



WAYNE STATE
UNIVERSITY

Pandemic Perspectives

Department of History, College of Liberal Arts and Sciences



Pandemic Perspectives

Historical accounts of
pandemics and epidemics

Cohn-Haddow

Center for Judaic Studies

With support from:

An aerial, sepia-toned photograph of Detroit, Michigan. The Spirit Tower is prominent on the left, with a large American flag flying from its top. In the center, the Michigan State Capitol building is visible. To the right, a large, multi-story building with many windows is shown. The city streets and other buildings are visible in the background.

1918-1919 Pandemic and Detroit

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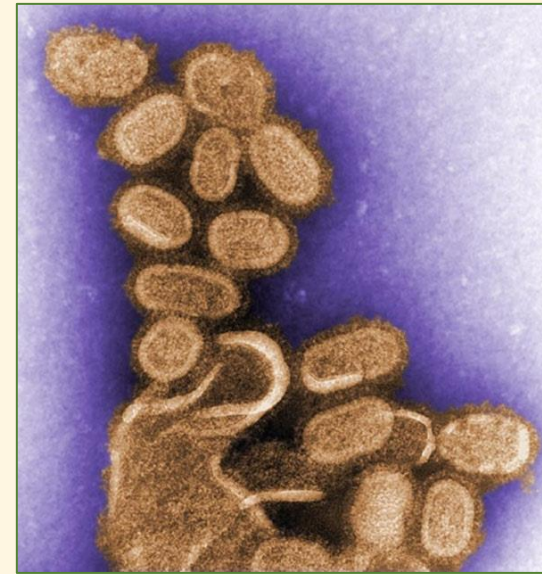
1918-1919 Pandemic Statistics

- The Spanish Flu pandemic began in January 1918 and ended in June 1919
- It was among the most lethal global pandemics in recorded history, with 40–50 million people estimated to have died worldwide and a third of the world's population (300-500 million) infected
 - Deaths greatly surpassed the 116,516 US and c. 20 million overall war-related fatalities
- There were three waves of disease:
 - 1) January - June 1918: temperate but not particularly lethal
 - 2) September - December 1918: infamously lethal
 - 3) February - June 1919: virulent but not particularly lethal



Medical Profile: H1N1 Virus

- Mortality was high in those:
 - younger than 5 years old
 - between 20-40 years old (highest casualties)
 - 65 years and older
- The 1918 H1N1 virus had genes of avian origin; it has been synthesized and evaluated, but the properties that made it so devastating are not well understood
- With no vaccine and no antibiotics to treat secondary bacterial infections, efforts to contain the spread of the virus were limited to non-pharmaceutical interventions: isolation, quarantine, good personal hygiene, use of disinfectants, and limitations of public gatherings

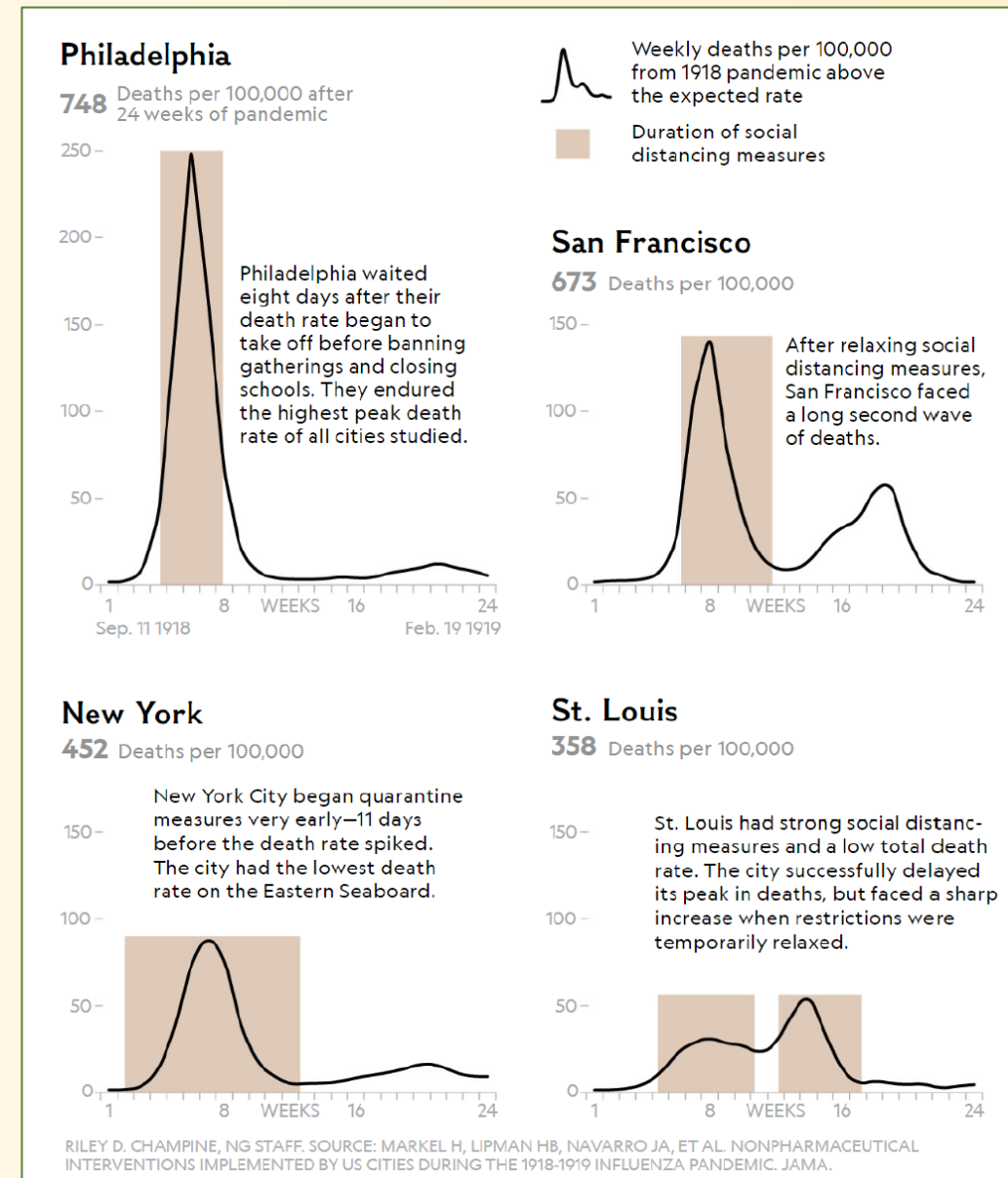


A colorized image of the 1918 virus taken by a transmission electron microscope (TEM). (Specimens obtained from autopsy samples of 1918 victims.)
Photo credit: C. Goldsmith - Public Health Image Library #11098



US Morbidity and Mortality

- The 1918-1919 pandemic killed an estimated 675,000 in the US
 - In one year, 1918, the average life expectancy in America dropped by 12 years
- This varied by city: public health was the province of local officials working in consultation with the state health officer
 - Cities less careful about enforcing social distancing were hit harder
 - A Liberty bond parade on 28 September attended by 200,000 in Philadelphia spiked an outbreak
 - Relaxing social restrictions too early caused relapses: St. Louis was emboldened by its low death rate and lifted restrictions on public gatherings less than two months after the outbreak began, and a rash of new cases soon followed



“How some cities ‘flattened the curve’ during the 1918 flu pandemic,” by Nina Strochlic and Riley D. Champine, *National Geographic*, September 2020

Symptoms and Prognosis

- The Spanish flu was highly contagious, spread by droplets in coughs and sneezes
 - Secondary pneumonia rather than influenza itself was the chief killer in 1918
- Victims suffered high fevers and terrible nose bleeds, with massive pneumonia and fatal pulmonary complications: they literally drowned in their own body fluids, as their lungs filled with fluid and their skin turned blue from a lack of oxygen
- Illness struck suddenly and killed quickly: someone who felt well in the morning could be dead by nightfall
- Little could be done to help patients: nursing was more in demand than physician services
 - As Navy nurse Josie Brown recalled: “We would give them a little hot whisky toddy; that’s about all we had time to do.”



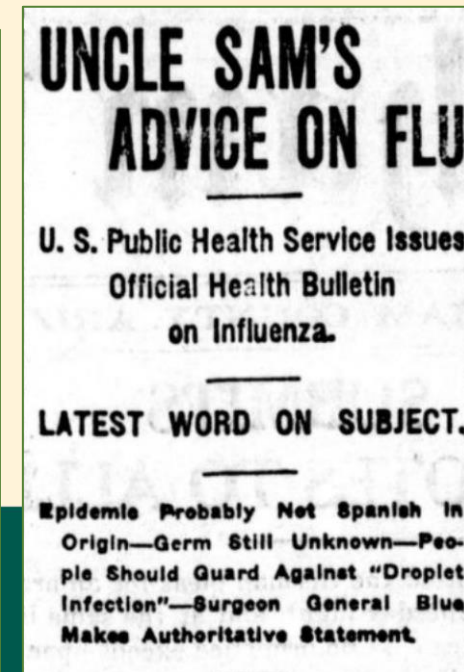
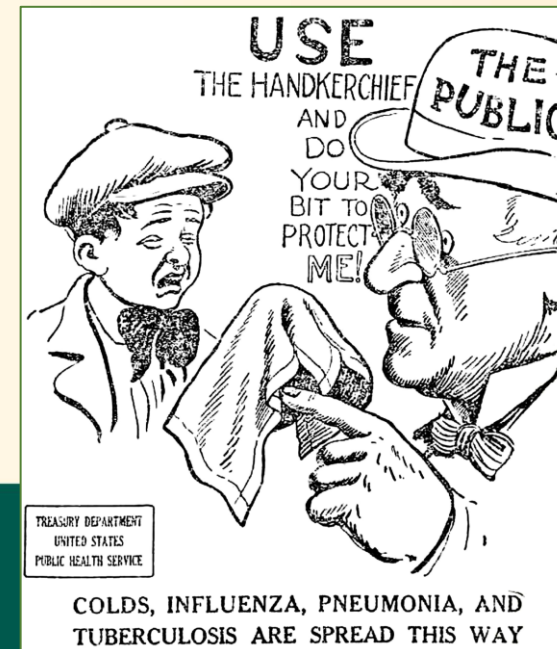
Preventive Measures

- Western cities adopted compulsory mask regulations
- The Army Bureau of Medicine and Surgery “Circular 1” advised the following:

“If you are up and about, protect healthy persons from infection—don’t spray others with the secretions from your nose and throat in coughing, sneezing, laughing, or talking. Cover your mouth with a handkerchief. Boil your handkerchiefs and other contaminated articles. Wash your hands frequently. Keep away from others as much as possible while you have a cough.”



Credits: Above: National Library of Medicine;
Below: Science History Images/Alamy; Graham Chronicle, 28 October 1918 (Library of Congress)



The First World War and the Pandemic

- The spread of the virus was exacerbated by the First World War
 - 6 April 1917: US entered the war
 - June 1917: Troops began to be sent to large camps for training
 - March 1918: Over 100 soldiers at Camp Funston in Fort Riley, Kansas became ill with flu; a week later there were over 500 cases, and it soon spread to other military installations on the East Coast
 - May 1918: Hundreds of thousands of soldiers were deployed to Europe each month
 - September – November 1918: A highly fatal second wave of flu peaked in the US, responsible for most of the pandemic deaths.
 - October was the deadliest month: 195,000 in died; demobilization of troops and civic celebrations after the 11 November Armistice ushered in yet a new spike in flu
 - January – April 1919: A third wave of flu swept through several US cities, with some experiencing a significant number of deaths



Spread of the Infection

- The coincidence of the two initial waves with the final year of World War I (1918) encouraged the spread of the infection, due to crowding of troops in transport, including large-scale movements across countries.
- The influenza epidemic of 1918-19 in the United States was characterized by a relatively mild phase in the spring of 1918, an explosive outbreak with high mortality in the fall, and a third phase or recrudescence early in 1919.
- It spread from the East Coast to all parts of the country over the period from late August to October 1918, with cities hit first followed by rural areas



First Wave in Detroit

- Several Midwestern communities experienced an uptick in influenza cases in Spring 1918, before authorities recognized the beginning of an epidemic
 - Detroit noted cases in early April
- Flu, unlike tuberculosis or cholera, was not an illness that had to be reported to state or federal officials
- Moreover, most eyes at the time were focused on the US war effort, which dominated attention

**QUEER AILMENT
GRIPPING CITY**

**No Section of Detroit Spared
by Epidemic of Malady
Resembling Influenza.**

**WHATEVER IT IS, YOU'LL
KNOW IF YOU'VE GOT IT**

**Dust, Weather and Whisky All
Are Blamed in Wild Guesses
as to Its Origin.**

Have you had it yet?
Doctors are not exactly agreed as to what it is, but the victims, and there are a lot of 'em, are enthusiastically unanimous in declaring that it's all-fired discomfiting.

Whatever the name of the disease is, there's an epidemic of it throughout Detroit and Highland Park. It is prevalent in homes, factories and offices in all stations. The illness starts usually with a headache and sore throat, the nose and bronchial tubes become infected, aches develop in every joint of the body, fever mounts and then you go and tell the boss you're "all in" and hurry home to bed.

Resembles Common Influenza.

*Detroit Free Press,
3 April 1918*



Detroit and the Pandemic: Wartime Industrial Mobilization

- Detroit was the “Arsenal of Democracy” during the Second World War, but its industrial capacity was first tapped during World War One
- Even before the declaration of war, Detroit, with its burgeoning auto manufacturing capability, shifted to wartime production:
 - “Detroit has one hundred fifty thousand men working on over a billion dollars worth of war contracts. Aircraft, liberty motor, and motor trucks production of the United States depends [sic] upon this city.”

(Detroit health commissioner, James W. Inches, to Army Surgeon General William Gorgas, 12 October 1918)

GRIP RETARDS TROOP SAILING

1,800,000 Men Now Across;
Influenza Spreads; East
Fights Desperately.

WASHINGTON, Oct. 4.—The only way to stop the spread of Spanish influenza is to close churches, schools, theaters and public institutions in every community where the epidemic has developed, in the opinion of Surgeon-General Blue, of the public health service. There is no way to put a nation-wide closing order into effect, said Dr. Blue today, as this is a matter which is up to the individual communities.

Detroit News,
4 Oct 1918





Michigan's Wartime Production

- Michigan manufacturers (especially automotive companies) significantly contributed to the war effort
 - Motorized vehicles of all kinds were produced for the war
 - Packard trucks were used in France
 - The Reo plant in Lansing produced armored trucks
 - The Oakland Company in Pontiac made tanks
 - Steel ships were manufactured and launched in Saginaw, Wyandotte, Ecorse, and other port cities
 - Ford Motor Company contracted to build “Eagle” boats, intended as escorts for commercial vessels to protect from submarine attacks



Eagle Boats at the Ford Rouge Plant

- With American shipyards taxed to their limits, the U.S. Navy enlisted automaker Henry Ford to mass produce Eagle patrol boats for the war effort
- From May 1918 to October 1919, Ford built 60 "Eagle" anti-submarine patrol boats at the Rouge; although few saw wartime action, this proved that even warships could be made on an assembly line, something that would be well demonstrated during the Second World War



Image: Ohio History Collection,
World War I in Ohio Collection,
<https://ohiomemory.org/digital/collection/p16007coll51/id/650/>



Influenza at the Rouge

- The Navy opened a training school at the Rouge Plant to train sailors for Eagle boats constructed by Ford; by June 1918, 1,200 sailors were stationed there
- Five cases of influenza were first reported at the camp on 20 September 1918; this jumped to 107 two days later and 250 by early October



Top: The Henry Ford Archives; *Bottom:* Catalog # NH 43173, Naval History and Heritage Command





Downtown Detroit, 1918
(Credit: Robin Bodnaruk, Pinterest)



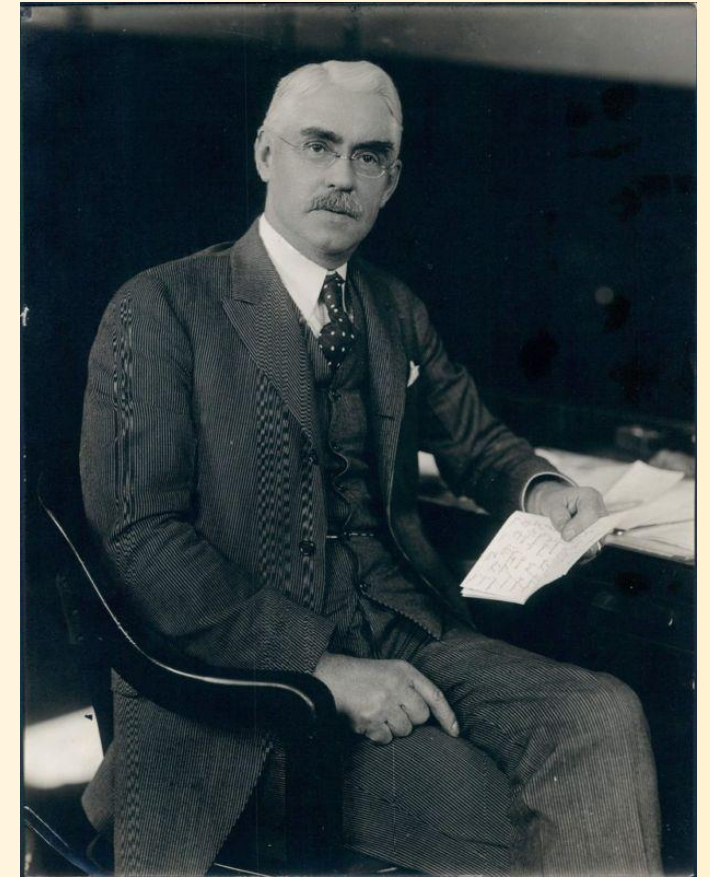
Spread to Detroit

- On 18 September, Health Commissioner James W. Inches warned Detroiters to take precautions
- On 24 September, Dr. Richard M. Olin, first director of the Michigan State Board of Health, 1913-1924, issued a circular to local health departments warning them to be on the alert for influenza cases
- Sailors may have spread the influenza to Detroit when visiting its entertainment venues: the city reported its first influenza death on 1 October 1918; by 5 October there were 135 suspected cases and 3000 by 15 October
- According to the Detroit *Free Press*, however, “Proof that the Spanish influenza is of German origin is not needed. None but a Hun would ever start such a disease” (3 October 1918)



Detroit Health Commissioner

- Dr. James W. Inches served as Detroit's Commissioner of Health, 1917-1919
- He had strong views about measures to control the Spanish flu: he did not believe closing schools, theatres, and churches was beneficial and described masks as “pure fakes”
 - He directed schools and businesses to send the sick home
- More valuable was restricting servicemen from coming to Detroit



Dr. James W. Inches (1860-1952)
Photo: Influenzaarchive.org

Quarantining Rouge Sailors

- When the US Surgeon General refused Inches' request to issue a quarantine, he exercised his authority to do so on 17 October 1918
 - To enforce the rule, inspectors met all incoming trains, streetcars, and interurbans to allow only those on official business to enter Detroit
 - As Rouge Camp Commander A.M. Cook told reporters: "The quarantine is more a precaution against our men spreading the ailment among the inhabitants of Detroit, which would be apt to happen were they given leave from the station than from any apprehension on our own behalf."
- Airmen at Selfridge Field in Mt. Clemens were put on "solitary confinement" on 25 October



Governor Sleeper Orders a Statewide Closure

- Over the objection of civic leaders of Detroit and Grand Rapids, Governor Albert Sleeper issued a sweeping order closing all places of entertainment and congregation on 19 October
 - Dance halls, theatres, amusement parks, and churches were shuttered
 - Funerals had been limited to the immediate family since Dr. Olin's order of 29 September
 - Large gatherings were prohibited, but schools, factories, and stores remained open
 - Dr. Inches had canceled a meeting of aircraft workers on 12 October to celebrate the completion of the 10,000th Liberty engine, citing the need to protect essential war workers
 - But he allowed football and baseball games in Detroit if no tickets were sold



Detroit's Dance Halls

- Detroit was among the country's biggest "ballroom cities"
- It was home to many famous dance halls that provided entertainment as well as a place for people to mingle
- Several dance halls were located at Electric Park on East Jefferson, near Belle Isle (now Gabriel Richard Park), a popular amusement park



Detroit News Archive



Detroit Historical Society
Archive, 2012.044.164



Boblo Pavilion Dance Hall



- The Boblo Pavilion, built in 1914 on Bois Blanc (Boblo) Island on the Detroit River near Amherstburg, could accommodate 5000 dancers
- Financed by Henry Ford (who loved to dance), it was once the second largest in the world

Photo: Detroit News Archive



Theaters

- In early October, Inches asked theatres and movie houses to educate the public by showing lantern slides depicting proper cough and sneeze etiquette
- Faced with closure, the fledgling cinema industry was hit hard by the pandemic
 - Much of US production, distribution, and exhibition came to a standstill for months
- The pandemic also catalyzed a debate over the role of cinema in society
 - On one side were those who saw movie theaters as little more than venues for mass entertainment, and therefore easily closed in the face of a health crisis
 - On the other were those who argued that cinema might be used for educational purposes in the fight against influenza
- Owners lost thousands of dollars from closure

Detroit's Orpheum Theatre (Lafayette and Shelby) had a seating capacity of 2130.

Credit: WSU Walter Reuther Library



In Detroit as in Chicago, theaters distributed educational material to customers before being shut down for several weeks in October 1918

Credit: National Library of Medicine

INFLUENZA
FREQUENTLY COMPLICATED WITH
PNEUMONIA
IS PREVALENT AT THIS TIME THROUGHOUT AMERICA.
THIS THEATRE IS CO-OPERATING WITH THE DEPARTMENT OF HEALTH.
YOU MUST DO THE SAME
IF YOU HAVE A COLD AND ARE COUGHING AND SNEEZING- DO NOT ENTER THIS THEATRE
GO HOME AND GO TO BED UNTIL YOU ARE WELL
Coughing, Sneezing or Spitting Will Not Be Permitted In The Theatre. In case you must cough or sneeze, do so in your own handkerchief, and if the Coughing or Sneezing Persists Leave The Theatre At Once.
This Theatre has agreed to co-operate with the Department Of Health in disseminating the truth about Influenza, and thus serve a great educational purpose.
HELP US TO KEEP CHICAGO THE HEALTHIEST CITY IN THE WORLD
JOHN DILL ROBERTSON
COMMISSIONER OF HEALTH



US Public Health Service Involvement

- Since 1902, the US PHS had been charged with reducing epidemic diseases like small pox and yellow fever, often spread to port cities via ships and sailors
 - The PHS evolved from marine hospitals established in 1799 under President Adams to care for sick and disabled sailors; a supervising surgeon (“Surgeon General”) was first appointed in 1871
- In 1918-1919, PHS switched from preventative measures to emergency relief: it sent representatives to each state to help health officers organize and coordinate activities, but state health authorities had ultimate responsibility for implementing policy decisions



Detroit's Health Workers

- In Detroit, the Board of Health and school officials decided to close schools effective 24 October
 - The decision was not based on concern about the health of students; it was primarily due to wanting to enlist the system's 3,000 teachers to serve as "volunteer" health department aides
 - School buildings were to serve as headquarters for "health zones"
 - Teachers were to investigate cases of influenza and pneumonia
 - As the *Free Press* reported on 22 October, teachers were being reassigned to "work visiting homes of influenza sufferers and advising in their care"



Nursing Shortage

- Although many teachers objected to putting themselves and their families at risk, their services were important given the dire shortage of trained nurses
 - Although Michigan had passed a Workman's Compensation law in 1912, one teacher protested in a letter to the editor that were she to contract influenza through this work, she would not receive her salary or have anyone to care for her
 - However, Inches halted the program on 27 October, stating that cases of flu were decreasing and the dire crisis had passed: schools could reopen on 30 October
- Home visits by teachers provided data on the number of families afflicted by influenza previously unreported
 - Educators made 102,000 house calls, reported on 15,647 cases of illness, and discovered 434 families in need of medical care or assistance



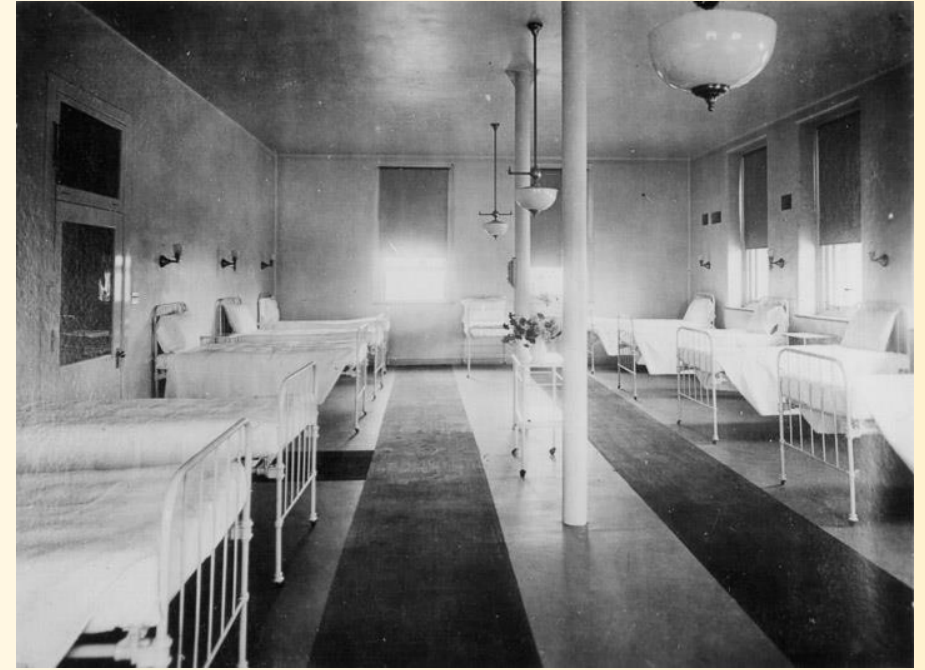


- With most nurses deployed to military camps in the US and Europe, the American Red Cross asked for volunteers
- Detroit Red Cross volunteers partnered with Public Health nurses to deliver food and supplies to homes and to help with childcare



Care of the Ill

- Between 1 October and 20 November, there were 18,066 reported cases of influenza in Detroit, with 1,688 deaths
- Another 10,920 cases came during the third wave, in January and February 1919
- Hospitals were at capacity in both Detroit and Grand Rapids; in Detroit, patients were admitted to its contagious diseases hospital, Herman Kiefer, which by 1918 was treating nearly 3,500 patients



With the great influx of immigrants to Detroit, the city built Herman Kiefer Hospital to house contagious disease patients; by 1919, there were five pavilions: 1 for scarlet fever, 2 for diphtheria, 3 for influenza and tuberculosis, and 4 for various diseases (erysipelas, infantile paralysis, spinal meningitis, mumps, and measles), and 5 for receiving.

(Image: <http://www.detroiturbex.com>)



“Plague Serum”

- A therapeutic treatment for influenza patients was the use of plasma from the blood of those who had contracted influenza, sometimes called plague serum or *convalescent sera*
- The treatment drew on the success of the Diphtheria antitoxin – made from the blood of previously infected animals – used effectively since the 1890s

Plague Serum Called Success

BOSTON, Oct. 19.—An influenza-pneumonia serum has been produced by Dr. William R. Redden, of the staff of the United States Naval Hospital at Chelsea, it was announced today. Officials of the hospital said it was the only curative serum now employed and that satisfactory results had followed its use in a number of cases. To obtain supplies of the serum, patients convalescing at the hospital are asked to give a quart of blood, a pint at a time.

Detroit Sunday News,
20 October 1918



Vaccines

- The cause of influenza was not well known at the time: medical professionals recognized it as a specific communicable disease that presented seasonally, usually in the winter, but mild cases of influenza were difficult to distinguish from other acute respiratory illnesses. There were no diagnostic tests, given that microscopes could image bacteria, but not smaller pathogens like viruses
- The German Richard Pfeiffer (1858-1945) claimed to have identified a bacillus as the causative agent of influenza in 1892, and by the 1910s some thought a vaccine might be possible
- In October 1918, William H. Park, MD, head bacteriologist of the New York City Health Department, prepared a vaccine from heat-killed Pfeiffer's bacilli isolated from ill individuals and tested it on volunteers from Health Department staff
- Others began working on different vaccines, including a mixed bacterial vaccine (streptococcal, pneumococcal, staphylococcal, and Pfeiffer's bacilli) developed by E.C. Rosenow at the Mayo Foundation, and 500,000 doses were produced, and thousands of people were immunized
- In January 1919, the Editorial Committee of the *American Journal of Public Health* wrote that the causative organism of the current influenza was still unknown, and therefore the vaccines being produced had only a chance at being directed at the right target, noting that vaccines for secondary infections made some sense, but that all the vaccine being produced must be viewed as experimental
- Current opinion is mixed about whether any were effective



Prevention and Control

- In 1918, isolation of cases and quarantine of contacts were applied vigorously in some areas, but there is little evidence to indicate whether or not these measures were successful in preventing introduction or spread of the disease
- The use of a vaccine containing the influenza bacillus was advocated, but no value could be demonstrated
 - If a vaccine containing the viruses now known to cause the disease had been made available early in the epidemic, it is doubtful whether it would have been effective, since the epidemic in the fall of 1918 spread with great rapidity
- In *Epidemiology and Public Health* (1922), Dr. Victor C. Vaughan stated that social measures were useless and the most reasonable administrative action that could have been taken was to direct efforts toward relief measures, namely, medical and nursing care and hospitalization
- Based on the study of comparative data on 50 US cities, Dr. Howard Markel disagrees: cities that implemented quarantining and isolation, school closures and bans on public gatherings fared the best
 - (Influenza Encyclopedia: The American Influenza Epidemic of 1918-1919)



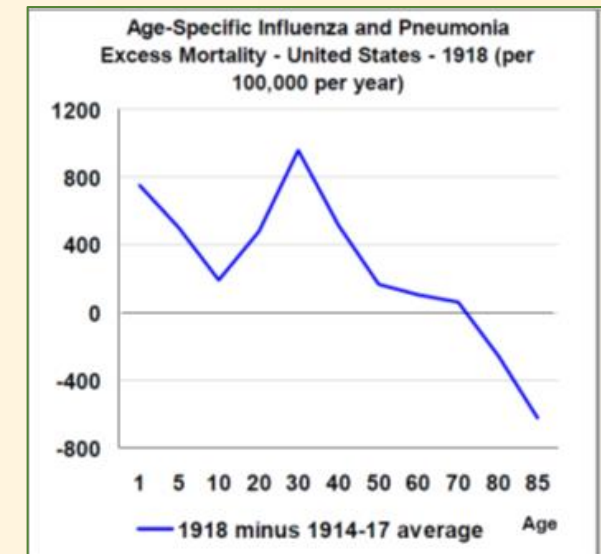
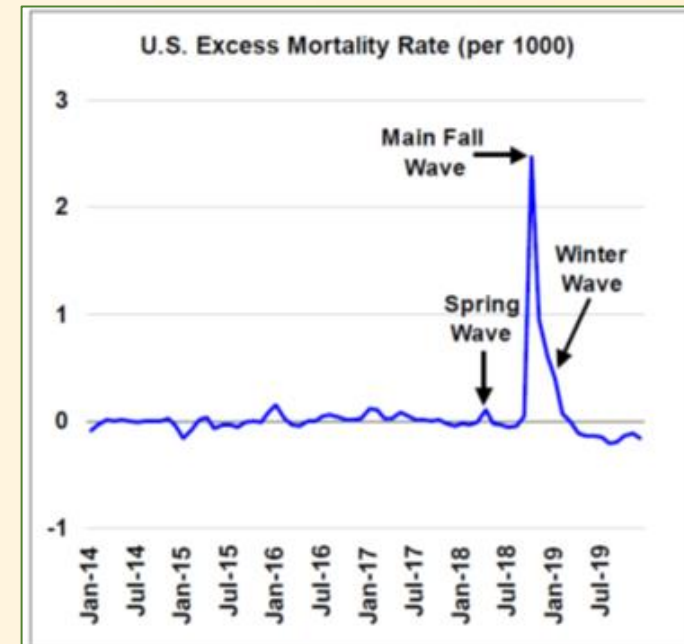
Conclusions: Worldwide

- The movement of troops and refugees during World War I spread the disease more quickly and effectively than might have happened otherwise
- Wartime deprivations also meant European populations were less healthy and more vulnerable to disease than they might have been otherwise
- Moreover, in both the United States and Europe, the Industrial Revolution had led to increased urbanization, creating public-health issues such as overcrowded housing, air pollution, and lack of access to clean water that all contributed to the spread of communicable diseases



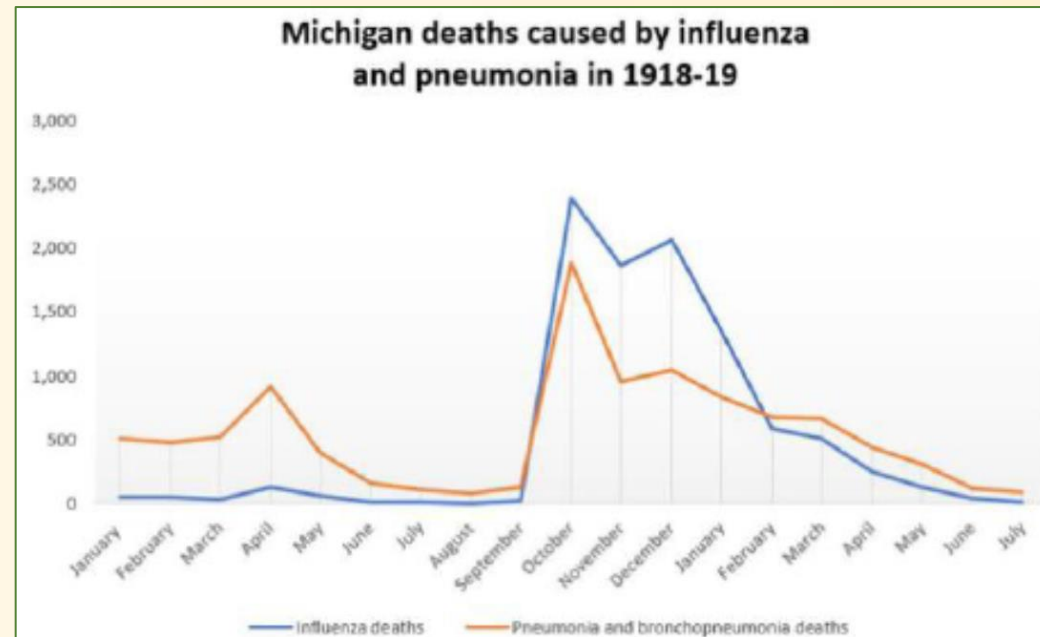
Conclusions: United States

- The pandemic was so severe in the US that from 1917 to 1918, life expectancy fell by about 12 years, to 36.6 years for men and 42.2 years for women
- Of the three waves, most of the deaths occurred during the second wave, October-November 1918
- The highest number of excess mortality compared to non-pandemic years fell in the 20-40 years old age group
- From spring 1918 through spring 1919, about 200 of every 1000 people contracted influenza (about 20.6 million out of a total population of 103.2 million)
- Between 0.8% (164,800) and 3.1% (638,000) of those infected died from influenza or secondary pneumonia
- Despite the extraordinary number of deaths worldwide, most influenza cases were mild and people recovered completely after a 3-5 day fever

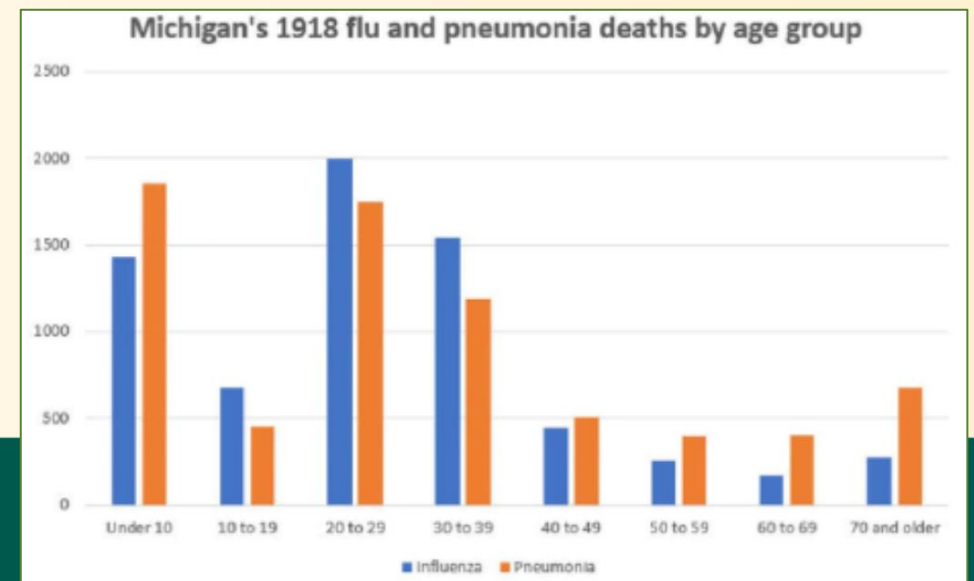


Conclusions: Michigan

- Michigan recorded 54,617 deaths in 1918, a 15% increase over 1917 and the state's highest death rate in more than a century
 - In 1917, Michigan had 554 deaths attributed to influenza
- 6,742 deaths were attributed to influenza with another 7,247 to pneumonia or broncho-pneumonia
 - 6,336 died of influenza between October and December alone
 - Of those deaths, 3,742 occurred among people in their 20s

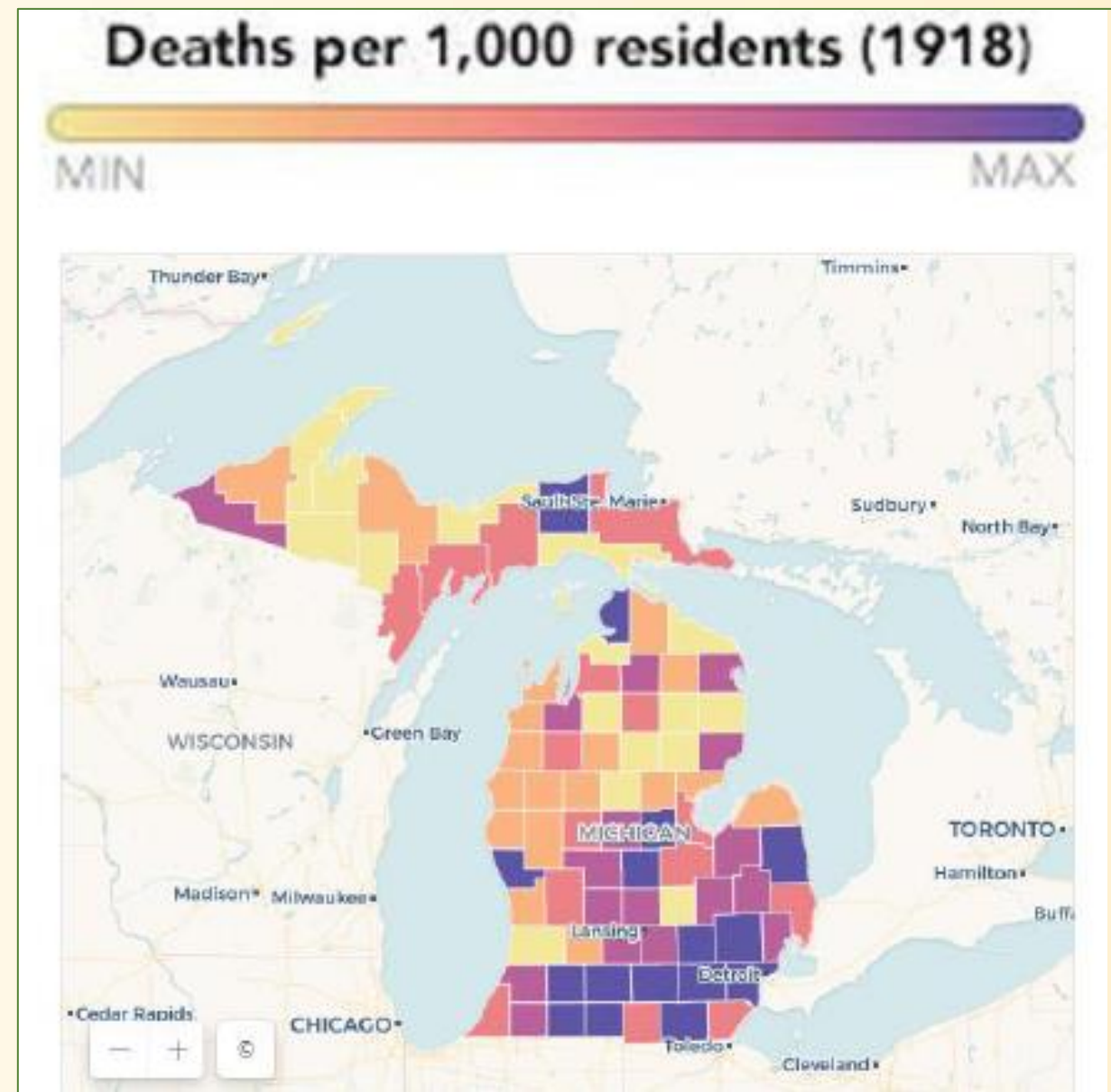


Deaths, January 1918 - July 1919, based on the state's annual report of births and deaths



Michigan's Pandemic Geography

- Areas with greater concentration of population suffered higher fatalities
- Southern counties of the mitten fared the worst
- The mining districts of the UP were especially hard hit



The Pandemic's Effect on the Economy

- According to economist Brian Asquith, the conventional wisdom about the economic impact of the Spanish flu holds that: 1) pandemics cause a sharp economic contraction followed by a sharp recovery; 2) nonpharmaceutical interventions (NPIs) like lockdowns and social distancing are, on net, economically beneficial; and 3) NPIs help ensure that normalcy can be rapidly reestablished even in a globalized world
- He estimates that the 1918 pandemic contracted the real economy on the order of 6 percent of GDP and 8 percent of private consumption, which prompted large, if temporary, declines in the returns on stocks and short-term government bonds
- There is substantial disagreement on how long-lasting the effects of the 1918 pandemic were on regions and national economies, but there is some indication that effects lingered for up to 40 years



Lessons Learned

- The Spanish flu pandemic of 1918-1919, like the Covid-19 pandemic, affected the respiratory system, was spread through aerosol droplets, was highly contagious and lethal, and moved to all corners of the globe quickly
- Similar non-pharmaceutical methods of control were used then as today: various types of restrictions on social interaction
- In 1918, as today, hopes were high that a vaccine could be developed to halt its spread, but the Spanish flu disappeared as abruptly as it began before trials could be evaluated
- Ultimately, however, the H1N1 virus is very different from SARS-CoV-2, and patient outcomes differ accordingly
 - While both spread by coughs and sneezes, 40% of coronavirus transmission takes place before a patient shows symptoms, and people may be most contagious the day or two before they start feeling sick
 - Sars-CoV-2 has an unusually low dispersion factor—an estimated 80% of transmissions are caused by just 10% of cases, whereas the 1918 influenza had a very high dispersion factor: there was almost no clustering at all
 - Long-term disability seems to be more prevalent from viral attacks on blood vessels and organs
 - Whereas the outcome by race was slightly higher for Blacks in 1918-1919, for Covid-19 cases (2.6), hospitalization (4.7), and death (2.1) are significantly higher for Blacks (and Hispanics and Native Americans)
 - The mortality by age-group is particularly high for those over 50
- Despite significant advances of molecular medicine, which promise effective vaccines in record time and expanded treatment options, we continue to rely on non-pharmaceutical control, but with more organized social protest than in 1918
- However, the most lethal period of the 1918-1919 pandemic lasted only two months, whereas Covid-19 may remain a global scourge for the unforeseeable future



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