U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30329-4027

August 25, 2020

The Honorable Ted Cruz
United States Senate
Washington, DC 20510

Dear Senator Cruz:

Thank you for your thoughtful letter regarding Coronavirus Disease 2019 (COVID-19) pandemic data. At the heart of any public health response is the critical need for timely, accurate, and complete information and data. I have answered your questions with the input of subject matter experts in an enclosure.

With thousands of personnel supporting the pandemic response, the Centers for Disease Control and Prevention (CDC) is at the forefront of the federal government's efforts to control the spread of COVID-19. Our decades fighting epidemics and pandemics give us the experience needed to mitigate the impact of this virus on the American public.

We are adjusting our response and guidance as conditions change and as we learn more about this emerging infectious disease. Please regularly visit our COVID-19 website, www.cdc.gov/coronavirus/2019-ncov/index.html, for CDC's latest and most up-to-date information, resources, and guidance.

During this public health emergency and global pandemic, HHS and its federal partners are providing regular congressional briefings to keep policymakers up to date on evolving developments. We hope that you and your staff take advantage of these opportunities to get answers to your most pressing questions. Please contact Anstice Brand Kenefick in our CDC Washington Office at (202) 245-0600 or abrand@cdc.gov if you have further questions.

Thank you again for the work you do to protect the American people and for your interest in this ongoing response. We appreciate your support, and that of Congress, as we all work together to fight COVID-19. CDC remains committed to protecting the American public in the face of this pandemic.

Sincerely,

Robert R. Redfield, MD
Director, CDC

Enclosure

Enclosure

Centers for Disease Control and Prevention (CDC) answers to questions about coronavirus disease 2019 (COVID-19) data

1. **To what extent are repeated positive tests counted as "new" coronavirus cases by the CDC, other federal entities, and state entities?**

   New coronavirus cases are intended to represent a single infection per person, regardless of how many positive tests a person has had. States and other jurisdictions maintain databases that allow them to map multiple positive tests to a single person. Rare duplications are possible, for example, if tests results are submitted with incorrect names and dates of birth, but this is not the norm. CDC does not receive personally identifiable information about cases; however, CDC also has procedures in place to ensure states are not reporting cases to CDC multiple times.

   The laboratory testing data are reported differently than cases. CDC's lab testing data counts total tests performed, not the number of unique people tested, so these data will include dual reported tests and repeat tests.

2. **Earlier this year, it was reported that the CDC and some states were combining the count of antibody tests with diagnostic tests. Has the CDC corrected this problem? If so, what steps has CDC taken to correct this problem? Has the CDC provided states with clear guidance to ensure uniform and accurate reporting? Have all states taken similar actions to correct this problem?**

   CDC is making progress in addressing this issue. Laboratory data from public health laboratories, U.S. hospital laboratories, private and commercial laboratories, large chain drug stores, and other testing entities are reported to CDC through state and jurisdictional health departments. CDC has been rapidly moving to a more detailed form of COVID-19 electronic laboratory reporting (CELR) from state and jurisdictional health departments to CDC that seeks to more clearly identify the type of test that was administered.

   As of August 6, 2020, 37 states/jurisdictions have converted to the more detailed electronic laboratory reporting to CDC, which represents more than 71 percent of the laboratory testing volume in the country; all of the other state and jurisdictional health departments are in progress of converting to electronic laboratory reporting. CDC is providing technical consultation to states that need additional assistance to convert their data to the more detailed electronic data feeds. (See *COVID-19 Electronic Laboratory Reporting Implementation by State*: www.cdc.gov/coronavirus/2019-ncov/lab/electronic-reporting-map.html.)

   A review of laboratory data previously submitted to CDC from state and jurisdictional health departments shows that most states excluded antibody tests in their total testing counts that were available on CDC's COVID Data Tracker website. The counts presented on CDC's *COVID Data Tracker* website were recently updated to exclude any serology test counts and only provide viral (RT-PCR) test counts (www.cdc.gov/covid-data-tracker/#testing).

3. **Federal and state mandates on federal, state, and private health financing programs and entities have created incentives for providers and hospitals to "up-code" by including coronavirus as a diagnosis in order to obtain higher or guaranteed reimbursements. What is being done by the CDC to reduce the risk that "up-coding" could impact CDC-reported coronavirus data?**

   CDC does not have decision-making or oversight authority for medical coding, nor does CDC regulate or enforce proper coding. The Department of Health & Human Services (HHS) Office of the Inspector General (OIG) is at the forefront of the nation's efforts to fight waste, fraud, and abuse in Medicare, Medicaid, and more than 100 other HHS programs. A majority of OIG's resources goes toward the oversight of Medicare and Medicaid - programs that represent a significant part of the federal budget and that affect this country's most vulnerable citizens. OIG is closely monitoring potential waste, fraud, and abuse in HHS programs, including Medicare and Medicaid, that could increase as a result of the COVID-19 pandemic. Further, when providers and hospitals submit Medicare claims for care provided to beneficiaries, these services must meet the coverage, coding and payment requirements. The Centers for Medicare & Medicaid Services (CMS), by law, is only permitted to pay claims for covered services. CMS uses regional contractors, the Medicare Administrative Contractors (MACs), to process and audit payments for healthcare items and services, including COVID-19-related claims, submitted by enrolled Medicare providers on their cost report. In addition, CMS plays a significant role in supporting state efforts to ensure proper Medicaid payments, as well as increasing state oversight, accountability, and transparency. Because of this responsibility, CMS has implemented new and enhanced initiatives, including stronger audit functions and enhanced enforcement of state compliance with federal rules.

4. **How many Americans died from delaying, reducing, or being denied care due to "stay-at-home orders," state "lockdowns," and orders to stop elective care?**

   At this time, CDC does not have estimates for the number of Americans affected by the COVID-19 pandemic in respect to delaying, reducing, or being denied care. CDC released guidance, *Healthcare Facilities: Managing Operations During the COVID-19 Pandemic* (www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-hcf.html), to reinforce the need for healthcare facilities to provide care for all patients in the safest way possible for patients and healthcare personnel and at the appropriate level, whether patients need home-based care, outpatient care, urgent care, emergency room care, inpatient care, or intensive care. This guidance outlines goals and strategies for U.S. healthcare facilities to operate effectively and safely during the COVID-19 pandemic.

5. **How have the reported incidents of suicide, drug abuse, and other diseases of despair and social isolation changed year-to-date from comparable periods from 2018 and 2019? If there has been a statistically significant change, has the CDC examined whether "stay-at-home orders" and state "lockdowns" have driven the change?**

CDC uses multiple surveillance systems to monitor trends in nonfatal suicide attempts, suicide deaths, nonfatal drug overdoses, and fatal drug overdoses. CDC monitors suicide deaths and drug overdose deaths using data reported to CDC's National Violent Death Reporting System (NVDRS) and National Vital Statistics System (NVSS). While data timeliness is improving, because of the length of time involved completing the death investigation process, death data are not reported to NVDRS and NVSS in real time. Therefore, the most recent preliminary death data available is from 2019. In the coming months, the National Center for Health Statistics (NCHS) will begin to publish provisional mortality data through NVSS on fatal drug overdoses that includes data from the period of the COVID-19 pandemic. CDC collects near real-time data on nonfatal suicide attempts and nonfatal drug overdoses through CDC's National Syndromic Surveillance Program (NSSP).

Using data reported to NVDRS and NVSS, CDC observed no significant difference in the number of suicide deaths between July 1, 2017 – June 30, 2018, and July 1, 2018 – June 30, 2019. Analysis of provisional drug overdose death data indicate a 4.8 percent increase in drug overdose deaths in 2019 compared to 2018. Because the most recent death data reported to NVDRS is from 2019, CDC is unable to estimate suicide or drug overdose deaths in 2020 or draw comparisons between 2019 and 2020 suicide death rates.

Preliminary analyses of NSSP data indicate a higher percentage of emergency department (ED) visits for suicide attempts between January 1, 2020 to July 25, 2020, than we observed during the same time period in 2019 (January 1, 2019 to July 25, 2019). This difference is most pronounced between the week of March 8-14, 2020 and April 5-11, 2020, when we observed a 50 percent **relative** increase in the percentage of ED visits for suicide attempts when compared to the same time period in 2019. (President Trump declared a national emergency on March 13, 2020, and the White House released *The President's Coronavirus Guidelines for America: 30 Days to Slow the Spread* on March 16, 2020, which asked Americans to stay home when possible.) **However, the observed percentage increase between March and April 2020 may represent either a true absolute increase in suicide attempts or may represent changes in ED utilization patterns as a result of the COVID-19 pandemic. NSSP data from March 2020 through June 2020 showed an overall drop in ED visits that occurred during this timeframe. Therefore, rates of nonfatal drug overdose and suicide attempts during this timeframe cannot be reliably analyzed by comparing the percentage of ED visits in 2020 with previous timeframes.**

6. **Of all the individuals who were treated for coronavirus in hospitals within states along the U.S.-Mexico border, how many were identified as foreign nationals? Please include data for both past and present patients and delineate patients by country of residence.**

CDC does not collect information on citizenship status of COVID-19 cases from states/jurisdictions.

7. **How many Americans have recovered from coronavirus? Is the CDC aware that other countries have released data on this point and the absence of clear recovery data from the CDC has created a point of confusion among Americans?**

   States and other jurisdictions maintain the data on the number of Americans who have recovered from COVID-19 and do not report these data to CDC. Reporting COVID-19 recoveries at the national level is difficult due to the scarcity of this information and the potential for inaccuracies in reporting. There is no standard method for determining recovered COVID-19 patients at the national level.

8. **How effective are masks in preventing the transmission of coronavirus? Please provide data on the effectiveness of cloth masks, surgical and procedural masks, professional respirators (including N95 respirators), and eye and face protection equipment in preventing transmission of coronavirus.**

   CDC's guidance on use of masks to help slow the spread of COVID-19 is found at www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html.

   All NIOSH-approved respirators, including NIOSH-approved N95 respirators reduce the wearer's exposure to airborne particles, from small particle aerosols to large droplets and protect the wearer from exposure to coronavirus. N95 respirators are tight-fitting respirators that filter out at least 95% of particles in the air, including large and small particles.

   Unlike NIOSH-approved N95s, facemasks are loose-fitting and provide only barrier protection against droplets, including large respiratory particles. No fit testing or seal check is necessary with facemasks. Most facemasks do not effectively filter small particles from the air and do not prevent leakage around the edge of the mask when the user inhales. The role of facemasks is for patient source control, to prevent contamination of the surrounding area when a person coughs or sneezes. Individuals with confirmed or suspected COVID-19 should wear a facemask until they are isolated in a hospital or at home.

   The scientific evidence on the effectiveness of face masks is growing, however. The most recent peer-reviewed scientific studies show that masks, as a form of source control (i.e., measures intended to prevent people with COVID-19 from spreading the disease to others), reduce the risk of COVID-19 transmission.

   While the available science does not allow us to say definitively that masks offer personal protection to the wearer, evidence is mounting that they likely do. Our best evidence is based on studying other respiratory infections – science we have relied on early in the COVID-19 pandemic when there was little information about COVID-19 – but there is increasing evidence specific to COVID-19 that shows the same scientific principles apply. Growing evidence supports the concept that as the number of people wearing masks in a community increases, transmission among individuals in that community decreases. There are laboratory and "natural experiment" studies, as well as policy

observations, that show universal masking reduces transmission in communities, meaning that universal masking likely has personal protective benefits as well as community benefits.

Below is a list of key studies that have informed CDC's mask guidance to date, organized by laboratory studies, community studies, applied science studies, "natural environment" studies, and impact of mask policies on COVID-19 in communities.

Laboratory Studies

- ***Leung NHL, Chu DKW, Shiu EYC, et al. Respiratory virus shedding in exhaled breath and efficacy of face masks [published correction appears in Nature Medicine. 2020 May 27;:]. Nat Med. 2020;26(5):676-680. doi:10.1038/s41591-020-0843-2.***
    - This study examined the ability of face masks to block virus in exhaled breath and coughs of children and adults with acute respiratory illness that included infections with human coronaviruses (not SARS-CoV-2), influenza viruses, and rhinoviruses.
    - Surgical face masks significantly reduced detection of influenza virus RNA in respiratory droplets and coronavirus RNA in aerosols, with a trend toward reduced detection of coronavirus RNA in respiratory droplets.
    - These results indicate that surgical face masks could prevent transmission of human coronaviruses and influenza viruses from symptomatic individuals.

- ***Davies A, Thompson KA, Giri K, Kafatos G, Walker J, Bennett A. Testing the efficacy of homemade masks: would they protect in an influenza pandemic? Disaster Med Public Health Prep. 2013;7(4):413-418. doi:10.1017/dmp.2013.43.***
    - These cough experiments measured how well surgical versus homemade cotton masks reduced the total number of microorganisms (normal oral microflora) expelled when coughing while wearing the mask.
    - The results indicate that both types of masks significantly reduced the number of microorganisms expelled.
    - Although in these experiments the surgical mask was three times more effective, it should be noted that the investigators did not describe the number of layers of fabric included in the homemade masks; the effectiveness of homemade masks is associated with the number of layers of fabric and mask fit.

- ***Ma, Q-X, Shan, H, Zhang, H-L, Li, G-M, Yang, R-M, Chen, J-M. Potential utilities of mask-wearing and instant hand hygiene for fighting SARS-CoV-2. Journal of Medical Virology. 2020; 1– 5.***
    - In this study, investigators evaluated how well three types of masks blocked avian influenza virus as a proxy for SARS-CoV-2.

  - N95 masks, medical masks, and homemade masks made of four-layer kitchen paper and one-layer cloth blocked 99.98%, 97.14%, and 95.15% of the virus in aerosols, respectively.

- ***Aydin O, Emon B, Saif M. Performance of fabrics for home-made masks against spread of respiratory infection through droplets: a quantitative mechanistic study medRxiv 2020.04.19.20071779; doi: https://doi.org/10.1101/2020.04.19.20071779.***
  - This study examined the performance of ten different fabrics, ranging from cotton to silk, in blocking high velocity droplets, using a 3-layered commercial surgical mask as a benchmark material.
  - The study found that most home fabrics substantially blocked droplets, even as a single layer. With two layers, blocking performance can reach that of surgical mask without significantly compromising breathability.
  - The results of this study suggest that most double-layered cloth face masks may help reduce droplet transmission of respiratory infections.
  - Because medical masks and N95 respirators are in short supply, these data show that homemade masks provide an alternative for the public that could help reduce community transmission.

- ***Anfinrud P, Stadnytskyi V, Bax CE, Bax A. 2020 Visualizing Speech-Generated Oral Fluid Droplets with Laser Light Scattering. New England Journal of Medicine (doi: 10.1056/NEJMc2007800).***
  - In this study, the researcher used a green laser to illuminate and qualitatively describe visual evidence of speech-generated droplets with and without a mouth cover.
  - The results show that a slightly damp cloth cover over the mouth can substantially curb emission of droplets.

- ***Verma S, Dhanak M, Frankenfield J. Visualizing the effectiveness of face masks in obstructing respiratory jets. Phys Fluids (1994). 2020;32(6): 061708. doi:10.1063/5.0016018.***
  - This study examined the effect of a variety of fabric face coverings to block small aerosol-sized respiratory droplets.
  - The findings indicate that well-fitted homemade masks with multiple layers of quilted fabric performed as well as an off-the-shelf cone style mask, and both were the most effective in reducing droplet dispersal compared with a loosely folded face mask and a bandana-style face covering.
    - These masks were able to curtail the speed and range of the respiratory jets significantly, albeit with some leakage through the mask material and from small gaps along the edges.

- ***Lindsley WG, Blachere FM, Law BF, Beezhold DH, Noti JD. Efficacy of face masks, cloth face coverings and face shields for reducing the expulsion of simulated cough-generated aerosols. NIOSH pre-peer-review pre-print in clearance 2020.***

- This study examined the effectiveness of procedure masks (i.e., commercially made surgical masks), cloth masks, and face shields at blocking aerosol-sized particles in simulated coughs.
- The results indicate that the procedure mask and the cloth face mask were more effective than the face shield at blocking release of aerosol-sized particles in a simulated cough, although the face shield was modestly more effective than no intervention.
- In fact, the procedure mask and three-layer cloth face covering (created by Hanes Mills for USG as part of COVID-19 Response) performed nearly equivalently as source control.

Community Studies

- ***van der Sande M, Teunis P, Sabel R. Professional and home-made face masks reduce exposure to respiratory infections among the general population. PLoS ONE. 2008;3:e2618.***
  - This study examined the use of face masks in reducing exposure to respiratory infections in the general population.
  - The authors found that all types of masks reduced aerosol exposure, and that this reduction remained relatively stable over time, was unaffected by duration of wear or type of activity, but that there was a high degree of individual variation.
    - Personal respirators (i.e., commercially manufactured filtering face pieces or FFPs) were more efficient than surgical masks, which were more efficient than home-made masks.
    - Regardless of mask type, children were less well protected.
  - The study suggests that any type of general mask use is likely to decrease viral exposure and infection risk on a population level, in spite of imperfect fit and imperfect adherence, with personal respirators providing the most protection.

- ***Konda A, Prakash A, Moss GA, Schmoldt M, Grant GD, Guha S. Aerosol Filtration Efficiency of Common Fabrics Used in Respiratory Cloth Masks. ACS Nano. 2020 Apr 24. doi: 10.1021/acsnano.0c03252.***
  - This study examined the filtration efficiency of different fabrics that are available for consumer purchase and used to make masks.
  - Overall, the study found that combinations of various commonly available fabrics used in cloth masks can potentially provide significant protection against the transmission of aerosol particles.

Applied Science and Modeling Studies

- ***Chu DK, Akl EA, Duda S, et al. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. Lancet. 2020;395(10242):1973-1987. doi:10.1016/S0140-6736(20)31142-9.***

  - This systematic review and meta-analysis examined effects of physical distancing, face masks, and eye protection in preventing person-to-person transmission of COVID-19.
  - The findings suggest that face mask use could result in a large reduction in risk of infection, with stronger associations with N95 or similar respirators compared with disposable surgical masks or similar.

- ***Cheng VC, Wong SC, Chuang VW, et al. The role of community-wide wearing of face mask for control of coronavirus disease 2019 (COVID-19) epidemic due to SARS-CoV-2. J Infect. 2020;81(1):107-114. doi:10.1016/j.jinf.2020.04.024.***
  - This community study examined the effect of community-wide wearing of face mask for community control of COVID-19.
  - The study suggests that community-wide mask wearing may contribute to the control of COVID-19 by reducing the amount of emission of infected saliva and respiratory droplets from individuals with subclinical or mild COVID-19.

- ***Ngonghala CN, Iboi E, Eikenberry S, et al. Mathematical assessment of the impact of non-pharmaceutical interventions on curtailing the 2019 novel Coronavirus. Math Biosci. 2020;325:108364. doi:10.1016/j.mbs.2020.108364.***
  - This study uses a mathematical model to estimate the efficacy of masks in reducing the impact of the pandemic, and with the assumption that surgical masks were more effective than cloth masks.
    - Although public use of surgical masks alone could curb the U.S. pandemic if adopted and used properly by at least 80 percent of the population, the same rates of cloth masks use could also significantly reduce the national COVID-19 burden and also curb the pandemic if combined with other interventions (e.g., a strict social-distancing strategy).

"Natural Environment" Studies

- ***Schwartz KL, Murti M, Finkelstein M, et al. Lack of COVID-19 transmission on an international flight. CMAJ. 2020;192(15):E410. (and personal communication).***
  - A man with a dry cough due COVID-19 who wore a surgical mask during two flights totaling 15 hours from Guangzhou, China to Toronto, Canada on January 22, 2020.
  - None of the 25 close contacts on the plane became infected during 14 days of monitoring. Close contacts included passengers sitting within 6 feet of the source patient and the flight crew.

- ***Hendrix MJ, Walde C, Findley K, Trotman R. Absence of Apparent Transmission of SARS-CoV-2 from Two Stylists After Exposure at a Hair Salon with a Universal Face Covering Policy — Springfield, Missouri, May 2020. MMWR Morb Mortal Wkly Rep 2020;69:930-932. DOI: http://dx.doi.org/10.15585/mmwr.mm6928e2***

  - Among 139 clients exposed to two symptomatic hair stylists with confirmed COVID-19 while both the stylists and the clients wore face masks, no symptomatic secondary cases were reported.
  - Among 67 clients tested for SARS-CoV-2, all test results were negative.
  - This study found that adherence to the community's and company's face-covering policy likely mitigated spread of SARS-CoV-2.

- ***Lau JT, Tsui H, Lau M, Yang X. SARS transmission, risk factors, and prevention in Hong Kong. Emerg Infect Dis. 2004;10(4):587-592. doi:10.3201/eid1004.030628.***
  - A study from Hong Kong during the SARS epidemic (*not COVID-19*) found that frequent mask use in public venues significantly protected against infection [adjusted OR = 0.36, $p < 0.001$], as did frequent hand washing [adjusted OR = 0.58, $p = 0.008$] and disinfecting one's living quarter [adjusted OR = 0.36, $p < 0.001$].

- ***Aiello AE, Murray GF, Perez V, et al. Mask use, hand hygiene, and seasonal influenza-like illness among young adults: a randomized intervention trial. J Infect Dis. 2010;201(4):491-498. doi:10.1086/650396.***
  - This randomized intervention trial involved 1,437 young adults living in university residence halls during the 2006–2007 influenza season.
  - Residence halls were randomly assigned to 1 of 3 groups—face mask use, face masks with hand hygiene, or control— for 6 weeks.
  - The study observed significant reductions in influenza-like illness (ILI) during weeks 4–6 in the mask and hand hygiene group, compared with the control group, ranging from 35% to 51%, after adjusting for vaccination and other covariates.
  - Neither face mask use and hand hygiene nor face mask use alone was associated with a significant reduction in the rate of ILI cumulatively.

- ***Aiello AE, Perez V, Coulborn RM, Davis BM, Uddin M, Monto AS. Facemasks, hand hygiene, and influenza among young adults: a randomized intervention trial. PLoS One. 2012;7(1):e29744. doi:10.1371/journal.pone.0029744.***
  - A cluster-randomized intervention trial was designed to examine the effects of face masks and hand hygiene involving 1,178 young adults living in 37 residence houses in five university residence halls during the 2007–2008 influenza season.
  - Participants were assigned to face mask and hand hygiene, face mask only, or control group.
  - Both intervention groups compared to the control showed cumulative reduction in rates of influenza over the study period, although results did not reach statistical significance.
  - Face masks and hand hygiene combined may reduce the rate of ILI and confirmed influenza in community settings.

- ***Suess T, Remschmidt C, Schink SB, et al. The role of facemasks and hand hygiene in the prevention of influenza transmission in households: results from***

a cluster randomized trial; Berlin, Germany, 2009-2011. BMC Infect Dis. 2012;12:26. Published 2012 Jan 26. doi:10.1186/1471-2334-12-26.

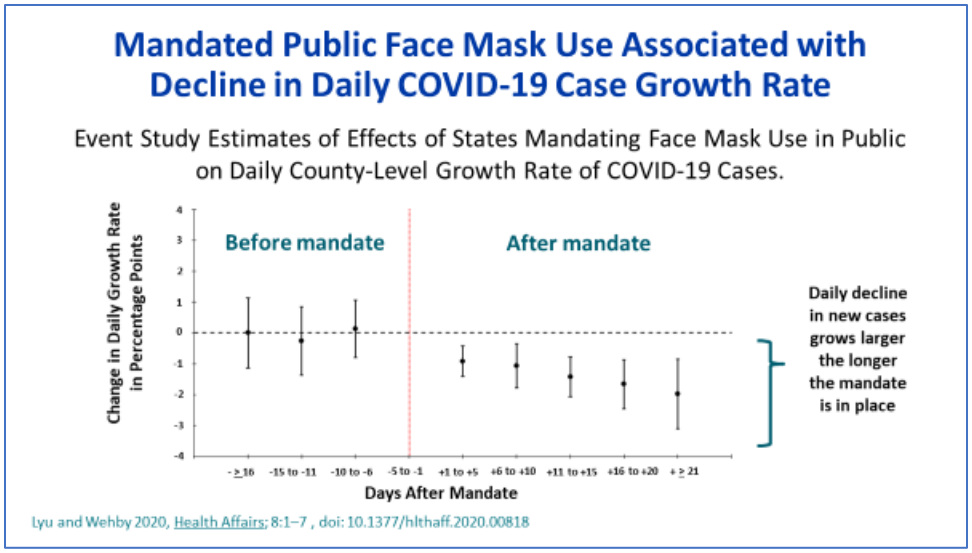
- This cluster randomized controlled trial examined the effect of masks and hand hygiene in households during the pandemic influenza season 2009-2010 and the ensuing influenza season 2010-2011.
  - The study included households with an influenza-positive index case in which there had been no other respiratory illness within the preceding 14 days.
  - Study groups either wore a facemask and practiced intensified hand hygiene (MH group), wore facemasks only (M group), or neither (control).
- Results suggest (but were not statically significant) that household transmission of influenza can be reduced by the use of nonpharmaceutical interventions, such as facemasks and intensified hand hygiene, when implemented early and used diligently.

- ***Cowling BJ, Chan KH, Fang VJ, et al. Facemasks and hand hygiene to prevent influenza transmission in households: a cluster randomized trial. Ann Intern Med. 2009;151(7):437-446. doi:10.7326/0003-4819-151-7-200910060-00142.***
  - This cluster randomized controlled trial examined the effect of masks and hand hygiene in households during influenza season.
    - The trial followed 407 people presenting to outpatient clinics with influenza-like illness who were positive for influenza A or B virus by rapid testing (index patients) and their 794 household members (contacts) in 259 households.
  - The findings suggest that in 154 households in which interventions were implemented within 36 hours of symptom onset in the index patient(s), there was reduced transmission of confirmed influenza infection in household members.
    - In other words, increased hand hygiene and wearing of masks was thought to be protective.

Impact of Mask Policies on COVID-19 in Communities

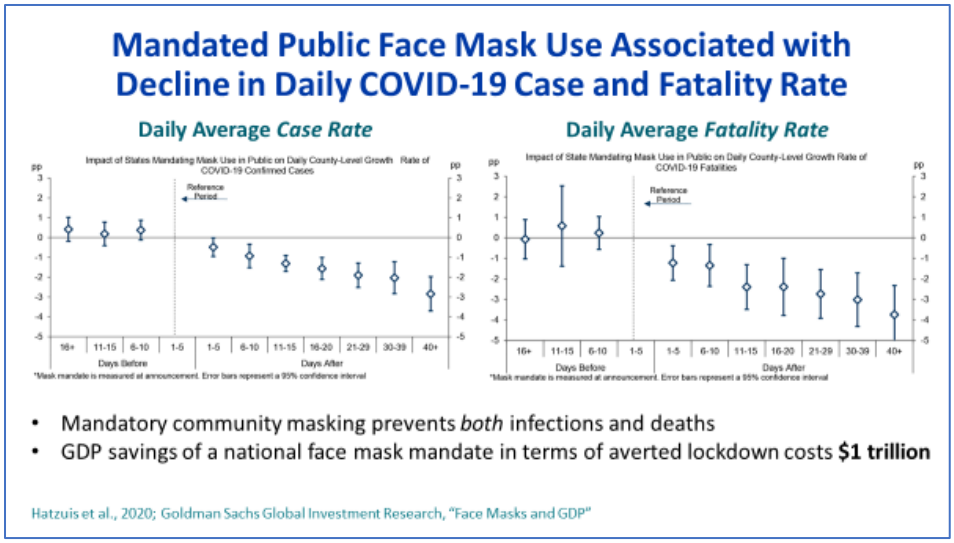
- ***Lyu W, Wehby GL. Community Use of Face Masks And COVID-19: Evidence From A Natural Experiment Of State Mandates In The US. Health Aff (Millwood). 2020;39(8):1419-1425. doi:10.1377/hlthaff.2020.00818***
  - This study examined the impact of mask policies on COVID-19 associated mortality and hospitalization rates.
  - This study suggests that mandating face mask use in public is associated with a decline in the daily COVID-19 growth rate by 0.9, 1.,1, 1.4, 1.7, and 2.0 percentage points at 1–5, 6–10, 11–15, 16–20, and 21+ days after signing, respectively. See figure below.
  - These estimates suggest as many as 230,000–450,000 COVID-19 cases were possibly averted as of May 22, 2020 by these mandates.
  - The findings suggest that requiring face mask use in public might help in mitigating COVID-19 spread.

Enclosure



- ***Hatzius J, Struyven D, Rosenberg I. Face Masks and GDP. Goldman Sachs Research. Published June 29, 2020. Accessed July 8, 2020. www.goldmansachs.com/insights/pages/face-masks-and-gdp.html.***
    - Goldman Sachs conducted research to examine the impact of wearing masks on health outcomes and the economy.
    - This is company-produced research and is not published in peer reviewed journals, but it was one of the few sources that look at the economic impact of this intervention.
    - This research indicates that face masks are associated with significantly better coronavirus outcomes.
    - The author's baseline estimate is that a nationwide mandate could raise the percentage of people who wear masks by 15% and cut the daily growth rate of confirmed cases by 1.0% to 0.6%.
    - These calculations imply that a face mask mandate could potentially substitute for lockdowns that would otherwise subtract nearly 5% from GDP.

Enclosure



9. Of those deaths attributed to coronavirus, how many of those deaths would have likely occurred at some point this year because of other causes?

This is a question that is difficult to answer because there is no data or scientific evidence that can indicate for certain whether deaths would have occurred from other causes. However, estimates of excess deaths can provide information about the burden of mortality potentially related to the COVID-19 pandemic, including deaths that are directly or indirectly attributed to COVID-19. CDC published a study on *Preliminary Estimate of Excess Mortality During the COVID-19 Outbreak — New York City, March 11–May 2, 2020* (www.cdc.gov/mmwr/volumes/69/wr/mm6919e5.htm?s_cid=mm6919e5_w) and the authors concluded that "monitoring of all-cause deaths and estimating excess mortality during the pandemic provides a more sensitive measure of the total number of deaths than would be recorded by counting laboratory-confirmed or probable COVID-19–associated deaths." CDC partners are conducting investigations to better understand excess mortality during the pandemic; provisional data on excess mortality at the national and state levels are updated weekly during the pandemic and can be found on the NCHS excess deaths interactive dashboard (www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm). These data show substantially more total excess deaths in 2020 compared with expected.

10. What percentage of those who have contracted coronavirus are estimated to be asymptomatic?

Due to the nature of syndromic surveillance, which picks up an increase in people being sick, asymptomatic cases or cases from people who never seek medical care will always be missed. This is why thorough contact tracing is important, especially tracking a sick person's contacts.

CDC and the Office of the Assistant Secretary for Preparedness and Response (ASPR) have developed five COVID-19 Pandemic Planning Scenarios (www.cdc.gov/

coronavirus/2019-ncov/hcp/planning-scenarios.html) that are designed to help inform decisions by public health officials who use mathematical modeling and by mathematical modelers throughout the federal government. The current best estimate for percent of infections that are asymptomatic in the United States is 40-45 percent based of a recent published summary of well-characterized outbreaks that have assessed how many people in those populations tested positive but did not report having symptoms. However, the percent of cases that are asymptomatic remains uncertain and further systematic studies are ongoing.

11. **What percentage of those who have contracted coronavirus are estimated to have mild symptoms or symptoms not requiring hospitalization?**

    CDC is taking action to estimate rates of COVID-19 using multiple surveillance systems run in collaboration with state, local, and territorial health departments; public health, commercial and clinical laboratories; vital statistics offices; healthcare providers; emergency departments; and academic partners. *COVIDView* (www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/index.html) provides a weekly summary and interpretation of a variety of surveillance systems that will be used to track the progression and severity of COVID-19 disease throughout the course of the pandemic.

    CDC has efforts ongoing to use these variety of data sources to provide estimates of the fuller burden of COVID-19 in the U.S., including both hospitalized and non-hospitalized cases. In addition, CDC has implemented multiple large scale seroprevalence studies to better understand the prevalence of infection throughout the U.S. population over time. The first summary of these data from 10 states demonstrated a higher level of SARS-CoV-2 (the virus that causes COVID-19) infection in the population than had been reflected by confirmed case counts. Most of these unrecognized cases are likely asymptomatic or mild SARS-CoV-2 infections in people who recovered at home without seeking medical care and testing.

12. **Has the CDC studied or analyzed whether any protest rallies held during the period of March 2020 to the present contributed to or increased the spread of coronavirus? If so, please provide the underlying data, including the location of the increased transmission. If no, please explain whether the CDC expects to study this issue in the future.**

    CDC is not currently studying or planning to study COVID-19 transmission at rallies or protests.

13. **Please provide what the CDC has found regarding the severity of coronavirus cases in children in the United States, the prevalence of child-to-adult transmission of coronavirus in the United States, and the death rate of American children who have been diagnosed with coronavirus. Of those American children who died of coronavirus, what percentage had underlying or preexisting medical conditions?**

    In the United States, fewer cases of COVID-19 in children have been reported when compared to cases among adults. In addition, hospitalization rates of children with

COVID-19 are significantly lower than hospitalization rates among adults with COVID-19. These data suggest that overall disease severity of COVID-19 is less among children than adults.

We currently have limited data about child-to-adult transmission of the virus. Early reports suggested that children may not be significant drivers of community transmission of SARS-CoV-2, but more recent studies show children may, in fact, be able to effectively spread the virus, particularly in household settings where it is challenging to isolate children.

CDC is actively analyzing multiple data sources to better understand associations between coronavirus infection in children, certain underlying medical conditions, and deaths among these children. Based on current knowledge, children with medical complexity who have genetic, neurologic, metabolic conditions, or who have congenital heart disease, may be at increased risk for severe illness from COVID-19. In addition, and similar to adults, children with obesity, diabetes, asthma and chronic lung disease, or immunosuppression, may also be at increased risk for severe illness from COVID-19. Most children who have needed intensive care unit (ICU)-level care in the U.S. have had underlying medical conditions.

An April 10, 2020, *MMWR* article, "Coronavirus Disease 2019 in Children — United States, February 12–April 2, 2020" (www.cdc.gov/mmwr/volumes/69/wr/mm6914e4.htm?s_cid=mm6914e4_w), analyzed data from 2,572 laboratory-confirmed COVID-19 cases among children younger than 18 years in the United States. Data were available for a small proportion of patients on many important variables, including underlying conditions. Among 345 pediatric cases with information on underlying conditions, 80 (23%) had at least one underlying condition. The most common underlying conditions were chronic lung disease (including asthma) (40), cardiovascular disease (25), and immunosuppression (10). Among the 295 pediatric cases for which information on both hospitalization status and underlying medical conditions was available, 28 of 37 (77%) hospitalized patients, including all six patients admitted to an ICU, had one or more underlying medical condition; among 258 patients who were not hospitalized, 30 (12%) patients had underlying conditions.

According to CDC's *COVID 19 Data Tracker* (www.cdc.gov/covid-data-tracker/index.html#demographics), of the 119,633 deaths for which age group information is available as of August 6, 2020, <0.1 % of deaths were recorded for patients 0-4 years old, and <0.1% of deaths were recorded for patients 5-17 years old.

It is important to note that due to limited testing, particularly early in the pandemic, testing was prioritized for persons at increased risk for severe illness and those with severe symptoms. Children may have been under-tested, leading to an underestimate of the actual number of children infected with coronavirus. Additionally, as most children have been out of school since the spring and have been limiting their interactions with others, children have been relatively protected from contracting COVID-19. This may also contribute to an under-estimate of the total cases among children, or rates of child-to-adult transmission.