ARE MASKS REALLY EFFECTIVE AGAINST COVID-19?

Type of Mask	Effective For Healthcare Workers?	Effective For the General Public?
Multilayer Cloth Masks and Face Coverings	No. Excellent Evidence	Probably. Good Evidence. Protects wearer from spreading infection to others.
N95 Respirators	Yes. Required for caring for COVID-19 patients. Protects wearer from acquiring infection from others.	Yes, but not recommended. PPE being reserved for healthcare workers.

The following slides (created by the NM Human Services Department) present a summary of selected mask-related research and COVID-19, going back to April 2020. COVID-19 research is evolving rapidly and not all mask-related research will be included in this resource. Please note many research studies are not peer-reviewed.

EFFICACY OF FACE MASK IN PREVENTING RESPIRATORY VIRUS TRANSMISSION

- Total of 21 studies met inclusion criteria.
- **Meta-analyses suggest mask use provided a significant protective effect.**
- Use of masks by healthcare workers (HCWs) and non-healthcare workers (Non-HCWs) can reduce the risk of respiratory virus infection by 80% and 47%.
- Protective effect of wearing masks in Asia appeared to be higher than Western countries.
- Masks had a protective effect against influenza viruses, SARS, and SARS-CoV-2.
- In the subgroups based on different study designs, protective effects of wearing mask were significant in cluster randomized trials and observational studies

Citation: Liang, M., Gao, L., Cheng, C., Zhou, Q., Uy, J. P., Heiner, K., & Sun, C. (2020). Efficacy of face mask in preventing respiratory virus transmission: a systematic review and meta-analysis. *Travel Medicine and Infectious Disease*, 101751.

EFFECTIVENESS OF CLOTH MASKS: A SYSTEMATIC REVIEW

In this systematic review of 10 studies, cloth masks are not as effective as medical masks but may be better than no masks at all.

- Recommendations are to standardize masks with use of materials proven to have high filtration efficacy.
- Leakage needs to be minimized as much as possible.
- Use of cloth masks should not lead to a neglect of other infection control measures and are not recommended for healthcare workers.

Citation: Mondal, A., Das, A., & Goswami, R. P. (2020). Utility of Cloth Masks in Preventing Respiratory Infections: A Systematic Review. *medRxiv*.

PHYSICAL DISTANCING, FACE MASKS, AND EYE PROTECTION TO PREVENT TRANSMISSION OF SARS-COV-2 AND COVID-19: SYSTEMATIC REVIEW AND META-ANALYSIS

- Researchers identified 172 observational studies across 16 countries and six continents, with no randomized controlled trials and 44 relevant comparative studies (n=25 697 patients).
- **Transmission of viruses was lower with physical distancing of 1 meter or more**, compared with a distance of less than 1 meter (n=10 736); protection was increased as distance lengthened.
- **Face mask use could result in a large reduction in risk of infection** (n=2647), with stronger associations with N95 or similar respirators compared with disposable surgical masks or similar (e.g., reusable 12–16-layer cotton masks).
- **Eye protection also was associated with less infection** (n=3713).
- Optimum use of face masks, respirators, and eye protection in public and health-care settings should be informed by these findings and contextual factors. Robust randomized trials are needed to better inform the evidence for these interventions.

Citation: Chu, D. K., Akl, E. A., Duda, S., Solo, K., Yaacoub, S., Schünemann, H. J., ... & Hajizadeh, A. (2020). 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. *The Lancet*.

GUIDELINES ON HOW TO PROPERLY WEAR A CLOTH MASK IN PUBLIC

- Many citizens are concerned that people are wearing masks incorrectly.
- **According to the WHO, the mask should fit snugly without any gaps. Masks should also cover all of the nose and below the chin.**
- Hands should also be washed prior to putting the mask on.

Source: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/when-and-how-to-use-masks

FACE MASK USE BY PUBLIC OFFERS SIGNIFICANT BENEFIT WHEN USED CONSISTENTLY

- **Use of face masks in general population offers significant benefit in preventing spread of respiratory viruses, but utility is limited by inconsistent adherence to mask usage.**
- Early initiation of mask usage was more effective.
- Masks were more effective in viruses that transmit easily from asymptomatic individuals, an issue with the current pandemic.

Citation: Gupta, M., Gupta, K., & Gupta, S. (2020). The use of facemasks by the general population to prevent transmission of Covid 19 infection: A systematic review. *medRxiv*.

COMMUNITY-WIDE IMPACT OF FACE MASK USE BY PUBLIC

- Face masks are found to be useful with respect to both preventing illness in healthy persons and preventing asymptomatic transmission.
- 80% adoption of moderately (50%) effective masks could prevent 17–45% of projected deaths over 2 months in New York, while decreasing peak daily death rate by 34–58% absent other changes in epidemic dynamics.

Eikenberry, S. E., Mancuso, M., Iboi, E., Phan, T., Eikenberry, K., Kuang, Y., ... & Gumel, A. B. (2020). To mask or not to mask: Modeling the potential for face mask use by the general public to curtail the COVID-19 pandemic. *Infectious Disease Modelling*.

ADDING NYLON LAYER TO FABRIC MASKS INCREASES PARTICLE FILTRATION EFFICIENCY

- Using a modified method of mask fit testing, researchers compared particle filtration efficiency of 10 community-produced fabric mask designs to commercially produced surgical masks.
- **A nylon stocking over layer improved particle filtration efficiency for all masks**, and brought the efficiency for 5 of the 10 fabric mask designs above the 3M surgical mask baseline.
- Use of this testing method on a wider range of mask material/designs could optimize PPE given available resources.

Citation: Mueller, A. V., Eden, M. J., Oakes, J. J., Bellini, C., & Fernandez, L. A. (2020). Quantitative Method for Comparative Assessment of Particle Filtration Efficiency of Fabric Masks as Alternatives to Standard Surgical Masks for PPE. *medRxiv*.

OF 25 COUNTRIES WITH HIGHEST NUMBER OF CASES, 16 RECOMMEND AGAINST PUBLIC USE OF MASKS

- Quantitative content analysis of health agency mask guidelines performed in late March among 25 countries with highest number of cases.
- Nine countries recommended masks in public/poorly ventilated places
- Sixteen recommended against it due to masks creating a false sense of security.
- Twelve did not offer recommendations.

Citation: Laestadius, L., Wang, Y., Taleb, Z. B., Kalan, M. E., Cho, Y., & Manganello, J. (2020). Online National Health Agency Mask Guidance for the Public in Light of COVID-19: Content Analysis. *JMIR Public Health and Surveillance*, *6*(2), e19501.

CLOTH MASKS CREATE A FALSE SENSE OF SECURITY

- This study, not yet peer-reviewed, shows evidence masks enable disinhibition behavior and Americans spend less time at home and more time in moderate to high-risk locations following orders to wear masks.
- Mask orders provide a sense of protection, leading people to substitute face mask wearing for other nonpharmaceutical interventions like avoiding time in public.

Citation: Yan, Y., Bayham, J., Fenichel, E. P., & Richter, A. (2020). Do Face Masks Create a False Sense of Security? A COVID-19 Dilemma. *medRxiv*.

HOUSEHOLD MATERIALS SELECTION FOR HOMEMADE CLOTH FACE COVERINGS

- Researchers evaluated filtration properties of natural and synthetic materials using a modified procedure for N95 respirator approval:
  - Cotton, polyester, nylon, and silk had filtration efficiency of 5-25%
  - Polypropylene spunbond had filtration efficiency 6-10%
  - Paper-based products had filtration efficiency of 10-20%
- Advantage of polypropylene spunbond is it can be simply triboelectrically charged to enhance the filtration efficiency (from 6 to >10%), without any increase in pressure (stable overnight and in humid environments).
- Cotton, polyester, and polypropylene multilayered structures can meet or even exceed the efficiency of materials used in some medical face masks.

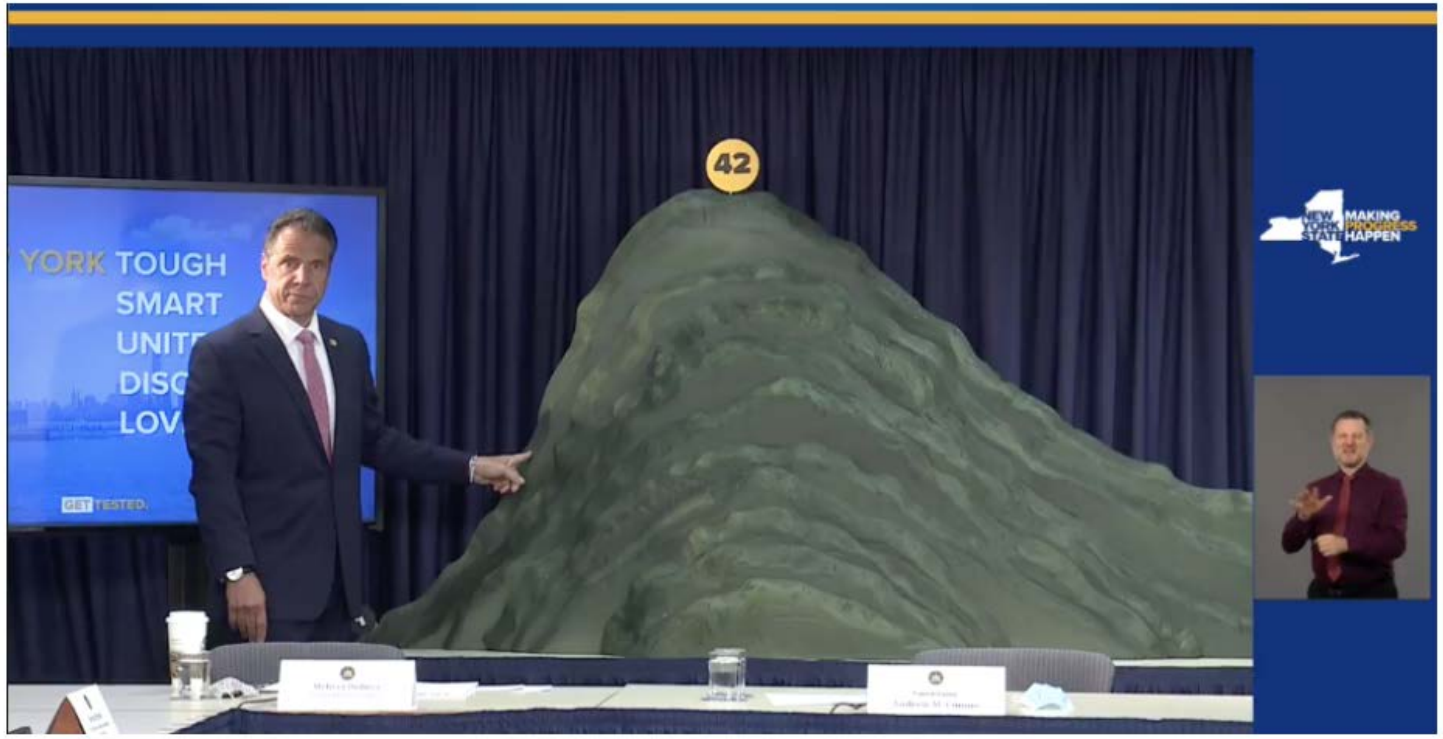
Citation: Zhao, M., Liao, L., Xiao, W., Yu, X., Wang, H., Wang, Q., ... & Chu, M. C. (2020). Household materials selection for homemade cloth face coverings and their filtration efficiency enhancement with triboelectric charging. *Nano Letters*.

WANT TO PREVENT ANOTHER SHUTDOWN, SAVE 33,000 LIVES AND PROTECT YOURSELF? WEAR A FACE MASK, DOCTORS SAY

- Public health officials say we must wear masks if we want to keep the economy open and save tens of thousands of lives.
- Initially, CDC said cloth masks were intended to protect other people from a person wearing the mask in case that person is asymptomatic.
- However, there is some evidence the mask benefits the wearer from COVID-19 infection, too.
- An estimated 230,000-450,000 COVID-19 cases were prevented in states that enacted requirements for mask use between 4/8-5/15.
- Face masks increase civil liberties by decreasing asymptomatic viral spread, which will result in more places open sooner.

CNN WORLDWIDE: JUNE 29 CORONAVIRUS NEWS

- Cuomo urges Trump to issue executive order requiring everyone in the US to wear masks.
- Cuomo on coronavirus spread: “We could have to do this all over again.”



New York Gov. Andrew Cuomo unveiled a large sculpture showing the curve of coronavirus cases in the state, warning that "we don't need to climb another mountain."

A marker at the peak of the mountain represented the 42 days that cases in New York increased before plateauing and the declining.

CDC SAYS SINGERS COULD BE VIRUS SUPERSPREADERS—BUT 100 SANG UNMASKED WITH PENCE

- A choir of ~100 performers sang without masks at an event with Vice President Pence in Texas on 6/28.
- Epidemiologists fear singers could be superspreaders of COVID-19 due to aerosolization of virus.
- On 6/25, Texas Gov. Greg Abbott announced a "pause" on his state's reopening after saying that Texas is facing a "massive outbreak" of the coronavirus.
- On 5/15, the CDC published a report on a 2 1/2-hour indoor choir practice in Skagit County, Wash., that took place in early March and was attended by 61 people. Afterward, 85% of those singers contracted COVID-19, with 32 confirmed and 20 probable cases. Three of the singers were hospitalized, and two died.