

Do Masks Really Reduce the Spread of COVID-19?

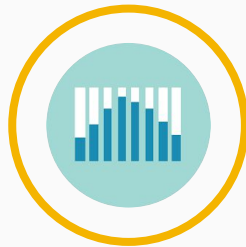
- A Panel Data Analysis

Team Disinfectant Wipes

Roadmap



Objective



Data Source



Model Building



Recommendation

Background



Face masks: should we have been wearing them right from the start?

Objectives: Explore and Quantify

Explore the correlation between mask interest and positive case increase



Quantify the effect of the awareness of wearing masks

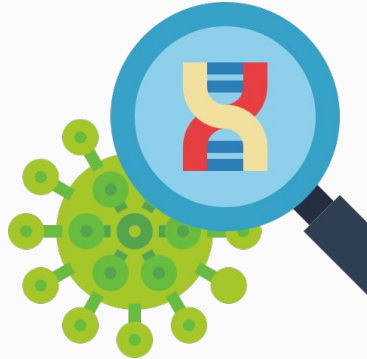
Data Source

Search Interests



Proxy for people's interest in masks,
hand sanitizer, panic buying

COVID-19 Case Tracking



Number of people tested, tested positive,
hospitalized, dead, etc.

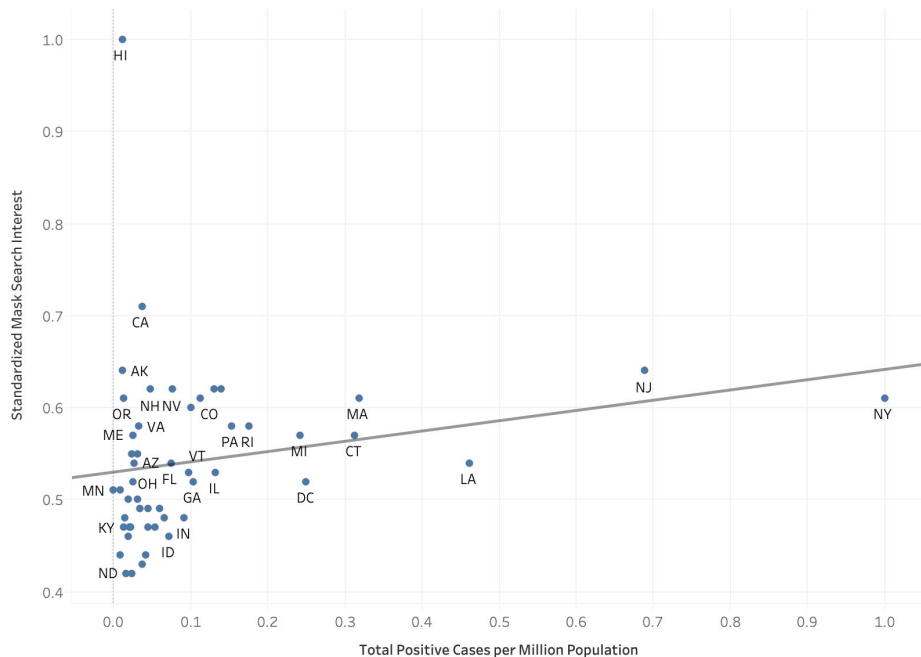
Shelter-in-Place Order



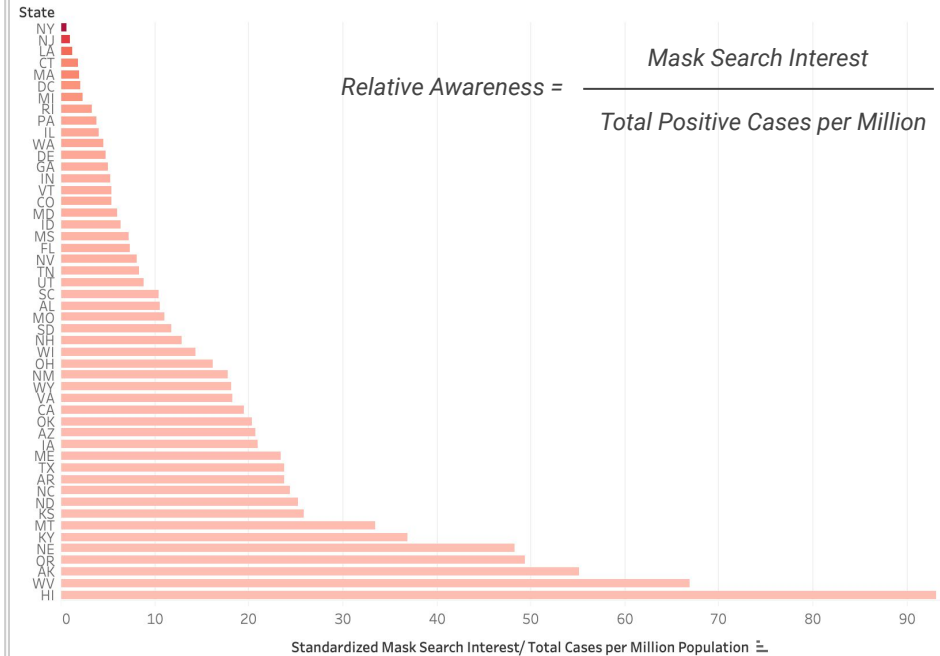
The effective date of shelter-in-place
orders in each state

What is the True Relationship between Interest in Masks and the Number of Cases?

Mask Search Interest vs. Total Positive Cases per Million

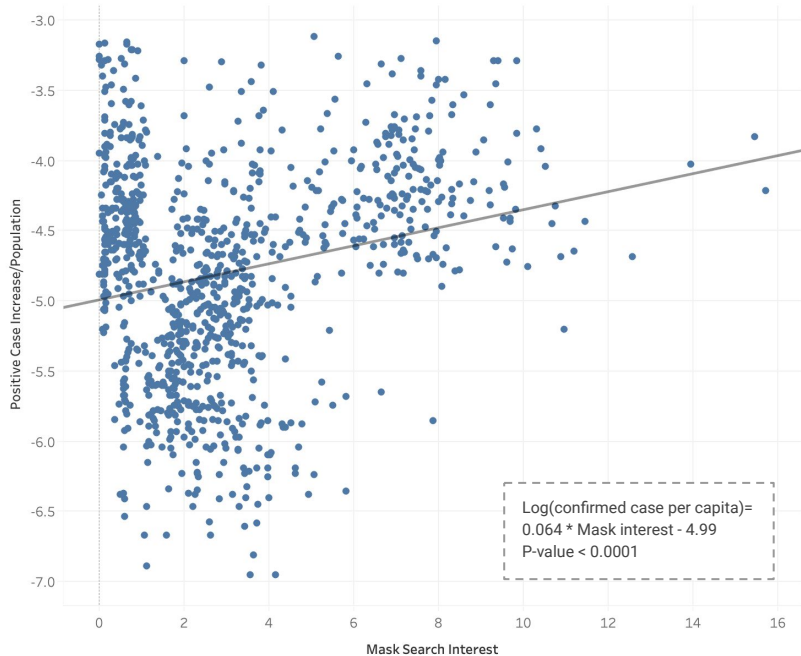


Relative Awareness of Wearing Masks in response to the Severity of COVID-19

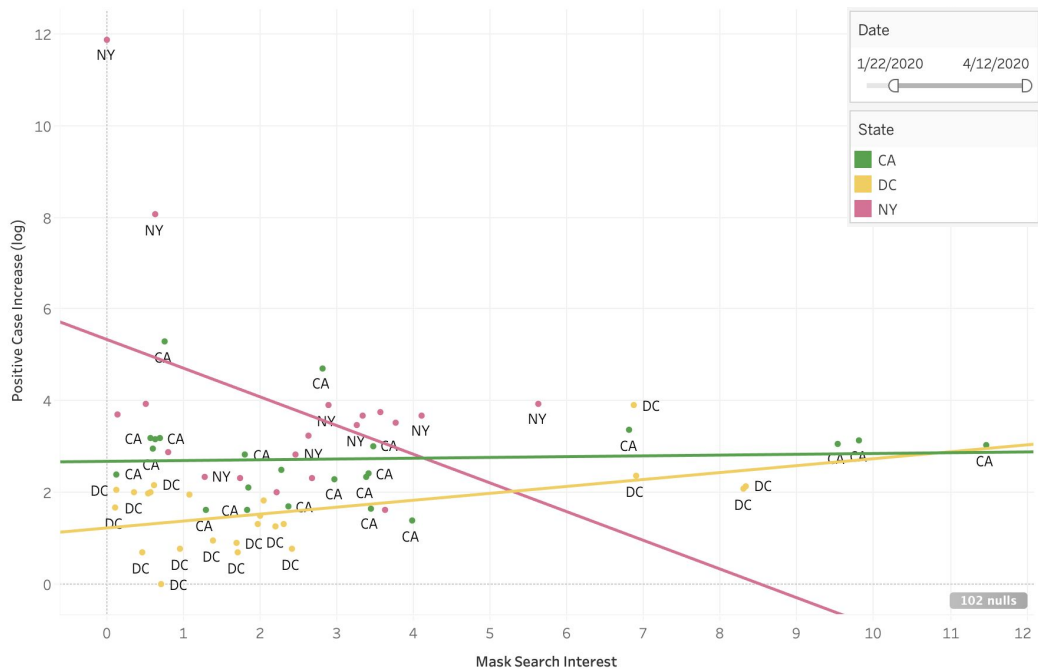


Why Do We Need A Fixed Effect Model (FEM)?

Pooled Regression



Positive Case Increase vs. Mask Search Interest by State



What Went into Our Model?

Dependent Variable:

Increase in
Confirmed Cases of
COVID-19



Independent Variables:

Google Trends (Search Interest)



#Mask



#Hand Sanitizer



#Toilet Paper



#Coronavirus

Order

*Whether a
stay-at-home
order is in
place*

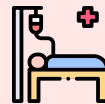


Medical Resources Available

of Hospital Beds

of ICU Beds

of Seniors



Time span:
03/01 - 04/12



Regions:
All states in the US



Dimension:
1064 * 29

FEM Results:

Being Aware of Wearing Masks Helps!

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
Increase in Hospitalized Patients	2.8170	0.4766	5.9103	0.0000	1.8817	3.7523
Stay-at-Home Order in Place	0.0001	0.0001	1.7424	0.0817	0.0000	0.0002
Search Interest for "Coronavirus"	-0.1324	0.4189	-0.3162	0.7519	-0.9545	0.6896
<div>Search Interest for "Masks"</div>	-11.0730	2.6637	-4.1570	0.0000	-16.3000	-5.8458
Search Interest for "Sanitizers"	1.0953	1.6358	0.6696	0.5033	-2.1147	4.3053
Search Interest for "Toilet Paper"	0.2343	0.6093	0.3845	0.7007	-0.9613	1.4298

Recommendations: Faster Reactions from the Government

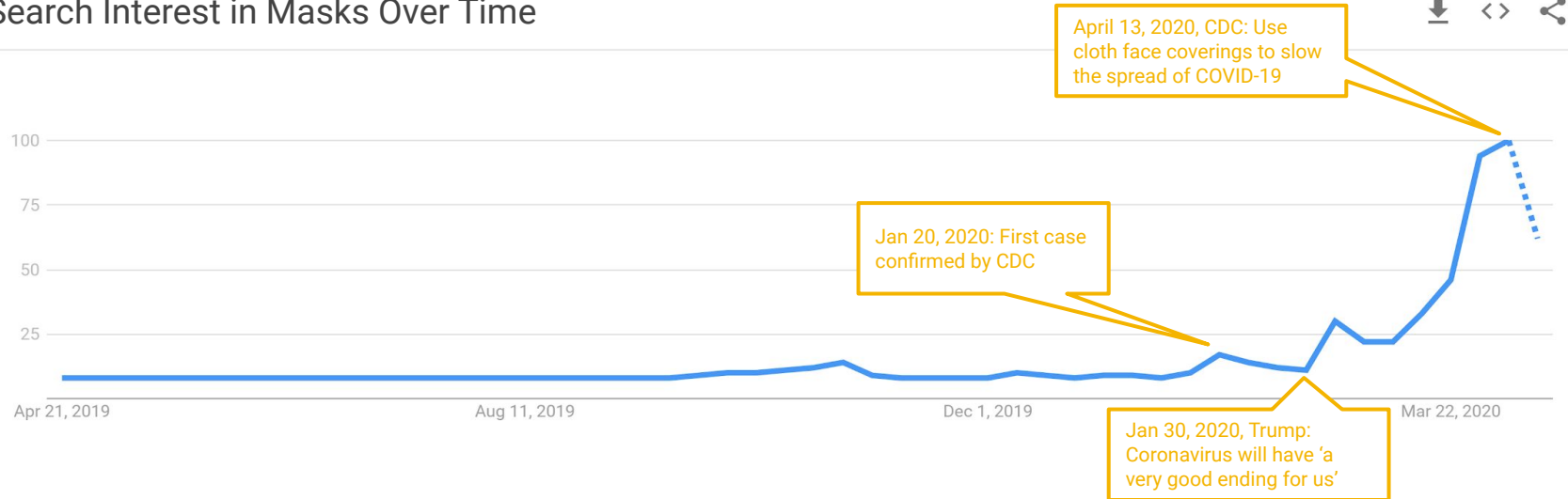
United States ▼

Past 12 months ▼

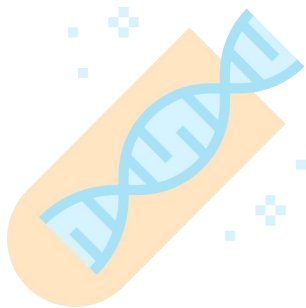
All categories ▼

Web Search ▼

Search Interest in Masks Over Time



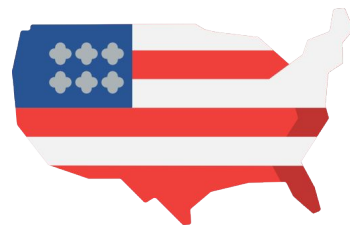
Limitations



**Real-world constraint
from testing capacity**



**Limitation in Google
Trends as a proxy**



**Aggregation on
state-level**



Thank You!

Stay safe, healthy and happy :-)