**LITERATURE SURVEY**

# 1)"To mask or not to mask: Modeling the potential for face mask use by the general public to curtail the COVID-19 pandemic.

# AUTHORS: Eikenberry, Steffen E., Marina Mancuso, Enahoro Iboi, Tin Phan, Keenan Eikenberry, Yang Kuang, Eric Kostelich, and Abba B. Gumel.

Face mask use by the general public for limiting the spread of the COVID-19 [pandemic](https://www.sciencedirect.com/topics/medicine-and-dentistry/pandemic) is controversial, though increasingly recommended, and the potential of this intervention is not well understood. We develop a compartmental model for assessing the community-wide impact of mask use by the general, asymptomatic public, a portion of which may be asymptomatically infectious. Model simulations, using data relevant to COVID-19 dynamics in the US states of New York and Washington, suggest that broad adoption of even relatively ineffective face masks may meaningfully reduce community transmission of COVID-19 and decrease peak hospitalizations and deaths. Moreover, mask use decreases the effective transmission rate in nearly linear proportion to the product of mask effectiveness (as a fraction of potentially infectious contacts blocked) and coverage rate (as a fraction of the general population), while the impact on epidemiologic outcomes (death, hospitalizations) is highly nonlinear, indicating masks could synergize with other non-pharmaceutical measures. Notably, masks are found to be useful with respect to both preventing illness in healthy persons and preventing asymptomatic transmission. Hypothetical mask adoption scenarios, for Washington and New York state, suggest that immediate near universal (80%) adoption of moderately (50%) effective masks could prevent on the order of 17–45% of projected deaths over two months in New York, while decreasing the peak daily death rate by 34–58%, absent other changes in [epidemic dynamics](https://www.sciencedirect.com/topics/medicine-and-dentistry/epidemic-dynamics). Even very weak masks (20% effective) can still be useful if the underlying transmission rate is relatively low or decreasing: In Washington, where baseline transmission is much less intense, 80% adoption of such masks could reduce mortality by 24–65% (and peak deaths 15–69%), compared to 2–9% mortality reduction in New York (peak death reduction 9–18%). Our results suggest use of face masks by the general public is potentially of high value in curtailing community transmission and the burden of the pandemic. The community-wide benefits are likely to be greatest when face masks are used in conjunction with other non-pharmaceutical practices (such as social-distancing), and when adoption is nearly universal (nation-wide) and compliance is high.

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# 2"Social and behavioral consequences of mask policies during the COVID-19 pandemic."

# AUTHORS: Betsch, Cornelia, Lars Korn, Philipp Sprengholz, Lisa Felgendreff, Sarah Eitze, Philipp Schmid, and Robert Böhm.

Mandatory and voluntary mask policies may have yet unknown social and behavioral consequences related to the effectiveness of the measure, stigmatization, and perceived fairness. Serial cross-sectional data (April 14 to May 26, 2020) from nearly 7,000 German participants demonstrate that implementing a mandatory policy increased actual compliance despite moderate acceptance; mask wearing correlated positively with other protective behaviors. A preregistered experiment (*n* = 925) further indicates that a voluntary policy would likely lead to insufficient compliance, would be perceived as less fair, and could intensify stigmatization. A mandatory policy appears to be an effective, fair, and socially responsible solution to curb transmissions of airborne viruses.

# 3 "Real-Time Facemask Recognition with Alarm System using Deep Learning."

# AUTHORS: Militante, Sammy V., and Nanette V. Dionisio.

In the background of the COVID-19 pandemic, institutions such as the academy suffer a great deal from practically closed globally if the current situation is not going to change. COVID-19 also known as Serious Acute Respiratory Syndrome Corona virus-2 is an infectious disease that is released from an infected sick person who speaks, sneezes, or coughs by respiratory droplets. This spreads quickly through close contact with anyone infected, or by touching objects or surfaces affected with a virus. There's still currently no vaccine available to protect against COVID-19 and preventing exposure to the virus seems to be the only method to safeguard ourselves. Wearing a facemask that covers the nose and mouth in a public setting and often washing hands or the use of at least 70% alcohol-based sanitizers is one way to avoid being exposed to the virus. Amid the advancement of technology, Deep Learning has proven its effectiveness in recognition and classification through image processing. The research study uses deep learning techniques in distinguishing facial recognition and recognize if the person is wearing a facemask or not. The dataset collected contains 25,000 images using 224x224 pixel resolution and achieved an accuracy rate of 96% as to the performance of the trained model. The system develops a Raspberry Pi-based real-time facemask recognition that alarms and captures the facial image if the person detected is not wearing a facemask. This study is beneficial in combating the spread of the virus and avoiding contact with the virus.

**4 "Deep Learning Implementation of Facemask and Physical Distancing Detection with Alarm Systems."**

AUTHORS**: Militante, Sammy V., and Nanette V. Dionisio.**

COVID-19 or Severe Acute Respiratory Syndrome Corona virus-2 is an extremely transmissible virus that is discharged through breathing droplets released from an infected individual who is talking, sneezing, or coughing. Close interaction with a person infected or through touching a contaminated surface and object can spread the virus rapidly. As of now, there is no vaccine to combat the COVID-19, and the best way to protect the person from a virus is to avoid being exposed to it. Wearing a facemask that covers the nose and mouth in a public setting and repeatedly cleansing of hands or the use of at least 70% alcohol-based disinfectants is a practice to avoid virus exposure. Deep Learning technology has demonstrated its achievement in recognition and classification by processing images. The research study uses deep learning techniques that identify if the person is wearing a facemask or not and check if the persons in the area observe physical distancing. The collected image data contains 20,000 images, uniformly crop images in 224x224 pixels, and attained an accuracy rate of 97% during the training of the model. The developed system is implemented using Python and OpenCV through TensorFlow that recognizes persons wearing a facemask or not wearing and measures the physical distance between each person. It signals an alarm and captures facial images upon detecting persons not wearing a mask and does not observe physical distancing. This study is beneficial in combating the spread of the virus and avoiding contact with the virus.

5) **"Face Mask Detection using YOLOv5 for COVID-19."**

AUTHORS: **Sharma, Vinay.**

COVID-19 is a big threat to human mankind. The whole world is now struggling to reduce the spread of COVID-19 virus. Wearing masks is a good practice that helps to control the COVID-19 effectively. From the results of China and South Korea that is clear wearing, facemask reduces the virus spread. Now they backed to normal life. But ensuring all peoples wearing facemask is not an easy thing. This paper attempts to develop a simple and effective model for real-time monitoring. The proposed model successfully recognize if an individual is wearing a face mask or not.