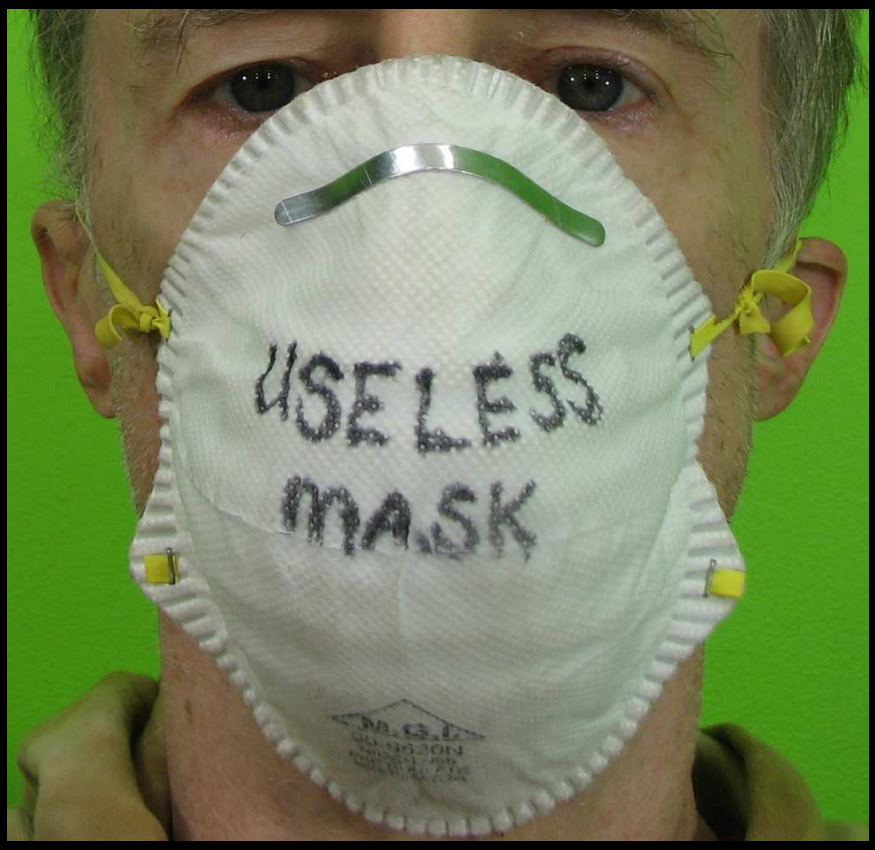

Analysis With Confounding Factors Says COVID-19 Deaths and Unemployment Depended On A Few Demographics, Not Public Policy

January 5, 2021

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Abstract (satire)

Once upon a time, there was a young man. A young man full of hope.

No one told him to wear a mask. Thus, he was happy.

Then, one night, much like tonight, SOMETHING ROSE FROM THE SWAMP... He heard a noise behind him: "Thump thump". "Thump thump".

He walked a little faster.

"THUMP THUMP." "THUMP THUMP!"

He turned, looked, and there, in the light of the TV screen, stood the evil, lying, soul crushing, fake news!

He heard it's wild cry!

"Mask up, or die!"

He ran from it! He used *epidemiology, confounding factors and **AI***! Nothing could stop it!

Finally, it trapped him, and asked "Wear a mask?"

And, are you wondering if he did?

Yes, I'm afraid he did.

And, he was *never, heard from, again!*

You know what the worst of it is?

There could be more BEHIND THAT TV SCREEN ***RIGHT NOW***!

Or maybe not...

But beware! Because wherever there's a paying advertiser, they'll come a creepin', AND THEY CAN'T BE STOPPED!

So, sleep well now, if you can,

BWA HAAA HAAA HAAAAAAAAA!

Methods (serious)

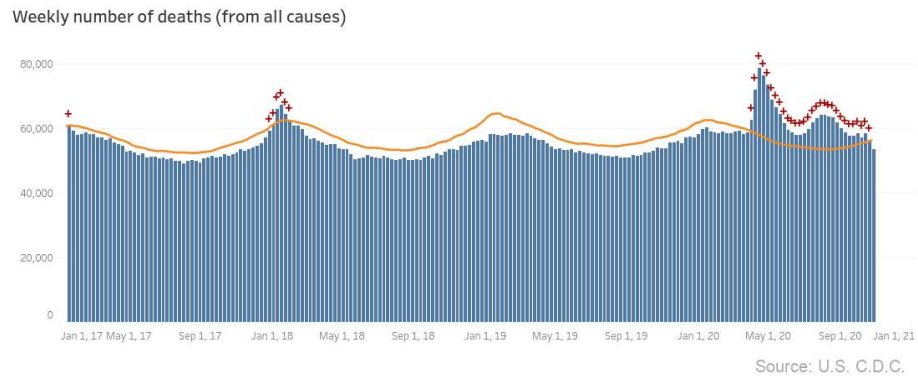
I collected data on

1. excess deaths[1,2,3],
2. changes in unemployment[4],
3. 8 public polices related to COVID-19[1] and
4. 20 demographics[2] for each of America's 50 states.

I entered them into a computer spread sheet[14].

I avoided exaggerating the effect of people who may have died anyway from other causes by considering "excess deaths"[3].

U.S. Center for Disease Control excess deaths in 2020.



I avoided bias by averaging excess death reported from three sources[1,2,3][4].

[1] Lock downs[10], stay at home orders[11], requiring face coverings in public[11], banning all gatherings[11], restricting out-of-state travel[11], closing day cares[11], closing bars & sit-down restaurants[11] and closing non-essential retail[11]

[2] Latitude, longitude, average wind speed, average humidity, cigarette use among adults, lung cancer rates, emission reduction over 10 years, air pollution, good and moderate air days, population density per square mile[5], population (2015 est.)[6], White[6], Black or African American[6], American Indian and Alaska native[6], Asian[6], native Hawaiian and other Pacific islander[6], some other race[6], two or more races[6], 2017 household income[7] and average percent of population aged 65+[8,9]

[3] How many more people died from any cause than normal.

[4] If I understand correctly, the Journal of the American Medical Association censored data from states reporting fewer deaths than usual (Alaska, Hawaii and North Dakota). I'm concerned that may have biased their reporting.

I used multiple linear regressions[5] to check how significantly public policies and demographics were linked to excess deaths and unemployment.

Plus, to check for non-linear interactions between confounding factors, I computed feature importances with a machine learning technique called "random forest"[15].

I also checked if simpler analyses might lead to false positives by testing the hypotheses that excess deaths and unemployment were linked to individual public policies..

Results

Simple hypothesis tests of individual public policies suggested links, ***but***, these vanished when confounding policies and demographics were simultaneously considered in multiple regression analyses.

No public policy I tested ended up having a significant link.

Either individually, or in total.

But a few demographics did.

So it seems to me that

1. excess deaths were linked to
   (a) humidity,
   (b) population density and
   (c) air quality

   and
2. unemployment was linked to
   (a) race,
   (b) population density and
   (c) cigarette use.

[5] I used version 1.12.47-1 of computer spread sheet software called "gnumeric"[13] via its menu path: Statistics->Dependent Observations->Regression... It reports "p values" for individual regression coefficients. "P values" are used by scientists and statisticians to test if hypotheses are true. P values of 0.05 or less are often considered to be significant.

Public policies did not seem to effect COVID-19 outcomes

	Outcome: average of 3 reports of excess deaths					Outcome: changes in unemployment rates				
	linear regression coefficients considering individual public policies		linear regression coefficients considering all public policies implemented		*feature importances from non-linear regression (random forest)*	linear regression coefficients considering individual public policies		linear regression coefficients considering all public policies implemented		*feature importances from non-linear regression (random forest)*
	sign	p value	sign	p value		sign	p value	sign	p value	
DEMOGRAPHICS										
2017 household income	-	0.299	-	0.212	*0.057*	+	0.606	+	0.837	*0.007*
American Indian and Alaska Native	+	0.789	+	0.884	*0.013*	-	0.313	-	0.361	*0.024*
Asian	+	0.625	+	0.694	*0.079*	-	0.355	-	0.431	*0.182*
Average humidity	-	0.062	-	0.019	*0.054*	+	0.916	+	0.825	*0.016*
Average percent of population aged 65+	-	0.764	+	0.766	*0.014*	+	0.084	+	0.166	*0.015*
Average wind speed (m.p.h.)	-	0.208	-	0.119	*0.019*	+	0.446	+	0.387	*0.006*
Black or African American	+	0.755	+	0.832	*0.034*	-	0.383	-	0.429	*0.028*
Latitude	+	0.854	+	0.280	*0.012*	+	0.065	+	0.159	*0.019*
Longitude	+	0.703	+	0.801	*0.036*	+	0.793	+	0.760	*0.027*
Native Hawaiian and Other Pacific Islander	-	0.774	-	0.665	*0.011*	-	0.657	-	0.655	*0.009*
Population (2015 est.)	-	0.183	-	0.238	*0.071*	+	0.388	+	0.549	*0.009*
Population density per mi^2	+	0.794	+	1.000	*0.357*	+	0.086	+	0.042	*0.292*
Rank for Air Pollution	-	0.127	-	0.131	*0.034*	-	0.303	-	0.227	*0.021*
Rank for Good & Moderate Air Days	+	0.459	+	0.514	*0.015*	-	0.616	-	0.632	*0.007*
Rank for Poor Air Days	+	0.031	+	0.022	*0.012*	-	0.272	-	0.535	*0.021*
Ranking for Least Cigarette Usage Among Adults	-	0.777	-	0.298	*0.022*	+	0.018	+	0.005	*0.013*
Ranking for Reducing Emissions over 10 years	-	0.591	-	0.841	*0.015*	+	0.516	-	0.898	*0.021*
Ranking for Smallest Lung Cancer Rates	+	0.830	+	0.650	*0.029*	+	0.422	+	0.464	*0.014*
Some other race	+	0.763	+	0.843	*0.058*	-	0.550	-	0.609	*0.206*
Two or more races	+	0.758	+	0.833	*0.010*	-	0.422	-	0.462	*0.014*
White	+	0.750	+	0.832	*0.016*	-	0.377	-	0.427	*0.012*
PUBLIC POLICIES										
all gatherings banned	+	0.309			*0.002*	-	0.296			*0.001*
bars & sit-down restaurants ordered closed	+	0.672			*0.000*	-	0.627			*0.000*
daycares ordered closed	+	0.695			*0.000*	-	0.888			*0.000*
face coverings required in public	-	0.119			*0.001*	+	0.718			*0.042*
locked down	-	0.958			*0.000*	+	0.849			*0.000*
non-essential retail ordered closed	-	0.804			*0.000*	+	0.565			*0.001*
out-of-state travel restrictions	-	0.582			*0.027*	-	0.861			*0.003*
stay at home	-	0.832			*0.000*	+	0.437			*0.000*
total number of COVID-19 public policies enacted			-	0.348	*0.001*			+	0.397	*0.028*

Notes: Separate linear regressions of individual public policies and their total avoided colinearity errors. Statisticians often assume p values equal to or less than 0.05 are significant. Feature importances are relative, and add up to 1. Higher feature importances correspond to lower p values.

Discussion

It seems to me the main things that distinguish my study from others is

1. the lengths I went to to mitigate confounding factors[6] and
2. a satirical abstract.

I like to think of this as the COVID-19 study that went to college.

I suppose my main finding is how ineffective public policies were.

It's consistent with several other studies saying masks were futile [16,17,18,20,21] but contradicts other saying they might work, at least some times or a little[19,22].

I was surprised that

1. lock downs and business closures didn't seem to affect unemployment, and
2. excess deaths were insignificantly linked to the percentage of people aged 65 and older.

The raw data could shift with time.

For example, if population density only influences where COVID-19 hits first, like cities, but it eventually spreads to rural areas, subsequent raw data may suggest weaker relationships to population density.

My study was retrospective, and not randomized or peer-reviewed, so it's predictably imperfect.

I wonder if states passed laws requiring people to wash their hands, and if that data could also be considered.

Although I'm unaware of any serious flaw in my study, it's easy to make a mistake, especially in complex analyses like these. I'd appreciate it if someone carefully tries to replicate my work[14].

Feel free to check out my spread sheet[14].

If you do, please let me know what you find!

[6] I analyzed 8 public policies and 20 demographics, in both linear and non-linear multiple regressions.

Conclusion

If my analysis is correct, laws claiming to prevent COVID-19 deaths were futile.

Nor did they seem to effect unemployment.

It seems to me that it may be OK, and even desirable, to stop wearing masks.

Funding

I received no funding for this research, and have no conflict of interest in it.

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