transportation Authority as of Friday afternoon. Nearly 2,500 MTA transit employees had tested positive, and more than 4,000 were in quarantine, a spokesman said.

- At least 24 more transit union members have died in other cities, according to two major transit unions. Bus drivers have died from coronavirus in Boston; Chicago; St Louis; Detroit; Seattle; Newark and Dover, New Jersey; Richmond, Virginia; and Washington DC, among others. In New Orleans, city bus drivers said they had lost three colleagues to coronavirus, only one of them a union member."[276] (Emphasis added).

14. Water Transportation.

The water transportation work environment contains various hazards and job tasks which present "high", "medium" (close contact) and "lower" risk exposures:

NOTE: Cruise ships provide medical services for passengers, including known or suspected COVID-19 passengers and crew.

[275] https://www.thecity.nyc/health/2020/4/7/21216831/bus-drivers-hardest-hit-by-deaths-as-covid-19-devastates-mta
[276] https://www.theguardian.com/world/2020/apr/20/us-bus-drivers-lack-life-saving-basic-protections-transit-worker-deaths-coronavirus

Water Transportation COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

ABCnews.go.com, April 14, 2020, "Employees sue Celebrity Cruises over COVID-19 response"

> "A class action lawsuit filed Tuesday on behalf of over a thousand Celebrity Cruises employees alleges the company failed to protect its crew members working aboard ships amid the novel coronavirus outbreak.
>
> The suit comes less than two weeks after a crew member working on the Celebrity Infinity died after being medically evacua**ted** by the U.S. Coast Guard. The USCG confirmed the employee had coronavirus-like symptoms.
> ….
> According to the CDC, over the last two months outbreaks on three cruise ships have caused more than 800 confirmed cases of coronavirus in the United States among passengers and crew, including 10 deaths."[277]

Businessinsider.com, April 12, 2020, "All the cruise ships that have had confirmed cases of COVID-19 onboard"

> "….Here's a look at the cruise ships at the center of the coronavirus crisis on the high seas:"[278]

[277] https://abcnews.go.com/Business/cruise-employees-sue-celebrity-covid-19-response/story?id=70147214
[278] https://www.businessinsider.com/cruise-ships-with-confirmed-covid-19-cases-during-coronavirus-pandemic-2020-4

Cruise ships with COVID-19 outbreaks

SHIP	PARENT COMPANY	CONFIRMED COVID-19 CASES
Diamond Princess	Carnival Corp.	712
Ruby Princess	Carnival Corp.	612
Oasis of the Seas	Royal Caribbean Cruises	157
Grand Princess	Carnival Corp.	78
Celebrity Eclipse	Royal Caribbean Cruises	76
MS A'Sara	Gate 1 Travel	45
Disney Wonder	Walt Disney Company	38
Costa Luminosa	Carnival Corp.	36
Symphony of the Seas	Royal Caribbean Cruises	31
Artania	Phoenix Reisen	27
Voyager of the Seas	Royal Caribbean Cruises	26
Ovation of the Seas	Royal Caribbean Cruises	23
Carnival Freedom	Carnival Corp.	14
Celebrity Solstice	Royal Caribbean Cruises	11
Zaandam	Carnival Corp.	9
World Dream	Genting Hong Kong	8
Silver Explorer	Royal Caribbean Cruises	6
Costa Favolosa	Carnival Corp.	6
MS Braemar	Bonheur ASA	5
Marella Explorer 2	TUI Group	5
Majesty of the Seas	Royal Caribbean Cruises	2
Costa Magica	Carnival Corp.	2
Celebrity Apex	Royal Caribbean Cruises	2
MSC Opera	Mediterranean Shipping Company	2
Jewel of the Seas	Royal Caribbean Cruises	2
Sun Princess	Carnival Corp.	1
Carnival Valor	Carnival Corp.	1
Celebrity Infinity	Royal Caribbean Cruises	1
Explorer of the Seas	Royal Caribbean Cruises	1
Norwegian Bliss	Norwegian Cruise Line Holdings	1
Norwegian Breakaway	Norwegian Cruise Line Holdings	1
Silver Shadow	Royal Caribbean Cruises	1
Costa Victoria	Carnival Corp.	1
Norwegian Encore	Norwegian Cruise Line Holdings	1
MSC Fantasia	Mediterranean Shipping Company	1

Sources: CDC; The Guardian; KUSI; NBC News; CNN; Independent; Western Australia DOH; The New South Wales Ministry of Health; Australian Broadcasting Corporation; Holland America PR; Miami Herald; COVID-19 Cruise Tracker; NY Times; USA Today; Seatrade Cruise News; WKBN; South Florida Sun Sentinel; SILive.com; WESH; TUI Group; Cruise Law News; The Daily Mail; Axios

Updated as of April 9, 2020.

BUSINESS INSIDER

15. Post-Secondary and Higher Education.

The post-secondary and higher education work environments contains various hazards and job tasks which present "high", "medium" (close contact) and "lower" risk exposures:

NOTE: Many colleges and universities provide on campus medical services for suspected covid-19 students. College and university affiliated hospitals provide medical services for suspected COVID-19 and COVID-19 positive students and members of the general public.

"Considerations for Institutes of Higher Education (IHE)
….
The more an individual interacts with others, and the longer that interaction, the higher the risk of COVID-19 spread. The risk of COVID-19 spread increases in IHE non-residential and residential (i.e., on-campus housing) settings as follows:

- Lowest Risk: Faculty and students engage in virtual-only learning options, activities, and events.
- More Risk: Small in-person classes, activities, and events. Individuals remain spaced at least 6 feet apart and do not share objects (e.g., hybrid virtual and in-person class structures or staggered/rotated scheduling to accommodate smaller class sizes).
- Highest Risk: Full-sized in-person classes, activities, and events. Students are not spaced apart, share classroom materials or supplies, and mix between classes and activities."[279]

Post-secondary and Higher Education COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

WBEZ.org, April 2, 2020, "A City Colleges Of Chicago Employee Has Died Of COVID-19. Staffers Say Conditions Are Unsafe."

> "Employees at Wright College, one of the City Colleges of Chicago, are mourning the death of a campus clerical worker, Carmelita Cristobal, who died of complications from COVID-19 on March 30. Employees remembered Cristobal as a beautiful person. 'If you needed help, she helped you,' said Audrey Butler, executive vice president of the clerical workers. Butler worked with Cristobal, who was 71, for years. She said Cristobal's husband had contracted the virus as well.
>
> Staffers are accusing City Colleges' leadership of failing to do enough to ensure employee safety. At least nine cases have been confirmed at multiple campuses so far. Union leaders representing faculty and staff painted a chaotic picture of safety protocols across the seven colleges during a virtual press

[279] https://www.cdc.gov/coronavirus/2019-ncov/community/colleges-universities/considerations.html

conference Thursday."[280]

Clickondetroit.com, Detroit, MI, "Wayne State University employee studying at college for degree in sociology dies from coronavirus"

> "A Wayne State University employee who was also studying for a degree in sociology at the college died from complications related to the coronavirus, WSU president Roy Wilson announced Saturday.
>
> Darrin Adams worked at WSU for almost six years as a custodian primarily in the Manoogian Hall.
>
> 'This pandemic has hit Detroit hard, and we have all watched with great concern as the cases in our city have mounted. Unfortunately, our campus is not immune. We have had a number of cases, and now we mourn the loss of one of our employees.'"[281]

16. Child Care Programs, Pre-school, Elementary, and Secondary Education.

The child care, pre-school, elementary, secondary education work environments contains various hazards and job tasks which present "high", "medium" (close contact) and "lower" risk exposures:

NOTE: Some schools provide on campus medical/nursing services for suspected COVID-19 students.

School Nutrition Professionals – "For school nutrition professionals…working in meal preparation and/or distribution at a school/school district site or other public settings, potential sources of exposure include close contact with co-workers, students, and families with COVID-19 and touching your nose, mouth, or eyes after touching contaminated surfaces or handling items that others infected with COVID-19 have touched. Currently there is no evidence to support transmission of COVID-19 is spread through food."[282] (Emphasis added).

US K-12 Schools and Child Care Programs – "Schools, working together with local health departments, have an important role in slowing the spread of diseases to help ensure students have safe and healthy learning environments. Schools serve students, staff, and visitors from throughout the community. All of these people may have close contact in the school setting, often sharing spaces, equipment, and supplies.

Information about COVID-19 in children is somewhat limited, but the information that is available suggests that children with confirmed COVID-19 generally had mild symptoms. Person-to-person spread from or to children, as among adults, is thought to occur mainly via respiratory droplets produced when an infected person coughs,

[280] https://www.wbez.org/stories/a-city-colleges-of-chicago-employee-has-died-of-covid-19-staffers-say-conditions-are-unsafe/4e12e670-cd2b-4d32-9352-a4bbe9aa9708
[281] https://www.clickondetroit.com/news/local/2020/04/04/wayne-state-university-employee-studying-at-college-for-degree-in-sociology-dies-from-coronavirus/
[282] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/school-nutrition-professionals.html

sneezes, or talks. Recent studies indicate that people who are infected but do not have symptoms likely also play a role in the spread of COVID-19.

However, a small percentage of children have been reported to have more severe illness. Older adults and people who have serious underlying medical conditions are at highest risk of severe illness from COVID-19. Despite lower risk of serious illness among most children, children with COVID-19-like symptoms should avoid contact with others who might be at high risk for severe illness from COVID-19.[283] (Emphasis added).

Child Care Programs, Pre-school, Elementary, and Secondary Education.COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

WTVR.com, Richmond, VA, May 27, 2020, "Richmond principal diagnosed with COVID-19; his wife hospitalized"

> "Parents and students who picked-up computers or supplies from Richmond's Mary Munford Elementary School over the last two weeks have been asked to self-isolate for 14 days.
>
> That's because the school's principal Greg Muzik was at those events and has since tested positive for COVID-19.
>
> 'The only time that we've had any kind of event of any kind where I was around a lot of people was the computer distribution,' Muzik told CBS 6 via Zoom on Wednesday. Muzik notified parents about his diagnosis on the school's PTA website.
>
> 'Both my wife and I have tested positive for COVID," he wrote. 'So far I am doing just fine and just isolating at home.'
> ….
> The school system indicated the employee was asymptomatic while attending events at the school."[284]

ABC7ny.com, New York City, NY, May 11, 2020, "Coronavirus News: 30 teachers among 74 DOE employees to die of COVID-19"

> The New York City Department of Education said it has now lost 74 employees to COVID-19. On Monday, official announced the two new deaths. All but four of the 74 DOE employees who died were based in schools across the city. The other 70 school-based employees include:

[283] https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/guidance-for-schools.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fspecific-groups%2Fguidance-for-schools.html

[284] https://www.wtvr.com/news/local-news/richmond-principal-diagnosed-with-covid-19-families-told-to-self-isolate

- 28 are paraprofessionals
- 30 are teachers
- 2 are food service staffers
- 2 are administrators
- 2 are facilities staff
- 2 are school aides
- 2 are guidance counselors
- 1 is a parent coordinator
- 1 is a School Computer Technology Specialist[285]

Blog.edweek.org, April 30, 2020, "A Third of Teachers Are at Higher Risk of Severe Illness From COVID-19"

> "As states begin to consider what reopening schools might look like, a new analysis of federal data warns that teachers could be more susceptible to severe illness from COVID-19.
>
> About 29 percent of teachers are aged 50 and older, federal data show. Older adults are at higher risk for severe illness from COVID-19—92 percent of deaths related to the disease in the United States were of people aged 55 and older, and that age group also has higher rates of coronavirus-related hospitalizations than younger adults. And as the brief report by the research group Child Trends points out, teachers have significantly more social contact than the average adult, since they're in close quarters with dozens of students every day.
>
> Already, teachers' workplaces rank among the "germiest"—one study found that teachers have nearly 27 times more germs on their computer keyboards than other professions studied. Teachers report that they frequently come down with colds and other garden-variety illnesses over the course of the school year. After all, children are "effective transmitters of respiratory germs," Donna Mazyck, the executive director of the National Association of School Nurses, told Education Week earlier this year.
>
> The immune system naturally deteriorates with age, the Child Trends report notes. Also, teachers are more likely to report being stressed at work than average people, and some research suggests that stress can weaken the immune system."[286]

17. Restaurants and Bars.

The restaurants and bars work environment contains various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

[285] https://abc7ny.com/teacher-deaths-doe-department-of-education-schools/6173896/

[286] https://blogs.edweek.org/teachers/teaching_now/2020/04/a_third_of_teachers_are_at_higher_risk_of_severe_illness_from_covid-19.html

"The more an individual interacts with others, and the longer that interaction, the higher the risk of COVID-19 spread. The risk of COVID-19 spread increases in a restaurant or bar setting as follows:

- Lowest Risk: Food service limited to drive-through, delivery, take-out, and curb-side pickup.
- More Risk: Drive-through, delivery, take-out, and curb-side pickup emphasized. On-site dining limited to outdoor seating. Seating capacity reduced to allow tables to be spaced at least 6 feet apart.
- Even More Risk: On-site dining with both indoor and outdoor seating. Seating capacity reduced to allow tables to be spaced at least 6 feet apart.
- Highest Risk: On-site dining with both indoor and outdoor seating. Seating capacity not reduced and tables not spaced at least 6 feet apart.[287]

Restaurants and Bars COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

CNN.com, May 24, 2020, Ozarks, MI, "Pool party at Lake of the Ozarks in Missouri draws a packed crowd"

> "Video posted by a reporter shows partiers [at a bar] crowded together in a pool at the Lake of the Ozarks, Missouri, this Memorial Day weekend.
> ….
> The gathering violates social distancing measures intended to limit the spread of Covid-19. As part of Missouri's reopening plan announced earlier this month, state officials said restaurants may offer dining-in services but must adhere to social distancing and other precautionary public health measures.

[287] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/business-employers/bars-restaurants.html

> The bar posted on Facebook that this was its launch of a summer party called 'Zero Ducks Given Pool Party." It advertised several DJs and bands performing throughout the event. The venue has worked with and taken the advice of government officials and management teams and will be following social distancing guidelines. Extra precautions and safety measures will be taken to provide a safe environment for you to enjoy the event,' the bar said.

USAtoday.com, May 29, 2020, "Lake of the Ozarks pool partier tests positive for coronavirus"

> "SPRINGFIELD, Missouri -- A week after images of Memorial Day weekend revelers jammed into a Lake of the Ozarks pool party at Backwater Jack's Bar & Grill in Osage Beach made international headlines, the Camden County Health Department announced that a Boone County resident tested positive for the novel coronavirus after visiting the Lake of the Ozarks area over the holiday weekend.
>
> The Boone County subject arrived at the lake on Saturday, May 23, and "developed illness" on Sunday, according to a news release obtained by LakeNewsOnline.com, which like the News-Leader is part of the USA TODAY Network.
>
> The infected person "was likely incubating illness and possibly infectious at the time of the visit," the health department said."[288]

Ny.eater.com, May 22, 2020, "Coronovirus, Those We've Lost"

> "In NYC, where COVID-19 has hit harder than anywhere else in the country, the number of people dying in the restaurant industry is growing.
> …
> Only three weeks after COVID-19 cases were confirmed in New York City, the metropolis became the epicenter of the virus in the United States. Restaurants and bars completely shut down for dine-in service on March 16. And weeks later, the virus has shown a dramatic and tragic impact on people within the dining community.
>
> Top chefs and restaurateurs like Floyd Cardoz, neighborhood stalwarts like butcher Moe Albanese, and lesser-known, behind-the-scene chefs like Jesus Roman Melendez from Jean-Georges Vongerichten's Nougatine have all died due to the virus. As of Thursday, May 21, in NYC, more than 200,000 people have tested positive for COVID-19 and 20,491 people have died.
> ….
> Jimmy Glenn, 89, bar owner
> ….
> Lloyd Porter, 49, restaurateur

[288] https://www.usatoday.com/story/news/health/2020/05/29/lake-ozarks-pool-party-missouri-resident-coronavirus/5288079002/

….
Michael Halkias, 82, event space owner
….
Jonathan Adewumi, 57, restaurateur
….
Victor Morales, 33, bar assistant
….
Deodoro Monge Gutierrez, chef and restaurateur
….
Miguel Grande, 52, chef
….
Domingo Vega, 45, restaurateur and chef
….
Vincent Mesa, 76, chef
….
Vincent Cirelli Sabatino, 68, food vendor
….
Jose Torres, 73, chef and restaurateur
….
Miguel Torres, chef
….
Samuel Hargress, Jr., 84, bar owner
….
Panayiotis Peter Panayiotou, 65, restaurateur
….
Kathleen Elizabeth McNulty, 80, restaurateur
….
Joe Joyce, 74, bar owner
….
Moe Albanese, 95, butcher
….
Kamal Ahmed, 69, hotel banquet worker
….
Joseph Migliucci, 81, restaurateur
….
Kosta Kasimis, 84, restaurateur
….
Jesus Roman Melendez, 49, chef
….
Andreas Koutsoudakis, 59, restaurateur
….
Floyd Cardoz, 59, restaurateur and chef"[289]

18. Grocery Store and Food Retail (Including General Retail).

The grocery store and food retail work environments contain various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

[289] https://ny.eater.com/2020/5/6/21229781/nyc-coronavirus-death-restaurant-workers-chefs

"As a grocery or food retail worker, potential sources of exposures include close contact for prolonged periods of time with a customer with COVID-19 and touching your nose, mouth, or eyes after handling items, cash, or merchandise that customers with COVID-19 have touched."[290]

Grocery Store and Food Retail COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Boston.com, May 27, 2020, Quoting story from the *Washington Post*, "COVID-19 has killed 100 grocery store workers. Vitalina Williams was one of the first."

> "The couple [David and Vitalina Williams] worked at grocery stores near their Salem home: Vitalina Williams as a cashier at a Market Basket in Salem and security at a Walmart in Lynn, while David Williams stocked shelves at a Market Basket in Danvers. When the coronavirus pandemic hit the United States in March, they were concerned but needed to pick up extra hours to pay bills**.** Both were given gloves but no masks.
>
> By the end of March, both were sick with COVID-19, the disease the virus causes. He recovered quickly, but her condition continued to deteriorate. On March 28, she was hospitalized and put on a ventilator. A week later, she died. Vitalina Williams was 59.
>
> "As somebody who shared everything with her, it rattles in the back of my head, 'Did I give it to her?' " he said. "'Did I get it first and give it to her, or did she give it to me?' To be honest, I don't know."
>
> The Williamses' jobs were deemed essential — putting them at grave risk of infection. At least 5,500 grocery store employees have tested positive for the novel coronavirus since late March, according to a recent Washington Post investigation and 100 workers have died of the virus. Vitalina Williams was one of the first.
> ….
> David Williams stocks shelves, constantly changing out of his latex gloves as he wears holes into them. He isn't sure whether his wife regularly wore gloves or whether she caught the virus at work. But two other employees at the Market Basket location where Vitalina Williams worked tested positive around the time she died."[291] (Emphasis added).

Richmond.com, Richmond, VA, May 15, 2020, "Half of people around Richmond aren't wearing masks to go to the store. We counted."

[290] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/grocery-food-retail-workers.html
[291] https://www.boston.com/news/coronavirus/2020/05/27/covid-19-has-killed-100-grocery-store-workers-vitalina-williams-was-one-of-the-first

"After weeks of saying that healthy people didn't need to wear masks in public, elected leaders and health officials across the country in April reversed course and began recommending them in stores and places where it's difficult to stay 6 feet apart. You can't get on a plane or in an Uber without one. People are required to wear one when they leave home in New York.

But in Virginia, you can still get into a Walmart, or a Home Depot or an ABC store with an uncovered face.

Richmond Times-Dispatch reporters spent nearly 15 hours observing nearly 2,900 people entering stores for groceries and other supplies in the city and neighboring localities this week. More than half — 1,480 — didn't wear a mask or other face covering. Two dozen more were doing it wrong: A woman walked into the Home Depot in Chester on Wednesday with a black headband wrapped behind her neck and over her mouth, with nothing covering her nose.
….
A recent study and computer model from the University of California, Berkeley's International Computer Science Institute and Hong Kong University of Science and Technology suggested that if 80% of people would wear masks in public, the spread of the coronavirus would plummet. But the impact of masks falls dramatically in the model if the rate of people using them dips below 50%.
….
The message on masks has been jumbled since the coronavirus spread here in March: Officials with the U.S. Centers for Disease Control and Prevention and the World Health Organization initially said people shouldn't wear them, as the world grappled with a shortage of specialized N95 masks for medical personnel and first responders.

The agencies reversed course last month, announcing that face coverings can help keep people from infecting others — even if they don't protect the wearer."[292] (Emphasis added).

9news.com, Colorado, May 16, 2020, "Costco & Walmart among grocery stores with COVID-19 outbreaks"

"There are now six grocery stores with COVID-19 outbreaks in Colorado.

Data released from the Colorado Department of Health and Environment (CDPHE) on Wednesday shows 67 confirmed COVID-19 staff cases in grocery stores throughout Colorado, four probable staff cases and three deaths.
….
These are the six grocery stores in Colorado with COVID-19 outbreaks:

King Soopers - 1155 E. 9th Ave., Denver, 8 confirmed staff cases
Costco - 1470 South Havana St., Aurora, 6 confirmed staff cases

[292] https://www.richmond.com/special-report/coronavirus/half-of-people-around-richmond-arent-wearing-masks-to-go-to-the-store-we-counted/article_7cd4a541-986b-5a1e-b4e9-b0e7f99147d3.html

Walmart - 14000 E. Exposition Ave., Aurora, 14 confirmed staff cases and 3 deaths
Mi Pueblo Market, 9171 Washington St., Thornton, 19 confirmed staff cases
Carniceria Sonora, 347 N. 1st St., Montrose, 7 confirmed staff cases
City Market, 400 N. Parkway, Breckenridge, 13 confirmed staff cases and 4 probable staff cases"[293] (Emphasis added).

Businessinsider.com, April 13, 2020, "At least 30 grocery store workers have died from the coronavirus, and their colleagues are pleading for shoppers to wear masks and respect social distancing"

" At least 30 grocery store workers have died from the coronavirus so far, and at least 3000 have stopped working because they've been exposed or gotten sick.

In a media call on Monday, the United Food and Commercial Workers International Union, or UFCW, told journalists that over 30 of its members had died from the coronavirus. UFCW, which represents about 1.3 million grocery store workers and food processing workers, is pushing for increased protection from the government for its members. The union is asking the CDC to classify grocery workers as first responders, and to give them priority for testing and protective equipment.

Those 30 deaths are only the ones the union has accounted for, said UFCW president Marc Perrone. There are many chains, such as Whole Foods and Trader Joe's, that aren't part of the union and aren't included in the data UFCW collects.
….
In a survey conducted by the UFCW of 5000 grocery store workers, 85% of respondents said they had seen customers violating social distancing guidelines."[294] (Emphasis added).

General Retail

Detroitnews.com, May 15, 2020, "Michiganians flock to Ohio to enjoy state's reopening"

"Ohio Gov. Mike DeWine on Friday restarted parts of his state's economy, with selected businesses opening for the first time since he issued a stay-at-home order on March 22 in response to the coronavirus emergency.

Michiganians like Hamade of Temperance flocked across the border for goods and services still not available in their own state. Dozens of vehicles bearing Michigan license plates were parked outside Toledo businesses that reopened Friday.

[293] https://www.9news.com/article/news/health/coronavirus/costco-walmart-among-grocery-store-covid-19-outbreaks/73-bde0be4d-e1e3-41f1-a56d-8cf2356d6dde
[294] https://www.businessinsider.com/grocery-store-worker-deaths-from-coronavirus-at-least-30-nationwide-2020-4

….
Hilary Wilcox said she understands that "Michigan is a little crazier" than Ohio as far as being impacted by the COVID-19 virus. Ohio has reported 26,954 COVID cases, with 1,581 deaths. That compares to 50,079 cases and 4,825 deaths in Michigan as of Friday.

"I'm just excited Ohio is opening up, and that I live close enough to drive here," said Wilcox, 31, who made the 75-mile trip from her Wixom home to enjoy her version of normal — an afternoon of lunch and shopping with her friend.
….
Rylee Rasmussen, 19, and her 14-year-old sister, Ragean Rasmussen, of Carleton in Monroe County said their shopping excursion Friday was their first since Whitmer imposed the original stay-at-home order March 24.

"It feels weird," Rylee Rasmussen said as she and her sister strolled through the Dick's Sporting Goods store in Franklin Park Mall. "We're not really looking for anything; we just wanted to get out."

Like most of the store's customers, the sisters did not wear masks.[295]

19. Drug Stores and Pharmacies.

The drug store and pharmacy work environments contain various hazards and job tasks which present “high”, “medium” (close contact) and “lower” risk exposures:

“Reduce risk during COVID-19 testing and other close-contact pharmacy care services

[295]Photo: Hilary Wilcox of Wixom spent Friday afternoon shopping at Franklin Park Mall in Toledo. (Photo: Max Ortiz, The Detroit News)” (Emphasis added).

Pharmacies that are participating in public health testing for COVID-19 should communicate with local and state public health staff to determine which persons meet the criteria for testing. State and local health departments will inform pharmacies about procedures to collect, store, and ship specimens appropriately, including during afterhours or on weekends/holidays. Some pharmacies are including self-collection options.

In the "CDC Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 (COVID-19) in Healthcare Settings," there is guidance for collecting respiratory specimens.

Pharmacy staff conducting COVID-19 testing and other close-contact patient care procedures that will likely elicit coughs or sneezes (e.g., influenza and strep testing) should be provided with appropriate PPE. Staff who use respirators must be familiar with proper use and follow a complete respiratory protection program that complies with OSHA Respiratory Protection standard (29 CFR 1910.134). Staff should also have training in the appropriate donning and doffing of PPE. Cloth face coverings should NOT be worn by staff instead of a respirator or facemask if more than source control is required."[296]

Drug Stores and Pharmacies COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Propublica.org, April 9, 2020, "Pharmacy Workers Are Coming Down With COVID-19. But They Can't Afford to Stop Working."

"A few days later, during routine calls to customers about medication ready for pickup, Peralta learned that the customer whom he had helped had tested positive for COVID-19. Peralta notified his manager that he may have been exposed to the virus. The manager checked with headquarters and told him to keep working, Peralta said.

Toward the end of March, Peralta and two colleagues started to come down with telltale symptoms: A loss of smell and taste. Fatigue. Body aches. He realized that he might be laid up for weeks — far longer than his sick pay would last.

….

Without sufficient safeguards, pharmacies could become vectors for spreading the coronavirus within communities, according to Denis Nash, a professor of epidemiology at the CUNY School of Public Health. "This is not a hospital setting per se, but it is a busy place where sick people may be going at a time when transmission of SARS-CoV-2 is high," he said."[297]

[296] https://www.cdc.gov/coronavirus/2019-ncov/hcp/pharmacies.html
[297] https://www.propublica.org/article/pharmacy-workers-are-coming-down-with-covid-19-but-they-cant-afford-to-stop-working

20. Personal Care, Personal Grooming, Salon, and Spa Services,

The personal care, personal grooming, salon, and spa services work environment contains various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

Personal Care, Personal Grooming, Salon, and Spa Services COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

CNN.com, Missouri, May 24, 2020, "A second hairstylist who worked while symptomatic potentially exposed 56 clients to Covid-19, officials say"

> "The Springfield-Greene Health Department announced Saturday that a second hairstylist tested positive for coronavirus, and may have exposed 56 clients at the same Great Clips salon. A day earlier, officials had said another hairstylist with coronavirus at the same salon potentially exposed 84 customers and seven coworkers. Both stylists had symptoms while at work, officials said. They did not provide details on their conditions or when they tested positive."[298] (Emphasis added).

CNN.com, Missouri, May 23, 2020, "A hairstylist worked while symptomatic and exposed 91 people to coronavirus"

> "A hairstylist with coronavirus worked for eight days this month while symptomatic, exposing as many as 91 customers and coworkers in Missouri, health officials said.
>
> 'In this instance, the 84 customers exposed got services from the hairstylist at Great Clips,' said Clay Goddard, director of the Springfield-Greene County Health Department. In addition to the customers, seven coworkers were also notified of exposure.
>
> It's unclear when the stylist tested positive but the infection is believed to have happened while traveling. The stylist worked May 12 through Wednesday, health officials said Friday. At the time, businesses such as barbershops and hair salons were allowed to operate in the state.
>
> 'The individual and their clients were wearing face coverings. The 84 clients potentially directly exposed will be notified by the Health Department and be offered testing, as will seven coworkers,' the Springfield-Greene County Health Department said in a statement.' It is the hope of the department that because face coverings were worn throughout this exposure timeline, no additional cases will result." [299]

[298] https://www.cnn.com/2020/05/24/us/missouri-hairstylists-coronavirus-clients-trnd/index.html
[299] https://www.cnn.com/2020/05/23/us/missouri-hairstylist-coronavirus-trnd/index.html

(Emphasis added).

ABC7News.com, California, May 7, 2020, "Coronavirus: First case of COVID-19 community spread in California tracked to nail salon, Newsom reveals in press conference"

> "The first case of community spread of novel coronavirus in California can be tracked back to a nail salon, Gov. Gavin Newsom revealed in a press conference Thursday.
>
> The announcement wasn't part of the governor's prepared remarks; he mentioned it in only in response to a question about why churches and salons aren't being allowed to open in Stage 2 of the state's reopening.
>
> 'This whole thing started in the state of California - the first community spread - in a nail salon. I just want to remind you, remind everybody, of that. I'm very worried about that.'
>
> 'Community spread' means the virus was locally contracted, not from traveling to a foreign country or by being in close proximity who recently traveled to a foreign country.
>
> The first case of community spread in California was known to have occurred in Solano County in February. The county told ABC7 News, 'Solano Public Health cannot confirm this information and we did not release this information when the first COVID-19 community spread occurred.'
>
> Nail salons, spas, barbershops and the like are included in Stage 3 of reopening. They are considered higher risk environments because the business necessitates close proximity between people. Newsom pointed out that nail technicians typically wear face masks and even sometimes gloves, yet COVID-19 was apparently still transmitted. That makes the reopening of such businesses particularly challenging."[300]

21. Sports and Entertainment, and Mass Gatherings.

The sports and entertainment venue work environments contain various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

"Large events and mass gatherings can contribute to the spread of COVID-19 in the United States via travelers who attend these events and introduce the virus to new communities. Examples of large events and mass gatherings include conferences, festivals, parades, concerts, sporting events, weddings, and other types of assemblies. These events can be planned not only by organizations and communities but also by individuals.

….

[300] https://abc7news.com/first-case-of-coronavirus-in-california-nail-salon-covid-nails/6161231/

Larger gatherings (for example, more than 250 people) offer more opportunities for person-to-person contact and therefore pose greater risk of COVID-19 transmission.
….
Based on what is currently known about the virus, spread from person-to-person happens most frequently among close contacts (within 6 feet).”[301]

Sports and Entertainment, and Mass Gatherings COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Bleacherreport.com, “Timeline of Coronavirus' Impact on Sports”

> “Saturday, March 14
>
> 10:44 p.m.: Cleveland State women's basketball head coach Chris Kielsmeier has tested positive for COVID-19, the school announced, per ESPN.
>
> 8:05 p.m.: ESPN's Adrian Wojnarowski and Stadium and The Athletic's Shams Charania reported that Detroit Pistons big man Christian Wood tested positive for the coronavirus. Per Charania, Wood "has shown no symptoms and is doing well." The 24-year-old played on March 7 against the Utah Jazz, who have two players (Rudy Gobert and Donovan Mitchell) who have tested positive for the coronavirus.
> ….
> Tuesday, March 17
> ….
> 3:57 p.m.: The Brooklyn Nets announced four players tested positive for the coronavirus. Only one of the four is showing symptoms. The organization says it's currently notifying anyone who has had known contact with the players, including recent opponents.
> ….
> Thursday, March 19
> ….
> 7:17 p.m.: Two Los Angeles Lakers players tested positive for COVID-19, per Shams Charania of Stadium and The Athletic. Mark Medina of USA Today reported Wednesday that "the majority" of Lakers players received tests that morning at the team's practice facility in El Segundo, California. Charania noted that the Lakers may test other players who did not take part in those tests.
>
> 6:11 p.m.: The Philadelphia 76ers announced three members of the organization have received positive tests for the coronavirus.”[302]

Richmond Times Dispatch, April 16, 2020, “Dozens protest social distancing orders as Virginia's death toll passes 200”

[301] https://www.cdc.gov/coronavirus/2019-ncov/community/large-events/mass-gatherings-ready-for-covid-19.html
[302] https://bleacherreport.com/articles/2880569-timeline-of-coronavirus-impact-on-sports

A Virginia Capitol Police officer asked demonstrators to maintain social distancing guidelines during Thursday's protest at Capitol Square. Organizers plan to hold another protest May 1.

DANIEL SANGJIB MIN/RTD

"A Virginia Capitol Police officer asked demonstrators to maintain social distancing guidelines during Thursday's protest at Capitol Square. Organizers plan to hold another protest May 1."

22. Homeless Shelters.

The homeless shelter work environments contain various hazards and job tasks which present "high", "medium" (close contact) and "lower" risk exposures:

"People experiencing homelessness are at risk for infection during community spread of COVID-19.
….
Continuing homeless services during community spread of COVID-19 is critical, and homeless shelters should not close or exclude people who are having symptoms or test positive for COVID-19 without a plan for where these clients can safely access services and stay.

Decisions about whether clients with mild illness due to suspected or confirmed COVID-19 should remain in a shelter, or be directed to alternative housing sites, should be made in coordination with local health authorities. Community coalitions should identify additional temporary housing and shelter sites that are able to provide appropriate services, supplies, and staffing. Ideally, these additional sites should include:

- Overflow sites to accommodate shelter decompression (to reduce crowding)

and higher shelter demands
- Isolation sites for people who are confirmed to be positive for COVID-19
- Quarantine sites for people who are waiting to be tested, or who know that they were exposed to COVID-19
- Protective housing for people who are at highest risk of severe COVID-19

Depending on resources and staff availability, non-group housing options (such as hotels/motels) that have individual rooms should be considered for the overflow, quarantine, and protective housing sites."[303]

Homeless Shelter COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Voiceofoc.org, Orange County, CA, May 29, 2020, "Coronavirus Outbreak Hits Second Orange County Homeless Shelter"

> "The Fullerton Armory's replacement shelter at Independence Park has become the second Orange County homeless shelter to have an outbreak of coronavirus cases, according to county officials.
> ….
> The Fullerton outbreak was about a week ago, and people who tested positive were moved into the county's motel sheltering program, county Chief Executive Officer Frank Kim said Friday in response to Voice of OC's questions.
> ….
> Late Friday, county spokeswoman Molly Nichelson said two people tested positive at one shelter in OC and 11 people at another, none of whom were hospitalized. She declined to say which shelter had two cases and which had 11, citing privacy.
>
> The first known shelter outbreak was at the Salvation Army shelter in Anaheim, where two staff members tested positive for coronavirus in late March. It wasn't clear if more people have since tested positive at the Anaheim shelter."[304] (Emphasis added).

KHOU.com, Houston, TX, May 25, 2020, "77 positive coronavirus cases reported at Houston homeless shelter"

> "Eichenbaum said 69 residents and eight staff members have now tested positive at one shelter. 'I consider it a spike, it seems to be isolated right now,' Eichenbaum said. The cases are all at the Men's Development Center downtown. Right now, it's not accepting new clients and the city is vowing to

[303] https://www.cdc.gov/coronavirus/2019-ncov/community/homeless-shelters/plan-prepare-respond.html
[304] https://voiceofoc.org/2020/05/coronavirus-outbreak-hits-second-orange-county-homeless-shelter/

increase homeless testing."[305] (Emphasis added).

23. Fitness, Gyms, and Exercise Facilities.

The fitness, gyms, and exercise facility work environments contain various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

"During 24 days in Cheonan, South Korea, 112 persons were infected with severe acute respiratory syndrome coronavirus 2 associated with fitness dance classes at 12 sports facilities. Intense physical exercise in densely populated sports facilities could increase risk for infection. Vigorous exercise in confined spaces should be minimized during outbreaks.

….

By March 9, we identified 112 COVID-19 cases associated with fitness dance classes in 12 different sports facilities in Cheonan (Figure). All cases were confirmed by RT-PCR; 82 (73.2%) were symptomatic and 30 (26.8%) were asymptomatic at the time of laboratory confirmation. Instructors with very mild symptoms, such as coughs, taught classes for ≈1 week after attending the workshop (Appendix). The instructors and students met only during classes, which lasted for 50 minutes 2 times per week, and did not have contact outside of class.

On average, students developed symptoms 3.5 days after participating in a fitness dance class (3). Most (50.9%) cases were the result of transmission from instructors to fitness class participants; 38 cases (33.9%) were in-family transmission from instructors and students; and 17 cases (15.2%) were from transmission during meetings with coworkers or acquaintances.

….

Characteristics that might have led to transmission from the instructors in Cheonan include large class sizes, small spaces, and intensity of the workouts. The moist, warm atmosphere in a sports facility coupled with turbulent air flow generated by intense physical exercise can cause more dense transmission of isolated droplets. Classes from which secondary COVID-19 cases were identified included 5–22 students in a room ≈60 m^2 during 50 minutes of intense exercise. We did not identify cases among classes with <5 participants in the same space.

Of note, instructor C taught Pilates and yoga for classes of 7–8 students in the same facility at the same time as instructor B (Figure; Appendix Table 2), but none of her students tested positive for the virus. We hypothesize that the lower intensity of Pilates and yoga did not cause the same transmission effects as those of the more intense fitness dance classes."[306], [307]

[305] https://www.khou.com/article/news/health/coronavirus/77-positive-covid-19-cases-at-houston-homeless-shelter/285-f8ad7306-cb8d-4471-b8bb-4ce310ebd3a7

[306] https://wwwnc.cdc.gov/eid/article/26/8/20-0633_article

[307] *Id.* "A limitation of our study is the unavailability of a complete roster of visitors to the sports facilities, which might have meant we missed infections among students during surveillance and investigation efforts. Discovery of outbreak cases centered on exercise facilities led to a survey of instructors who participated in a fitness dance workshop and provided clues to identifying additional cases among students. Early identification of asymptomatic persons with RT-PCR–confirmed infections helped block further transmissions. Because of the increased possibility of infection

24. Call Centers.

The call center work environments contain various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

"Coronavirus Disease Outbreak in Call Center, South Korea
….
We describe the epidemiology of a coronavirus disease (COVID-19) outbreak in a call center in South Korea. We obtained information on demographic characteristics by using standardized epidemiologic investigation forms. We performed descriptive analyses and reported the results as frequencies and proportions for categoric variables. Of 1,143 persons who were tested for COVID-19, a total of 97 (8.5%, 95% CI 7.0%–10.3%) had confirmed cases.

Of these, 94 were working in an 11th-floor call center with 216 employees, translating to an attack rate of 43.5% (95% CI 36.9%–50.4%). The household secondary attack rate among symptomatic case-patients was 16.2% (95% CI 11.6%– 22.0%). Of the 97 persons with confirmed COVID-19, only 4 (1.9%) remained asymptomatic within 14 days of quarantine, and none of their household contacts acquired secondary infections.
….
However, if we restrict our results the 11th floor, the attack rate was as high as 43.5%. This outbreak shows alarmingly that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) can be exceptionally contagious in crowded office settings such as a call center. The magnitude of the outbreak illustrates how a high-density work environment can become a high-risk site for the spread of COVID-19 and potentially a source of further transmission. Nearly all the case-patients were on one side of the building on 11th floor.

Severe acute respiratory syndrome coronavirus, the predecessor of SARS-CoV-2, exhibited multiple superspreading events in 2002 and 2003, in which a few persons infected others, resulting in many secondary cases. Despite considerable interaction between workers on different floors of building X in the elevators and lobby, spread of COVID-19 was limited almost exclusively to the 11th floor, which indicates that the duration of interaction (or contact) was likely the main facilitator for further spreading of SARS-CoV-2.
….
In summary, this outbreak exemplifies the threat posed by SARS-CoV-2 with its propensity to cause large outbreaks among persons in office workplaces."[308] [309]

through droplets, vigorous exercise in closely confined spaces should be avoided during the current outbreak, as should public gatherings, even in small groups."

[308] https://wwwnc.cdc.gov/eid/article/26/8/20-1274_article

[309] *Id.* "This outbreak investigation has several limitations. First, we could not track these cases to another cluster, making it difficult to identify the actual index case-patient. Second, not all clinical information was available for all confirmed cases, prohibiting detailed description of clinical syndromes. Date of symptom onset by office seat would be informative in understanding SARS-CoV-2 transmission in close contact area. However, our findings demonstrate the power of screening all potentially exposed persons and show that early containment can be implemented and used in the middle of national COVID-19 outbreak. By testing all potentially exposed persons and their contacts to facilitate the isolation of symptomatic and asymptomatic COVID-19 case-patients, we might have helped interrupt transmission

Call Center COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Martinsvillebulletin.com, Martinsville, VA, May 13, 2020, "Martinsville call center Young Williams sees outbreak of COVID-19, including one death"

> "An outbreak of COVID-19 has hit a Martinsville call center that has had six positive cases and one death among its employees.
>
> A spokesperson for the Virginia Department of Social Services confirmed via email that six employees of Young Williams Child Support Services, located in the Clocktower Building off Commonwealth Boulevard, have tested positive for the virus as of Wednesday morning."[310]

25. Package Processing Facilities.

The package processing facility work environment contains various hazards and job tasks which present "medium" (close contact) to "lower" risk exposures:

"….production or assembly lines and other areas in busy plants where workers have close contact with coworkers and supervisors—may contribute substantially to workers' potential exposures."[311]

Package Processing Facilities COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

NBCnews.com, May 21, 2020," Eighth Amazon warehouse worker dies from COVID-19"

> "Another Amazon warehouse worker has died from COVID-19, bringing the total known deaths to eight employees, the company said Thursday.
>
> The female employee worked in packing at the fulfillment center outside Cleveland in North Randall, Ohio, known as CLE2, Amazon said. She had been with the company since November 2018.

chains. In light of the shift to a global pandemic, we recommend that public health authorities conduct active surveillance and epidemiologic investigation in this rapidly evolving landscape of COVID-19."

[310] https://www.martinsvillebulletin.com/news/local/martinsville-call-center-young-williams-sees-outbreak-of-covid-19-including-one-death/article_4d116bb4-0dbd-58b4-bc21-984a9faa3053.html

[311] https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-manufacturing-workers-employers.html, NOTE: The CDC guidance in this document is for manufacturing workers, but to the extent that work conditions at package processing facilities mirror the work activities described in the document, the same exposure risk level analysis can be reasonably applied to package processing facilities.

> The employee last went to work on April 30, the same day she was diagnosed, said Amazon spokesperson Lisa Levandowski. The e-commerce giant learned of her positive test results on May 8 and was informed of her death by her sister-in-law on May 18.
> ….
> NBC News has confirmed that seven other Amazon warehouse workers have died after testing positive for coronavirus in Staten Island, New York; Waukegan, Illinois; Hawthorne, California; Tracy, California; Bethpage, New York; Jeffersonville, Indiana; and Indianapolis, Indiana."[312] (Emphasis added).

Washingtonpost.com, March 25, 2020, "Amazon workers test positive for covid-19 at 10 U.S. warehouses"

> "The U.S. coronavirus outbreak has spread to at least 10 Amazon warehouses, infecting workers racing to deliver massive volumes of packages for consumers leery of leaving their homes to shop.
>
> In the past few days, workers tested positive for covid-19 at Amazon warehouses and shipping facilities across the country, from New York to California and Michigan to Texas. In some cases, Amazon shut down facilities for cleaning, and some workers who were in close contact with their infected colleagues have been quarantined.

26. Emergency Responders Including Police, Fire, Emergency Medical Services.

The emergency responder work environment contains various hazards and job tasks which present "high", "medium" (close contact) to "lower" risk exposures:

"Emergency medical services (EMS) play a vital role in responding to requests for assistance, triaging patients, and providing emergency medical treatment and transport for ill persons. However, unlike patient care in the controlled environment of a healthcare facility, care and transports by EMS present unique challenges because of the nature of the setting**,** enclosed space during transport, frequent need for rapid medical decision-making, interventions with limited information, and a varying range of patient acuity and jurisdictional healthcare resources."[313] (Emphasis added).

Emergency Responder COVID-19 Reports and Statistics

The following is not intended to be an exhaustive list of COVID-19 outbreaks in this industry.

Thecity.nyc, New York City, April 7, 2020 "Bus Drivers Hardest Hit by Deaths as COVID-19 Devastates MTA"

> "By comparison, the NYPD has lost 13 members to COVID-19 from a

[312] https://www.yahoo.com/lifestyle/eighth-amazon-warehouse-worker-dies-003500221.html
[313] https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-for-ems.html

workforce of more than 55,000 people, while the FDNY has suffered two deaths among its more than 40,000 employees."[314] (Emphasis added).

Pressherald.com, "Seven state public health and emergency workers report COVID-19 symptoms"

> "Seven employees who work at the Maine Emergency Management Agency experienced symptoms similar to COVID-19 and called in sick Thursday, forcing the state to shift its daily media briefing to a virtual event."[315]

Ems1.com, May 4, 2020, "COVID-19: EMS Deaths, Tracking the coronavirus-related deaths of EMTs and paramedics"

> "As COVID-19 continues to spread around the country, the first responders on the front lines are increasingly vulnerable of contracting the virus. As was feared, the death toll now includes a growing number of EMS personnel.
>
> What follows is a compilation of the reports, by state, of EMS personnel who have died of coronavirus-related complications. For cities with multiple diagnoses, the links are ordered chronologically, with the top being the most recent.
>
> Note: Not all of these deaths have been confirmed as line-of-duty deaths. Deputy Chief Billy Goldfeder shared an update from the Public Safety Officers' Benefits program as to how COVID-19 deaths will be classified.
>
> COLORADO
> Denver — Colo. paramedic, Paul Cary, 66, dies from COVID-19
>
> MICHIGAN
> Huron Township — Mich. paramedic and former fire Lt., Paul Novicki, 51, dies from COVID-19
>
> MISSISSIPPI
> Natchez — Miss. AMR paramedic, David Martin, dies from COVID-19 complications
>
> MISSOURI
> Kansas City — Mo. EMT, Billy Birmingham, dies from COVID-19
>
> NEW JERSEY
> Passaic — City of Passaic firefighter-EMT, Israel Tolentino, 33, has died from COVID-19

[314] https://www.thecity.nyc/health/2020/4/7/21216831/bus-drivers-hardest-hit-by-deaths-as-covid-19-devastates-mta
[315] https://www.pressherald.com/2020/05/28/maine-reports-3-more-deaths-52-additional-covid-19-cases/

Hackensack — Past Hackensack Volunteer Ambulance Corps captain and life member, Reuven Maroth, dies from COVID-19

Newark — EMT Liana Sá, of Monmouth-Ocean Hospital Service Corporation and Watchung Rescue Squad, dies from COVID-19

Pompton Lakes — North Bergen and Saint Clare's Hospital EMT Kevin Leiva, 24, dies from COVID-19 complications

Bergen County — Physician and NJSEA EMS member, Dr. Frank Molinari, has died from COVID-19

Monmouth County — NJ firefighter-EMT, Robert Weber, dies from COVID-19 complications

West Orange — RWJBarnabas Health EMS educator, Robert Tarrant, has died from COVID-19

Elizabeth — Trinitas Regional Medical Center EMT, Solomon Donald, dies from COVID-19

Chatham — Atlantic Health EMS educator, former Chatham police captain, Bill Nauta, 72, dies from COVID-19

Morristown — Atlantic Mobile Health EMT, Scott Geiger, dies due to COVID-19 complications

Bergen County — Firefighter, EMS instructor and NJSEA EMT, John Ferrarella, dies from COVID-19

Woodbridge — NJ volunteer EMS chief, John Careccia, 74, dies from COVID-19

Bergen County — NJ EMT, former fire chief, David Pinto, 70, dies from COVID-19 complications

NEW YORK

New York City — FDNY ambulance mechanic, James Villecco, 55, dies from COVID-19

New York City — FDNY EMT and 9/11 responder, Gregory Hodge, 59, dies from COVID-19

New York City — NYU Langone Hospital paramedic, former FDNY EMS member, Tony Thomas, dies from COVID-19

Valley Stream — LODD: NY firefighter-EMT and 9/11 responder, Mike Field, dies from COVID-19

New York City — FDNY EMT, John Redd, 63, dies due to COVID-19

New York City — FDNY EMT, Idris Bey, 60, dies due to COVID-19

New York City — FDNY EMT, 30-year EMS veteran, Richard Seaberry, 63, dies due to COVID-19

Blooming Grove — NY ambulance volunteer, Sal Mancuso, 66, dies from COVID-19

PENNSYLVANIA
Delaware County — Pa. first responders, healthcare professionals mourn paramedic, Kevin Bundy, who died from COVID-19

Robesonia — Pa. assistant fire chief and EMT, Robert Zerman, 49, dies from COVID-19"[316]

[316] https://www.ems1.com/coronavirus-covid-19/articles/covid-19-ems-deaths-jk5zWFziwYVYUaM4/

ATTACHMENT B: CURRENT LAWS AND REGULATIONS

RECOGNIZED MITIGATION STRATEGIES FOR COVID-19 NOT COVERED BY VOSH REGULATIONS OR STANDARDS

VA. CODE §40.1-51(A), THE "GENERAL DUTY CLAUSE"

Neither OSHA nor VOSH has a regulation specific to SARS-CoV-2 or COVID-19 or infectious diseases generally.[317]

Certain VOSH regulations (identical to OSHA counterparts unless otherwise noted) can be used to address some SARS-CoV-2 or COVID-19 hazards.

1. VOSH Regulations

a. General Industry.

General requirements to provide personal protective equipment to employees in General Industry are contained in:

1910.132 (Personal Protective Equipment)[318],

1910.133 (Eye and Face Protection)[319], however, the scope of the regulation is limited to exposure "to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation." It is does not reference exposure to airborne biological hazards.

1910.134 (Respiratory Protection)[320],

1910.138 (Hand Protection)[321]

1910.141 (Sanitation)[322]

1910.142 (Temporary Labor Camps)[323]

[317] Following the H1N1 virus outbreak in 2009, the AFL-CIO petitioned OSHA on May 28, 2009 for an infectious disease standard to be promulgated. In 2010, OSHA published a Request for Information toward developing an infectious disease standard, held stakeholder meetings, and conducted site visits. A regulatory framework document was created. In Spring 2017, on OSHA's Regulatory Agenda an infectious disease standard was placed under long term action. No subsequent actions have been taken by OSHA toward this standard during the current administration. https://www.osha.gov/dsg/id/. The AFL-CIO has again recently petitioned OSHA for a standard covering COVID-19 exposure risks, and on May 18, 2020 filed a petition in the U.S. Circuit Court of Appeals for the District of Columbia asking the court to order OSHA to promulgate such a rule. *In re: AFL-CIO*, dkt. no. 20-1158 (D.C. Cir. 2020).

[318] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.132

[319] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.133

[320] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134

[321] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.138

[322] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.141

[323] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.142

1910.1200 (Hazard Communication)[324] (i.e., regulatory requirements for employee use of certain cleaning chemicals)

1910.1045 (Occupational Exposure to Hazardous Chemicals in Laboratories)[325]

b. Construction Industry.

1926.21(b)(2)[326] (Safety Training and Education)

1926.59 (Hazard Communication)[327] (i.e., regulatory requirements for employee use of certain cleaning chemicals)

1926.28[328] and 1926.95[329], (Personal Protective Equipment)

NOTE: The Construction Industry does not have a requirement comparable to 1910.132(d) which requires General Industry employers to conduct a written workplace assessment to "determine if hazards are present, or are likely to be present, which necessitate the use of" PPE.[330]

1926.102 (Eye and Face Protection)[331]; however, the scope of the regulation is limited to exposure "to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation." It is does not reference exposure to airborne biological hazards.

1926.103 (Respiratory Protection)[332]

NOTE: The Construction Industry Standards do not have a "Hand Protection" regulation similar to 1910.138.

[324] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1200
[325] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1450
[326] https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.21
[327] https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.59
[328] https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.28
[329] https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.95
[330] 1910.132(d), Hazard assessment and equipment selection.
1910.132(d)(1), The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:
1910.132(d)(1)(i), Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;
1910.132(d)(1)(ii), Communicate selection decisions to each affected employee; and,
1910.132(d)(1)(iii), Select PPE that properly fits each affected employee.
Note: Non-mandatory appendix B contains an example of procedures that would comply with the requirement for a hazard assessment.
1910.132(d)(2)
The employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.
[331] https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.102
[332] https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.103

16VAC25-160[333] (Construction Industry Sanitation Standard – Virginia unique regulation that is the functional equivalent of 1926.51 for Construction), sanitation requirements are limited to "Toilet facilities shall be operational and maintained in a clean and sanitary condition."

c. Agriculture Industry.

1928.21(a)(1)[334] (Temporary Labor Camps, 1910.142 applies to agricultural operations)

1928.21(a)(5)[335] (Hazard Communication, 1910.1200 applies to agricultural operations) (i.e., regulatory requirements for employee use of certain cleaning chemicals)

1910.142 (Temporary Labor Camps)[336] applies to the Agriculture Industry

16VAC25-180[337] (Field Sanitation - Virginia unique regulation that is the functional equivalent of 1928.110 for Agriculture), sanitation requirements are limited to "(3) Maintenance. Potable drinking water and toilet and handwashing facilities shall be maintained in accordance with appropriate public health sanitation practices, including the following:

(i) Drinking water containers shall be constructed of materials that maintain water quality, shall be refilled daily or more often as necessary, shall be kept covered and shall be regularly cleaned.

(ii) Toilet facilities shall be operational and maintained in clean and sanitary condition.

(iii) Handwashing facilities shall be refilled with potable water as necessary to ensure an adequate supply and shall be maintained in a clean and sanitary condition; and

(iv) Disposal of wastes from facilities shall not cause unsanitary conditions.

NOTE: There are no regulatory requirements in the Agriculture Industry for PPE, including respiratory protection.

d. Maritime Industry.

NOTE: VOSH has jurisdiction of state and local government maritime related activities only. OSHA retains jurisdiction over private sector maritime activities in Virginia.

1915.88[338], Shipyard Employment (Sanitation)

[333] https://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+16VAC25-160-10
[334] https://www.osha.gov/laws-regs/regulations/standardnumber/1928/1928.21
[335] https://www.osha.gov/laws-regs/regulations/standardnumber/1928/1928.21
[336] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.142
[337] https://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+16VAC25-180-10
[338] https://www.osha.gov/laws-regs/regulations/standardnumber/1915/1915.88

1915.152[339], Shipyard Employment (Personal Protective Equipment)

1915.153[340], Shipyard Employment (Eye and Face Protection); however, the scope of the regulation is limited to exposure "to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation." It is does not reference exposure to airborne biological hazards.

1915.154[341], Shipyard Employment (Respiratory Protection)

1915.157[342], Shipyard Employment (Hand and Body Protection)

1917.127[343], Marine Terminal Operations (Sanitation)

1917.1(a)(2)(vi)[344], Marine Terminal Operations (Hazard Communication, 1910.1200)

1917.92 and 1917.1(a)(2)(x)[345], Marine Terminal Operations (Respiratory Protection, 1910.134)

1917.91[346], Marine Terminal Operations (Eye and Face Protection)

1917.95[347], Marine Terminal Operations (PPE, Other Protective Measures

1918.95[348], Longshoring (Sanitation)

1918.90[349], Longshoring (Hazard Communication)

1918.102[350] Longshoring (Respiratory Protection)

1918.101[351] Longshoring (Eye and Face Protection)

2. Recognized Mitigation Strategies for COVID-19 Not Covered by VOSH Regulations or Standards.

There are no VOSH or OSHA regulations or standards that would require:

> Physical distancing of at least six feet where feasible (also known as Social Distancing)

[339] https://www.osha.gov/laws-regs/regulations/standardnumber/1915/1915.152
[340] https://www.osha.gov/laws-regs/regulations/standardnumber/1915/1915.153
[341] https://www.osha.gov/laws-regs/regulations/standardnumber/1915/1915.154
[342] https://www.osha.gov/laws-regs/regulations/standardnumber/1915/1915.157
[343] https://www.osha.gov/laws-regs/regulations/standardnumber/1917/1917.127
[344] https://www.osha.gov/laws-regs/regulations/standardnumber/1917/1917.1#1917.1(a)(2)(ix)
[345] *Id.*
[346] https://www.osha.gov/laws-regs/regulations/standardnumber/1917/1917.91
[347] https://www.osha.gov/laws-regs/regulations/standardnumber/1917/1917.95
[348] https://www.osha.gov/laws-regs/regulations/standardnumber/1918/1918.95
[349] https://www.osha.gov/laws-regs/regulations/standardnumber/1918/1918.90
[350] https://www.osha.gov/laws-regs/regulations/standardnumber/1918/1918.102
[351] https://www.osha.gov/laws-regs/regulations/standardnumber/1918/1918.101

Disinfection of work areas where known or suspected COVID-19 employees or other persons accessed or worked[352]

Employers to develop policies and procedures for employees to report when they are sick or experiencing symptoms consistent with COVID-19

Employers to, prior to the commencement of each work shift, prescreen of employees and other persons to verify each employee or person is not COVID-19 symptomatic

Employers to prohibit known and suspected COVID-19 employees and other persons from reporting to or being allowed to remain at work or on a job site until cleared for return

Employers to develop and implement policies and procedures for known COVID-19 or suspected COVID-19 employees to return to work using either a symptom-based or test-based strategy depending on local healthcare and testing circumstances

Employers to prohibit COVID-19 positive employees from reporting to or being allowed to remain at work or on a job site until cleared for return to work

Employers to provide employees assigned to work stations and in frequent contact with other persons inside six feet with alcohol based hand sanitizers at their workstations

Employers with hazards or job tasks classified at very high, high, or medium exposure risk to develop a written Infectious Disease Preparedness and Response Plan

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[352] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.141
1910.141(a)(3)(i) provides that "All places of employment shall be kept **clean** to the extent that the nature of the work allows." (Emphasis added). The term "sanitary" is not used, although it is used in reference to "washing facilities", "waste disposal", "food storage", "sweepings", and "drinking water".
1910.141(a)(4)(i) provides that "Any receptacle used for putrescible solid or liquid waste or refuse shall be so constructed that it does not leak and may be thoroughly cleaned and maintained in a **sanitary** condition. Such a receptacle shall be equipped with a solid tight-fitting cover, unless it can be maintained in a **sanitary** condition without a cover. This requirement does not prohibit the use of receptacles which are designed to permit the maintenance of a **sanitary** condition without regard to the aforementioned requirements." (Emphasis added).
1910.141(a)(4)(ii) provides that "All sweepings, solid or liquid wastes, refuse, and garbage shall be removed in such a manner as to avoid creating a menace to health and as often as necessary or appropriate to maintain the place of employment in a **sanitary** condition." (Emphasis added).
1910.141(b)(1)(iii) provides that "Portable drinking water dispensers shall be designed, constructed, and serviced so that **sanitary** conditions are maintained, shall be capable of being closed, and shall be equipped with a tap." (Emphasis added).
1910.141(d)(1) provides that "Washing facilities shall be maintained in a **sanitary** condition." (Emphasis added).
1910.141(g)(3) provides that "Waste disposal containers. Receptacles constructed of smooth, corrosion resistant, easily cleanable, or disposable materials, shall be provided and used for the disposal of waste food. The number, size, and location of such receptacles shall encourage their use and not result in overfilling. They shall be emptied not less frequently than once each working day, unless unused, and shall be maintained in a **clean and sanitary** condition. Receptacles shall be provided with a solid tight-fitting cover unless **sanitary** conditions can be maintained without use of a cover." (Emphasis added).
1910.141(g)(4) provides that "**Sanitary** storage. No food or beverages shall be stored in toilet rooms or in an area exposed to a toxic material." (Emphasis added).

Employee training on SARS-CoV-2 and COVID-19 hazards, with the exception of 1926.21(b)(2) referenced above for the Construction Industry

NOTE: Employers that provide training to employees will be able to avail themselves of an affirmative defense to VOSH citations and penalties known as the "Employee Misconduct Defense," which is codified in VOSH regulation 16 VAC 25-60-260.B:[353]

> B. A citation issued under subsection A of this section to an employer who violates any VOSH law, standard, rule, or regulation shall be vacated if such employer demonstrates that:
>
> 1. Employees of such employer have been provided with the proper training and equipment to prevent such a violation;
>
> 2. Work rules designed to prevent such a violation have been established and adequately communicated to employees by such employer and have been effectively enforced when such a violation has been discovered;
>
> 3. The failure of employees to observe work rules led to the violation; and
>
> 4. Reasonable steps have been taken by such employer to discover any such violation. (Emphasis added)
>
> In order for an employer to avail themselves of the above affirmative defense, which can result in dismissal of COVID-19 citations and penalties, they have to able to demonstrate that employees were trained on hazards regulated by and the requirements of the ETS/ER. Including a training requirement in the ETS/ER will assure that employers have preserved an important legal right.

3. Va. Code §40.1-51(a), the "General Duty Clause".

While neither OSHA nor VOSH has a regulation specific to SARS-CoV-2 or COVID-19, Va. Code §40.1-51(a), otherwise known as the "general duty clause" (the Virginia equivalent to §5(a)(1))[354] of the OSH Act of 1970), provides that:

> "It shall be the duty of every employer to furnish to each of his employees safe employment and a place of employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees...."

While Congress intended that the primary method of compliance and enforcement under the

[353] https://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+16VAC25-60-260
[354] https://www.osha.gov/laws-regs/oshact/section_5, 29 U.S.C. § 654(a)(1).

OSH Act of 1970 would be through the adoption of occupational safety and health standards[355], it also provided the general duty clause as an enforcement tool that could be used in the absence of an OSHA (or VOSH) regulation.

As is evident from the wording of the general duty statute, it does not directly address the issue of SARS-CoV-2 or COVID-19 related hazards. While preferable to no enforcement tool at all, the general duty clause does not provide either the regulated community, employees, or the VOSH Program with substantive and consistent requirements on how to reduce or eliminate SARS-CoV-2 or COVID-19 related hazards.

Federal case law has established that the general duty clause can be used to address "serious" recognized hazards to which employees of the cited employer are exposed through reference to such things as national consensus standards, manufacturer's requirements, requirements of the Centers for Disease Control (CDC), or an employer's safety and health rules.

However, there are limitations to use of the general duty clause that make it problematic to enforce and result in its infrequent use. The recent 2019 decision of the Occupational Safety and Health Review Commission's (OSHRC) in *Secretary of Labor v. A. H. Sturgill Roofing, Inc.,*[356] demonstrates the complexities and difficulties of establishing a heat-related illness general duty "recognized hazard" and accompanying violation in a case where an employee of a roofing contractor collapsed and later died with a diagnosis of heat stroke where the employee's core body temperature was determined to be 105.4°F.[357]

One limitation of use of the general duty clause can result in unfortunate outcomes in at a worksite with multiple employers. For instance, a general duty clause violation can only be issued to an employer whose own employees were exposed to the alleged hazardous condition.[358] In the context of a COVID-19 situation, consider a subcontractor who sends one employee to a multi-employer worksite who is COVID-19 positive and knowingly allows that employee to work around disease free employees of a second subcontractor, which results in the transmission of the disease to one or more of the second contractors' employees.

In such a situation, because no uninfected employees of the first contractor were exposed to the disease at the worksite, the contractor who created the hazard could not be issued a general duty violation or accompanying monetary penalty.

There is no ability to cite "other-than-serious" general duty violations ("other than serious" violations normally do not carry a monetary penalty) because the statutory language specifies that the hazard be one that is "causing or likely to cause death or serious physical harm."

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[355] *The Law of Occupational Safety and Health,* Nothstein, 1981, page 259.

[356] OSHRC Docket No. 13-0224, https://www.oshrc.gov/assets/1/18/A.H._Sturgill_Roofing_Inc.%5E13-0224%5EComplete_Decision_signed%5E022819%5EFINAL.pdf?8324

[357] *Id.* at pages 2-3, Contributing factors included that the worker had some preexisting medical conditions, it was his first day on the job, and the outside temperature at the time of collapse was estimated to be 82°F with 51 percent relative humidity. The work took place on a flat roof with periods of direct sun alternating with clouds; and involved removing a single-ply sheet rubber membrane and Styrofoam insulation so that a new roof could be installed.

[358] https://townhall.virginia.gov/L/GetFile.cfm?File=C:\TownHall\docroot\GuidanceDocs\181\GDoc_DOLI_5354_v6.pdf, VOSH Field Operations Manual (FOM), Chapter 10, page 18)

In the context of the COVID-19 pandemic, the primary problem with the use of the general duty clause is the inability to use it to enforce any national consensus standard, manufacturer's requirements, CDC recommendations, or employer safety and health rules which use "should," "may," "it is recommended," and similar non-mandatory language.[359]

a. Use of the General Duty Clause to Enforce OSHA and CDC Guidelines.

All of the "Guidelines" published by OSHA, both of general application and directed to specific industries are by their own wording, unenforceable under the General Duty Clause:

> "This guidance is not a standard or regulation, and it creates no new legal obligations. It contains recommendations as well as descriptions of mandatory safety and health standards. The recommendations are advisory in nature, informational in content, and are intended to assist employers in providing a safe and healthful workplace."[360]

With regard to CDC guidelines generally, as an example, its "Meat and Poultry Processing Workers and Employers, Interim Guidance from CDC and the Occupational Safety and Health Administration (OSHA)"[361] states that:

> "All meat and poultry processing facilities developing plans for continuing operations in the setting of COVID-19 occurring among workers or in the surrounding community should (1) work directly with appropriate state and local public health officials and occupational safety and health professionals; (2) incorporate relevant aspects of CDC guidance, including but not limited to this document and the CDC's Critical Infrastructure Guidance; and (3) incorporate guidance from other authoritative sources or regulatory bodies as needed."[362] (Emphasis added).

The above-referenced CDC Interim Guidance document contains very little "mandatory" language:

- "shall" is never used
- "much" is used 8 times but mostly with regard to OSHA regulatory requirements
- "should" is used 56 times
- "may" is used 39 times
- "recommend" or "recommendation" is used 7 times

In addition, the large majority of CDC's documents providing employers with mitigation strategies for COVID-19 identify them as "recommendations" rather than mandatory requirements, which makes use of the General Duty Clause to enforce them very problematic.

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[359]" Courts and the [Occupational Safety and Health Review] Commission have held that OSHA must define an alleged hazard in such a way as to give the employer fair notice of its obligations under the OSH Act. In *Ruhlin Co.* [*Ruhlin Co.*, 21 OSH Cases 1779], the Commission held that the employer 'lacked fair notice that it could have an obligation under section 5(a)(1) to require its employees to wear high visibility vests.' The Commission found that a May 2004 interpretive letter by OSHA refers to a provision of the Federal Highway Administration manual which contained optional, not mandatory language."

[360] https://www.osha.gov/Publications/OSHA3990.pdf, at page 2.

[361] https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/meat-poultry-processing-workers-employers.html

[362] *Id.*

For instance, the CDC's "Interim Guidance for Restaurants and Bars"[363] appears unenforceable under the General Duty Clause, even though the body of the document lists what read like "requirements" without any qualifying "should" or "may" language, because the opening paragraph says the following:

> "This guidance provides considerations for businesses in the food service industry (e.g., restaurants and bars) on ways to maintain healthy business operations and a safe and healthy work environment for employees, while reducing the risk of COVID-19 spread for both employees and customers. Employers should follow applicable Occupational Safety and Health Administration (OSHA) and CDC guidance for businesses to plan and respond to COVID-19. All decisions about implementing these recommendations should be made in collaboration with local health officials and other State and local authorities who can help assess the current level of mitigation needed based on levels of COVID-19 community transmission and the capacities of the local public health and healthcare systems. CDC is releasing this interim guidance, laid out in a series of three steps, to inform a gradual scale up of activities towards pre-COVID-19 operating practices. The scope and nature of community mitigation suggested decreases from Step 1 to Step 3. Some amount of community mitigation is necessary across all steps until a vaccine or therapeutic drug becomes widely available." (Emphasis added).

b. Use of the General Duty Clause to Enforce "Mandatory" Requirements in Virginia Executive Orders.

Where Virginia Executive Order 61[364] provides for mandatory measures to be taken by an employer to protect employees (e.g., wearing of "face covering" or "physical distancing" of 6 feet), the Department believes that it would be able to use the General Duty Clause to enforce such requirements. However, only those mitigation measures that contain "mandatory" language that result in protection for employees can be enforced using the General Duty Clause.

4. Va. Code §18.2-422, Prohibition of wearing of masks in certain places; exceptions.[365]

Section 18.2-422 provides as follows:

> "It shall be unlawful for any person over 16 years of age to, with the intent to conceal his identity, wear any mask, hood or other device whereby a substantial portion of the face is hidden or covered so as to conceal the identity of the wearer, to be or appear in any public place, or upon any private property in this Commonwealth without first having obtained from the owner or tenant thereof consent to do so in writing. However, the provisions of this section shall not apply to persons (i) wearing traditional holiday costumes; (ii) engaged in professions, trades, employment or other activities and

[363] https://www.cdc.gov/coronavirus/2019-ncov/downloads/php/CDC-Activities-Initiatives-for-COVID-19-Response.pdf#page=53
[364] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-61-and-Order-of-Public-Health-Emergency-Three---Phase-One-Easing-Of-Certain-Temporary-Restrictions-Due-To-Novel-Coronavirus-(COVID-19).pdf
[365] https://law.lis.virginia.gov/vacode/18.2-422/

wearing protective masks which are deemed necessary for the physical safety of the wearer or other persons; (iii) engaged in any bona fide theatrical production or masquerade ball; or (iv) wearing a mask, hood or other device for bona fide medical reasons upon (a) the advice of a licensed physician or osteopath and carrying on his person an affidavit from the physician or osteopath specifying the medical necessity for wearing the device and the date on which the wearing of the device will no longer be necessary and providing a brief description of the device, or (b) the declaration of a disaster or state of emergency by the Governor in response to a public health emergency where the emergency declaration expressly waives this section, defines the mask appropriate for the emergency, and provides for the duration of the waiver. The violation of any provisions of this section is a Class 6 felony." (Emphasis added).

Virginia Executive Order 62 continues the waiver of Va. Code §18.2-422 of the Code of Virginia so as to allow the wearing of a medical mask, respirator, or any other protective face covering for the purpose of facilitating the protection of one's personal health in response to the COVID-19 public health emergency declared by the State Health Commissioner on February 7, 2020, and reflected in Executive Order 51 declaring a state of emergency in the Commonwealth. Executive Order 51 is so further amended. This waiver is effective as of March 12, 2020.

Washington.

The State of Washington's Division of Occupational Safety and Health (DOSH) just enacted Emergency COVID-19 Safety Rules[366] on "Prohibited Business Activities and Conditions for Operations."[367]

DOSH enacted an emergency rule that, on its face, allows the agency to cite Washington employers who fail to follow the patchwork of rules and guidance related to COVID-19, as set out by the State of Washington and associated safety and health authorities.

Oregon.

Effective November 16, 2020, adopted a Temporary Rule Addressing COVID-19 Workplace Risks,[368] which applies to all employees working in places of employment subject to Oregon OSHA's jurisdiction.

On May 11, 2020, Oregon adopted a Temporary Rule addressing the COVID-19 emergency in employer-provided housing, labor-intensive agricultural operations, and agricultural transportation.

The Oregon Occupational Safety and Health Administration (Oregon OSHA) adopted a temporary rule[369] addressing the COVID-19 emergency in employer-provided housing, labor-intensive agricultural operations, and agricultural transportation with an effective date of May 11, 2020 and end date of October 23, 2020.[370] The temporary rule provides for:

- enhanced sanitation requirements for toilet and handwashing facilities in the field;
- procedures to identify and isolate suspect COVID-19 cases "with sleeping, eating, and bathroom accommodations that are separate from others" ("Sick people should be isolated from others, have adequate hygiene facilities, and be taken care of by only one person in the household. If such isolation is not possible, follow guidance provided by the Oregon Health Authority or the local public health authority to make appropriate arrangements".);
- procedures for isolating confirmed COVID-19 cases and only housing them with other confirmed cases with separate bathroom, cooking and eating facilities separate from people who have not been diagnosed with COVID-19. ("Sick people should be isolated from others, have adequate hygiene facilities, and be taken care of by only one person in the household. If such isolation is not possible, follow guidance provided by the Oregon Health Authority or the local public health authority to make appropriate arrangements."); and
- "Affected employers must post a notice describing the requirements of these rules, including their application to COVID-19 risks, and advising where workers may file complaints regarding field sanitation matters. It must be in the language of the majority of the workers."

[366] https://www.lni.wa.gov/rulemaking-activity/AO20-10/2010CR103E.pdf?utm_medium=email&utm_source=govdelivery
[367] https://www.environmentalsafetyupdate.com/states/washington/wa-dosh-issues-emergency-covid-19-safety-rule-mandating-compliance-with-emergency-proclamation-and-safe-start-reopening-guidance/
[368] https://osha.oregon.gov/OSHARules/div1/437-001-0744.pdf
[369] https://osha.oregon.gov/OSHARules/adopted/2020/ao2-2020-text-emergency-rules-ag-covid.pdf
[370] *Id.*

NOTE: The Virginia Department of Health is responsible for conducting pre-occupancy inspections of temporary labor camps under 1910.142, and has issued "Interim Guidance for Migrant Labor Camp Operators and Employees Regarding COVID-19."[371]

California.

The California Division of Occupational Safety and Health (Cal/OSHA) Aerosol Transmissible Diseases (ATD) standard[372] is aimed at preventing worker illness from infectious diseases that can be transmitted by inhaling air that contains viruses (including SARS-CoV-2), bacteria or other disease-causing organisms. The Cal/OSHA ATD standard is only mandatory for certain healthcare employers in California.

Cal/OSHA also adopted COVID-19 Prevention Emergency Temporary Standards[373] on December 1, 2020. These new temporary standards apply to most workers in California not covered by Cal/OSHA's AT D standard.

[371] https://www.vdh.virginia.gov/environmental-health/environmental-health-services/migrant-labor-camps/9505-2/
[372] https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/Pages/ATDStd.aspx
[373] https://www.dir.ca.gov/dosh/coronavirus/ETS.html

ATTACHMENT D: FINDING OF "GRAVE DANGER" TO SUPPORT THE ADOPTION OF THE EMERGENCY TEMPORARY STANDARD (ETS) FOR INFECTION DISEASE PREVENTION OF THE SARS-COV-2 VIRUS THAT CAUSES COVID-19, 16VAC25-220, EFFECTIVE JULY 27, 2020

Workplace exposures to SARS-CoV-2 and COVID-19 constitute a grave danger to employees and employers in Virginia necessitating the adoption of an emergency temporary standard pursuant to Va. Code §40.1-22(6a).

1. Statutory Construction of Va. Code §40.1-22(6a).

Va. Code §40.1-22(6), is specific to the Board and provides procedures for adopting an Emergency Temporary Standard:

> § 40.1-22. Safety and Health Codes Commission continued as Safety and Health Codes Board.
> ….
> (6) Chapter 40 (§ 2.2-4000 et seq.) of Title 2.2 shall apply to the adoption of rules and regulations under this section and to proceedings before the Board.
>
> (6a) The Board shall provide, without regard to the requirements of Chapter 40 (§ 2.2-4000 et seq.) of Title 2.2, for an emergency temporary standard to take immediate effect upon publication in a newspaper of general circulation, published in the City of Richmond, Virginia, if it determines that employees are exposed to grave danger from exposure to substances or agents determined to be toxic or physically harmful or from new hazards, and that such emergency standard is necessary to protect employees from such danger. The publication mentioned herein shall constitute notice that the Board intends to adopt such standard within a period of six months. The Board by similar publication shall prior to the expiration of six months give notice of the time and date of, and conduct a hearing on, the adoption of a permanent standard. The emergency temporary standard shall expire within six months or when superseded by a permanent standard, whichever occurs first, or when repealed by the Board.
> (Emphasis added).

The terms "grave danger" and "necessity" are not defined in the statute, but have been addressed in federal court cases surrounding federal OSHA's similar statutory requirement in the OSH Act, §6(c) (identical language underlined):

> "(1) The Secretary shall provide, without regard to the requirements of chapter 5, title 5, Unites States Code, for an emergency temporary standard to take immediate effect upon publication in the Federal Register if he determines –
>
> (A) that employees are exposed to grave danger from exposure to substances or agents determined to be toxic or physically harmful or from new hazards, and
> (B) that such emergency standard is necessary to protect employees from such danger. (Emphasis added).
>
> 29 U.S.C. § 655(c).

From *Asbestos Information Ass'n/North America v. OSHA*, 727 F.2d 415 (5th Cir. 1984) – review of OSHA's Emergency Temporary Standard (ETS) lowering the PEL for asbestos under Section 6(c) of the OSH Act (29 U.S.C. § 655(c):

> "As the Supreme Court has noted, the determination of what constitutes a risk worthy of Agency action is a policy consideration that belongs, in the first instance to the Agency. [citation omitted] The Secretary determined that eighty lives at risk is a grave danger. We are not prepared to say it is not. The Agency need not support its conclusion 'with anything approaching scientific certainty. [citation omitted] … so long as the Agency supports its conclusion with 'a body of reputable scientific thought,' it may 'use conservative assumptions' to support that conclusion. The Agency also has prerogative to choose between conflicting evidence of equivalent quality, and a court will consider a finding consistent with one authority or another to be supported by substantial evidence."

From *Florida Peach Growers Ass'n v. Dept. of Labor*, 489 F.2d 120 (5th Cir. 1974) – review of OSHA ETS regarding protecting farmworkers from exposure to certain pesticides during cultivation of various crops:

"The Act requires determination of danger from exposure to harmful substances, not just a danger of exposure; and, not exposure to just a danger, but to a grave danger; and, not the necessity of just a temporary standard, but that an emergency standard is necessary.

OSHA relied on a report finding that 800 persons are killed annually from the improper use of pesticides, and 80,000 injured. The court found this did not support a conclusion that the per se use of the pesticides presents a "grave danger." *Id*. at 131. There was not enough data in the record on deaths from use of pesticide in the workplace (as opposed to ingestion by children, etc.).

The court looked at petitioner's evidence "detailing the generally mild nature of the relatively few cases of illness reported by crop workers exposed solely to residues. … from time to time a group of workers will experience nausea, excessive salivation and perspiration, blurred vision, abdominal cramps, vomiting, and diarrhea, in approximately that sequence.…these are not grave illnesses, however, and do not support a determination of a grave danger.…no deaths have been conclusively attributed to exposure to residues." *Id*. at 131.

The court said "We reject any suggestion that deaths must occur before health and safety standards may be adopted. Nevertheless, the danger of incurable, permanent, or fatal consequences to workers, as opposed to easily curable and fleeting effects on their health, becomes important in the consideration of the necessity for emergency measures to meet a grave danger." *Id*. at 132.

From *International Union, United Auto., Aerospace, and Agr. Implement Workers of America, UAW v. Donovan*, 590 F. Supp. 747 (D.D.C. 1984), where OSHA declined to promulgate an ETS on formaldehyde in the workplace. The court action was brought in district court challenging decision under the federal APA:

> "The 'grave danger' and 'necessity' findings must be based on evidence of actual, prevailing industrial conditions, i.e., current levels of employee exposure to the substance in question." *Id*. at 751.

From *Dry Color Mfrs. Ass'n, Inc. v. Brennan*, 486 F.2d 98 (3d Cir. 1973), a review of OSHA's emergency regulations regarding 14 carcinogenic substances under Section 6(c) of the OSH Act (29 U.S.C. § 655(c)):

> "…the most that can be said is that DCB and EI pose a 'potential' cancer hazard to men. Although the danger to cancer is surely "grave," subsection 6(c)(1) of the Act requires a grave danger of exposure to substances 'determined to be toxic or physically harmful.' 486 F.2d 98, 104.
>
> > "While the Act does not require an absolute certainty as to the deleterious effect of a substance on man, an emergency temporary standard must be supported by evidence that shows more than some possibility that a substance may cause cancer in man. On this record, the evidence supplies no more than some possibility that DCB and EI may cause cancer in man." *Id*. at 104-5.

<u>Finding that SARS-CoV-2 and COVID-19 constitute a grave danger to employees in Virginia that necessitates the adoption of an emergency temporary standard to protect Virginia employees from such danger.</u>

The staff of the Department of Labor and Industry recommends that the Board find that SARS-CoV-2 and COVID-19 related hazard and job task employee exposures constitute a grave danger to employees in Virginia that necessitate the adoption of an emergency temporary standard to protect Virginia employees from the spread of the SARS-CoV-2 virus that causes COVID-19 under Va. Code §40.1-22(6a).

As is supported by the information presented below and in the administrative record presented to the Board, there currently exists in the Commonwealth of Virginia an emergency situation due to the ongoing spread of the potentially deadly SARS-CoV-2 virus that causes COVID-19.

A state of emergency has been declared by Governor Northam, due to the presence of COVID-19, a communicable disease which poses a public health threat as declared by the State Health Commissioner.

In the context of the Board's authority to regulate occupational safety and health hazards in Virginia, COVID-19 poses a threat of "material impairment of health or functional capacity" to employees. The threat is new, immediate, dangerous, and potentially life threatening to employees and presents a grave danger to employees that necessitates the adoption of an emergency temporary standard.

The onslaught of the SARS-CoV-2 virus and COVID-19 disease are by their own definitions new and "novel," involving a sudden, unforeseen, and fast spreading epidemic which evolved into a worldwide pandemic in a matter of months. In the U.S. it quickly spread to all 50 states and territories and became one of the leading causes of death in the country in just four months at over 112,000 deaths so far. As of June 11, 2020, thirty-seven

(37) U.S. jurisdictions report more than 10,000 COVID-19 cases,[374] including the Virginia border states of Maryland (over 60,100 cases, and 2,875 deaths), North Carolina (over 38,100, and 1,053 deaths), Kentucky (over 11,800, and 484 deaths), Tennessee (over 28,000, and 456 deaths). The District of Columbia has over 9,500 cases, and 499 deaths.[375]

Virginia now has 52,647 cases, 5,306 people hospitalizations, and 1,520 deaths as of June 11, 2020. The COVID-19 impact on Virginia's employees and employers has been widespread, significant and devastating. Employee deaths under VOSH investigation now total 11 in a span of four months (which would represent 30% of the average number of deaths investigated by VOSH on a calendar year basis), with at least four employee hospitalizations under VOSH investigation. Both are expected to increase over the coming months.

According to Virginia Workers' Compensation Commission statistics, over 3,150 claims have been submitted in a four month period across a wide range of industries and job classifications. On May 11, 2020, VWCC was reporting 2,182 workers' compensation claims; and by May 31, 2020 the total had increased by 972 claims to 3,154, a 44.5% increase in a 20 day time period. For a number of reasons, these numbers significantly underrepresent the number of actual workers' compensation claims and COVID-19 illnesses suffered by Virginia employees on the job. In addition, over 40 claims have been submitted for Virginia state employees from a wide variety of agencies during the same period.

According to a CDC study, among U.S. COVID-19 cases with known disposition, the proportion of persons who were hospitalized was 19%. The proportion of persons with COVID-19 admitted to the intensive care unit (ICU) was 6%."[376]

The federal and state governments have almost universally acknowledged the emergency presented by the disease with declarations of emergencies around the country and implementation of a combination of voluntary and mandatory mitigation efforts to attempt to slow the progress of the disease. The effectiveness of those efforts remain an open question. Statistics, studies, and news reports demonstrate that employees are becoming infected, seriously ill, and dying from COVID-19 because of workplace exposures in a wide variety of industries.

Complications can include pneumonia and trouble breathing, organ failure in several organs, heart problems, a severe lung condition that causes a low amount of oxygen to go through your bloodstream to your organs (acute respiratory distress syndrome), blood clots, acute kidney injury, additional viral and bacterial infections, permanent long term injury to the body, and death.

Early studies indicate that COVID-19's "infection fatality rate" may be substantially higher than the seasonal influenza – potentially resulting in death ten or more times frequently than the seasonal flu.

[374] https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html
[375] https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html
[376] https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html

Susceptibility to COVID-19 is near universal in the workplace as there is no pre-existing immunity to this novel virus among humans. There is currently no specific treatment for or vaccine to prevent COVID-19. The best way to prevent workplace related illness is to prevent workplace exposure to the SARS-CoV-2 virus.

SARS-CoV-2 is easily transmitted through the air from person-to-person through respiratory aerosols created by coughing, sneezing, talking, and even singing. Epidemiologic studies have documented SARS-CoV-2 transmission during the pre-symptomatic incubation period, and asymptomatic transmission has been suggested in other reports. SARS-CoV-2 aerosols can settle and deposit on environmental surfaces where they can remain viable for days, although it is thought that transmission of the virus in this manner is not thought to be the primary mode of transmission.

The CDC's current best estimate of the percentage of persons with positive COVID-19 infections that are asymptomatic is 35%. The CDC's current best estimate of the percentage of COVID-19 disease transmission occurring prior to symptom onset is 40%. This means that until an effective vaccine is developed and deployed, healthy employees will run a continuing risk of exposure to COVID-19 despite an employer's best efforts to conduct pre-shift screening of employees, customers, and other persons to identify suspected COVID-19 carriers of the disease.

Researchers think that the reproduction number for COVID-19 is between 2 and 3, which means that one person can infect two to three other people. There are also documented cases in the U.S. of "superspreader" events where, one person has been shown to have infected dozens of people at a single mass gathering event.

"The threshold for combined [COVID-19] vaccine efficacy, once one is developed and herd immunity needed for disease extinction" is estimated between 55% and 82% "(i.e., >82% of the population has to be immune, through either vaccination or prior infection, to achieve herd immunity to stop transmission)." Development and deployment of a vaccine in the United States remains at least six months away and perhaps many more months beyond that.

CDC's current "best guess" is that — in a scenario without any further social distancing or other efforts to control the spread of the virus — roughly 4 million patients would be hospitalized in the U.S. with COVID-19 and 500,000 would die over the course of the pandemic.

Although all employees are potentially susceptible to serious health complications from exposure to the SARS-CoV-2 virus and COVID-19 disease, there are sound reasons to be significantly concerned about workplace exposures to employees in high risk categories (age and medical condition). A substantial portion of the workforce are individuals of 65 years or older, or suffering from chronic medical conditions such as diabetes, obesity, hypertension, high cholesterol, or underlying respiratory conditions.

Continued spread of the virus in the general population and the workplace is anticipated for months to come. The disease is spread through "very, very casual interpersonal contact." Despite all the efforts of national, state, and local government leaders, there are currently (as of June 4, 2020) 19 states that have averaged more new cases over the past week than the prior week, while 13 are holding steady and 18 are seeing a downward trend. In addition, it

is still widely expected that a late fall or early winter second wave of COVID-19 could be even more deadly in the U. S., as it would coincide with the flu season, which already puts a strain on hospitals.

There is ample evidence to support the conclusion that spread of the SARS-CoV-2 virus and the potentially deadly COVID-19 disease will persist in Virginia's workplaces for many months to come. It is well documented that employers will be confronted with employees who work despite being symptomatic for fear of job loss, and customers who will refuse to observe physical distancing or face covering requirements, even in the face of Governor's executive orders, thereby exposing employees to a continuing risk of exposure unless mandatory mitigation efforts are implemented through an emergency regulation.

In addition, as contractors from other states cross borders into and out of Virginia, combined with the loosening of travel restrictions and opening of state economies, more people from other states and localities with ongoing high rates of community transmission will potentially bring the SARS-CoV-2 virus and COVID-19 disease to Virginia's workplaces and communities.

As previously noted, there is currently no vaccine for COVID-19. While officials are hopeful a vaccine to prevent COVID-19 will be ready in the first half of 2021, it's far from guaranteed. Producing and deploying a vaccine to a sufficient number of the U. S. population (over 329,000,000 people) to achieve a minimum of 50% of the population with effective COVID-19 antibodies will take some time to accomplish. In addition the fact that the vaccine may have an effectiveness rate below 100%, successful deployment of a vaccine will depend on the willingness of the U.S. population to actually take the vaccine. There is evidence to support a conclusion that a not insignificant portion of the population may refuse to take the vaccine.

The need for an emergency temporary standard is demonstrated by the rapid and overwhelmingly widespread onslaught of the SARS-CoV-2 virus and COVID-19 disease in the country, to states surrounding Virginia, and to Virginia itself and its places of employment. The deadly virus is both new and "novel," involving a sudden, unforeseen, and fast spreading epidemic which evolved into a worldwide pandemic in a matter of months.

A significant number of employee deaths and workers' compensation claims have been reported in Virginia in just a four month period. Virginia employees are becoming infected, seriously ill, and dying from COVID-19 because of workplace exposures in a wide variety of industries.

Susceptibility to COVID-19 is near universal in the workplace as there is no pre-existing immunity to this novel virus among humans. There is currently no specific treatment for or vaccine to prevent COVID-19. Development and deployment of a vaccine in the United States remains at least six months away and perhaps many more months beyond that.

Due to the high potential for pre-symptomatic and asymptomatic persons to unknowingly spread the SARS-CoV-2 virus in a public or workplace setting, until an effective vaccine is developed and deployed, healthy employees will run a continuing risk of exposure to COVID-19 despite an employer's best efforts to conduct pre-shift screening of employees, customers, and other persons to identify suspected COVID-19 carriers of the disease.

The most effective way to ensure that no Virginia "employee will suffer material impairment of health or functional capacity" is to prevent the spread of workplace related COVID-19 infections through the adoption of mandatory employee protection and virus mitigation requirements.

There currently is no occupational law, standard, or regulation that specifically addresses infectious diseases such as the SARS-CoV-2 virus that causes the COVID-19 disease. While there are some VOSH regulations that can be applied toward some mitigation efforts (i.e., personal protective equipment, respiratory protection equipment), those regulations are not universal across all Virginia industries, and none would require:

- Physical distancing of at least six feet where feasible
- Disinfection of work areas where known or suspected COVID-19 employees or other persons accessed or worked[377]
- Employers to develop policies and procedures for employees to report when they are sick or experiencing symptoms consistent with COVID-19
- Employers to, prior to the commencement of each work shift, prescreen of employees to verify each employee is not COVID-19 symptomatic
- Employers to prohibit known and suspected COVID-19 employees from reporting to or being allowed to remain at work or on a job site until cleared for return to work
- Employers to develop and implement policies and procedures for known COVID-19 or suspected COVID-19 employees to return to work using either a symptom-based or test-based strategy depending on local healthcare and testing circumstances
- Employers to prohibit COVID-19 positive employees from reporting to or being allowed

[377] https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.141
1910.141(a)(3)(i) provides that "All places of employment shall be kept **clean** to the extent that the nature of the work allows." (Emphasis added). The term "sanitary" is not used, although it is used in reference to "washing facilities", "waste disposal", "food storage", "sweepings", and "drinking water".
1910.141(a)(4)(i) provides that "Any receptacle used for putrescible solid or liquid waste or refuse shall be so constructed that it does not leak and may be thoroughly cleaned and maintained in a **sanitary** condition. Such a receptacle shall be equipped with a solid tight-fitting cover, unless it can be maintained in a **sanitary** condition without a cover. This requirement does not prohibit the use of receptacles which are designed to permit the maintenance of a **sanitary** condition without regard to the aforementioned requirements." (Emphasis added).
1910.141(a)(4)(ii) provides that "All sweepings, solid or liquid wastes, refuse, and garbage shall be removed in such a manner as to avoid creating a menace to health and as often as necessary or appropriate to maintain the place of employment in a **sanitary** condition." (Emphasis added).
1910.141(b)(1)(iii) provides that "Portable drinking water dispensers shall be designed, constructed, and serviced so that **sanitary** conditions are maintained, shall be capable of being closed, and shall be equipped with a tap." (Emphasis added).
1910.141(d)(1) provides that "Washing facilities shall be maintained in a **sanitary** condition." (Emphasis added).
1910.141(g)(3) provides that "Waste disposal containers. Receptacles constructed of smooth, corrosion resistant, easily cleanable, or disposable materials, shall be provided and used for the disposal of waste food. The number, size, and location of such receptacles shall encourage their use and not result in overfilling. They shall be emptied not less frequently than once each working day, unless unused, and shall be maintained in a **clean and sanitary** condition. Receptacles shall be provided with a solid tight-fitting cover unless **sanitary** conditions can be maintained without use of a cover." (Emphasis added).
1910.141(g)(4) provides that "**Sanitary** storage. No food or beverages shall be stored in toilet rooms or in an area exposed to a toxic material." (Emphasis added).

to remain at work or on a job site until cleared for return to work

- Employers to provide employees assigned to work stations and in frequent contact with other persons inside six feet with alcohol based hand sanitizers at their workstations
- Employers with hazards or job tasks classified at very high, high, or medium exposure risk to develop a written Infectious Disease Preparedness and Response Plan
- Employee training on SARS-CoV-2 and COVID-19 hazards, with the exception of 1926.21(b)(2) requirements for the Construction Industry[378]

The current patchwork of VOSH and OSHA standards and regulations do not ensure that similarly situated employees and employers exposed to the same SARS-CoV-2 and COVID-19 related hazards and job tasks in similar exposure settings are provided the same level of occupational safety and health protections. Examples include but are not limited to:

- Construction Industry employers would be required to provide training to employees on an emergency temporary standard/emergency regulation, but no other employers covered by VOSH jurisdiction would be required to do so. Section 1926.21(b)(2)[379] (Safety Training and Education).
- The Agricultural Industry has no standards or regulations to provide respiratory or personal protective equipment to employees.
- Sanitation requirements in the Construction Industry are limited to "Toilet facilities shall be operational and maintained in a clean and sanitary condition."
- Neither the Construction Industry nor the Agricultural Industry have a requirement comparable to 1910.132(d) which requires General Industry employers to conduct a written workplace assessment to "determine if hazards are present, or are likely to be present, which necessitate the use of" PPE.[380]

[378] With the exception of the Construction Industry regulation at 1926.21(b)(2) (Safety Training and Education)

[379] https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.21

[380] 1910.132(d), Hazard assessment and equipment selection.
1910.132(d)(1), The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:
1910.132(d)(1)(i), Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;
1910.132(d)(1)(ii), Communicate selection decisions to each affected employee; and,
1910.132(d)(1)(iii), Select PPE that properly fits each affected employee.
Note: Non-mandatory appendix B contains an example of procedures that would comply with the requirement for a hazard assessment.
1910.132(d)(2)
The employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.

The Board's statutory mandate in Va. Code §40.1-22(5) to:

> "... adopt, alter, amend, or repeal rules and regulations to further, protect and promote the safety and health of employees in places of employment over which it has jurisdiction and to effect compliance with the federal OSH Act of 1970...as may be necessary to carry out its functions established under this title. The Commissioner shall enforce such rules and regulations. All such rules and regulations shall be designed to protect and promote the safety and health of such employees. In making such rules and regulations to protect the occupational safety and health of employees, the Board shall adopt the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity. However, such standards shall be at least as stringent as the standards promulgated by the Federal Occupational Safety and Health Act of 1970 (P.L. 91-596). In addition to the attainment of the highest degree of health and safety protection for the employee, other considerations shall be the latest available scientific data in the field, the feasibility of the standards, and experience gained under this and other health and safety laws…." (Emphasis added).

As is discussed in greater detail in section above, while the General Duty Clause, Va. Code §40.1-51(a), can be used in certain limited circumstances to enforce mandatory requirements in Governor Northam's Executive Orders, there are severe limitations to its use that make it problematic to enforce and results in its infrequent use. As is evident from the wording of the statute, it does not directly address the issue of SARS-CoV-2 or COVID-19 related hazards.

While preferable to no enforcement tool at all, the general duty clause does not provide either the regulated community, employees, or the VOSH Program with substantive and consistent requirements on how to reduce or eliminate SARS-CoV-2 or COVID-19 related hazards, serious illnesses and deaths, that can otherwise be clearly and uniformly established in an emergency temporary standard. It cannot be used to enforce OSHA Guidelines at all, and can only be used to enforce CDC guidelines that use "mandatory" language such as "shall" and "will" as opposed to language that "suggests" or "recommends" employer action through words such as "should" or "may". Of the specific mitigation efforts listed above only the physical distancing and enhanced sanitation requirements are addressed in Governor Northam's Executive Orders and therefore enforceable through the General Duty Clause.

Further, federal OSHA has taken the position that it will not be promulgating an emergency temporary standard pursuant to its authority under the OSH Act of 1970,[381], instead opting to rely upon many voluntary guidelines for various business sectors. These guidelines, while useful for employers with the intention of complying with health and safety standards, will be irrelevant for businesses who choose not to take steps to protect employees from the grave danger posed by COVID-19.

Many of the guidelines are explicit that they are voluntary, and may not be used to impose legal obligations upon employers. Employers' voluntary compliance with relevant

[381] https://www.osha.gov/laws-regs/oshact/section_6

guidelines, which has also been asserted by OSHA as a reason a standard is unnecessary, is antithetical to the goal of protecting all employees, particularly in those workplaces with recalcitrant employers.

An emergency regulation is also necessary to establish clear baseline standards employers can rely upon as to how to protect employees, rather than having them rely upon ad hoc "interim" guidance documents from various agencies. In a similar case where federal OSHA relied solely upon voluntary guidance and employers' voluntary compliance instead of an emergency temporary standard, the D.C. Circuit Court of Appeals found OSHA had "embarked upon the least responsive course short of inaction" and ordered OSHA to expedite rulemaking for an ethylene oxide standard. *Public Citizen Health Research Group v. Auchter*, 702 F.2d 1150, 1153 (D.C. Cir. 1983).

The following items are intended to support and supplement the above finding, but the Board reserves the right to rely on other evidence presented in the administrative record to support the finding and its decision to adopt an emergency temporary standard, should it decide to do so.

- On February 7, 2020, the State Health Commissioner declared COVID-19 a communicable disease of public health threat[382] as defined in Va. Code §44-146.16 in part as "an illness of public health significance….caused by a specific or suspected infectious agent that may be reasonably expected or is known to be readily transmitted directly or indirectly from one individual to another and has been found to create a risk of death or significant injury or impairment…."

- In the context of VOSH's jurisdiction over places of employment and the Safety and Health Codes Board's authority to regulate occupational safety and health hazards in Virginia, COVID-19 poses a threat of "material impairment of health or functional capacity" to employees. Va. Code §40.1-22(5).

- Infectious respiratory diseases can spread in a workplace setting when a healthy person comes in contact with virus particles expelled by someone who is sick — usually through a cough or sneeze.[383] SARS-CoV-2 is easily transmitted through the air from person-to-person through respiratory aerosols, and the aerosols can settle and deposit on environmental surfaces where they can remain viable for days.[384]

- Susceptibility to COVID-19 will be universal in the workplace as there is no pre-existing immunity to this novel virus among humans. "The virus is spread through very, very casual interpersonal contact," W. David Hardy, a professor of infectious disease at Johns Hopkins University School of Medicine, told STAT.[385]

- "Although most people with COVID-19 have mild to moderate symptoms, the [COVID-

[382] https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/Order-of-the-Governor-and-State-Health-Commissioner-Declaration-of-Public-Health-Emergency.pdf
[383] https://www.statnews.com/2020/04/14/how-much-of-the-coronavirus-does-it-take-to-make-you-sick/
[384] https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/coronavirus-disease-2019-covid-19-frequently-asked-questions
[385] https://www.statnews.com/2020/04/14/how-much-of-the-coronavirus-does-it-take-to-make-you-sick/

19] disease can cause severe medical complications and lead to death in some people. Older adults or people with existing chronic medical conditions are at greater risk of becoming seriously ill with COVID-19."[386] "Younger adults are also being hospitalized in the U.S. Adults 20–44 account for 20% of hospitalizations, 12% of ICU admissions."[387] Some research indicates that SARS-CoV-2 infection can cause significant morbidity in relatively young persons without severe underlying medical conditions.[388]

- "Those most at risk are 'people 65 years and older, people who live in a nursing home or long-term care facility, people with chronic lung, heart, kidney and liver disease,' said Dr. Gary Weinstein, pulmonologist/critical care medicine specialist at Texas Health Presbyterian Hospital Dallas (Texas Health Dallas). Additionally, he said others who could be at risk are those with compromised immune systems and people with morbid obesity or diabetes. **"**Finally, when patients have lung failure, they frequently have failure or dysfunction of their other organs, such as the kidney, heart, and brain,'.'"[389] (Emphasis added).

- In all 50 states and the District of Columbia, at least 20 percent of adults ages 65 to 74 are in the workforce. In seven states, more than 30 percent are working. Since 2013, 46 of 51 had seen increases in workforce participation of 75-and-older residents. Seniors represent significant portions of the workforce for many professions that require close contact with others, including bus drivers, ushers, ticket takers, taxi drivers, street vendors, chiropractors, dentists, barbers and many more.[390]

- The CDC conducted a study of "Selected health conditions and risk factors, by age: United States, selected years 1988–1994 through 2015–2016"[391] of the general population. Although the working population of the country is only a subset of the totals for the table, the data nonetheless demonstrates the significant risk that SARS-CoV-2 and COVID-19 related hazards pose to the U.S. and Virginia workers. Using the age adjusted statistical totals:

  - 14.7% of the population suffer from diabetes
    - 12.2% from high cholesterol
    - 30.2% suffer from hypertension
    - 39.7% suffer from obesity

[386] https://www.mayoclinic.org/diseases-conditions/coronavirus/symptoms-causes/syc-20479963
[387] https://www.hopkinsguides.com/hopkins/view/Johns_Hopkins_ABX_Guide/540747/all/Coronavirus_COVID_19__SARS_CoV_2_
[388] https://www.cdc.gov/mmwr/volumes/69/wr/mm6918e1.htm
[389] https://www.healthline.com/health-news/what-we-know-about-the-long-term-effects-of-covid-19#COVID-19-might-affect-the-brain-stem
[390] https://www.seniorliving.org/research/senior-employment-outlook-covid/
[391] https://www.cdc.gov/nchs/data/hus/2018/021.pdf

NOTE: Virginia's Adult Diabetes Rate in 2019 was 10.5%.[392]

Virginia's Hypertension Rate in 2015 was 33.2%[393]

Virginia's Adult High Cholesterol Rate[394] in 2019 was 33%.[395]

Virginia's Adult Obesity Rate[396] in 2019 was 30.3%.[397]

- The largest cohort of >44,000 persons with COVID-19 from China showed that illness severity can range from mild to critical:
  - Mild to moderate (mild symptoms up to mild pneumonia): **81%**
  - Severe (dyspnea, hypoxia, or >50% lung involvement on imaging): **14%**
  - Critical (respiratory failure, shock, or multi-organ system dysfunction): **5%**
- "In this study, all deaths occurred among patients with critical illness and the overall case fatality rate was 2.3%. The case fatality rate among patients with critical disease was 49%. Among children in China, illness severity was lower with 94% having asymptomatic, mild or moderate disease, 5% having severe disease, and <1% having critical disease. Among U.S. COVID-19 cases with known disposition, the proportion of persons who were hospitalized was 19%. The proportion of persons with COVID-19 admitted to the intensive care unit (ICU) was 6%."[398] (Emphasis added).
- Asymptomatic and Pre-Symptomatic Transmission. Epidemiologic studies have documented SARS-CoV-2 transmission during the pre-symptomatic incubation period, and asymptomatic transmission has been suggested in other reports. Virologic studies have also detected SARS-CoV-2 with RT-PCR low cycle thresholds, indicating larger quantities of viral RNA, and cultured viable virus among persons with asymptomatic and pre-symptomatic SARS-CoV-2 infection. The exact degree of SARS-CoV-2 viral RNA shedding that confers risk of transmission is not yet clear. Risk of transmission is thought to be greatest when patients are symptomatic since viral shedding is greatest at the time of symptom onset and declines over the course of several days to weeks. However, the proportion of SARS-CoV-2 transmission in the population due to asymptomatic or pre-symptomatic infection compared to symptomatic infection is unclear.[399]
- "Complications can include pneumonia and trouble breathing, organ failure in several organs, heart problems, a severe lung condition that causes a low amount of oxygen to go through your bloodstream to your organs (acute respiratory distress syndrome), blood

[392] https://www.americashealthrankings.org/explore/annual/measure/High_Chol/state/VA
[393] https://www.vdh.virginia.gov/content/uploads/sites/65/2018/05/VA-Heart-Disease-FactSheetFINAL.pdf
[394] Percentage of adults who reported having their cholesterol checked and were told by a health professional that it was high.
[395] https://www.americashealthrankings.org/explore/annual/measure/High_Chol/state/VA
[396] Percentage of adults with a body mass index of 30.0 or higher based on reported height and weight (pre-2011 BRFSS methodology).
[397] https://www.americashealthrankings.org/learn/reports/2019-annual-report/state-summaries-virginia
[398] https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html
[399] https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html

clots, acute kidney injury, additional viral and bacterial infections."[400]

- There is significant evidence of workplace exposures for employees to COVID-19 in many different industries in Virginia and around the country (see section IV.O.1 to .26).

- Early studies indicate that COVID-19 "infection fatality rate" may be substantially higher than the seasonal influenza. The generally accepted approximate IFR-S of seasonal influenza is 0.1%.[401] A study by the University of Washington using data through April 20, 2020, calculated the U.S. "infection mortality rate" among symptomatic cases (IFR-S) to be 1.3%[402] [13 times the seasonal influenza rate]. Another study calculated a global IFR of 1.04%[403] [10.4 times the seasonal influenza rate]. A study by the London School of Hygiene and Tropical Medicine estimated the infection fatality rate on the Diamond Princess Cruise Ship to be 1.2%[404] [12 times the seasonal influenza rate] Nearly the entire cruise ships 3,711 passengers and crew were tested.

- The CDC's current best estimate of the percentage of persons with positive COVID-19 infections that are asymptomatic is 35%.[405] The CDC's current best estimate of the percentage of COVID-19 disease transmission occurring prior to symptom onset is 40%.[406] This means that until an effective vaccine is developed and deployed, healthy employees will run a continuing risk of exposure to COVID-19 despite an employer's best efforts to conduct pre-shift screening of employees.

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[400] *Id.*

[401] *Id.* referencing https://www.cdc.gov/flu/about/burden/2018-2019.html

[402] https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2020.00455; Study assumptions: We make three assumptions for our analysis: (1) Errors in the numerator and the denominator lead to underreporting of true COVID-19 deaths and cases, respectively; error is smaller for deaths than for cases. (2) Both the errors are declining over time. (3) The errors in the denominator are declining at a faster rate than the error in the numerator.

Assumption #1 is self-evident; both the deaths and the actual cases are undercounted during the initial phase of the epidemic. Because deaths are much more visible events than infections, which, in the case of COVID-19, can go asymptomatic during the first few days of infection, we posit that, at any point in time, the errors in the denominator are larger than the errors in the numerator. Hence, this assumption leads to CFR estimates being larger than the IFR-S, which is typically believed to be true based on observed data.

Assumption #2 is our central assumption, which states that under some stationary processes of care delivery, health care supply, and reporting, which are all believed to be improving over time, the errors in both the numerator and the denominator are declining. It implies that we are improving in the measurement of both the numerator and denominator over time, albeit at different rates in different jurisdictions.

Assumption #3 posits that the error in the denominator is declining faster than the error in the numerator. This assumption indicates that the CFR rates, based on the number of cumulative COVID-19 deaths and the cumulative reported COVID-19 cases, are declining over time and are confirmed based on our observed data (described in detail below).

[403] https://www.medrxiv.org/content/10.1101/2020.05.11.20098780v1

[404] https://www.medrxiv.org/content/10.1101/2020.03.05.20031773v2

[405] https://www.cnn.com/2020/05/22/health/cdc-coronavirus-estimates-symptoms-deaths/index.html

[406] *Id.*

- The CDC has documented multiple "superspreaders" of the virus at mass gathering events involving a choir practice,[407] a church service,[408] a funeral,[409] and a birthday party[410] where dozens of persons were infected by a single "superemitter" of the virus.

- Since February, 2020, the Virginia Workers' Compensation Commission has received 3,154 COVID-19 related claims as of May 31, 2020 in a wide variety of occupational settings, representing a nearly 44.5% increase in claims over a 20 day period since May 11, 2020 (2,182 claims).

- Since February, 2020, the Virginia Department of Human Resources Workers' Compensation Statistics has received 42 COVID-19 related claims for state employees in a wide variety of occupational settings (see section IV.A.2).

- Pursuant to Va. Code §40.1-51.1.D[411], eight (8) COVID-19 related employee deaths have been reported by employers to the Department. An additional three (3) employee deaths have been reported to the Department by the Virginia Workers' Compensation Commission.

- The VOSH Program has investigated an average of 37 annual work-related employee deaths over the last five calendar years. The eleven (11) COVID-19 death notifications so far in 2020 would represent 30% of the deaths investigated by VOSH in an average year. It is not unreasonable to assume that had no mitigation efforts been undertaken by state and local governments beginning in mid-March (e.g., stay at home requests and orders, business shutdowns, physical distancing requirements, face covering recommendations and requirements, etc.), that the number of COVID-19 death notifications would be even higher than the 11 reported to date. It is anticipated that VOSH will be receiving more notifications of employee deaths in the coming weeks and months.

- "[As of May 20, 2020] The CDC's current "best guess" is that — in a scenario without any further social distancing or other efforts to control the spread of the virus — roughly 4 million patients would be hospitalized in the U.S. with COVID-19 and 500,000 would die over the course of the pandemic. That's according to the agency's new parameters that the Center for Public Integrity plugged into a simple epidemiological model."[412]

- Researchers think that the R_0 [reproduction number] for COVID-19 is between 2 and 3. This means that one person can infect two to three other people.[413] Depending on the level of contagiousness of COVID-19 expressed in the R_0[414] value, "the threshold for combined

[407] https://www.cdc.gov/mmwr/volumes/69/wr/mm6919e6.htm
[408] https://www.cdc.gov/mmwr/volumes/69/wr/mm6920e2.htm?s_cid=mm6920e2_w
[409] https://www.cdc.gov/mmwr/volumes/69/wr/mm6915e1.htm?s_cid=mm6915e1_w
[410] *Id.*
[411] https://law.lis.virginia.gov/vacode/40.1-51.1/
[412] https://www.npr.org/sections/health-shots/2020/05/22/860981956/scientists-say-new-lower-cdc-estimates-for-severity-of-covid-19-are-optimistic
[413] https://www.webmd.com/lung/what-is-herd-immunity#1
[414] "The basic reproduction number (R_0), pronounced "R naught," is intended to be an indicator of the contagiousness or transmissibility of infectious and parasitic agents…. R_0 has been described as being one of the fundamental and most

[COVID-19] vaccine efficacy and herd immunity needed for disease extinction" is estimated between 55% and 82% "(i.e., >82% of the population has to be immune, through either vaccination or prior infection, to achieve herd immunity to stop transmission)."[415]

- There is anecdotal evidence to support the conclusion that employers will be confronted with employees who work despite being symptomatic and customers who will refuse to observe physical distancing or face covering requirements, even in the face of Governor's executive orders (see section IV.O.17, Restaurants and Bars; section IV.O.18, Grocery Retail and Food Retail; section IV.O.20, Personal Care, Personal Grooming, Salon, and Spa Services; section IV.O.21, Sports and Entertainment, and Mass Gatherings).

- "As U.S. states push forward with reopening plans, nearly as many are seeing coronavirus caseloads trending upward as those where case numbers are declining, an analysis of Johns Hopkins data shows**.** Nineteen states have averaged more new cases over the past week than the prior week, while 13 are holding steady and 18 are seeing a downward trend. Louisiana is one of those downward-trending states and is set to begin Phase 2 of its plan to reopen the economy Friday, allowing businesses to open at 50% capacity, according to Gov. John Bel Edwards….Texas and Florida are still recording increasing weekly averages of new cases as they take steps toward reopening."[416]

- "It is not yet known whether weather and temperature affect the spread of COVID-19. Some other viruses, like those that cause the common cold and flu, spread more during cold weather months but that does not mean it is impossible to become sick with these viruses during other months. There is much more to learn about the transmissibility, severity, and other features associated with COVID-19 and investigations are ongoing."[417]

- "Robert Redfield, MD, the director of the Centers for Disease Control and Prevention (CDC), warned yesterday [April 21, 2020] that a late fall or early winter wave of COVID-19 could be even more deadly in the United States, as it would coincide with the flu season, which already puts a strain on hospitals."[418]

- There is currently no vaccine for COVID-19. "U.S. officials and scientists are hopeful a vaccine to prevent Covid-19 will be ready in the first half of 2021 - 12 to 18 months since Chinese scientists first identified the coronavirus and mapped its genetic sequence. It's far from guaranteed. Even the most optimistic epidemiologists hedge their bets when they say it could be ready that quickly. And a lot can go wrong that could delay their progress,

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often used metrics for the study of infectious disease dynamics (7–12). An R_0 for an infectious disease event is generally reported as a single numeric value or low–high range, and the interpretation is typically presented as straightforward; an outbreak is expected to continue if R_0 has a value >1 and to end if R_0 is <1 (13). The potential size of an outbreak or epidemic often is based on the magnitude of the R_0 value for that event (10), and R_0 can be used to estimate the proportion of the population that must be vaccinated to eliminate an infection from that population (14,15). R_0 values have been published for measles, polio, influenza, Ebola virus disease, HIV disease, a diversity of vectorborne infectious diseases, and many other communicable diseases (14,16–18).
https://wwwnc.cdc.gov/eid/article/25/1/17-1901_article

[415] https://wwwnc.cdc.gov/eid/article/26/7/20-0282_article#suggestedcitation
[416] https://www.cnn.com/2020/06/04/health/us-coronavirus-thursday/index.html
[417] https://www.cdc.gov/coronavirus/2019-ncov/faq.html#Coronavirus-Disease-2019-Basics
[418] https://www.cidrap.umn.edu/news-perspective/2020/04/coroner-first-us-covid-19-death-occurred-early-february

scientists and infectious disease experts warn."[419]

- Producing and deploying a vaccine to a sufficient number of the U. S. population (over 329,000,000 people) to achieve a minimum of 50% of the populations with effective COVID-19 antibodies will take some time to accomplish. The U.S. Census estimates that Virginia's population as of July 1, 2019 was 8,535,519, and that 15.4% (1,314,469) of Virginia's population was 65 years or older.[420]

- Successful deployment of a COVID-19 vaccine will depend on the willingness of the U.S. population to actually take the vaccine. In a Reuters' survey[421] of 4,428 U.S. adults taken between May 13 and May 19: "Fourteen percent of respondents said they were not at all interested in taking a vaccine, and 10% said they were not very interested. Another 11% were unsure."

[419] https://www.cnbc.com/2020/05/21/coronavirus-vaccine-why-it-may-be-ready-early-next-year-and-what-could-go-wrong.html
[420] https://www.census.gov/quickfacts/fact/table/VA#
[421] https://www.reuters.com/article/us-health-coronavirus-vaccine-poll-exclu/exclusive-a-quarter-of-americans-are-hesitant-about-a-coronavirus-vaccine-reuters-ipsos-poll-idUSKBN22X19G

ATTACHMENT E: OSHA RECORDKEEPING GUIDELINES FOR RECORDING COVID-19 OCCUPATIONALLY RELATED CASES

OSHA's changing guidance in April and May, 2020, concerning employer responsibilities to record COVID-19 occupationally related illnesses has over the short term resulted in reduced access to accurate workplace exposure and illness data related to COVID-19.

On **April 10, 2020**, OSHA issued a memorandum on "Enforcement Guidance for Recording Cases of Coronavirus Disease 2019 (COVID-19)"[422] to provide "interim guidance to Compliance Safety and Health Officers (CSHOs) for enforcing the requirements of 29 CFR Part 1904 with respect to the recording of occupational illnesses, specifically cases of Coronavirus Disease 2019 (COVID-19)….This guidance is intended to be time-limited to the current public health crisis:

> Under OSHA's recordkeeping requirements, COVID-19 is a recordable illness, and employers are responsible for recording cases of COVID-19, if: (1) the case is a confirmed case of COVID-19, as defined by Centers for Disease Control and Prevention (CDC);[1] (2) the case is work-related as defined by 29 CFR § 1904.5;[2] and (3) the case involves one or more of the general recording criteria set forth in 29 CFR § 1904.7.[3] On March 11, the World Health Organization (WHO) declared COVID-19 a global pandemic, and the extent of transmission is a rapidly evolving issue.
>
> In areas where there is ongoing community transmission, employers other than those in the healthcare industry, emergency response organizations (e.g., emergency medical, firefighting, and law enforcement services), and correctional institutions may have difficulty making determinations about whether workers who contracted COVID-19 did so due to exposures at work. In light of those difficulties, OSHA is exercising its enforcement discretion in order to provide certainty to the regulated community.
>
> Employers of workers in the healthcare industry, emergency response organizations (e.g., emergency medical, firefighting, and law enforcement services), and correctional institutions must continue to make work-relatedness determinations pursuant to 29 CFR § 1904. Until further notice, however, OSHA will not enforce 29 CFR § 1904 to require other employers to make the same work-relatedness determinations, except where:
>
> 1. There is objective evidence that a COVID-19 case may be work-related. This could include, for example, a number of cases developing among workers who work closely together without an alternative explanation; and
>
> 2. The evidence was reasonably available to the employer. For purposes of this memorandum, examples of reasonably available evidence include information given to the employer by employees, as well as information that an employer learns regarding its employees' health and safety in the ordinary course of managing its business and employees.
>
> This enforcement policy will help employers focus their response efforts on implementing good hygiene practices in their workplaces, and otherwise mitigating

[422] https://www.osha.gov/memos/2020-04-10/enforcement-guidance-recording-cases-coronavirus-disease-2019-covid-19

COVID-19's effects, rather than on making difficult work-relatedness decisions in circumstances where there is community transmission. (Emphasis added).

On **May 19, 2020**[423], OSHA revised its April 10, 2020 guidance as follows:

"Confirmed cases of COVID-19 have now been found in nearly all parts of the country, and outbreaks among workers in industries other than healthcare, emergency response, or correctional institutions have been identified. As transmission and prevention of infection have become better understood, both the government and the private sector have taken rapid and evolving steps to slow the virus's spread, protect employees, and adapt to new ways of doing business. As the virus's spread now slows in certain areas of the country, states are taking steps to reopen their economies and workers are returning to their workplaces. All these facts—incidence, adaptation, and the return of the workforce—indicate that employers should be taking action to determine whether employee COVID-19 illnesses are work-related and thus recordable. Given the nature of the disease and ubiquity of community spread, however, in many instances it remains difficult to determine whether a COVID-19 illness is work-related, especially when an employee has experienced potential exposure both in and out of the workplace.

In light of these considerations, OSHA is exercising its enforcement discretion in order to provide certainty to employers and workers. Accordingly, until further notice, OSHA will enforce the recordkeeping requirements of 29 CFR 1904 for employee COVID-19 illnesses for all employers according to the guidelines below.

….

Because of the difficulty with determining work-relatedness, OSHA is exercising enforcement discretion to assess employers' efforts in making work-related determinations. In determining whether an employer has complied with this obligation and made a reasonable determination of work-relatedness, CSHOs should apply the following considerations:

- The reasonableness of the employer's investigation into work-relatedness. Employers, especially small employers, should not be expected to undertake extensive medical inquiries, given employee privacy concerns and most employers' lack of expertise in this area. It is sufficient in most circumstances for the employer, when it learns of an employee's COVID-19 illness, (1) to ask the employee how he believes he contracted the COVID-19 illness; (2) while respecting employee privacy, discuss with the employee his work and out-of-work activities that may have led to the COVID-19 illness; and (3) review the employee's work environment for potential SARS-CoV-2 exposure. The review in (3) should be informed by any other instances of workers in that environment contracting COVID-19 illness.

- The evidence available to the employer. The evidence that a COVID-19 illness was work-related should be considered based on the information reasonably available to the employer at the time it made its work-relatedness determination. If the employer later learns more information related to an employee's COVID-19 illness, then that information should be taken into account as well in determining whether an employer made a reasonable work-relatedness determination.

[423] https://www.osha.gov/memos/2020-05-19/revised-enforcement-guidance-recording-cases-coronavirus-disease-2019-covid-19

- The evidence that a COVID-19 illness was contracted at work. CSHOs should take into account all reasonably available evidence, in the manner described above, to determine whether an employer has complied with its recording obligation. This cannot be reduced to a ready formula, but certain types of evidence may weigh in favor of or against work-relatedness. For instance:

    - COVID-19 illnesses are likely work-related when several cases develop among workers who work closely together and there is no alternative explanation.
    - An employee's COVID-19 illness is likely work-related if it is contracted shortly after lengthy, close exposure to a particular customer or coworker who has a confirmed case of COVID-19 and there is no alternative explanation.
    - An employee's COVID-19 illness is likely work-related if his job duties include having frequent, close exposure to the general public in a locality with ongoing community transmission and there is no alternative explanation.
    - An employee's COVID-19 illness is likely not work-related if she is the only worker to contract COVID-19 in her vicinity and her job duties do not include having frequent contact with the general public, regardless of the rate of community spread.
    - An employee's COVID-19 illness is likely not work-related if he, outside the workplace, closely and frequently associates with someone (e.g., a family member, significant other, or close friend) who (1) has COVID-19; (2) is not a coworker, and (3) exposes the employee during the period in which the individual is likely infectious.
    - CSHOs should give due weight to any evidence of causation, pertaining to the employee illness, at issue provided by medical providers, public health authorities, or the employee herself.

If, after the reasonable and good faith inquiry described above, the employer cannot determine whether it is more likely than not that exposure in the workplace played a causal role with respect to a particular case of COVID-19, the employer does not need to record that COVID-19 illness." (Emphasis added).

ATTACHMENT F: VOSH INVESTIGATION AND INSPECTION PROCEDURES

1. VOSH Inspection Priority Categories.

Priority	Category
First	Imminent Danger as defined in the VOSH Administrative Regulation Manual (ARM).
Second	Fatality Inspections (regardless of whether our inspection is in response to specific evidence of hazardous conditions or not).
Third	Accident / First Report of Accident Inspections.
Fourth	Complaints / Referrals.
Fifth	Follow-up / Monitoring.
Sixth	Programmed Inspections, i.e., General Schedule, Construction Schedule, National & Local Emphasis Programs AND unprogrammed inspections in response to alleged hazardous working conditions that would normally be classified as Other-Than-Serious.

2. VOSH Informal Investigation and Inspection Procedures.

COVID-19 "Investigations"

- Informal investigations (phone/fax/email/letter) are often conducted in response to employee complaints (with the permission of the employee); and referrals from the Virginia Department of Health
- The employer is provided the opportunity to provide a response to the complaint/referral items with a short turnaround time
- If no response or an unsatisfactory response is received, an inspection will be conducted
- If the response is considered satisfactory, it is provided to the Complainant for review and comment. If the Complainant provides reasonable information challenging the validity of the response provided, an inspection will be conducted.

Summary of How VOSH Initially Handled COVID-19 Related Complaints Early in the Pandemic:

COVID-19 related employee complaints received by the VOSH program that are within VOSH's jurisdiction are being addressed with employers. In an abundance of caution, at the beginning of the COVID-19 outbreak in Virginia the Department decided to modify its normal complaint processing procedures for both the safety and health of the employees at the work sites and its VOSH compliance officers by trying to limit exposure to the virus as much as possible while carrying out statutory enforcement mandates.

Rather than conducting a combination of onsite inspections and informal investigations as is the case under normal situations, COVID-19 complaints were initially handled through the VOSH program's complaint investigation process, which involves contacting the employer by phone, fax, email, or letter.

VOSH informed the employer of the complaint allegation and required a written response concerning the validity of the complaint allegation, any safety and health measures taken to date to protect employees against potential COVID-19 related hazards, and any measures to be taken in response to valid complaint allegations.

Employers were required to post a copy of VOSH's correspondence where it would be readily accessible for review by employees; and provide a copy of the correspondence and the employer's response to a representative of any recognized union or safety committee at the facility. Complainants were provided a copy of the employer's response.

Depending on the specific facts of the employee's alleged complaint, an employer's failure to respond or inadequate response could result in additional contact by the VOSH program with the employer, a referral to local law enforcement officials, an onsite VOSH inspection, or other enforcement options available to the VOSH program.

COVID-19 "Inspections"

- Can result in violations and substantial penalties
- Inspections are opened for COVID-19 related employee deaths
- Inspections may be opened for COVID-19 related hospitalizations or handled through an investigation
- Inspection files with proposed violations will be reviewed by Headquarters and receive a legal review before a decision to issue or not issue is made

3. Violation and Penalty Structure.

The emergency temporary standard/emergency regulation would be enforced in the same manner as all other VOSH laws, standards, and regulations. The types of civil violations that VOSH can cite are "serious", "other than serious", "repeat", "willful," and "failure to abate. Maximum penalties for each type are:

Serious and Other-than-serious $13,277

Willful and Repeat	$132,764
Failure-to-Abate	$13,277 per day

In calculating penalties, Va. Code §40.1-49.4.A.4 .a provides:

> In determining the amount of any proposed penalty [the Commissioner] shall give due consideration to the appropriateness of the penalty with respect to the size of the business of the employer being charged, the gravity of the violation, the good faith of the employer, and the history of previous violations. (Emphasis added).

Chapter 11 of the VOSH FOM explains how penalties are calculated:

> https://townhall.virginia.gov/L/GetFile.cfm?File=C:\TownHall\docroot\GuidanceDocs\181\GDoc_DOLI_5354_v6.pdf

Employers can receive penalty reductions for "size" based on the number of employees as follows:

1 - 25	70%
26-100	40%
101-250	20%
251 or more	zero

A penalty reduction of up to 25 percent is permitted in recognition of an employer's "good faith" in increments of 0%, 5%, 10%, 15%, 20% and 25%.

History. A reduction of 10% shall be given to employers who have not been cited by VOSH for any serious, willful or repeated violations in the past three years.

The minimum penalty for a serious violation is $600.00.

4. Employee Misconduct Defense.

The "Employee Misconduct" affirmative defense to VOSH citations and penalties is codified in VOSH regulation 16 VAC 25-60-260.B:

> B. A citation issued under subsection A of this section to an employer who violates any VOSH law, standard, rule, or regulation shall be vacated if such employer demonstrates that:
>
> 1. Employees of such employer have been provided with the proper training and equipment to prevent such a violation;
>
> 2. Work rules designed to prevent such a violation have been established and adequately communicated to employees by such employer and have been **effectively enforced** when such a violation has been discovered;

3. The failure of employees to observe work rules led to the violation; and

4. Reasonable steps have been taken by such employer to discover any such violation. (Emphasis added)

5. De Minimis Violation Policy.

Va. Code §40.1-49.4.A.2[424] provides "The Commissioner may prescribe procedures for calling to the employer's attention *de minimis* violations which have no direct or immediate relationship to safety and health." (Emphasis added).

The Virginia Occupational Safety and Health (VOSH) Field Operations Manual (FOM)[425] describes the Commissioner's procedures for *de minimis* violations in Chapter 10, pp. 38-39:

> *De minimis* violations are violations of standards which have no direct or immediate relationship to safety or health. Compliance Officers identifying *de minimis* violations of a VOSH standard shall not issue a citation for that violation, but should verbally notify the employer and make a note of the situation in the inspection case file. The criteria for classifying a violation as *de minimis* are as follows:
>
> 1. Employer Complies with Clear Intent of Standard.
>
> An employer complies with the clear intent of the standard but deviates from its particular requirements in a manner that has no direct or immediate relationship to employee safety or health. These deviations may involve distance specifications, construction material requirements, use of incorrect color, minor variations from recordkeeping, testing, or inspection regulations, or the like.
> ….
> 2. Employer Complies with Proposed Standard.
>
> An employer complies with a proposed standard or amendment or a consensus standard rather than with the standard in effect at the time of the inspection and the employer's action clearly provides equal or greater employee protection or the employer complies with a written interpretation issued by OSHA or VOSH.
>
> 3. Employer Technically Exceeds Standard.
>
> An employer's workplace is at the "state of the art" which is technically beyond the requirements of the applicable standard and provides equivalent or more effective employee safety or health protection.
>
> Note: Maximum professional discretion must be exercised in determining the point at which noncompliance with a standard constitutes a de minimis violation.

[424] https://law.lis.virginia.gov/vacode/40.1-49.4/

[425] https://townhall.virginia.gov/L/GetFile.cfm?File=C:\TownHall\docroot\GuidanceDocs\181\GDoc_DOLI_5354_v6.pdf

The FOM[426] further provides:

> The Compliance Officer shall discuss all conditions noted during the walkaround considered to be *de minimis*, indicating that such conditions are subject to review by the Regional Safety or Health Director in the same manner as apparent violations but, if finally classified as *de minimis*, will not be included on the citation. (Emphasis added).

6. Multi-employer Worksite Regulation and Defense.

Section 16VAC25-60-260.F contains requirements for employers:

> "F. On multi-employer worksites for all covered industries, citations shall normally be issued to an employer whose employee is exposed to an occupational hazard (the exposing employer). Additionally, the following employers shall normally be cited, whether or not their own employees are exposed:
>
> 1. The employer who actually creates the hazard (the creating employer);
>
> 2. The employer who is either:
>
> a. Responsible, by contract or through actual practice for safety and health conditions on the entire worksite, and has the authority for ensuring that the hazardous condition is corrected (the controlling employer); or
>
> b. Responsible, by contract or through actual practice for safety and health conditions for a specific area of the worksite or specific work practice or specific phase of a construction project, and has the authority for ensuring that the hazardous condition is corrected (the controlling employer); or
>
> 3. The employer who has the responsibility for actually correcting the hazard (the correcting employer).

Section 16VAC25-60-260.G contains the multi-employer worksite defense:

> "G. A citation issued under subsection F of this section to an exposing employer who violates any VOSH law, standard, rule, or regulation shall be vacated if such employer demonstrates that:
>
> 1. The employer did not create the hazard;
>
> 2. The employer did not have the responsibility or the authority to have the hazard corrected;
>
> 3. The employer did not have the ability to correct or remove the hazard;

[426] *Id.* at Chapter 5, p. 76.

4. The employer can demonstrate that the creating, the controlling, or the correcting employers, as appropriate, have been specifically notified of the hazards to which the employer's employees were exposed;

5. The employer has instructed his employees to recognize the hazard and, where necessary, informed them how to avoid the dangers associated with it;

6. Where feasible, an exposing employer must have taken appropriate alternative means of protecting employees from the hazard; and

7. When extreme circumstances justify it, the exposing employer shall have removed the employer's employees from the job.

ATTACHMENT G: DETERMINING CAUSE OF DEATH (CDC)

Report on "How COVID-19 Deaths Are Counted".[427]

"As coronavirus has swept through the United States, finding the true number of people who have been infected has been stymied due to lack of testing. Now, official counts of coronavirus deaths are being challenged, too.

….

The reality is that assigning a cause of death is not always straightforward, even pre-pandemic, and a patchwork of local rules and regulations makes getting valid national data challenging. However, data on excess deaths in the United States over the past several months suggest that COVID-19 deaths are probably being undercounted rather than over counted.

….

Death certificates can be signed by a physician who was responsible for a patient who died in a hospital, which accounts for many COVID-19 deaths. They can also be signed by medical examiners or coroners, who are independent officials who work for individual counties or cities. 'Many COVID-19 death certificates are being handled by physicians unless the death occurred outside of the hospital, in which case a medical examiner or coroner would step in', said Dr. Sally Aiken, the president of the National Association of Medical Examiners (NAME).

….

For COVID-19, the immediate cause of death might be listed as respiratory distress, with the second line reading "due to COVID-19." Contributing factors such as heart disease, diabetes or high blood pressure would then be listed further down. This has led to some confusion by people arguing that the "real" cause of death was heart disease or diabetes, Aiken said, but that's not the case.

'Without the COVID19 being the last straw or the thing that led to the chain of events that led to death, they probably wouldn't have died,' she said.

….

'Most COVID-19 deaths seen at Mount Sinai Health System in New York are in people who have comorbid (or co-occurring) conditions such as coronary artery disease or kidney disease', said Dr. Mary Fowkes, the chief of autopsy services at Mount Sinai. But it's not typically difficult to tell what killed them.

'Most of the cases are pretty straightforward,' Fowkes told Live Science. 'The lungs are usually so severely involved with pathology, so they are two to three times or more the normal weight of a normal lung.'

(The excess weight is due to fluid and cell detritus from damaged lung tissues.)

….

Another complication for assigning a cause of death for COVID-19 is that some younger people have died of strokes and heart attacks and then tested positive for COVID-19 without any history of respiratory symptoms. The virus is now known to cause blood clots, suggesting that COVID-19 was the killer in these cases, too. Fowkes and her colleagues conducted a microscopic inspection of the brains of 20 COVID-19 victims in her hospital system and found that six of them contained tiny blood clots that had caused small strokes before death.

[427] https://www.scientificamerican.com/article/how-covid-19-deaths-are-counted1/

'We're seeing it in younger patients than you would expect, and we're seeing it in a distribution that you wouldn't expect, so we think it's related to the COVID,' Fowkes said.

The Centers for Disease Control and Prevention (CDC) has issued guidelines[428] for how to attribute a death to COVID-19. The guidelines urge using information from COVID-19 testing, where possible, but also allow for deaths to be listed as "presumed" or "probable" COVID-19 based on symptoms and the best clinical judgment of the person filling out the death certificate. A medical examiner trying to determine a cause of death in the absence of testing would comb medical records and query family and loved ones about the person's symptoms before they died, Aiken said. Postmortem COVID-19 tests may be possible, depending on the jurisdiction."[429]

[428] https://www.cdc.gov/nchs/covid19/coding-and-reporting.htm
[429] *Id.*

ATTACHMENT H: VOSH Violations Issued in COVID-19 Cases Opened From February 1, 2020 to December 30, 2020

VOSH Violations Issued in COVID-19 Cases Opened From February 1, 2020 to December 30, 2020 **NOTE: 43 of the 94 Inspections Opened During the Period Remain in Progress**		
Violation	**Initial Violation Type**	**Standard**
16VAC25-220-40.B.5	Serious	ETS
16VAC25-220-40.G	Serious	ETS
16VAC25-220-40.K.5	Serious	ETS
16VAC25-220-60.C.1.e	Serious	ETS
16VAC25-220-60.C.1.k	Serious	ETS
1904.29(a)	Other-than-Serious	Recordkeeping
1904.29(b)(3)	Other-than-Serious	Recordkeeping
1904.30(a)	Other-than-Serious	Recordkeeping
1904.33(a)	Other-than-Serious	Recordkeeping
1904.40(a)	Other-than-Serious	Recordkeeping
1904.5(a)	Other-than-Serious	Recordkeeping
1910.1030(c)(1)(ii)	Serious	Bloodborne Pathogens
1910.1030(c)(1)(ii)	Serious	Bloodborne Pathogens
1910.1030(c)(2)(i)	Serious	Bloodborne Pathogens
1910.1030(f)(1)(i)	Other-than-Serious	Bloodborne Pathogens
1910.1030(g)(2)(ii)(B)	Other-than-Serious	Bloodborne Pathogens
1910.1030(g)(2)(ii)(B)	Other-than-Serious	Bloodborne Pathogens
1910.1030(h)(2)	Serious	Bloodborne Pathogens
1910.1200(e)(1)	Other-than-Serious	Hazard Communication
1910.1200(e)(1)	Other-than-Serious	Hazard Communication
1910.1200(e)(1)	Serious	Hazard Communication
1910.1200(e)(1)	Serious	Hazard Communication
1910.1200(e)(1)	Serious	Hazard Communication
1910.1200(e)(1)	Other-than-Serious	Hazard Communication
1910.1200(f)(6)	Serious	Hazard Communication
1910.1200(f)(6)(ii)	Serious	Hazard Communication
1910.1200(g)(11)	Other-than-Serious	Hazard Communication
1910.1200(g)(8)	Serious	Hazard Communication
1910.1200(g)(8)	Other-than-Serious	Hazard Communication
1910.1200(g)(8)	Serious	Hazard Communication
1910.1200(g)(8)	Other-than-Serious	Hazard Communication
1910.1200(g)(8)	Other-than-Serious	Hazard Communication
1910.1200(h)(1)	Other-than-Serious	Hazard Communication
1910.1200(h)(1)	Serious	Hazard Communication
1910.1200(h)(1)	Serious	Hazard Communication
1910.1200(h)(1)	Serious	Hazard Communication

1910.1200(h)(1)	Other-than-Serious	Hazard Communication
1910.132(d)(1)	Serious	PPE
1910.132(d)(1)	Serious	PPE
1910.132(d)(1)(i)	Serious	PPE
1910.132(d)(1)(i)	Serious	PPE
1910.132(d)(2)	Other-than-Serious	PPE
1910.132(d)(2)	Serious	PPE
1910.132(d)(2)	Other-than-Serious	PPE
1910.132(d)(2)	Serious	PPE
1910.132(d)(2)	Other-than-Serious	PPE
1910.132(d)(2)	Other-than-Serious	PPE
1910.132(d)(2)	Other-than-Serious	PPE
1910.132(d)(2)	Other-than-Serious	PPE
1910.132(f)(1)	Serious	PPE
1910.133(a)(1)	Serious	Eye and Face Protection
1910.134(c)(1)	Other-than-Serious	Respiratory Protection
1910.134(c)(1)	Serious	Respiratory Protection
1910.134(c)(1)	Serious	Respiratory Protection
1910.134(c)(1)	Serious	Respiratory Protection
1910.134(c)(1)	Serious	Respiratory Protection
1910.134(c)(1)	Serious	Respiratory Protection
1910.134(c)(1)	Serious	Respiratory Protection
1910.134(c)(1)	Serious	Respiratory Protection
1910.134(c)(1)	Serious	Respiratory Protection
1910.134(d)(1)(i)	Serious	Respiratory Protection
1910.134(d)(1)(ii)	Serious	Respiratory Protection
1910.134(e)(1)	Serious	Respiratory Protection
1910.134(e)(1)	Serious	Respiratory Protection
1910.134(e)(1)	Serious	Respiratory Protection
1910.134(e)(1)	Serious	Respiratory Protection
1910.134(e)(1)	Serious	Respiratory Protection
1910.134(e)(1)	Serious	Respiratory Protection
1910.134(e)(1)	Serious	Respiratory Protection
1910.134(e)(1)	Serious	Respiratory Protection
1910.134(e)(6)(i)	Other-than-Serious	Respiratory Protection
1910.134(e)(6)(i)	Other-than-Serious	Respiratory Protection
1910.134(f)(1)	Serious	Respiratory Protection
1910.134(f)(1)	Serious	Respiratory Protection
1910.134(f)(2)	Serious	Respiratory Protection
1910.134(f)(2)	Serious	Respiratory Protection
1910.134(f)(2)	Serious	Respiratory Protection
1910.134(f)(2)	Serious	Respiratory Protection
1910.134(f)(2)	Serious	Respiratory Protection
1910.134(f)(2)	Serious	Respiratory Protection
1910.134(h)(1)	Other-than-Serious	Respiratory Protection

1910.134(m)(1)	Serious	Respiratory Protection
1910.134(m)(1)	Serious	Respiratory Protection
1910.134(m)(2)(i)	Other-than-Serious	Respiratory Protection
1910.134(m)(2)(i)	Serious	Respiratory Protection
1910.134(m)(2)(i)	Serious	Respiratory Protection
1910.134(m)(2)(i)(B)	Other-than-Serious	Respiratory Protection
1910.134(m)(2)(i)(B)	Other-than-Serious	Respiratory Protection
1910.134(m)(2)(i)(C)	Other-than-Serious	Respiratory Protection
1910.134(m)(2)(i)(E)	Other-than-Serious	Respiratory Protection
1910.134(m)(2)(i)(E)	Other-than-Serious	Respiratory Protection
1910.134(m)(4)	Serious	Respiratory Protection
1910.141(a)(3)(i)	Serious	Sanitation
1910.151(b)	Other-than-Serious	First Aid
40.1-51.1.A	Serious	General Duty Clause
40.1-51.1.A	Serious	General Duty Clause
40.1-51.1.A	Serious	General Duty Clause
40.1-51.1.D	Other-than-Serious	Failure to Notify DOLI