

# Pandemic Flu

*Lessons from 1918:*

*Will It Happen Again?*

*What Will We Do?*

# 1918 Pandemic Flu Summary <sup>(1)</sup>

- May have existed for years before it mutated into its deadly form, perhaps originated in France
- Half of U.S. soldiers, about 43,000, who died in "The Great War" fell to influenza virus
- One-quarter of the U.S. and one-fifth of the world was infected with the influenza
- 20 – 40 million died worldwide in one year
- Sept-Dec 1918 = Deadly "Second Wave"

# 1918 Pandemic: March <sup>(3, 4)</sup>

- Morning, March 11, Fort Riley, (Camp Funston) Kansas: Army private and company cook Albert Mitchell reports to the camp hospital just before breakfast complaining of fever, sore throat, and headache
  - Soon followed by Corporal Lee W. Drake with similar complaints
  - By noon, camp surgeon Edward R. Schreiner's hospital had 107 sick soldiers
  - By week's end 522 were sick
  - 46 died in this first wave

# 1918 Pandemic: March <sup>(3, 4)</sup> Camp Funston

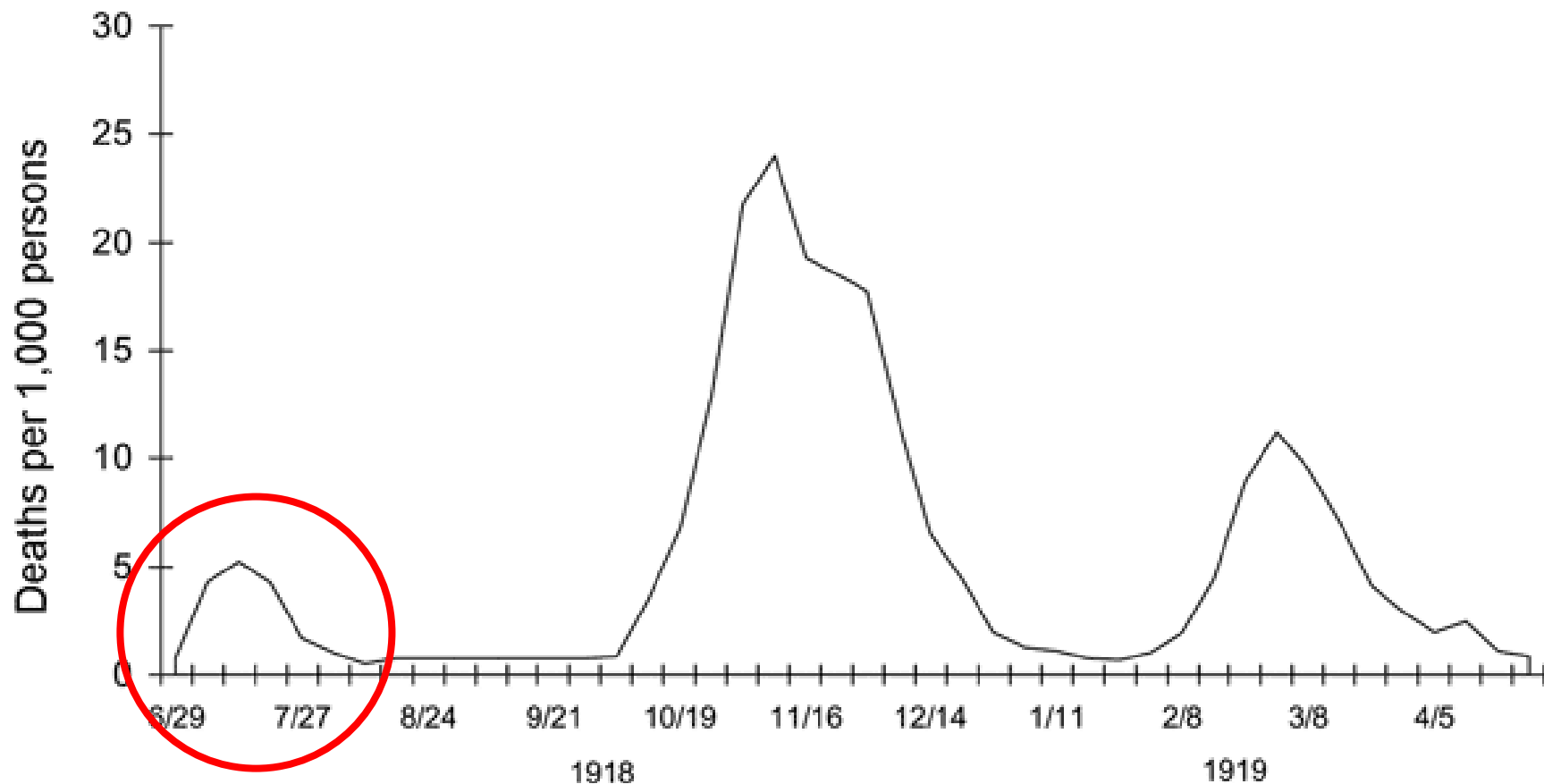





# 1918 Pandemic: Spring - Summer <sup>(3, 4)</sup>

- **March 18:** In 7 days, every State had cases
- **April:** 500 San Quentin prisoners struck by flu, and it spread across the Atlantic
- **Mid-April** French troops and civilians were infected, spread to China and Japan
- **May:** Spread across Africa & South America
- **July:** Philadelphia public health officials issue a bulletin about "Spanish influenza"

# 1918 Pandemic: Summer 1918 <sup>(3, 4)</sup>

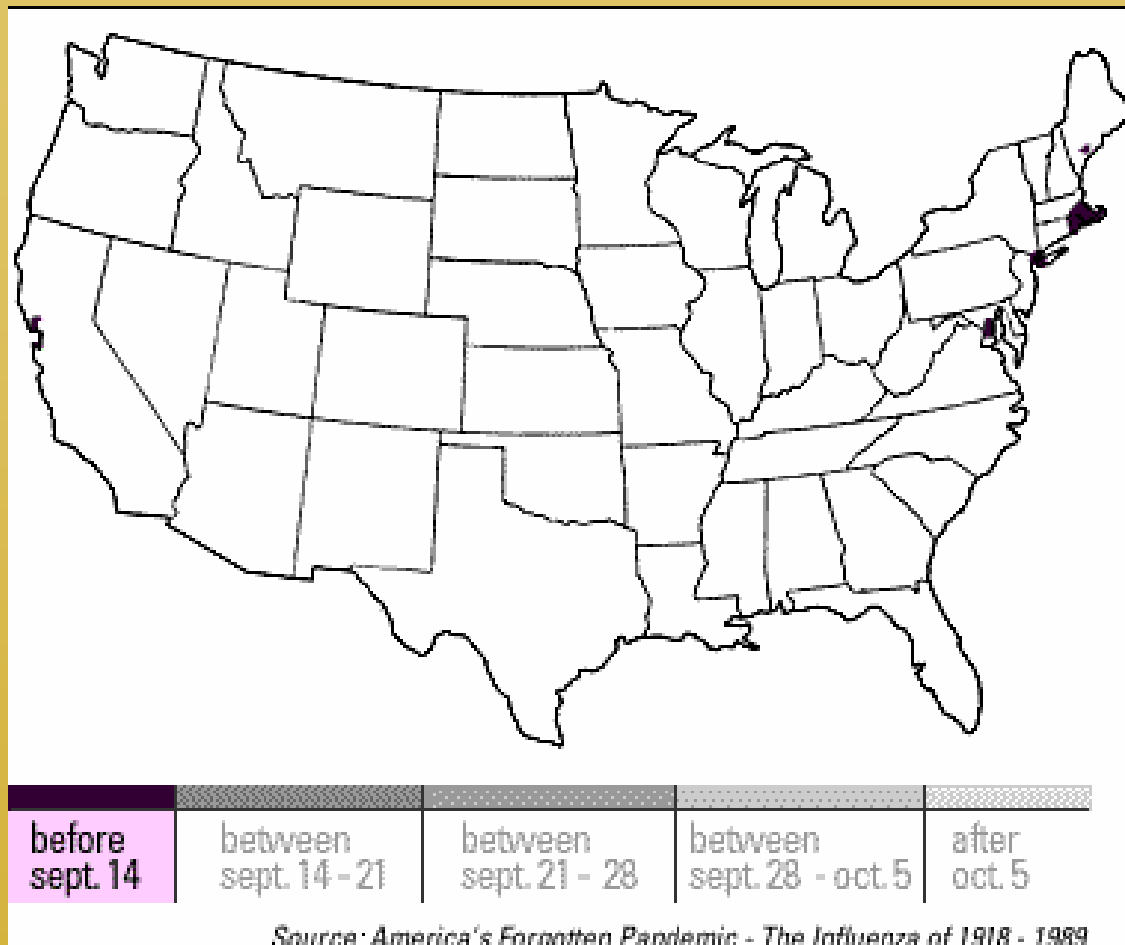


 This chart shows why we have to take outbreaks seriously when they first appear.

# 1918 Pandemic: August <sup>(3, 4)</sup>

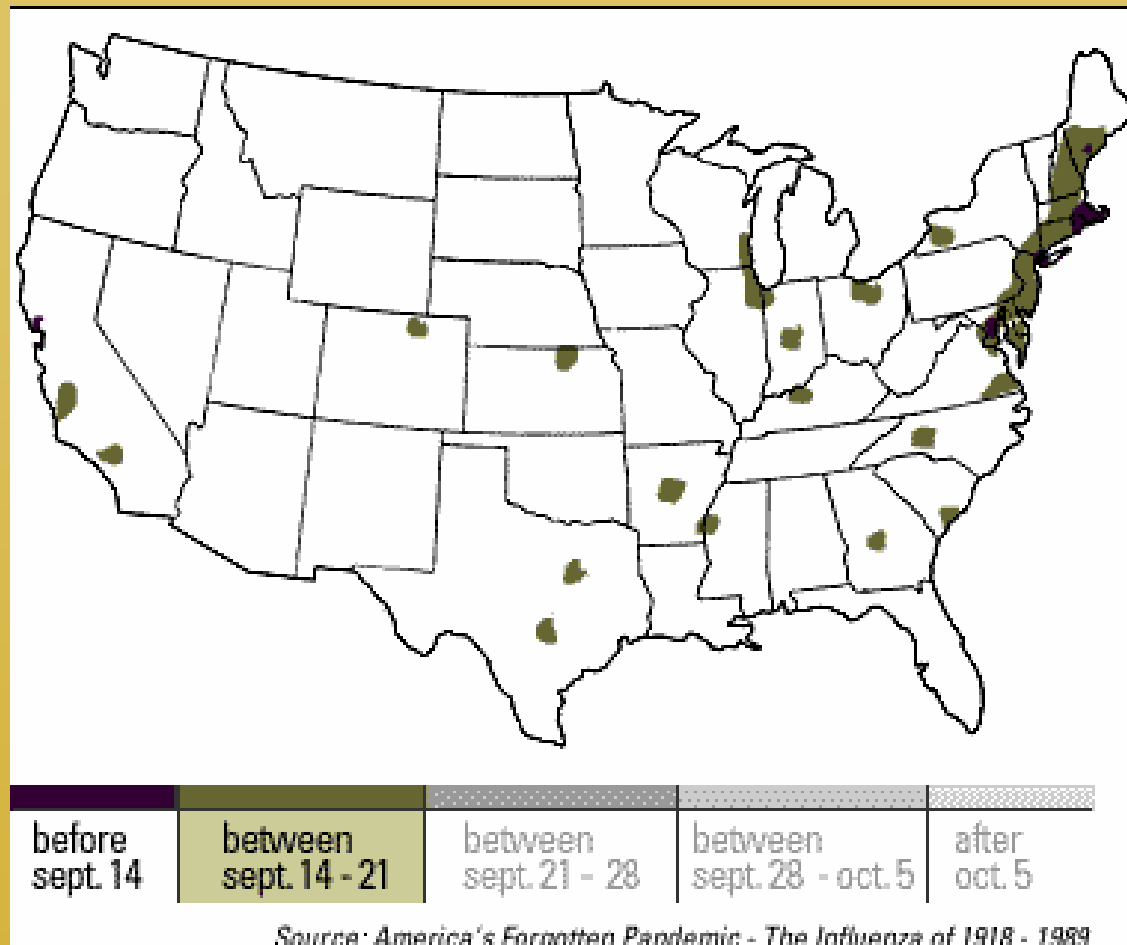
- Somewhere in western France, the virus mutates and becomes highly toxic.
- **August 27<sup>th</sup>:** Boston, sailors stationed on board the Receiving Ship at Commonwealth Pier begin reporting to sick-bay with the usual symptoms of "the grippe."
- **August 30:** More than 60 sailors sick
  - Commonwealth Pier was overwhelmed, 50 cases transferred to Chelsea Naval Hospital
  - Flu sufferers said they felt like they "had been beaten all over with a club."

# Second Wave: Five Weeks <sup>(5)</sup>

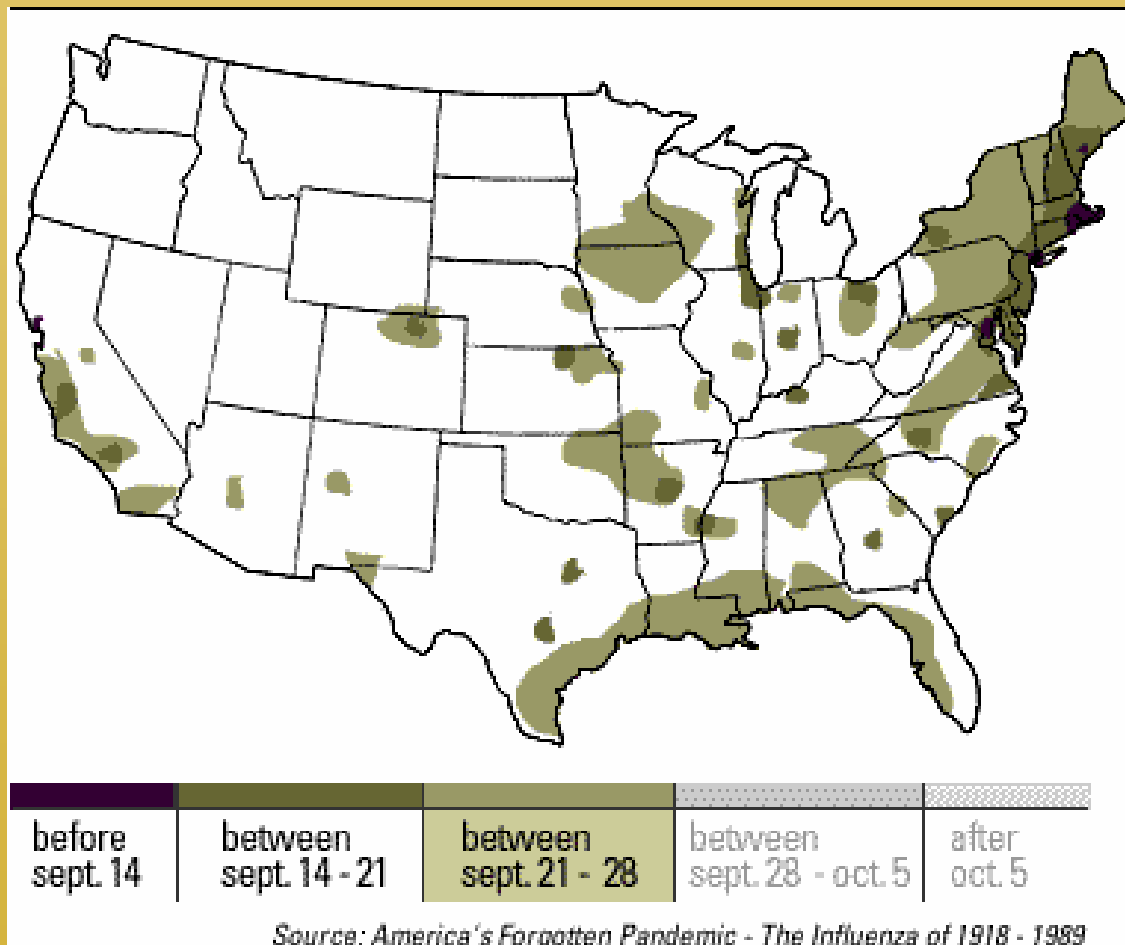




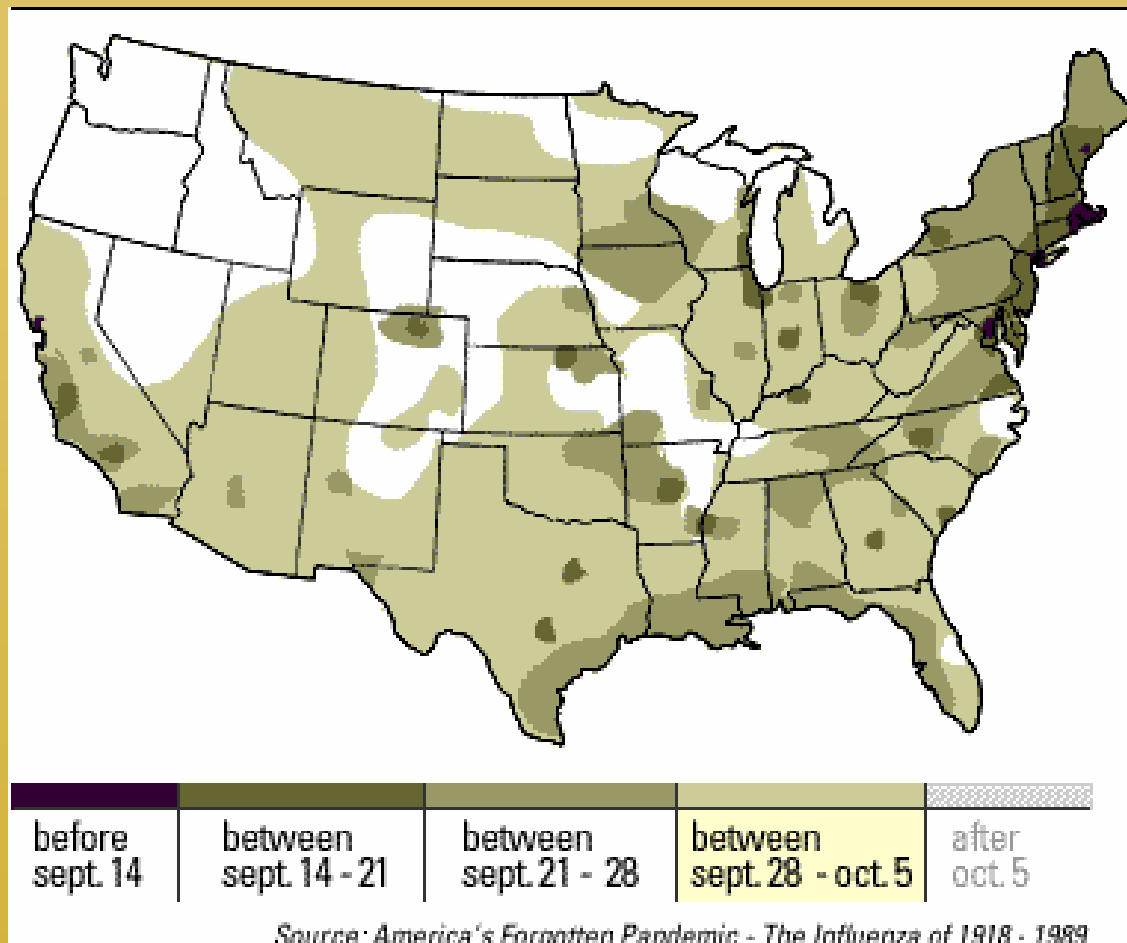
# Second Wave: Five Weeks <sup>(5)</sup>



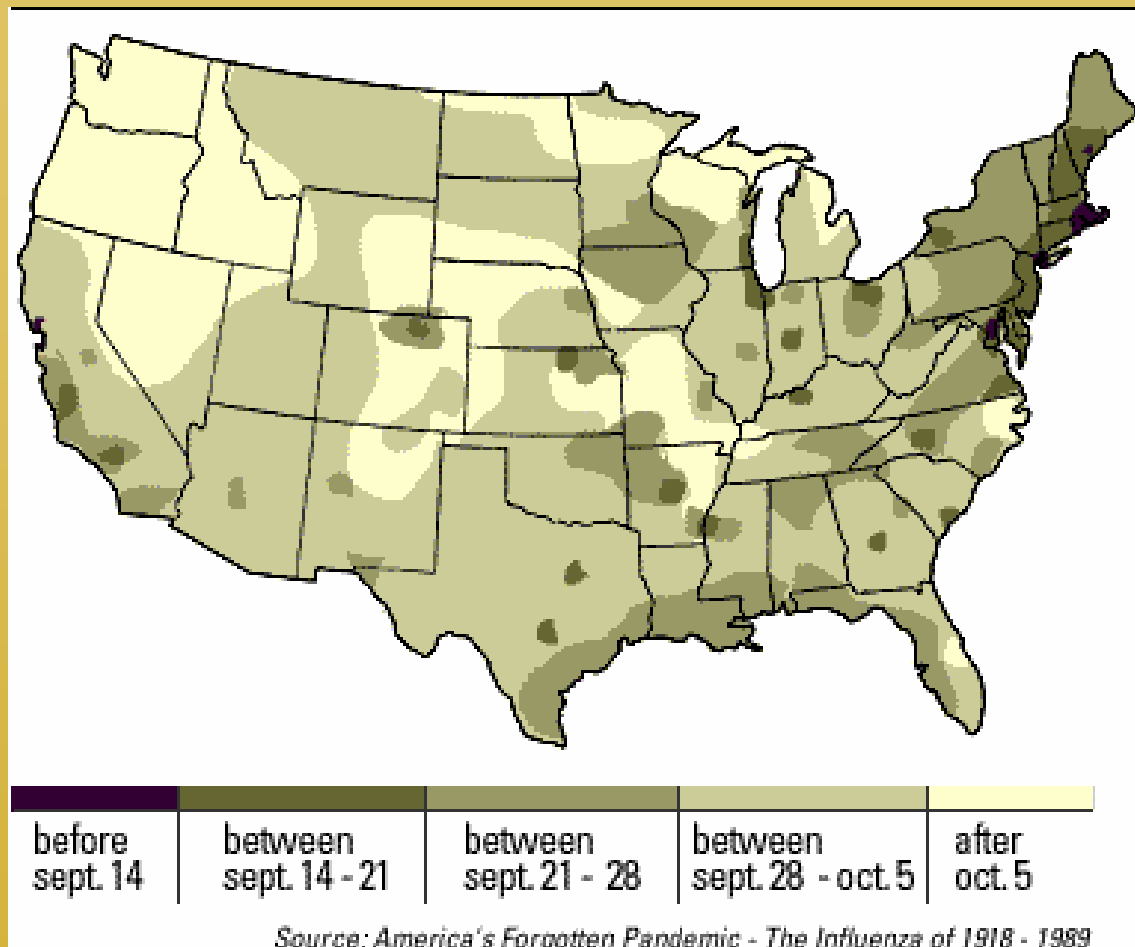
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# 1918 Pandemic: September <sup>(3)</sup>

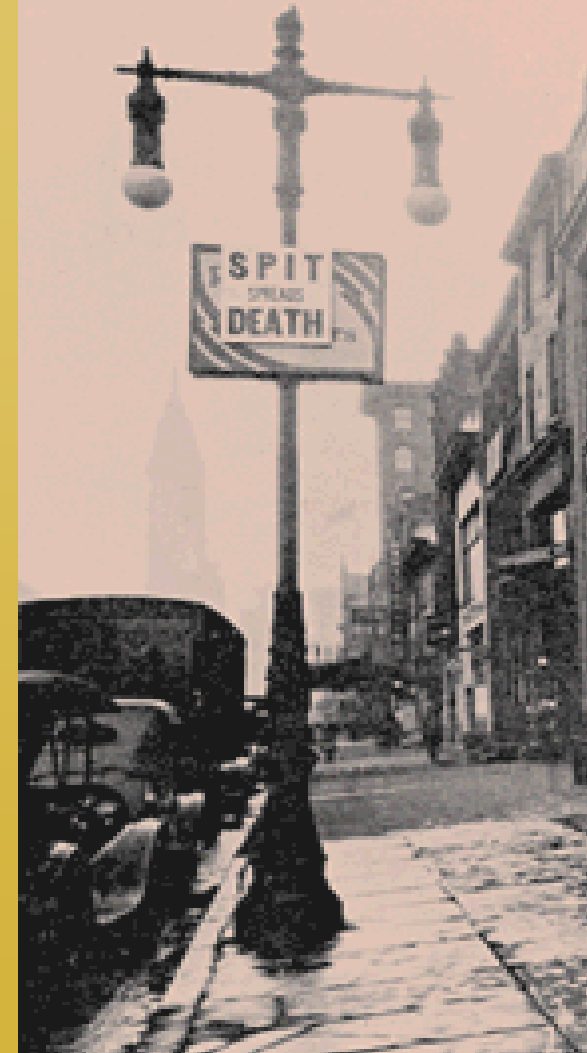
- The Navy Radio School at Harvard University in Cambridge reports the first cases of influenza among the 5,000 young men studying radio communications.
- Spanish flu arrived in Boston through the port busy with war shipments
- Almost 200,00 Americans die





# 1918 Pandemic: September <sup>(3)</sup>

- September 5: Massachusetts Department of Health alerts area newspapers that an epidemic is underway.
- Dr. John S. Hitchcock of the state health department warned that "unless precautions are taken the disease in all probability will spread to the civilian population of the city."



# 1918 Pandemic: September <sup>(3, 4)</sup>

September 15  
Camp Devens  
Boston, MA



## INFLUENZA EPIDEMIC HITS CAMP DEVENS

2,000 Soldiers Are Stricken and  
Washington Is Asked to Send  
More Doctors and Nurses.

### SPREADS IN MANY TOWNS

New England Industries Affected—  
Precautions Taken Here  
Against the Disease.

ATER, Mass., Sept. 14.—The develop-  
ment of 2,000 cases of influenza among  
the soldiers at Camp Devens led to the  
sending of a request today to the Sur-  
geon General's office at Washington to  
detail forty more nurses and ten addi-  
tional medical officers to the eastern-

been decided at Washington that this  
would not stop the spread of influenza.

PITTSBURGH, Va., Sept. 14.—The  
appearance of an acute respiratory in-  
fection, similar to influenza, among the  
soldiers at Camp Lee, resulted today in  
an order from the commandant prohibi-  
ting any gatherings in the camp, includ-  
ing those for religious services. It was  
explained that the order was issued on  
the advice of the camp surgeon as a  
preventive measure and that the ill-  
ness is not considered serious.

Special to The New York Times.

NEW LONDON, Conn., Sept. 14.—  
There are over a hundred cases of in-  
fluenza among men of the naval forces  
here. The submarine base has been  
under quarantine for several days.

At the Naval Hospital in this city  
there are over 100 cases, and a ma-  
jority of these cases came from the  
State pier, which is not under quaran-  
tine. An officer at the Naval Hospital  
says that the cases appear to be of a  
mild nature. Only one death has oc-  
curred and this victim was a civilian.

As far as can be learned the only  
places under quarantine are the sub-  
marine base and the armory in Wash-  
ington Street. The armory is now in  
use as an isolation hospital.

It is understood that naval men in  
this district have been forbidden to go  
outside New London for the present.

The New York Times September 15, 1918

the soldiers, and that was due to pneu-  
monia, resulting from the influenza.

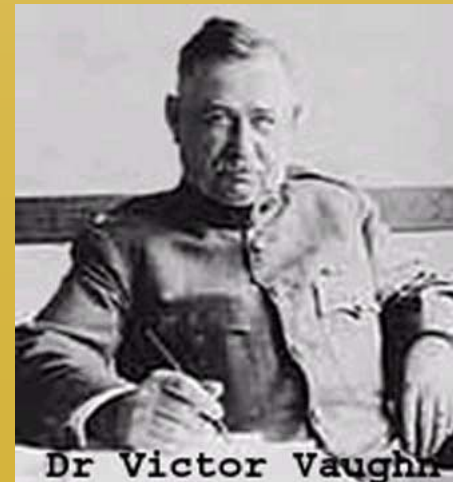
Lieut. Col. McCormack, the Divisional

naval station in Boston and that the  
mortality has been 5 per cent. Follow-  
ing the receipt of the news Health

Commissioner Connelley took steps to

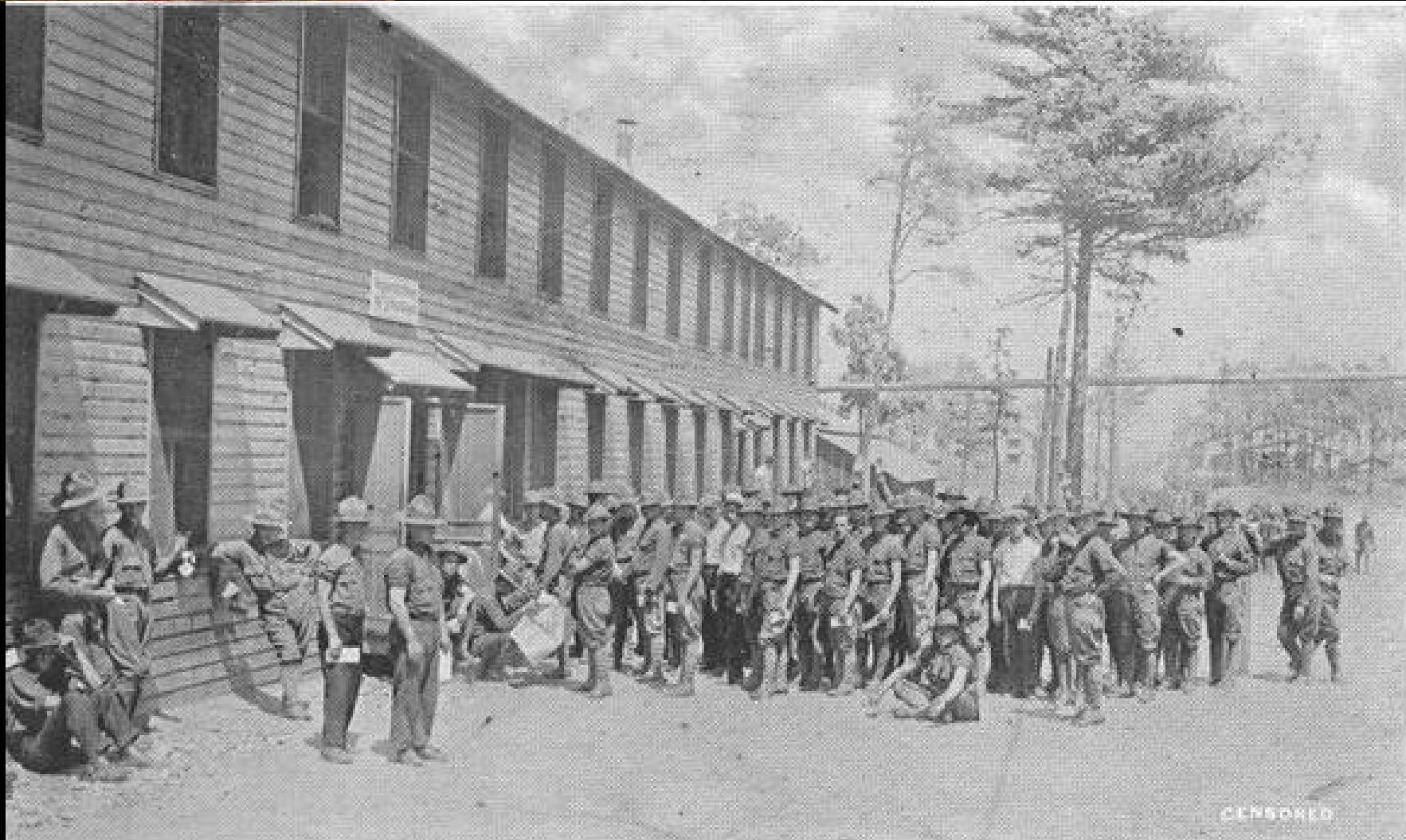
# 1918 Pandemic: September <sup>(3, 4)</sup>

- Dr. Victor Vaughn, acting Army Surgeon General, receives urgent orders to proceed to Camp Devens near Boston. What he sees changes his life:
  - "I saw hundreds of young stalwart men in uniform coming into the wards of the hospital. Every bed was full, yet others crowded in. The faces wore a bluish cast; a cough brought up the blood-stained sputum. In the morning, the dead bodies are stacked about the morgue like cordwood."
  - When Vaughn arrived at Camp Devens 63 men had died of flu.



Dr Victor Vaughn

# Waiting to Be Inoculated: Camp Deven



CENSORED

# 1918 Pandemic: September<sup>(3)</sup>

- US Surgeon General Rupert Blue, U.S. Public Health Service, dispatches advice to the press on how to recognize the influenza symptoms.
- Blue prescribed bed rest, good food, salts of quinine, and aspirin for the sick. (But Aspirin had just been invented by Bayer in Germany, so many people thought it was a plot to poison Americans and would not take it.)



Rupert Blue



# 1918 Pandemic: September <sup>(3)</sup>

- Lt. Col. Philip Doane, head of the Health and Sanitation Section, Emergency Fleet Corporation blames the Germans for the influenza striking Americans (bioterrorism).
  - "It would be quite easy for one of these German agents to turn loose Spanish influenza germs in a theater or some other place where large numbers of persons are assembled. The Germans have started epidemics in Europe, and there is no reason why they should be particularly gentle with America."

# 1918 Pandemic: September <sup>(3)</sup>

- Dr William Hassler, Chief of San Francisco's Board of Health, predicts Spanish flu will not reach the city. **September 24:** Edward Wagner, a Chicagoan newly settled in San Francisco falls ill with influenza.
- An agonized official in the hard-hit east sent an urgent warning west. "Hunt up your woodworkers and set them to making coffins. Then take your street laborers and set them to digging graves."

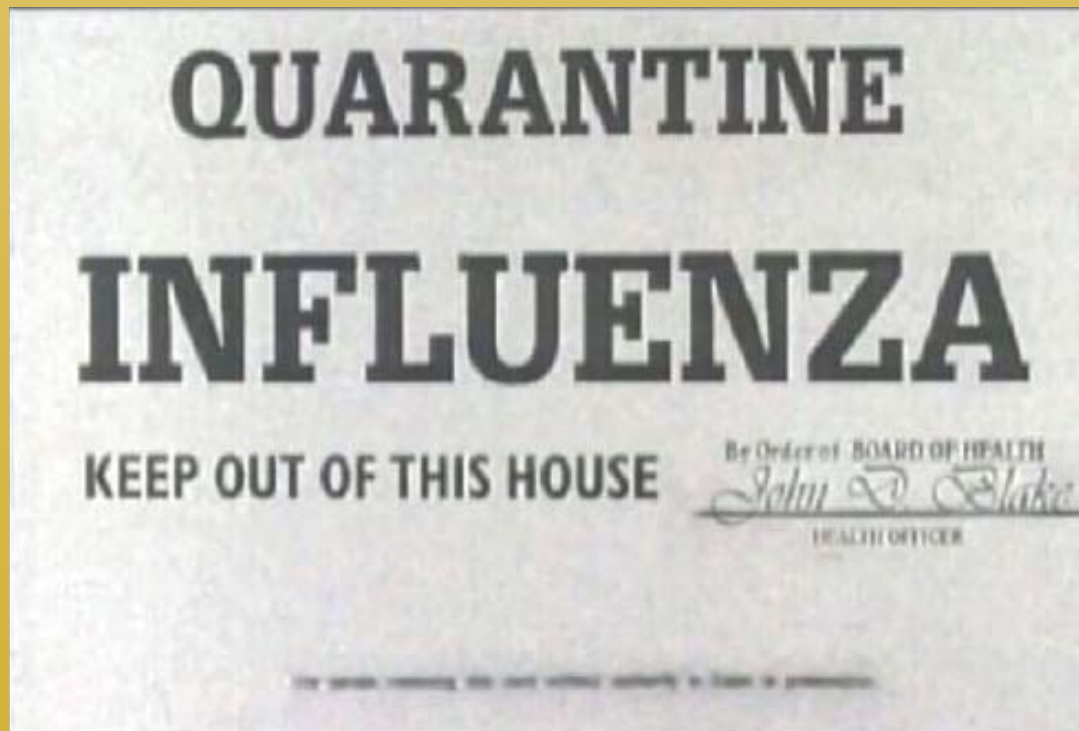
# 1918 Pandemic: September 28<sup>(3)</sup>

- 200,000 gather for a fourth Philadelphia Liberty Loan Drive, linked arms, sang patriot songs.
  - Days after the parade, 635 new cases of influenza. The city is forced to admit an epidemic exist. Churches, schools, and theaters are ordered closed, along with all other places of "public amusement."



# 1918 Pandemic: September <sup>(3)</sup>

- Royal Copeland, Health Commissioner of New York City, (who had no medical experience) announces, "The city is in no danger of an epidemic. No need for our people to worry."
- 30,000 New Yorkers died, 869 in a single day.



# 1918 Pandemic: October <sup>(3)</sup>

- **October 2:** Boston registers 202 deaths from influenza. Perhaps learning from Philadelphia, Boston canceled Liberty Bond parades and sporting events. Churches closed and the stock market was put on half-days.
- **October 6:** Philadelphia posts the first of several gruesome records for the month: 289 influenza-related deaths in a single day.

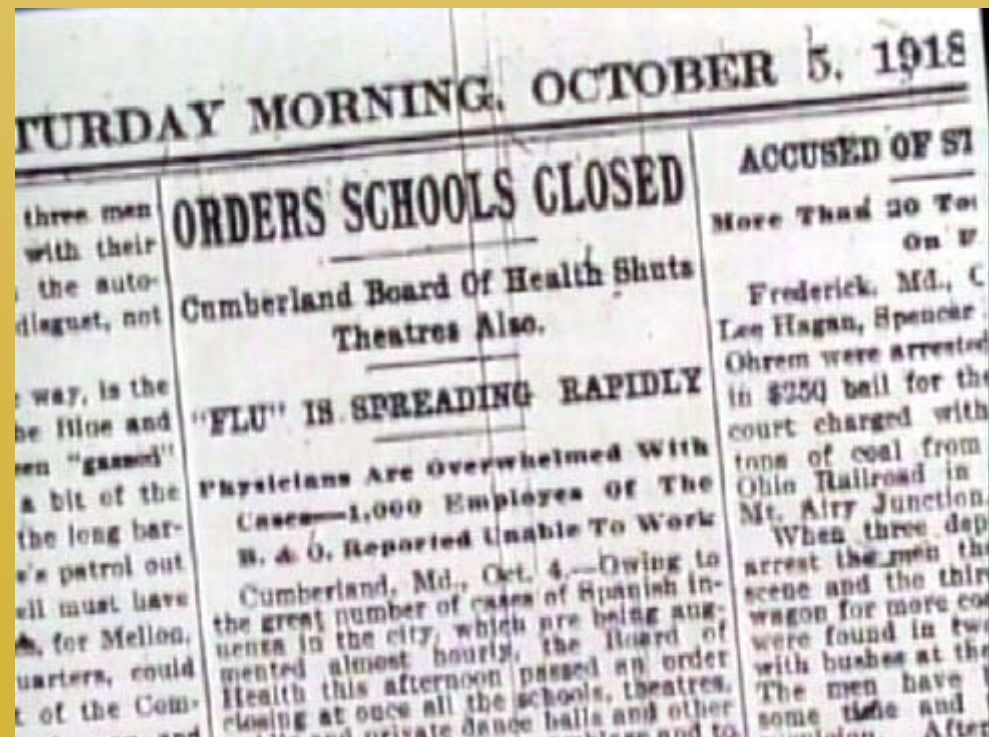


# 1918 Pandemic: October <sup>(3)</sup>

- **October:** Congress approves \$1 million to help the U.S. Public Health Service recruit physicians and nurses to deal with the growing epidemic.
- U.S. Surgeon General Rupert Blue sets out to hire more than 1,000 doctors and 700 nurses with the new funds.
- With many medical professionals already treating injured soldiers abroad and at home, Blue looks for recruits in places like old-age homes and rehabilitation centers.

# 1918 Pandemic: October <sup>(3)</sup>

- 851 New Yorkers die of influenza in one day: A man is attacked for spitting on the street.
- Philadelphia's death rate for one week is 700 times higher than normal.
- Chicago crime rate drops 43%: Attributed to influenza's impact on potential lawbreakers.



# 1918 Pandemic: October<sup>(3)</sup>

- **October 19:** Philadelphia Dr. C.Y. White announces that he has developed a vaccine to prevent influenza. Over 10,000 inoculations were delivered to the Philadelphia Board of Health. Whether it helped was a debate.
- **October 27:** Philadelphia's epidemic subsides with an estimated 47,094 reported cases and 12,191 dead.
- **October, 1918:** Deadliest month in U.S. history, 195,000 Americans die from influenza.

# 1918 Pandemic: November <sup>(3)</sup>

- Celebrating the end of The Great War, 30,000 San Franciscans take to the streets.
  - Much dancing and singing
  - But everybody wore a face mask!
- **November 21:** Sirens wail signaling to San Franciscans that it is safe--and legal--to remove their protective face masks.
  - 2,122 San Franciscans had died from influenza

# 1918 Pandemic: December<sup>(3)</sup>

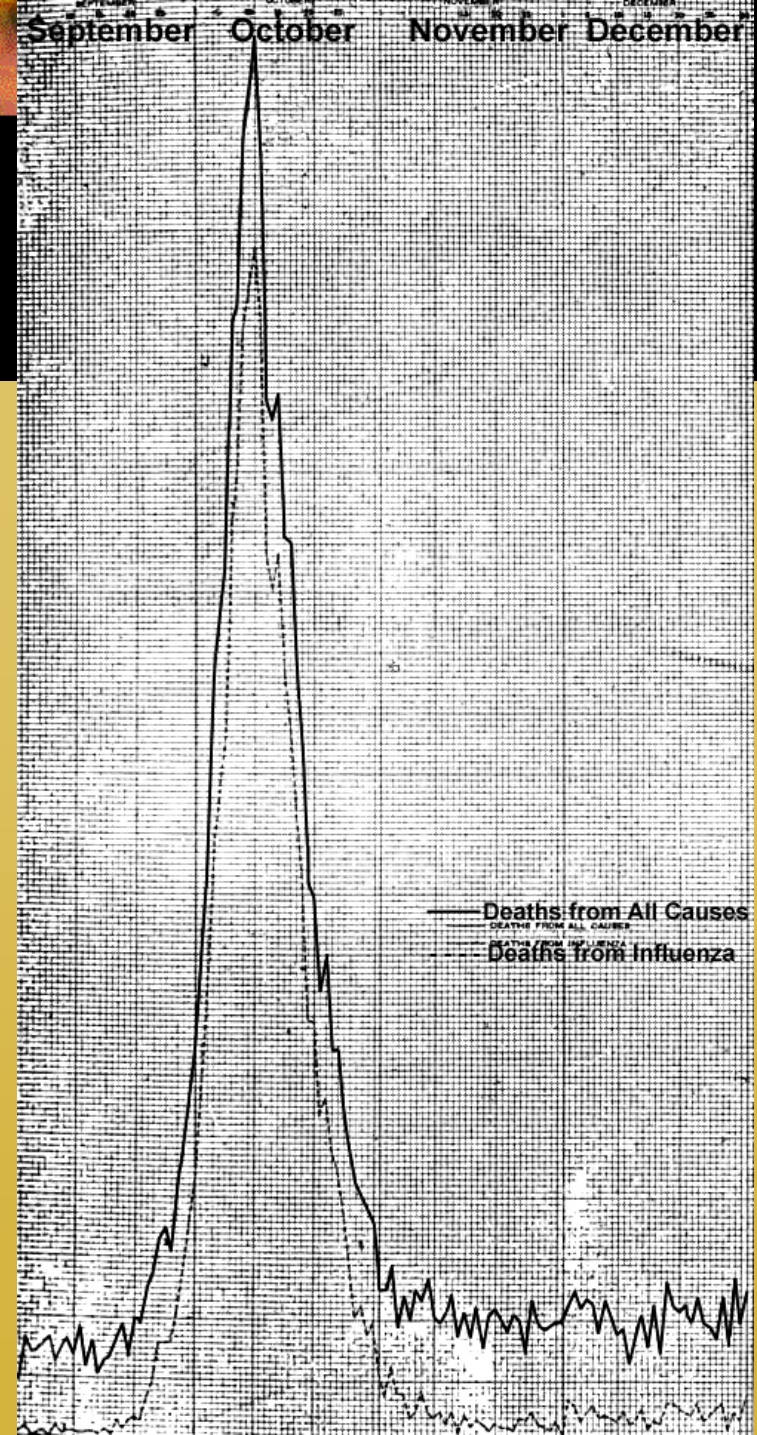
- But optimism was misplaced: 5,000 new cases of influenza are reported in San Francisco





# The Toll

- September-December, 1918. Influenza epidemic mortality in Kansas
  - ---- All deaths (upper line)
  - - - - Influenza deaths
  - Peaked at 230+ /day, 12-15x above baseline)
- Representative of pattern in every State in the nation



# The Toll <sup>(3,4)</sup>

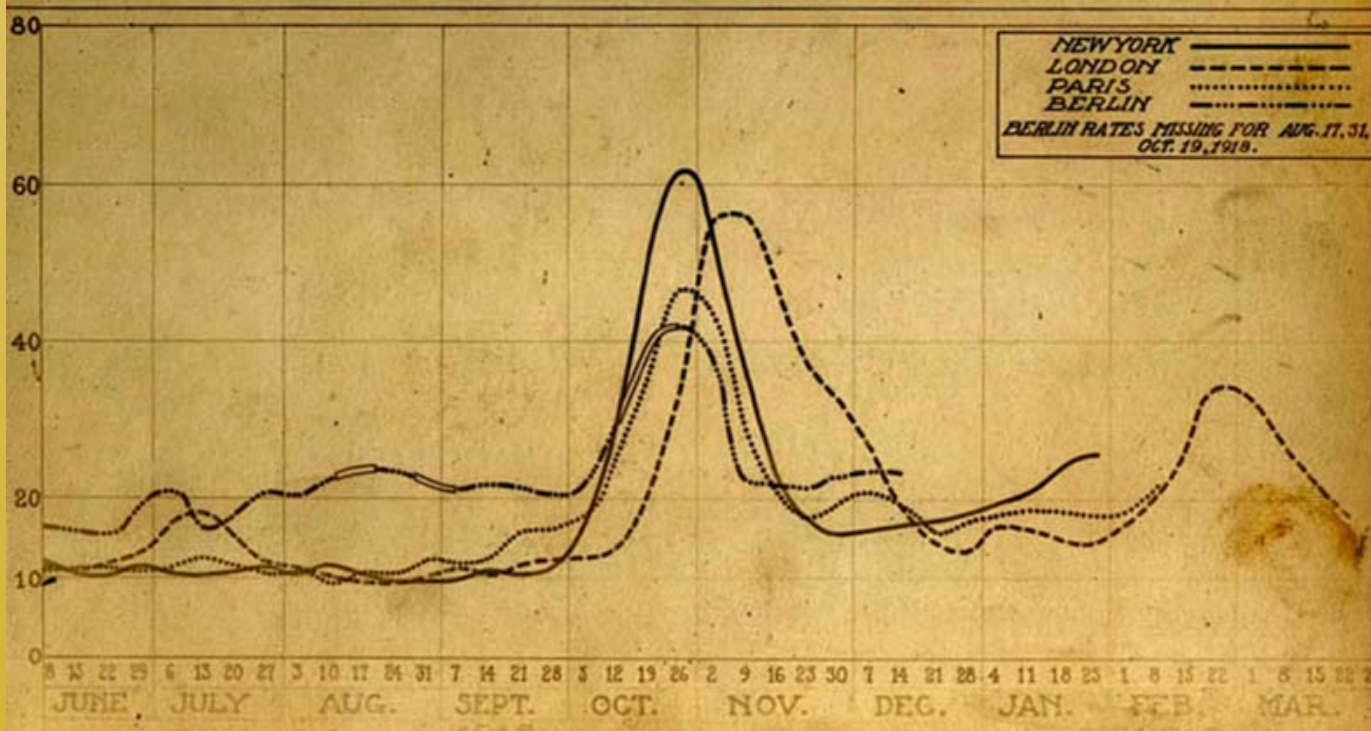
- **United States death toll:**  
675,000 to 850,000 people
  - Sixty percent of the Eskimo population was killed in Nome, Alaska
  - 80-90% of the Samoan population was infected, many survivors starved to death (they lacked energy to feed themselves and no supports)
- **Worldwide death toll:**  
25 million to 37 million
  - Ten times as many as in The Great War



# The Toll: Cities <sup>(3,4)</sup>

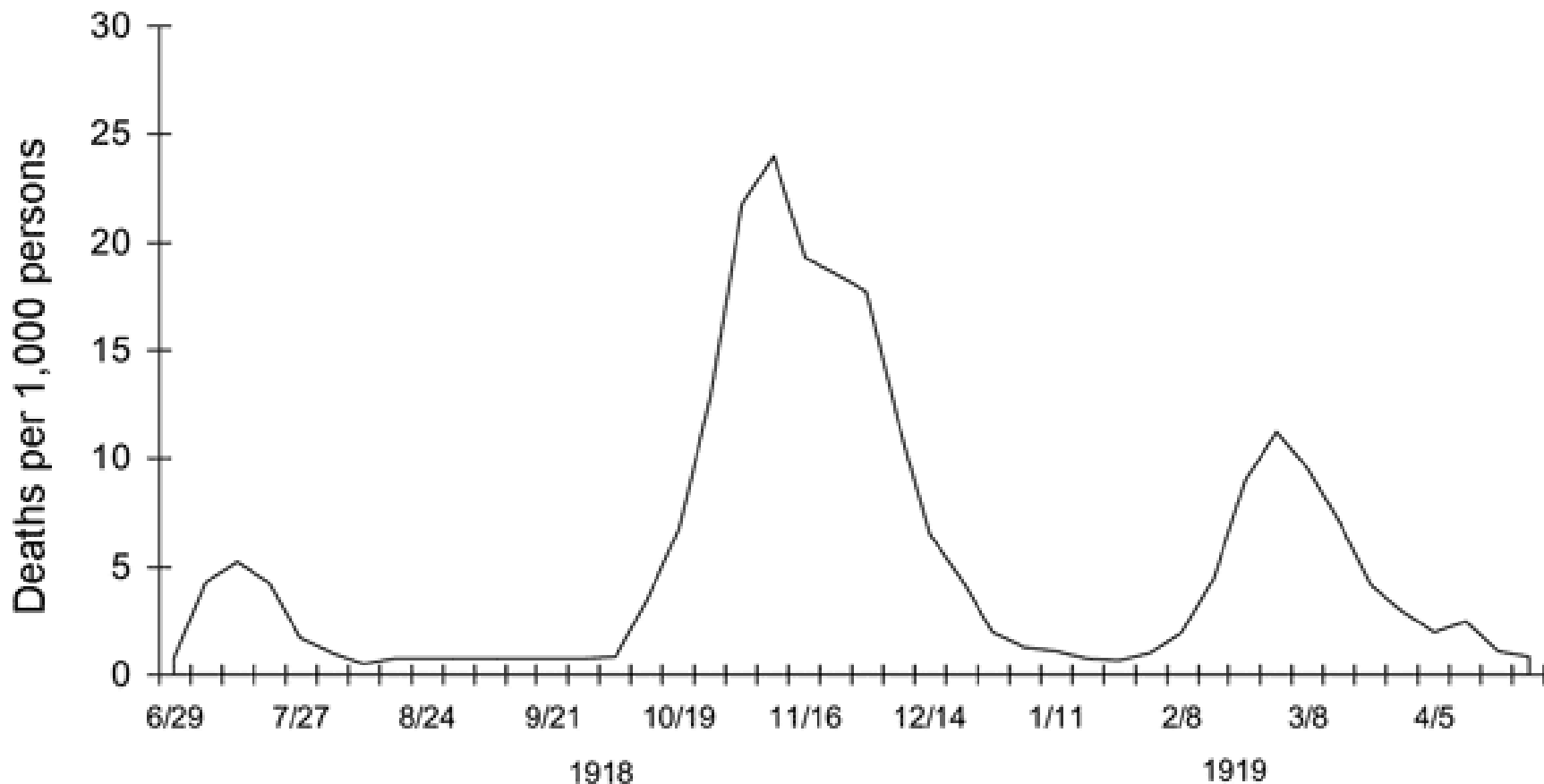
## INFLUENZA PANDEMIC MORTALITY IN AMERICA AND EUROPE DURING 1918 AND 1919

DEATHS FROM ALL CAUSES EACH WEEK  
EXPRESSED AS AN ANNUAL RATE PER 1000



# The Toll: Three Waves<sup>(5)</sup>

■ U.S. total influenza epidemic mortality rates



# Pandemic Flu Containment Strategies <sup>(2)</sup>

- **Laws, Regulation and Rules:** e.g., quarantine, laws against spitting in public, social distancing
- **Prevention:** e.g., masks, hand washing, cough into sleeve
- **Prophylaxis (vaccinations):** In 1918 they did not know the flu's type or source, an effective vaccine had no "scientific basis," (JAMA, 12/21/1918)
- **Last Resort: Diagnosis and Treatment:** Diagnoses must be quick to be effective

# 1918 Laws, Regulation and Rules<sup>(2)</sup>

- Stores could not hold sales
- Funerals were limited to 15 minutes
- Some towns required a signed certificate to enter, railroads would not take passengers without them
- Those who ignored flu ordinances had to pay steep fines enforced by extra police officers
- Bodies piled up
- Shortage of health care workers, medical supplies, coffins, morticians and gravediggers
- Conditions in 1918 similar to the Black Death (bubonic plague) of the Middle Ages



# Prevention <sup>(2)</sup>

- Public health departments distributed gauze masks
- Education and training: Wash your hands!
- Social distancing



*A Flu Slogan:  
"Obey the laws  
And wear the gauze  
Protect your jaws  
From Septic Paws"*

# Last Resort: Diagnosis and Treatment <sup>(2)</sup>



Emergency  
Hospital for  
Influenza  
Patients in  
1918

*Hospitals  
and medical  
resources  
will be  
overwhelmed*

# Impact of 1918 Pandemic Flu <sup>(1)</sup>

- Average life span in the US was depressed by 10 years
- Mortality rate 2.5% per 100,000, vs previous epidemics, which were less than 0.1%.
- Death rate for 15 to 34-year-olds was 20 times higher in 1918 than in previous years
- People were struck with illness on the street and died rapid deaths

# Impact of Pandemic Flu <sup>(1)</sup>

- People celebrated Armistice Day with parades and large parties, a complete disaster from a public health standpoint (consider the Olympics, World Cup Soccer, airports, concerts)
- Shortage of physicians, health resources were overwhelmed
- All standard assumptions and plans went out the window



# Pandemics Death Toll Since 1900: We Tend to Forget.....

## ■ 1918-1919

- U.S....600,000+
- Worldwide...40,000,000+

## ■ 1957-1958

- U.S....70,000+
- Worldwide...1-2,000,000

## ■ 1968-1969

- U.S....34,000+
- Worldwide...700,000+

# Why Be Concerned?

- "We're due [for another pandemic]. Its not a matter of if, but when this will happen. I am far more afraid of a flu pandemic than I am of SARS."
- Albert Osterhaus, WHO Scientist, Wall Street Journal, May 29, 2003

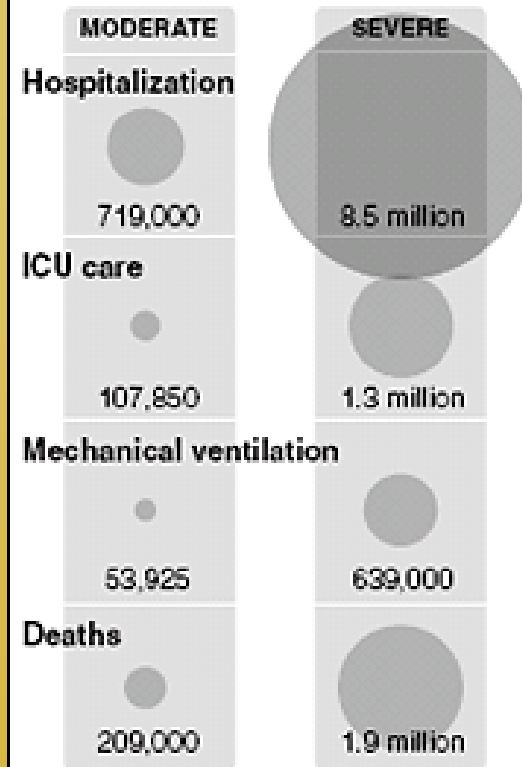


# Modern Predictions

## Predicting a Pandemic

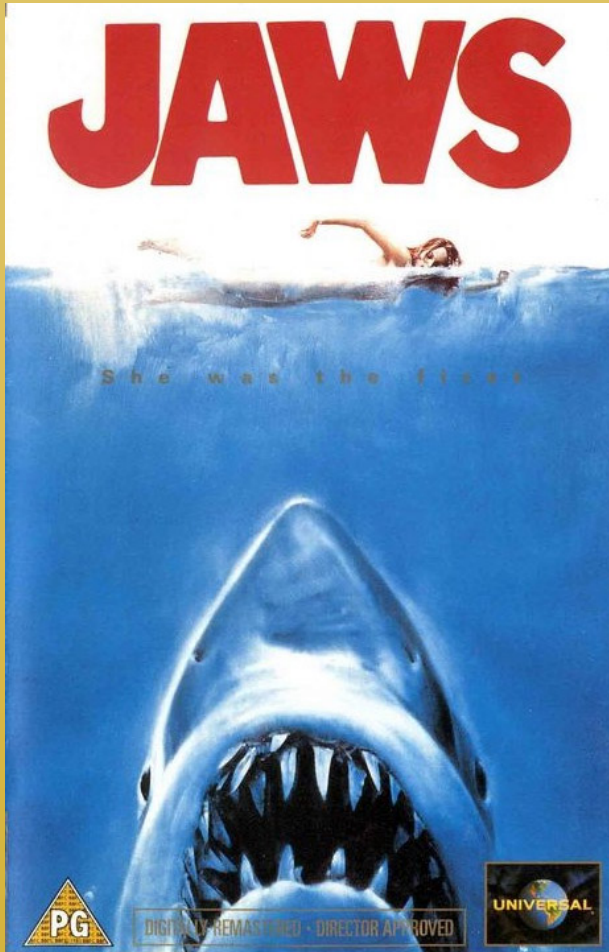
According to estimates by the Department of Health and Human Services, a flu pandemic could cause 90 million people in the United States to become ill and half of those to seek outpatient care. More serious effects would depend on how virulent the flu virus is.

Location	Deaths	Hospitalizations	# of Cases
United States	541,433	2,358,089	66,914,573
California	60,875	273,090	8,067,075



Note: The projections are based in part on past flu pandemics. The moderate case approximates the virulence of the 1958 or 1968 flus, which killed 70,000 and 34,000 in the United States, respectively. The severe case approximates the 1918 flu, which killed about 500,000.

# Goal: Avoid Jaws and Chicken Little!



# What Should We Do?

If We . . . And . . .	Do Nothing	Do Something
Nothing Happens		
A Pandemic Breaks Out		

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A Pandemic Breaks Out		

# What Should We Do?

If We . . . And . . .	Do Nothing	Do Something
Nothing Happens	We Skated! We saved money! We can put down doomsayers!	"Chicken Little Effect" We were wasteful, paranoid, dumb, stupid. Politicians lose elections!
A Pandemic Breaks Out		



# What Should We Do?

If We . . . And . . .	Do Nothing	Do Something
Nothing Happens	We Skated! We saved money! We can put down doomsayers!	"Chicken Little Effect" We were wasteful, paranoid, dumb, stupid. Politicians lose elections!
A Pandemic Breaks Out	"Jaws Effect" We blew it! People die. Politicians lose elections! We lose our jobs.	

# What Should We Do?

If We . . . And . . .	Do Nothing	Do Something
Nothing Happens	We Skated! We saved money! We can put down doomsayers!	"Chicken Little Effect" We were wasteful, paranoid, dumb, stupid. Politicians lose elections!
A Pandemic Breaks Out	"Jaws Effect" We blew it! People die. Politicians lose elections! We lose our jobs.	We are heroes! We saved lives. Saved society. We can put down deniers! We are very smart.

# What Should We Do?

- We should plan, not be wasteful, but . . .



*Be  
Prepared!*

# What Should We Do? <sup>7</sup>

- Be prepared to intervene early, even if it is not clear what is happening.
- St. Louis responded strongly within two days of the first cases in 1918 and saved lives. Philadelphia did not, and lives were lost, it was one of the worst hit cities.
- Keep measures in place after things seem to have settled down. Cities that did not do this saw a second wave of cases and deaths. Cities like San Francisco that kept restrictions in place saved lives, but even they dropped restrictions too early, should have held on until May 1919.





# References

1. <http://virus.stanford.edu/uda/>
2. <http://virus.stanford.edu/uda/fluresponse.html#mask>
3. <http://history1900s.about.com/gi/dynamic/offsite.htm?zi=1/XJ&sdn=history1900s&zu=http%3A%2F%2Fwww.pbs.org%2Fwgbh%2Famex%2Finfluenza%2Ftimeline%2Findex.html>
4. [http://history1900s.about.com/gi/dynamic/offsite.htm?zi=1/XJ&sdn=history1900s&zu=http%3A%2F%2Fhome.nycap.rr.com%2Fuseless%2Fbubonic\\_plague%2Findex.html](http://history1900s.about.com/gi/dynamic/offsite.htm?zi=1/XJ&sdn=history1900s&zu=http%3A%2F%2Fhome.nycap.rr.com%2Fuseless%2Fbubonic_plague%2Findex.html)
5. <http://www.pbs.org/wgbh/amex/influenza/>
6. Nicholls H. Pandemic Influenza: The Inside Story., PLoS Biology Vol. 4:22006
7. Rapid Response was Crucial to Containing the 1918 Flu Pandemic.  
<http://avianflu.futurehs.com/?cat=75>

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