

Covid-19  
**MASK SENTIMENT**  
A NLP Project.

Da Guo

Why



What

# QUESTIONS

1  
What are people's sentiment towards mask among  
this conflict of information in the US?

2  
Are mask sentiment and positive case increase rate  
correlated?

How

## I. Data Sources



Search Term: "Mask"

Exclusion:  
Tweets without location data

Method: Stream, to MongoDB Atlas  
Quantity: ~ 4,000/day



Method: Direct API Request

Frequency: 4/day

mask sentiment  
**PROCESS**

## II. Data Cleaning + Feature Engineering

Excluding:  
Tweets from outside the US,  
in foreign languages

Including:  
Sentiment [Subjectivity, VaderSentiment]  
, Bucketing [Contain number? Link?] & Topic Modeling [Tweet's topic orientation]  
• LSA Latent Semantic Analysis

## III. Modeling

Unsupervised:

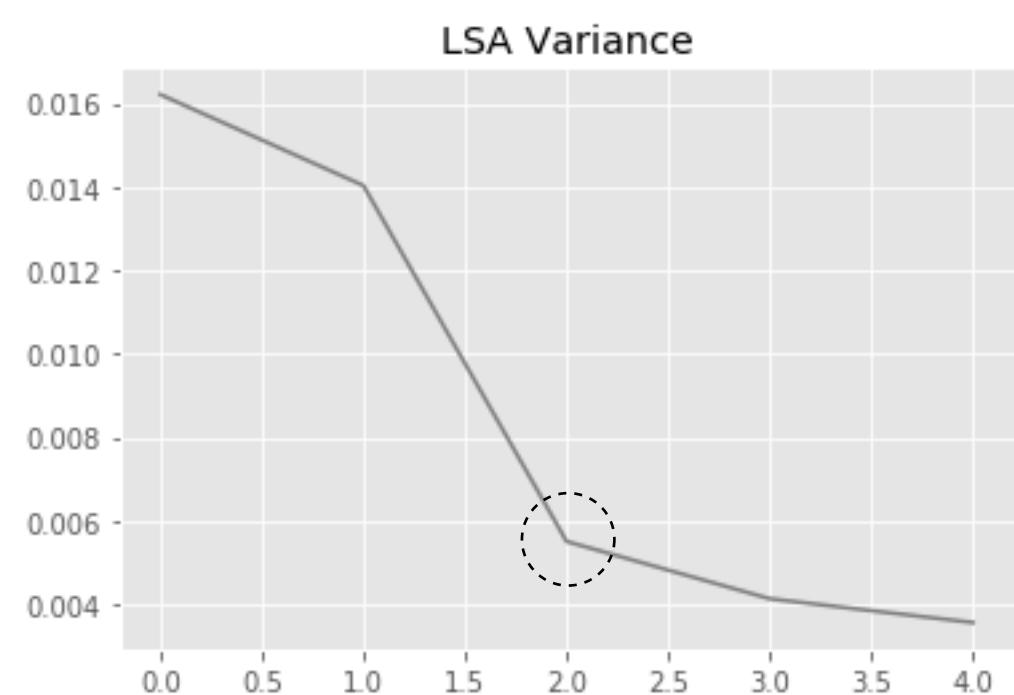
K means Clustering

n\_Custer:

Determined by inertia "elbow".

So

## Topic Modeling 3 Topics



wear\_face\_mask\_at\_all\_times

face mask, wear face mask, wear face, wear mask, cloth face mask, cloth face, mask face, gon na, mask face mask, need face mask

wear\_mask\_in\_public

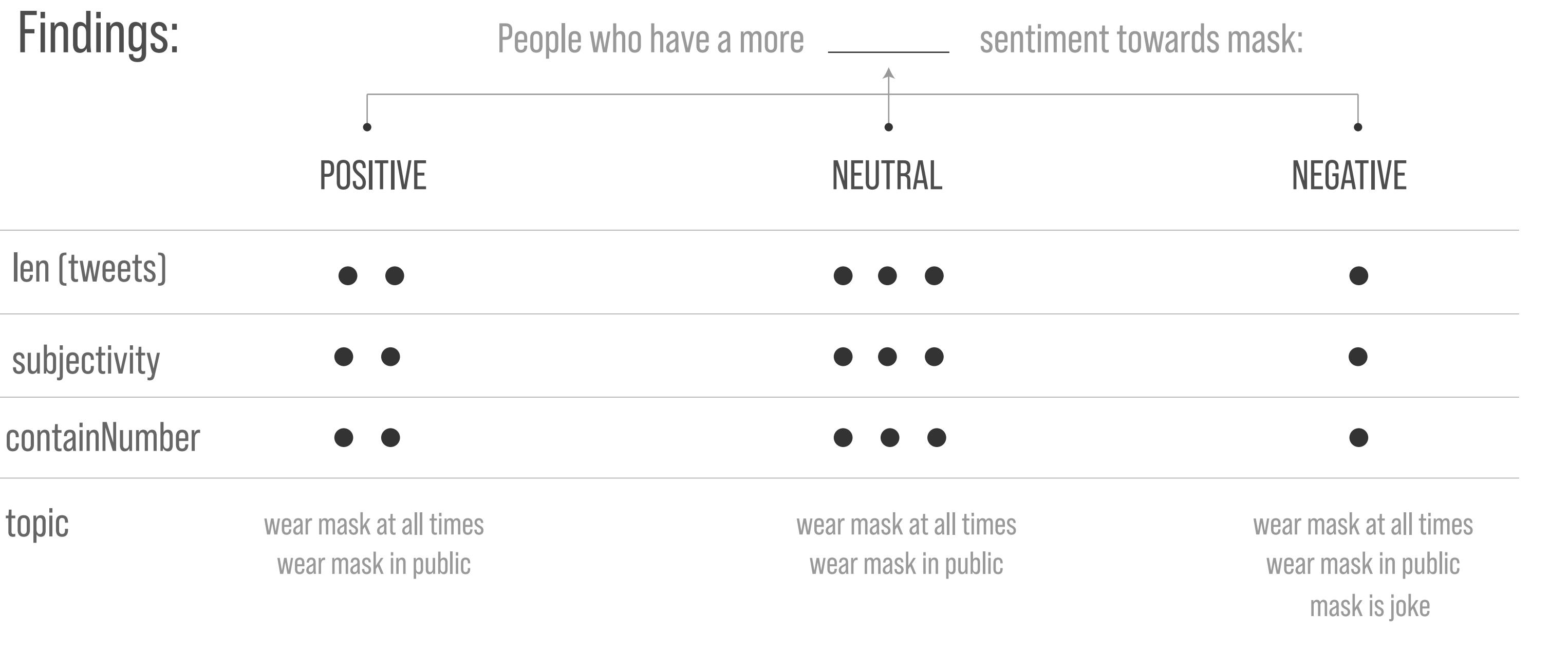
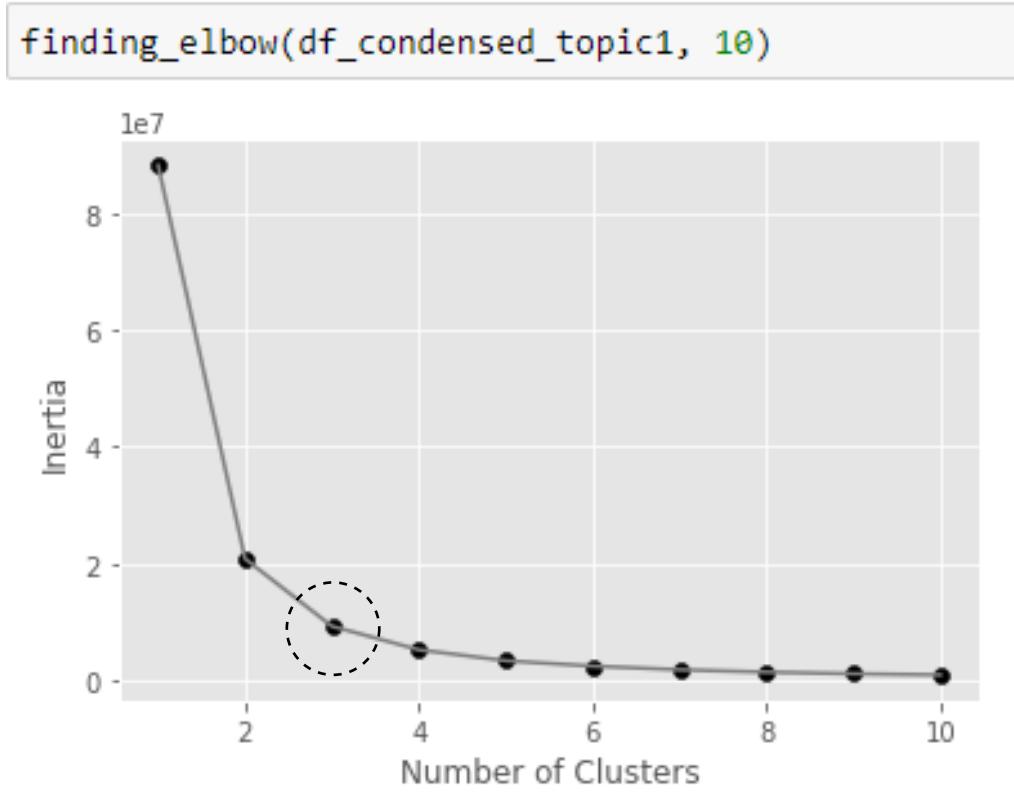
wear mask, wear mask glove, whi wear mask, wear mask public, mask glove, mask public, whi wear, dont wear mask, dont wear, peop 1 wear

mask\_is\_joke

gas mask, wear gas, wear gas mask, matt gaetz, wore gas mask, wore gas, constitu die, gas mask hous, mask hous, hous floor

	compoundScore	sentiment	subjectivity	containNumber	containSymbol	tweetLength	wear_face_mask_at_all_times	wear_mask_in_public	mask_is_joke
0	0.066	0.132	0.557	0.183	0.000	58.294	0.046	0.046	0.012
1	0.106	0.147	0.919	0.420	0.000	238.766	0.045	0.050	0.011
2	0.103	0.168	0.809	0.336	0.000	136.898	0.043	0.044	0.011

## K means Clustering 3 Clusters



Where

mask sentiment  
**DEPLOYMENT**

[covid19-mask-sentiment.herokuapp.com](https://covid19-mask-sentiment.herokuapp.com)

**THANK YOU**

# Topic Modeling

## LSA: 3 Topics

Latent Semantic Analysis

Clustering  
Kmeans: 3 Clusters  
Unsupervised

<b>wear_face_mask_at_all_times</b>	face mask, wear face mask, wear face, wear mask, cloth face mask, cloth face, mask face, gon na, mask face mask, need face mask
<b>wear_mask_in_public</b>	wear mask, wear mask glove, whi wear mask, wear mask public, mask glove, mask public, whi wear, dont wear mask, dont wear, peop 1 wear
<b>mask_is_joke</b>	gas mask, wear gas, wear gas mask, matt gaetz, wore gas mask, wore gas, constitu die, gas mask hous, mask hous, hous floor

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\*Interpretation of the

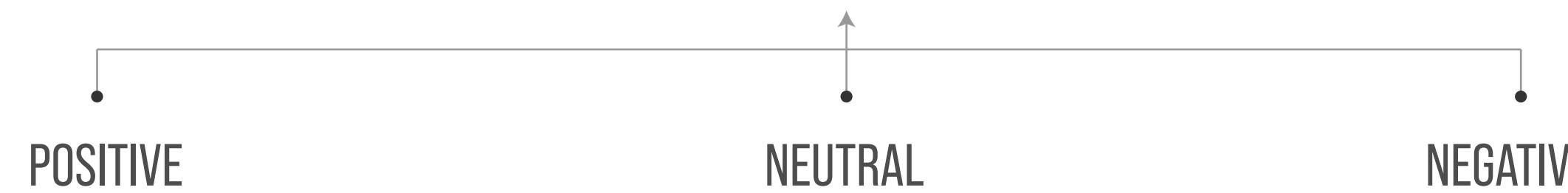
findings is subjective, feel  
free to reach your own  
conclusions.

The results shown here  
might be revised if dra-  
matic change happens.

\*Data used for modeling:  
200/day global tweets  
with keyword "mask"  
from 1/1 to 5/1, 2020.

## Findings:

People who have a more \_\_\_\_\_ sentiment towards mask:



len (tweets)



subjectivity



containNumber



topic

wear mask at all times  
wear mask in public

wear mask at all times  
wear mask in public

wear mask at all times  
wear mask in public  
mask is joke

# MILESTONE

## 2019 DECEMBER 01

The earliest date of symptom onset, according to a study in the journal Lancet.

### Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China

Chaoqun Jiang, Yanying Wang\*, Xiangrong Li, Li Ren\*, Jiaojing Zhou, \*Wu He\*, Li Zhang, Guofei Fan, Jiayong Xu, Xianyong Gu, Zhenzhong Chen, Jing Yu, Junling Yuan, Wei Wang, Mengchuan Zhao, Wei Feng, Li Li, Min Liu, Yan Xiao, Hong Gao, Di Guo, Jengong Xie, Guorui Wang, Rongrong Jiang, Zhancheng Guo, Qi Jin, Jianwen Wang†, Bin Cao\*

Background A recent cluster of pneumonia cases in Wuhan, China, was caused by a novel betacoronavirus, the 2019 novel coronavirus (2019-nCoV). We report the epidemiological, clinical, laboratory, and radiological characteristics and treatment and clinical outcomes of these patients.

Lancet 2020; 395: 497–506  
Published online January 24, 2020  
[https://www.thelancet.com/action/showPdf?pii=S0140-6736\(20\)00002-5](https://www.thelancet.com/action/showPdf?pii=S0140-6736(20)00002-5)



## 2020 FEBRUARY 29

US Surgeon General urges public not to buy masks as they are “ineffective” and even “risky”.

**U.S. Surgeon General** @Surgeon\_General

Seriously people- STOP BUYING MASKS!

They are NOT effective in preventing general public from catching #Coronavirus, but if healthcare providers can't get them to care for sick patients, it puts them and our communities at risk! [bit.ly/37Ay6Cm](https://bit.ly/37Ay6Cm)

70.3K 5:08 AM - Feb 29, 2020

52.6K people are talking about this

[https://www.thelancet.com/action/showPdf?pii=S0140-6736\(20\)00002-5](https://www.thelancet.com/action/showPdf?pii=S0140-6736(20)00002-5)

The United States reports its first death, a man in his fifties with an underlying health condition.

### First coronavirus death in U.S. and new cases detected as testing expands

Lancet 2020; 395: 497–506  
Published online January 24, 2020  
[https://www.washingtonpost.com/health/first-us-coronavirus-death-prompts-new-travel-restrictions-from-trump/2020/02/29/4d492a7c-5a2b-11ea-9b35-def5a0276470\\_story.html](https://www.washingtonpost.com/health/first-us-coronavirus-death-prompts-new-travel-restrictions-from-trump/2020/02/29/4d492a7c-5a2b-11ea-9b35-def5a0276470_story.html)

## 2020 APRIL 02

Following CDC guidelines, US to recommend masks and face coverings.

### White House expected to recommend Americans wear cloth masks to prevent coronavirus spread

By LEV FACHER @levfacher / APRIL 2, 2020  
<https://www.nytimes.com/2020/01/21/health/cdc-coronavirus.html>  
<https://www.medicalnewstoday.com/article/updated-timeline-coronavirus>



Cashiers wearing protective masks work in a grocery store in Brooklyn, N.Y.  
STEPHANIE KEITH/GETTY IMAGES  
<https://www.statnews.com/2020/04/02/coronavirus-cloth-masks-recommendation/>

## 2020 APRIL 18

Walmart among the first mega retail chains to require masks for all employees.

### Walmart to require all employees wear face masks starting Monday as part of coronavirus response

Kelly Tyko USA TODAY  
Published 11:41 a.m. ET Apr. 18, 2020 | Updated 1:44 p.m. ET Apr. 20, 2020  
<https://www.usatoday.com/story/money/2020/04/18/coronavirus-prevention-walmart-requiring-employees-wear-face-masks/5158840002/>

Cases are growing in the 20,000s per day in the USA.

23,285 in U.S.

<https://www.bloomberg.com/news/articles/2020-04-18/new-york-reports-540-virus-deaths-in-24-hours-down-from-friday>

Protests are happening around the country.

### Conservatives Fuel Protests Against Coronavirus Lockdowns

In addition to the “You Can’t Close America” rally in Austin, Texas, on Saturday, modest demonstrations took place in the capitals of Nevada, Indiana and Maryland.

<https://www.nytimes.com/2020/04/18/us/texas-protests-stay-at-home.html>

## 2020 MAY 01

First violent shooting over dispute of mask wearing.

### Three family members charged in shooting death of security guard who told a customer to put on a face mask

By Alice Snyder, Maria Alsharif and Theresa Waldrop, CNN  
© Updated 9:23 AM ET, Tue May 5, 2020



In this Friday, May 1, 2020 photo, employees stand outside the Family Dollar as police investigate a shooting that took place at the store in Flint, Mich.

<https://www.cnn.com/2020/05/04/us/michigan-security-guard-mask-killing-trnd/index.html>

US reports highest death count of a single day - 2,909 deaths.

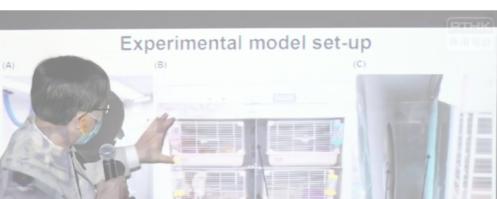
### The US just reported its deadliest day for coronavirus patients as states reopen, according to WHO

By William Fisher  
Published online May 02, 2020  
TRENDING NOW  
Subscribe  
KEY POINTS \* The U.S. saw 2,909 people die of Covid-19 in 24 hours, according to the data, which was collected as of 4 a.m. ET on Friday.  
<https://www.cnbc.com/2020/05/02/who-us-just-reported-deadliest-day-for-coronavirus.html>

## 2020 MAY 18

First major mask study reveal that masks are at least 17% effective against Covid19.

HKU hamster research shows masks effective in preventing Covid-19 transmission



<https://fightcovid19.hku.hk/hku-hamster-research-shows-masks-effective-in-preventing-covid-19-transmission/>

Total deaths surpass 90,000 in the USA.

**U.S. coronavirus death toll surpasses 90000 as states reopen**

CBS News - 3 days ago

<https://www.cbsnews.com/video/states-reopen-coronavirus-death-toll-surpasses-90000/>