



The effectiveness of face masks to prevent SARS-CoV-2 transmission: Additional Literature.

Executive Summary: The Ottawa County Department of Public Health and the Kent County Health Department published a summary of literature on the effectiveness of masks to prevent SARS-CoV-2 transmission in August of 2021. Since that time, additional research has been published supporting the utilizations of face masks to prevent SARS-CoV-2 transmission in the community and in K-12 school settings. Below is a summary of additional literature.

Reviews and Meta-analyses:

Talic et al. [Effectiveness of public health measures reducing the incidence of covid-19, SARS CoV-2 transmission, and covid-19 mortality: systematic review and meta-analysis.](#) BMJ 2021: 375.

The authors identified 72 studies meeting inclusion criteria and found that physical distancing, handwashing, and mask wearing were associated with reductions in COVID-19 incidence. Eight studies evaluating mask wearing were pooled and showed a 53% reduction in COVID-19 incidence. Although not included in the study meta-analysis, this systematic review highlighted a [natural experiment across 200 countries](#) that found COVID-19 mortality was reduced 45.7% when mask wearing was mandatory.

Epidemiologic Studies:

Lutreck et al. [Interim Estimate of Vaccine Effectiveness of BNT162b2 \(Pfizer-BioNTech\) Vaccine in Preventing SARS-CoV-2 Infection Among Adolescents Aged 12–17 Years — Arizona, July–December 2021.](#) CDC MMWR

This CDC-published prospective cohort study was primarily focused on vaccine effectiveness for adolescents aged 12-17. However, within this study the authors also found that participants with a positive SARS-CoV-2 test during the study period reported less time wearing a mask in school (48.6%) compared to those who did not receive a positive result (75.7%). This observed difference was statistically significant ($p=0.031$).

Andrejko et al. [Effectiveness of Face Mask or Respirator Use in Indoor Public Settings for Prevention of SARS-CoV-2 Infection — California, February–December 2021.](#) CDC MMWR.

A large multi-county matched case-control study conducted in California and administered through most of 2021 found that people who reported always wearing a mask in indoor public settings were less likely to test positive for COVID-19 than people who did not wear masks. Those that wore N95/KN95 masks, surgical masks, or cloth masks had 83%, 66%, and 56% lower odds of testing positive for COVID-19, respectively. The observed reduction was statistically significant for N95/KN95 and surgical masks. This study did not evaluate masking as source control, but as a method for protecting the wearer.



Abaluck et al. [Impact of community masking on COVID-19: a cluster-randomized trial in Bangladesh](#). Science 2021 Dec 2;375(6577)

The authors of this large 2-month long randomized study in Bangladesh found that villages utilizing masks had an 11.6% reduction in COVID-19 symptoms and a 9.5% reduction in symptomatic seropositivity. The results were most pronounced for older adults, noting a 35.3% reduction in symptomatic seroprevalence among individuals >=60 years of age.

University of Michigan. [MI COVID Response Data and Modelling Update November 2, 2021](#). Slide 44.

Surveillance data from MDHHS was analyzed by the University of Michigan through the first two months of the Fall 2021 semester for K-12 schools. The evaluation found that in school districts with few or no mask rules persons aged 5-18 years of age had higher COVID-19 case rates; and that case rates increased faster in districts with no mask rules compared to districts with partial mask rules or mask requirements.

Murray et al. [Association of Child Masking with COVID-19-Related Closures in US Childcare Programs](#). JAMA Netw Open. 2022;5(1):e214227.

This prospective longitudinal study of childcare professionals from all 50 states found that child masking at baseline was associated with a 13% reduction in closure within the following year.

Thakkar et al. [COVID-19 Incidence Among 6th-12th Grade Students by Vaccination Status](#). Pediatrics 2022.

A school cohort study evaluating vaccine effectiveness during the Fall of 2021 found that vaccination effectively prevented symptomatic infection. The study also noted that evidence of within school transmission was found in two of 27 infections – both of which were from unmasked exposures to unvaccinated index cases.

Donovan et al. [SARS-CoV-2 Incidence in K-12 School Districts with Mask-Required Versus Mask-Optional Policies – Arkansas, August-October 2021](#). CDC MMWR.

A large study of 233 school districts in Arkansas conducted through the fall of 2021 found that school districts utilizing full masking policies had 23% lower COVID-19 incidence among students and staff (IRR-0.77 [0.66-0.88]), accounting for vaccination coverage. This study also found that a subset of 26 districts that switched from no masking to partial or full masking, experienced a statistically significant reduction in COVID-19 incidence after employing a masking policy.

Boutzoukas et al. [School Masking Policies and Secondary SARS-CoV-2 Transmission](#). Pediatrics 2022.

This prospective cohort study which included data from 61 K-12 districts across 9 states and involving over 1 million children and 150,000 staff found that districts using optional masking policies had secondary transmission rates 3.6 times higher than districts utilizing universal masking policies. Further analysis adjusting for district size and weeks reporting data found that optional masking had 7.5 times the predicted rate of secondary transmission compared to universally masked districts – a statistically significant difference (95% CI, 4.21 – 13.42). This corresponds to an 87% reduction in predicted secondary transmission when universal masking was utilized.