

## **Worcester's Experience of the Influenza Pandemic of 1918**

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Next year will mark one hundred years since the great influenza pandemic of 1918-19. It is hardly an event to celebrate, of course, but some recognition of how it affected Worcester and how it was perceived as it approached and spread through the community is in order.

Exactly where it started is uncertain, but it quickly made its way throughout the world, missing few places and taking the lives of many millions of people. Estimates run between 20 and 50 million people and possibly more. For most of those who died, the end came quickly and brutally, often the result of an unusually severe case of pulmonary pneumonia. It is believed that the virus originated in, or was brought into, some military encampment somewhere, and that its rapid spread was a result of troop and cargo movements around the globe associated with the ongoing "Great War." In a gruesome duel of monsters, the virus ended up killing far more people than did the war.

One of the earliest and hardest hit areas in the United States was eastern Massachusetts. Among the hardest hit locations were Boston and Camp Devens in Ayer, where some 50,000 troops were in training, living in crowded barracks.

For the country and for the world, it was clearly a *pandemic*, but in each of the many localities where it struck it was an *epidemic*. People in local areas could not experience or fully comprehend a pandemic, but at least some people understood the concept of an epidemic and could try to interpret events accordingly.

The official definition of the Centers for Disease Control of an epidemic is "the occurrence of more cases of disease than expected in a given area or among a specific group of people over a particular period of time." Nothing in that definition says anything about exponential growth, but the most frightening aspect of an epidemic arises from the threat of exponential expansion of the virus, causing it to run out of control. Caught in an exponential growth cycle, each day's number of new cases exceeds the previous day's number, and the daily additions grow faster and faster as time goes on, with the potential threat of a kind of "wipe-out," in which everyone gets it. Or closer to everyone than anyone wants to think about.

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The flu epidemic in Worcester has been the subject of two informative essays.

Local historian Albert B. Southwick provided a good, brief overview, which may be enough for most readers, in his column in the *Worcester Telegram and Gazette* of November 5, 2006: "*When Fort Devens was ground zero of flu pandemic.*" His main storyline was an outline description of the flu epidemic at Camp (later Fort) Devens and then in Worcester, but he also sounded a warning

concerning preparation for future problems of a viral nature. "Every day," he wrote, "we read the grim news about North Korea, Iraq, Iran and the other global fever spots. But it may be that the worst threat to humankind is taking place at the viral level. If so, the laboratories will be on the front lines, not the United Nations diplomats."

Online at <http://www.telegram.com/article/20061105/column21/611050532>

Less well known is that Worcester was one of fifty U. S. cities which were the subjects of a comparative study of local responses to the pandemic, conducted by the Center for the History of Medicine and Michigan Publishing at the University of Michigan.\*

\* *"The American Influenza Epidemic of 1918-1919: A Digital Encyclopedia,"* University of Michigan, Center for the History of Medicine and Michigan Publishing, University of Michigan Library, 2<sup>nd</sup> edition, 2016.

Online at:

<http://www.influenzaarchive.org/about.html> (outline of the study – who, when etc)

Study header: <http://www.influenzaarchive.org/>

Essay on Worcester: <http://www.influenzaarchive.org/cities/city-worcester.html#>

The group gave Worcester's response to the epidemic a somewhat harsh review. A clue to the tone of the assessment can be seen in one of its side-headers: "A Rudderless Ship." Based mainly on newspaper accounts, plus year-end reports by City Hospital and the Board of Health, the group's report on the city's response used all, or at least most, of what is now available on the subject, and it yielded a useful perspective on the epidemic here.

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These two studies constitute the primary, and probably the only, sources on Worcester in the epidemic. My intention here is to try to advance the subject another step forward, using the same sources as the Michigan study, but more intensely so. Aside from the two sources noted above, the present research is based on the three daily English-language newspapers in the city at that time, and the annual reports of the city's Board of Health. The three dailies, which have been "eyeball scanned," using the microfiche facilities of the Worcester Public Library, are the *Telegram*, the *Evening Gazette*, and the *Evening Post*. \*

\* Because of their popularity among segments of the city's population at the time, the non-English newspapers publishing during that period, the French-language *L'Opinion Publique* and the Swedish *Svea*, would have made valuable additions to the list. However, the author cannot read either language, and the scope of the project was not intended to run quite as wide as to seek help with translations, which would have required a great deal of time to do. Also, it is unknown whether either newspaper is available for reading on microfiche.

As was true of the Michigan group and Mr. Southwick, the only source available to me, aside from newspapers, was the annual report of the Board of Health for each year.\* In addition, there are various sources on the pandemic as a whole, not bearing directly on Worcester. Several are included in a short list of online sources provided at the end.

\* Published annually in *City Documents*, various volumes, consisting of annual reports of city departments.

There are two primary objectives of this study. The first is to ascertain the degree to which a

reader of the local press could follow and track the influenza epidemic, to gather enough evidence to draw reasonably informed conclusions concerning the intensity of the disease, the rapidity of its spread, and its threat to individuals and families. In other words, to what extent could the people of Worcester comprehend the extent and the magnitude of the problem they were facing? By modern standards it was an era of limited “data systems” and limited communications. Newspapers were very nearly the sum of it. This objective can be attained only in fairly general terms, there being no feasible way to carry it much further. The second objective is to try to do a bit more with the data which became available after the fact -- the numbers of reported cases and deaths from the disease, found in the official records of the Board of Health.

The experience of the epidemic by the people of Worcester was a combination of what they *perceived* to be happening and what was *actually* happening. What they knew, or thought they knew, came from any or all of four sources: (1) their personal and family experiences; (2) what they heard from friends and acquaintances, including rumor and speculation; (3) what they heard (or read) from public officials, employers, or others in prominent positions, such as doctors and other health officials; and (4) what they read in the newspapers. As modes of research, the first three fall between very difficult and impossible, but it is feasible and within range to examine how the city’s (English language) newspapers handled the story of the epidemic. What was actually happening, in terms of the extent of the epidemic in the city, is primarily a matter of the data that became available after the fact, in the records of the Board of Health.

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### Coverage begins in the dailies

The story of the flu epidemic in Worcester, as seen in the press, began with small articles on the inside pages regarding talk of a possible epidemic east of the city – in Boston and at Camp Devens. On September 12, in a small item on an inside page, the *Gazette* said the “Spanish flu was attacking sailors.”\* Two days later, a two-sentence item said there were 1000 cases at Camp Devens, and below it a two-column headline said the flu “rages” in Brockton. It is widely assumed, if not known for sure, that the pandemic got much of its start and early momentum at military camps where soldiers and sailors were packed tightly in barracks while undergoing training for the war.

\* Why it was being called the *Spanish* flu: According to Wikipedia (see its notes 17-20), the major warring countries of Europe, and the U.S., sought to keep a kind of hush on the expanding epidemic, for reasons of morale among the troops and on the home fronts. Spain, however, was neutral in the war and therefore had little reason to constrain reporters from writing freely about the epidemic as it raged through the country and into Portugal as well. Soon the fast-spreading flu became widely known as the “Spanish Flu.” The name never quite disappeared from use by the press, and it probably was the term most commonly used for the disease by the public.



*Gazette*, Sep. 16

In another column that day Worcester physicians were said to be warning the public to be careful, and offering advice on how to minimize the spreading of the disease.

By this date the threat of an influenza epidemic was widely recognized in Worcester, and arguably the threat was being taken seriously, but there remained a sense that it had not struck here. Below the main headline about the “Spanish” flu, the *Gazette* added a secondary headline, in all capitals: “WORCESTER IS FREE FROM DREAD DISEASE” That kind of optimism would not survive much longer.

There were periodic reports of deaths from the flu elsewhere – mainly Boston or the Boston area, or Camp Devens – beginning on the 17<sup>th</sup>, and the numbers grew quickly. A Boston byline story on the 18<sup>th</sup> concerning flu in the military said there were some 3500 cases at Camp Devens, three and a half times more than had been reported two days earlier. In a statement of much greater concern and consequence today than was true a century ago, the article noted that the disease there “was mainly among negro soldiers from the south.” ([article in jpg format](#))



*Gazette*, Sep-20,-1918

On the 20<sup>th</sup>, the Superintendent of City Hospital, Dr. Charles A. Drew, was quoted in the *Telegram* saying there was “a large number of cases of influenza in the hospital and in the city,” and that there had been within the past week nine deaths from pneumonia, some of which had exhibited flu-like symptoms. He also stated that “he does not see any reason for the people to become unduly excited.” In effect, it amounted to saying “there’s a problem out there but don’t panic.”

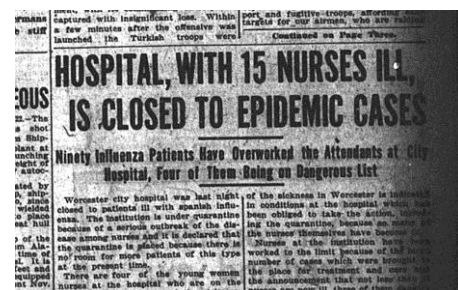
That describes fairly accurately the basic tone of most of what the press would write throughout the epidemic.

For the next few days, most of the press coverage regarding Worcester was of an incidental nature. On the 21<sup>st</sup> the *Post* reported on the first Worcester resident to die of the flu, a soldier in training who was visiting his parents when he came down with it and died within two days. Both of his parents contracted the disease and died as well. Other stories that day noted that a husband and wife had died from “the grip,” and that twin sisters, age 25, each married and living apart from the other, had died from the flu within hours of each other.

On the 23<sup>rd</sup>, City Hospital was said to have been forced to close itself to epidemic cases due to lack of space and the fact that fifteen nurses had fallen ill from the flu, four of them seriously so. This story could be seen as a strong indicator that the problem in Worcester had become serious.

It was obvious by this time that the epidemic had arrived, but it was not yet known how severe was the strain of the virus, how quickly was it spreading, or what were one’s chances of catching it.

For a while there were cross currents of information that may have seemed confusing to readers. Headlines said the “grip” epidemic was on the wane at Camp Devens, despite rising numbers of



*Telegram*, Oct. 23

deaths from it; another proclaimed that flu in New England was “nearly at peak,” despite rising death tolls. On the 26<sup>th</sup>, it was reported that 19 schools in Worcester were closed because of cold and dampness, conditions believed to enhance the possibilities of the flu spreading. This was almost surely good for pupils, teachers, and parents, but part of its news value lay in the fact that it underscored the seriousness of the epidemic. Two other articles that day provided further hints of the magnitude of the problem: “many concerns suffer due to loss of help”; and “telephone co. hard hit; quarter of girls are out.”

**Worcester and state officials.**

# INFLUENZA NOT CAUSING SCARE IN WORCESTER

## MANY CONCERNS SUFFER DUE TO LOSS OF HELP

**WAR MEASURES TO BE USED TO STAMP OUT GRIP**

**WASHINGTON, Sept. 24.**—Stamping out of Spanish influenza, which has extended to more than a score of army camps and many sections of the country, has been recognized by the government as a war measure. Medical and nursing units today were mobilized in communities where the epidemic has gained considerable headway under the general direction of a central committee representing the public health service, the army, the navy and the American Red Cross.

Immediate relief for the local localities where influenza has gone beyond control of the local authorities will be the main task of the committee. Home defense units will be organized with such nurses as may be spared from other duties, and each unit placed at the disposal of the central committee.

Some concern has been felt at public health service headquarters over the spread of the epidemic in Massachusetts and other New England states. Steps already have been taken to provide relief by the organization of nursing and medical forces there, under the personal supervision of a representative of the committee.

**Will Not Close Up Amusements Here Unless The Grip Gets Worse**

**Board of Health Will Not Take Drastic Action Unless It Receives Orders From State Officials or Unless Conditions Warrant It**

Worcester Board of Health will not under present conditions and without more reason than now exists, close Worcester places of amusement and

**City T. M. O. COM**

These headlines (left) from the *Gazette* of that same day, Sep. 26, addressed three separate aspects of what was happening.

The main headline appears to have been a bit of morale-boosting on the part of the paper, likely encouraged by the publisher. (A safe bet is that influenza was causing a considerable scare.)

The sub-headline, regarding workers being out sick, clearly added to the perception that the flu problem was affecting large numbers of people and that it was still growing. This was not numerical data but it created an impression of substantial size and threat of the epidemic.

The “war measures” item was a Washington story about the military’s efforts to deal with the flu. Below that, city officials were not quite ready to force closure of public gathering places, such as theatres, barrooms, or other places of “amusement.” It added, however, “unless the grip gets worse.”

It did, and two days later the Board of Health reversed itself. The Michigan group faulted the city for being slow to take this action. It is hard to argue with their point.

*Gazette*, Sep-26-1918

The *Gazette* of Sep. 30 noted some of the ways officials were dealing with the explosion of influenza cases. Among them were the Board of Health advising against the holding of wakes and suggesting limited attendance at funerals, aside from family members, and calling for voluntarily minimizing of sympathy visitations at the homes of victims.

The board also requested a meeting at City Hall to coordinate the delivery of nursing services through several agencies, for the sake of efficiency and non-duplication of efforts.

## HEALTH BOARD ORDERS PUBLIC PLACES CLOSED

**PRECAUTIONS FOR EVERYBODY TO TAKE**

Dr. Andrew B. Tenenbush, chairman of the board of health, says that influenza is spreading so rapidly in Worcester that he is asking the public to observe the following precautions:

- Avoid crowded places.
- Do not go to school or work if you are ill.
- Do not go to work or school if you have been in contact with someone who is ill.
- Do not spit or cough on the floor.
- Do not use public drinking fountains.
- Do not use public restrooms.
- Do not use public places of amusement.

**MASSACHUSETTS CALLS FOR HELP TO FIGHT EPIDEMIC**

Appeals for Doctors and Nurses to Aid in Checking Pneumonia and Influenza Cases in United States and in States of Maine, Vermont, New Hampshire, and New Jersey.

**City Officials, in Drive Against Epidemic, Recommend Delay in Filing Questionnaires and the Use of Paper Cups at All Soda Fountains**

*Telegram*, Sep. 28

**NEW HOSPITAL FOR INFLUENZA IS READY AT FAIR GROUNDS**

Everything Put In Shape and Force of Physicians and Nurses Is Organized in Record Time

Worthy of the Arabian Night Tales is the story of the erection and equipment of the new Emergency Hospital in the Fair Grounds at Greenfield. Started last Monday, in two days the entire interior work of wards A and B, with new partitions, installation of plumbing, electricity and steam heat was completed Wednesday, transforming the old dance hall into up-to-date hospital wards. On Wednesday and Thursday the beds were installed, and yesterday the nurses were busy hanging curtains and making beds, while a few patients were already there. The old exhibition hall now contains a row of offices, built along one side, and may be used later as a ward. Upstairs in the room formerly used for exhibitions of the Horticultural society, sleeping quarters for the nurses have been established. This room can also be transformed into a ward upon short notice. It is light and one of the most attractive parts of the new hospital.

If anyone still labors under the delusion that the patients are being

Left to right: Front row: Misses Lou Gorrin, Estelle Murley, superintendent of the Worcester Dispensary; Back row: Clifford S. Anderson, superintendent of medical staff; Dr. Edward H. Troy; Dr. Charles A. Drew, superintendent of John F. Curran.

**BULGAR KING QUILTS, CROWN**

Gazette, Oct. 5

On Sep. 30 it was announced that an emergency “grip” hospital was to be opened at the Fair Grounds on West Boylston Street, in an existing building used as a dance hall. Five days later it was ready to receive patients, an impressive achievement. It became known as the “Isolation Hospital.”

These and other stories in the late September made it clear that the epidemic had arrived in Worcester, and that it was an “all hands on deck” situation.

But there was still a lack of quantitative data needed to track the size and scope of the epidemic – the *numbers* of cases and deaths.

The epidemic was well underway in Worcester before any real information concerning numbers of cases or deaths from the disease became available. Newspaper accounts provided very little numerical “data” on cases or deaths from the flu in Worcester, mainly because such data were simply not available, at least not from official sources. The main reason it

was proving difficult or impossible to get good counts of cases of the flu was that they simply were not available. Because of the comparatively low rate of incidence of deaths from the flu, in the range of ten to twenty annually in recent years, influenza was not a “reportable” disease in the city, meaning doctors were not expected to report cases to the Board of Health. *Deaths* from the flu, on the other hand, were recorded in death certificates and reported annually by the Board as part of its causes-of-death summary.

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### Data on fatalities, finally

On Oct. 1, staff of the *Evening Post* devised a novel approach to the gathering of better information on *deaths* from the flu -- a survey of undertakers. Under an optimistic headline, and a bold and seemingly premature claim that the crisis had passed, the first numbers of deaths on a daily basis were shown here, as garnered from the undertakers. Four days later the *Post* added figures for Sep. 29 through Oct. 2, yielding 11 days accounted for since the 22nd.

#### Flu-related deaths per day for eleven days, per count of the *Post*:

September	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	Oct	<u>1</u>	<u>2</u>
Deaths	6	8	12	7	16	18	21	17	20	25	23	

Total 173, average 15.7 per day; first 4 days: 33, last 4 days: 85

**CITY GETTING GRIP EPIDEMIC UNDER CONTROL**

Crisis Passed Sept 28 — Sunny Weather Brings Optimistic Report

**Eighty-Seven Deaths From Pneumonia and Grip Here in Week**

Date	No. of Deaths
September 22	6
September 23	8
September 24	12
September 25	7
September 26	16
September 27	18
September 28	21
Total	87

Influenza is getting under control, not only in Worcester, where the epidemic has been the most severe, but also in other parts of the state.

Evening Post, Oct. 5

Note: Influenza and pneumonia had to be counted together because the flu so often led to pneumonia, which was the actual cause of death. It was the high incidence of the flu which led to the great surge in numbers of cases and deaths from the epidemic, by whichever name the cause of death was recorded.

The trend was clearly upward during the first week and a half. These data do not support the idea that the crisis was over by Oct. 2, much less by Sep. 28, as had been claimed. No “light at the end of tunnel” was visible in these numbers.

These counts of mortalities were all there was to go on, aside from indications gleaned from stories about filled-up hospitals, shortages of nurses, and telephone operators calling in sick. For the public, the thought of twenty-some deaths per day must have caused at least some, if not a lot, of concern among the populace. It might also have helped, on the other hand, that the numbers were not in the hundreds.

The issue of the non-reporting of flu cases was settled the first week of October when the Board of Health, in response to prompting by the state, according to the Michigan study, began requiring the reporting of influenza cases. The start was set for Friday, Oct. 4. As of that day, doctors, hospitals, and other medical authorities had to report all cases of influenza to the Board of Health on a daily basis. Numerous other communicable diseases were already required to be reported, of course.

On the 14th, the *Post* updated the numbers of deaths from its previous reports, citing figures reported by the Board of Health on influenza and pneumonia since Oct. 4 (thus leaving a gap for Oct. 3).

October	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>		
Deaths:	n/a	33	29	24	31	37	26	22	25	37	Total 264	average 29.3

Inserting an estimate for the missing date of Oct. 3 (the average of the days before and after, 28), the total for the three weeks Sep. 22 through Oct. 12 was 465 deaths. Few newspaper readers would have known that this was about one-sixth of all the deaths that would have been expected in the city that entire year, compacted into three weeks. A consequence of more such awareness might have been more fear and anxiety, on top of what people were already experiencing.

Knowledge couldn't really help much. One could call the doctor who could prescribe bed rest, clean air, and the like, but there were no antivirals or antibiotics, and there was little that could be done to make a real difference in the likelihood of survival, other than to provide better conditions for recovery. The essence of the approach to the epidemic was to treat the sick using the limited means available, and to try to prevent further expansion of the disease by encouraging people to control their personal environments: avoiding situations conducive to the spread of the virus, and keeping out of “germ spray” distance from other people as much as possible. Victims had to hope they could ride it out and return to health after the virus had run its course.

To the extent that they were correct, or close enough to being correct, the death counts printed first by the *Post* implied that the epidemic, as seen through these numbers, at least was not expanding exponentially, and it appeared likely to be slowing down.



A helpful way to follow the trend in the daily numbers is to break them into three-day periods: :

	Sep. <u>22-24</u>	<u>25-27</u>	<u>28-30</u>	Oct. <u>1-3</u>	<u>4-6</u>	<u>7-9</u>	<u>10-12</u>
Deaths	26	41	58	76	86	94	84
Period increase	+15	+17	+18	+10	+8	-10	

Through about the 9<sup>th</sup> of October the numbers of deaths were consistently increasing. Moreover, and more ominously, through about the 3<sup>rd</sup>, the increase each period had been larger than the last, and that had the look of exponential growth, which can lead to a runaway pattern of expansion, the worst kind of epidemic.

However, by Oct. 6, the rate of increase had turned smaller -- 10 compared with 18 the previous period. The next three-day period showed another slowing of the rate of growth (down to a gain of 8). Finally, the clearest sign of a break came Oct. 12 when the number of deaths dropped for the first time. This was the first time the numbers seemed to say that the epidemic had “broken.”

There seemed to be some understanding among reporters of the concept of an epidemic. They repeatedly tried to identify a “break” in the pattern of the flu epidemic, defined as that point after which the news began to get better (or less bad) instead of worse. While they may not have seen the apparent break pattern in the numbers as described above, they found useful clues in hospitals releasing more patients over a period of days than were admitted; ministers and priests saying their calls on the subject had diminished; and doctors reporting that their recent cases were not as bad as had been their earlier cases. This seemed to reflect a conscientious effort by reporters to provide useful clues as to the degree to which the disease was spreading.

The entire story from the Oct. 9 article (right) is worth a look ([here in jpg format](#)) for what it says about a community loosening up and beginning to relax after an epidemic that had been bad but had threatened to be worse.



Gazette, Oct. 9

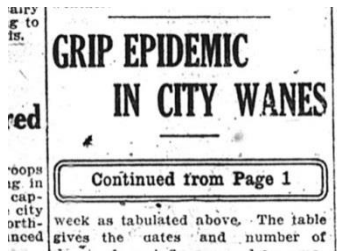
Throughout the episode there seemed to be a tendency in the press to be overly optimistic, sometimes seeing what they thought was the turning point a bit too early. Newspaper accounts commonly cited reasons for believing the epidemic had peaked, that the situation was not all that bad, or not as bad as had been feared, and that it was going to decline and disappear as other epidemics generally had done in anyone’s memory. It seems likely, although it would be hard to prove, that beneath that tone was an intention to try to help keep the public calm and to avoid any kind of panic. It may also have been, as would later be charged, that the information they were receiving from the Health department was biased toward a conservative view of the situation, as if to say “it’s there but it’s nothing to panic about.” Trying to keep the public from panic appears to square with a lot of what was happening in the press and in official statements.



Here are three headlines constituting too-early, borderline, and relatively safe times to “call” the epidemic:

Too early:

The *Post* headline of Oct. 1, shown earlier, said the crisis had passed on Sep. 28. The inside page of that story repeated the overly optimistic claim.



*Evening Post, Oct. 1*

Borderline:

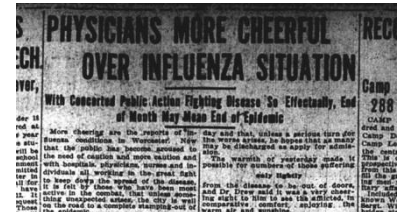
Using an inside headline that was very similar, the *Post* repeated the claim on Oct. 9 when it was still not certain enough to proclaim.



*Evening Post, Oct. 9*

Just about right:

On Oct. 13 the *Telegram* didn't say it was over but sounded a note of optimism. Four days later it said conditions were “near normal.”



*Telegram, Oct. 13*

By the second half of October the overall trend as seen in the available data of all kinds remained favorable. All known indicators were suggesting an end to the epidemic, and eventually the official statistics of the Board of Health would confirm it.

On Oct. 18, when the Board of Health was about ready to lift the ban on public places, there was an unexpected uproar from opponents saying it was too early and the threat was still too dangerous.



*Telegram, Oct. 18*

Clearly, a sizeable portion of the public had become skeptical of the optimistic reports it was seeing in the newspapers. As a result, the Board postponed its decision, over the objections of bar and theatre owners and other business interests, and maintained the ban for five more days, when the *Telegram* proclaimed that “Worcester is itself again.”

The numbers of cases and deaths from the flu plummeted and the episode appeared to have run its course.

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**A return visit**

Worcester was it old self again for a while, including the entire month of November, during which the major topic in the news was the ending of the war, officially on the 11<sup>th</sup>, along with the issues of amendments proposed regarding prohibition and women's rights, and other matters of long-term importance, such as the White Russians battling the Bolsheviks with some “Yank” involvement.

About a week into December an outbreak of the flu at Clark College landed twelve students in City Hospital. On the 18<sup>th</sup> the *Post* ran a story under the headline “Fear Influenza is paying city a second

visit.” City Hospital, it said, was handling as many influenza patients as it could and the Belmont Hospital was nearly at capacity as well.

The “second visit” actually was the third, though the first had not been recognized as such at the time, and the three-phase pattern here was fully in line with the overall pattern of the pandemic. World-wide, there were three phases during the course of about a year. In Worcester, the phases ran about like this:

- 1st March & mostly April – a small outbreak, making little news;
- 2nd September & October - by far the largest part of the epidemic;
- 3rd December & January – a fraction of the second, but still significant.

It is not clear that the initial, relatively minor, outbreak in March and April was given much notice. It might have been taken as just an ordinary, or somewhat worse-than-normal, end-of-winter outbreak, which was not uncommon and not as a rule likely to get much newsprint. However, the significance of this outbreak became clear later when it was reported that there had been 19 deaths from the flu and 45 from lobar pneumonia in April, numbers well above average for a month.

Upon the recognition of another influenza “visit” late in the year, a spark of anger suddenly broke out at the *Evening Post*. On the last day of the year, the *Post* virtually exploded in outrage over what it said was the Board of Health’s constant claim that the flu was “on the wane” when it clearly was not. A page one headline said the west side of the city was “full of influenza... in spite of statements by the health board.” The text of the story resurrected the term epidemic and said it had “reached the more well to do people, persons better able to cope with the disease,” and it claimed not only that the “entire west side of the city is in the grip of the epidemic” but also that the east side was “almost free from it.”

This unexpected geographic pattern of the return of the flu was only one of several points made in the article. Another was that the District Nursing Society and the Red Cross were operating at capacity, in need of more nurses and donations for “sick room” supplies. But the point made with the greatest vehemence pertained to the Board of Health. It complained that “no true information as to the epidemic has been received from the Board of Health office,” and that “the Board of Health doesn’t tell the public all the public’s business.”

After such an attack on the Board at the end of the year one might have expected to find a flurry of articles in the *Post* and other papers in January, but instead, the new year brought a surprising quiet concerning either the flu or the Board of Health’s reporting on it. All that could be found in the *Post* throughout the month and a few days into February was a pair of small items concerning outbreaks among police, firemen, and transit workers.

There was, however, one important exception in the *Gazette*. On January 1 it put out a story making the argument, reflected in the headlines, that much of the problem consisted of severe colds



*Evening Post*, Dec-31-1918

[\(entire story here\)](#)



*Gazette*, Jan-01-1919

instead of the flu. It was not a persuasive argument, and the case against it was buried under headlines and a colds-not-flu paragraph, where it stated that an average of 40 cases per week were being treated at the Isolation Hospital which had reopened in December (substantial information in itself), and that City Hospital was treating a good number of cases as well.

The most astounding statement, however, was that during a two-week period in December there had been 66 deaths from influenza and pneumonia! Such a number was clear evidence of a return of the epidemic. Yet, this sobering information was given below the fluff about hard colds, and the article was followed in the press by almost nothing further for the month of January.

One is left with the suspicion that there was a significant story in all this about the role of the press a century ago, but aside from the hints noted here, such a story lies beyond the present scope, and it is time to bring the tale to a close, except for a retrospective on the official data shown by the Board of Health, regardless of what its role in public relations might have been.

\* \* \*

### **A Retrospective Look at the Data**

*First: How not to do it.* In the annual report of the Board of Health for 1918, a summary paragraph on influenza and pneumonia stated that there had been 6884 cases and 1294 deaths during the year (page 883). The 1294 figure was the total number of deaths attributed to influenza and either of the two forms of pneumonia, lobar or bronchial. The case total, however, did not include bronchial pneumonia, so the two figures did not compare properly with each other. Also, because there had been no recording of influenza cases prior to October 4, the number of cases was therefore suspect, if not clearly understated, and it undoubtedly would have been so in any case because of the unknowable number of people who contracted lighter cases and were not seen by a doctor, a nurse, or any other medical authority required to report it. For this reason, no attention is given here to the ratio of deaths to cases, as has been a subject of various studies of the pandemic.

These two figures from the summary statement of the Board of Health were used as the final tallies for the impact of the disease in Worcester by the University of Michigan group. This was unfortunate because the Board's one-paragraph summary on page 883 was highly misleading. It was not an accurate summary of the epidemic in Worcester for several reasons. One, it included data for all months of 1918 and did not include figures for 1919 regarding the carryover of the third phase of the epidemic into that year. Another is that the number of deaths did not take into account the number that would have been expected to occur during the year in the absence of the epidemic, an estimate based on occurrences in other years constituting a *baseline estimate*. In addition, it included deaths from bronchial pneumonia, which it did not include in the case and death registrations. The ordinary and appropriate measure includes lobar but not bronchial pneumonia.

It should be emphasized that the Michigan group focused on the city's response to the epidemic, which it studied by means of the newspapers, not on the numbers of cases or deaths. The problems with the annual report noted above did not affect their work in any consequential way.

Fortunately, more precise and better defined data were reported by the Board of Health in the tables of their reports for each year, 1918 and 1919. Figures exist in the annual causes-of-death summary for influenza and lobar pneumonia, which are then combined, with bronchial pneumonia excluded. A little mathematical manipulation can then yield a more precise estimate of the number of people who died in Worcester as a result of the epidemic.

The number of deaths in Worcester from influenza or lobar pneumonia, between 1910 and 1917, averaged 205 per year, and there was no discernible trend upward or downward over the eight year period.\* Subtracting this 205 “expected” deaths from the reported total of 1112, leaves 907 deaths attributable to the epidemic during the year 1918.

\* In 1916 there was a distinct surge in pneumonia and influenza deaths: 419 compared with an average of 287 during the other years between 1910 and 1917. Depending on the degree to which they were concentrated during a portion of the year, this might also have constituted a minor epidemic. Worcester’s response to it has not been studied.

The same data on influenza and lobar pneumonia in 1919, seen on a monthly basis, suggest that the third phase of the flu pandemic of 1918 came to an end here about the end of March.

Influenza and lobar pneumonia combined, by month in 1919:

	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
Cases	1024	267	63	34	20	6	10	5	20	17	30	44
Deaths	140	62	37	18	15	7	6	0	6	6	12	22

The same computations as were done for 1918 yield a total of 188 deaths during the first three months of 1919, attributable to the last phase of the epidemic.\* The total for the epidemic therefore comes to 1095 deaths (907+188).

\* 239 deaths from combined flu and lobar pneumonia in the three months of 1919, less one-fourth (three months share) of the baseline expected total of 205 for the year, for an epidemic total of 188

A cautious estimate of the number of deaths in Worcester caused by the pandemic of 1918-19 falls between 1000 and 1200 persons. The central figure of 1095 amounts to 85 percent of the 1294 reported by the Board on its narrative summary page and used in the Michigan study. The difference is significant if precision matters but it is not overwhelming, As noted earlier, the numbers were not the focus of the Michigan group’s attention.

**Incidence per capita**

The estimated population of Worcester in 1918 was about 175,000 (Census of 1920: 179,754 Thus, the incidence in the population of the death due to the influenza epidemic was about 0.6 percent, roughly one death for every 164 residents.

**Incidence per family**

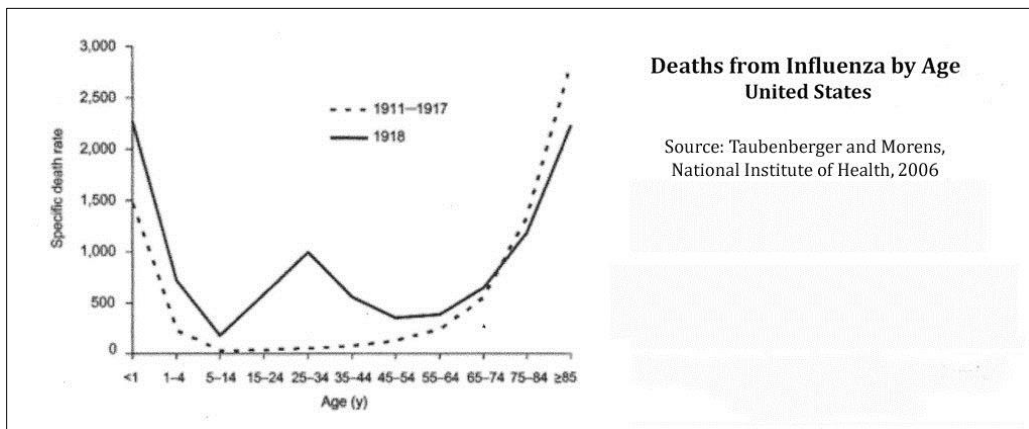
The number of families or other types of households (e.g., three unrelated adults sharing an apartment) was in the neighborhood of 30,000\* (give or take a thousand). To estimate the

incidence rate among families it is necessary to make a guess as to the frequency of multiple deaths in the same family. If it is assumed (based on intuition) that of the 1100-odd deaths, 150 of them were second, or even third, members of the same household to die of the disease, that leaves 950 different families, or about 3.2 percent. Push the estimate of multiples up or down a bit and the result ends up nearly the same. (If 900 different families lost one or more members, the rate of family incidence would be 3.0 percent.).

\* Technique for estimating total families and other households (for anyone who might care): From the Worcester City Directory is taken the figure of 17,626 “dwellings” on November 30, 1918. A dwelling, as defined there, was a building, regardless of numbers of housing units included. An estimated breakdown of these dwelling (buildings) is as follows: 5,000 three-deckers, 2,000 two-deckers or other types of two-unit houses, 10,000 single-family houses, 200 larger buildings containing various numbers of units, averaging six, and 300 apartments in buildings of primarily commercial use, for a total of about 30,500 occupiable units, rounded to 30,000 to account for a small percentage of vacancies. This is believed to be a somewhat crude but not-far-wrong estimate, formulated in the absence of the needed data from the census. Push the number up or down a thousand or two and the result will change only moderately.

### Incidence by age

Probably the most unique aspect of the 1918 pandemic was its unusual pattern of incidence by age. According to Wikipedia, “Most influenza outbreaks disproportionately kill juvenile, elderly, or already weakened patients; in contrast, the 1918 pandemic predominantly killed previously healthy young adults.” This finding was discussed in the seminal paper from the National Institute of Health by Taubenberger and Morens (link at end), and the graphical presentation is from that work, by way of Wikipedia, which also used it.



In Worcester in 1918, people between 15 and 49 accounted for 67 percent of the influenza-pulmonary pneumonia deaths. For the flu only, it was 76 percent, the difference probably attributable to the presence of the normal age pattern among the “expected,” non-epidemic pneumonia deaths.

Why this happened has been subject to considerable study among epidemiologists and others in the biological sciences. The subject is well beyond the reach of this onlooker, but with an amateur’s level of understanding, one major factor in this reversal of the norm is believed to have been what

is now known as a *cytokine storm* – an over-reaction of the immune system to an invading virus. The influenza virus apparently triggered such over-reactions, resulting in cytokines and white blood cells going into a positive feedback loop, with the result that far too many “soldiers” were sent out to address the invaders, with potentially deadly results. This process is believed to have been more deadly for healthy, younger adults with stronger immune systems, and therefore capable of responding so powerfully, compared with immune systems that were not yet fully mature or which had been weakened by age, illness, or other factors.

See [https://en.wikipedia.org/wiki/Cytokine\\_storm](https://en.wikipedia.org/wiki/Cytokine_storm), and [https://en.wikipedia.org/wiki/1918\\_flu\\_pandemic](https://en.wikipedia.org/wiki/1918_flu_pandemic)

This fact of a reversal in the usual age pattern of the disease was recognized early in Worcester by an important figure in the city’s response, Dr. May S. Holmes, who was Superintendent of the Belmont Hospital and in charge of the children’s ward at Isolation Hospital (Fair Grounds). According to the *Evening Post* of Oct. 9:

*Dr. May S. Holmes... states that children as a rule have the malady in a mild form, that adults from 25 to 45 years of age are most seriously afflicted, and that aged people are almost immune.*

A related, and sad, aspect of this age pattern was that so many parents of young children died, leaving their children with one heavily burdened parent, or no parents. The same article in the *Post* also took note of this matter:

*Boarding homes for babies are urgently needed by the Worcester Children’s Friend Society and its officers appeal through the Post for aid. The influenza epidemic has brought fresh problems to the society, for a number of mothers have died from the disease and left large families of children. Fathers and mothers of some families have died and hundreds of little ones are left without relatives to care for them.*

Two days later a *Telegram* headline read “Worcester Opens Heart to Babies / Infants, Orphaned by Disease, Find Homes Ready.” There were also, especially in early October, numerous articles in the newspapers about calls for food and food preparation, blankets, toys for children, and money, as well as homes to care for babies whose parents were ill or had died from the disease, and there were stories about the generous responses to such calls by the citizenry. There were also stories of volunteers who had contracted the disease and died. Throughout the episode the papers were full of accounts of people giving all they had in the war and in the onslaught of the flu. It was not an easy time.

### **Incidence by gender**

Death from influenza or pneumonia came more often to males, who suffered 56.4 percent of reported deaths in 1918. Females, however, took the greater hit between the ages of 15 and 30, when they were most likely to be employed, absorbing a 51.3 percent share. Leading occupations for women were nursing and teaching, and as telephone operators, the first two of which, if not all three, put them in comparatively dangerous situations for catching the virus.

## Incidence by residential location

Another perspective on the epidemic's effect on the city is that of the geography of incidence, wherein the main issue is whether neighborhoods of lesser affluence suffered more than did the more advantaged segments of the city. In a table of recorded cases of communicable diseases by voting ward in 1918, lobar pneumonia was included, while influenza was not because it was not reportable until early October.

Below is a comparison of deaths and estimated total population (based on the census, provided in the data by the Board of Health). The ratio of share of the cases to share of the population in column D shows the relative disparities in incidence rates. Column F presents a "social index" consisting of a blend of the only three social indicators that could be found on a ward basis. Index scores represent the average of (1) percent rental housing; (2) percent illiteracy among persons age 10 or over; and (3) percent foreign born. All three correlate with each other, although imperfectly, with a higher number presumed to reflect lesser affluence and a lower position on the community's social scale.

<b>Cases of Lobar Pneumonia by Ward, 1918</b>						
<b>Ward</b>	<b>A Pop. 1920</b>	<b>B Share</b>	<b>C Cases</b>	<b>D Share</b>	<b>E Ratio D/B</b>	<b>F Social Index</b>
3	24,074	13.4%	204	18.6%	1.39	46.1
5	22,517	12.5%	174	15.8%	1.27	43.7
2	18,432	10.3%	124	11.3%	1.10	33.7
8	13,592	7.6%	88	8.0%	1.06	32.7
4	22,119	12.3%	135	12.3%	1.00	38.6
9	14,280	7.9%	77	7.0%	0.88	33.0
1	16,630	9.3%	85	7.7%	0.84	28.5
7	16,068	8.9%	74	6.7%	0.75	27.5
6	18,181	10.1%	79	7.2%	0.71	34.6
10	13,861	7.7%	58	5.3%	0.69	26.5
City	179,754	100%	1098	100%	1.00	35.3

Data extracted from annual report of the Board of Health for 1918, table entitled "Record of Communicable Diseases – by Wards" and the U. S. census of 1920 (column F).

A ratio above 1.0 means the ward had a greater share of cases than its share of the city's population, thus a higher-than-average rate of cases of the illness.

Thus, if Ward 3, with the highest incidence rate, had suffered the same share of the cases as was its share of the population (13.4%), it would have recorded 147 cases. Instead, it had 204 cases, which is 39% more. Similarly, Ward 10 would have had 85 cases, 27 more than the 58 it actually had.

Column F, the index representing relative affluence, can be seen to correlate with incidence of pneumonia. Two wards found higher on the list than might have been expected, Wards 2 and 8, were the locations of City Hospital (8) and Belmont Hospital (2). Most likely, some health workers filling out the forms put the hospital as the place of residence instead of their home addresses.

Clearly a ward map would be helpful, but the only one that could be found was that of the 1922 Atlas of the city, which is so "messy" with colors and numbers representing different divisions of



the city, and streets that it didn't seem worth the effort. It should suffice to say that Wards 3 and 5, with the highest case rates, were two of the most densely populated areas of the inner part of the city, while Wards 6, 7, and 10, with the lowest rates, lay mostly in the outer areas of the city: Ward 6 in the south, and Ward 7 the west, and Ward 10 in the northwest sector.

Thus it appears that epidemic cases fell disproportionately upon the less affluent residents of the inner part of the city. This is hardly surprising, given the more crowded conditions and perhaps other factors as well.

Regarding the statistics for the third phase, most of which occurred in 1919, the *Evening Post's* assertion that the entire west side was suffering unduly can be examined with the benefit of data. Since data by ward was published only on an annual basis, and for cases, not deaths, the only way the question can be approached is by cases for the year. But that doesn't make much difference since the vast majority of the cases in 1919 occurred during the first three months. The data show an astounding 78 percent of the 1919 cases registered in Ward One alone. That supports the *Post's* argument very well, except that the outbreak was highly concentrated in just one ward of the west side instead of the entire west side.

\* \* \*

### **After Thoughts**

This kind of a study, based mainly on newspaper accounts many years after the fact, does not lend itself well to the drawing of defensible conclusions. A few impressions, however, can be offered on the basis of a general immersion in the topic as a reader of the newspapers of the day, but there is a real difference, and no claim is made that any rigorous research methods stand behind these impressions.

From the review of newspaper accounts, my first impression is that the press, as well as the Board of Health, may have taken on themselves a public stewardship role, being concerned to try to keep the people of the city calm in the face of a threat of unknown dimensions, while also, and perhaps secondarily, reporting the facts as they found them. If true, this assumed role might have been related to the greater degree of paternalism that was commonplace a century ago compared with today. It also seemed that the headlines were oriented more this way than were the stories themselves. Sometimes the facts one needed to follow the threat as accurately as possible were a few inches down the column, beneath the sometimes unduly optimistic headlines.

Another impression is that the city's medical profession responded heroically, working long hours in conditions quite dangerous to themselves, and seeming to do so without complaint. Particularly impressive, in terms of what one can read in the newspapers, was the coordinated activity of the District Nursing Society and other nursing associations, as well as agencies concerned with the welfare of children and families, such as the Children's Friend Society, the Saint Agnes Guild, and other organizations. An outstanding example of the larger community pulling together was the conversion of a building at the Fair Grounds into an emergency hospital in less than five days.

If there was a fault to be found it may have been, as noted by the Michigan study group, the city's hesitation to act quickly enough to deter the spread of the disease by closing public gathering places, from schools and churches, to theatres and saloons.

As for the actual impact of the epidemic, based on the examination of the numbers of cases and deaths, it is necessary to start by saying that anything that kills in the neighborhood of 1100 people has a very great impact. But some of the narratives about the pandemic, citing upwards of 50 million deaths or even more, could leave one to surmise that a large percentage of the local population perished. Actually, it was a little more than half a percent, and it directly affected something over three percent of families in the city. That was bad enough, but it was not ten or twenty percent. As for the numbers of cases of the flu, that turns out to have been virtually indeterminate, partly because influenza was non-reportable prior to October and partly because an unknown and undoubtedly significant number of people who simply endured the illness without being seen by a doctor or a nurse.

The story of Worcester's experience of the influenza pandemic stands as a good example of the city-as-community coping with a frightening, unpredictable, and fast-moving threat. My impression is that the city acquitted itself pretty well on the whole. Now, as Al Southwick suggested, the question is how well might Worcester fare if another large-scale viral threat should arise?

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### **Some Online Sources**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3291398/> "1918 Influenza: the Mother of All Pandemics," Jeffery K. Taubenberger and David M. Morens, National Institute of Health, January, 2006

From the NIH study:

Although in 1918 influenza was not a nationally reportable disease and diagnostic criteria for influenza and pneumonia were vague, death rates from influenza and pneumonia in the United States had risen sharply in 1915 and 1916 because of a major respiratory disease epidemic beginning in December 1915. Death rates then dipped slightly in 1917. The first pandemic influenza wave appeared in the spring of 1918, followed in rapid succession by much more fatal second and third waves in the fall and winter of 1918–1919, respectively.

[https://en.wikipedia.org/wiki/1918\\_flu\\_pandemic](https://en.wikipedia.org/wiki/1918_flu_pandemic)

<https://virus.stanford.edu/uda/index.html> by Molly Billings, June, 1997 modified RDS February, 2005, Stanford University

<http://eswi.org/> ESWI – scientists fighting influenza

<https://www.cdc.gov/ophss/csels/dsepd/ss1978/lesson1/section11.html> Centers for Disease Control elements of epidemiology, with definition of an epidemic