# Does wearing mask save lives? - Research Proposal

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## Background

The Covid-19 pandemic has taken more than 2.5 million lives worldwide. In the U.S. alone, more than half a million people have died because of it.

One major point of contention in the national conversation on Covid-19 policies is around face masks. There seems to be both extremely strong advocates **for** as well as *against* mask wearing.

Therefore as a team of Data Scientists, we're interested in answering exactly the question of whether face mask helped with containing the spread of Covid-19.

## Research Question

Rather than investigating the effect of face masks on a micro, personal interaction level, we are interested in its effect on a policy level.

Specifically the Research Question we're asking is:

`Does the policy of mandating face masks cause fewer Covid-19 cases?`

## Operationalization

To unpack the high level question, there are a few components to this.

**Firstly**, we'll use the New York Times Covid-19 data for the number of Covid cases per State. However, the raw number of cases is not a great measure of Covid spread, so we will normalize it by the population of the States and use "cases per 100,000 residents" as a more accurate measure. The population data will come from the COVID-19 US State Policy Database.

**Secondly**, we noticed that the Covid cases metric is a time-series data, and the policy of face masks is put in place at different times in different states, so it is also time sensitive. Also given that we know Covid symptoms typically start between 2 to 14 days after exposure[1], we would build in a time delay between the policy is in place and the counting of Covid cases.

We would break the time from March 2020 to March 2021 in 2 week periods, and stagger the mask policy and the number of cases by 1 period. For example, one data point would be:

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x = California's Mask Policy between 2020-03-01 and 2020-03-14
y = California's total number of cases between 2020-03-15 and 2020-03-28
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The face mask policy data will also come from COVID-19 US State Policy Database.

**And Finally**, for our more advanced models, we would also like to consider other control variables to isolate the effect of face masks. For example, we think the "State of Emergency" policy (from the same State Policy Database), as well as some sections of community mobility data ( from COVID-19 Community Mobility Report) can all be valuable explanatory variables in controlling the effect of face mask policy on the spread of Covid-19.

## References:

[1]: https://www.emersonhospital.org/articles/allergies-or-covid-19