

# Profiling a Pandemic

*Who were the victims of the Spanish flu?*

BY SVENN-ERIK MAMELUND

At the end of May 1918, the Spanish government was one of the first to admit that a new disease had emerged in their country. The newswire from Reuters reported that King Alfonso XIII, the prime minister, and other officials were all sick with influenza. This outbreak was later referred to as “the first wave” or “spring/summer wave” of the 1918–1920 Spanish flu pandemic. As a neutral country during World War I, Spain lacked the incentive to censor the news the way combatants did. Although it was recognized early on that the disease did not originate in Spain, the name nevertheless stuck.

The contemporary mass media as well as subsequent academic and popular historical accounts emphasized that not even royals, world political leaders, or members of the economic or cultural elites escaped. King Alfonso XIII of Spain was stricken and recovered, but Prince Erik of Sweden died at the age of twenty-nine on September 20, 1918, during the start of the second wave of the pandemic. The famous Norwegian painter Edvard Munch, who was fifty-five, became severely ill and barely survived. The literature published up to the end of the twentieth century perpetuated this “socially neutral” view, claiming that the influenza virus infected and killed all classes equally because the disease was so highly transmissible.

Scientific studies published after 2000, however, started to question the idea that the pandemic engulfed its victims so randomly. For instance, Prince Erik of Sweden, despite having access to high-quality nutrition and the best available medical care, was demonstrably vulnerable for two reasons. First, his health appears to have been quite poor. He suffered from epilepsy and a mild mental disability, possibly as a result of strong medication taken by his mother while pregnant. Such neurological disorders are risk factors for severe outcomes from influenza. Second, the prince, born on April 20, 1889, was only seven to ten months old when Sweden was hit by the Russian flu pandemic in the winter of 1889–1890. That pandemic has since been attributed to an influenza virus known as H<sub>3</sub>N<sub>x</sub>. (Back then, it should be noted, influenza was attributed to a bacillus; it was not shown to be caused by a virus until the 1930s.) It has been hypothesized that young adults had an increased risk of dying from the Spanish flu (a strain of H<sub>1</sub>N<sub>1</sub> virus) if they had been infected by the Russian flu in utero or as infants. We don’t know, but Prince Erik may well have fallen into that category.

It is not necessary, however, to examine each individual’s health history to understand why some people and not others died of the Spanish flu. Statistical studies since 2000 have documented higher mortality rates for the poor, in comparison with the more prosperous. Relative affluence and poverty can be measured in various ways—between countries, as defined by gross national product and per capita income, or by looking at the quality of people’s residential districts, degree of homeownership or apartment size, literacy, occupational class, unemployment rates, and similar indices. We need more research to disentangle the biological and social mechanisms that drove inequalities in mortality. But a person’s overall risk was increased by such socioeconomic factors as poor nutrition, overcrowding, living conditions (such as poor heating) conducive to secondary infection with bacterial pneumonia, pre-existing infection with other diseases, and low access to health care—or inadequate understanding of health information because of low literacy.

For example, in Norway’s capital city of Kristiania (renamed Oslo in 1924), mortality was 19 percent lower in the middle class and 25 percent lower in the upper class compared with the working class; it was up to 45 percent lower among those residing in the largest apartments versus the smallest, and 50 percent lower in the richest parish versus the poorest. A good documentation of the direct impact of prior illness comes from a Swiss tuberculosis sanatorium in 1919. There, 64 of 103 patients (62.1 percent) and 24 of 33 employees (72.7 percent) contracted influenza. Among the infected tuberculosis patients, 7 died and 57 survived; in other words, 12.3 percent of the cases among those with a pre-existing disease were fatal. Among the infected employees, however, none of the cases were fatal.

In times when influenza was a less familiar disease, population groups that lived in more isolated areas or seldom mixed with the wider society may have been more vulnerable than those living in more connected urban areas. That is because they had little or no exposure to seasonal influenza before 1918. Such exposure would have acted in two ways to strengthen such communities. In part, it would have culled some of the weaker members of the community ahead of time. Beyond that, people who had multiple exposure to various flu strains (including H<sub>1</sub>-like viruses) in the past, especially before the Russian flu pandemic of 1889–1890, would have acquired increased immunity

against the 1918 flu. If a large proportion of a community is essentially immune to an infection, this also reduces transmission to those with little or no immunity. That protective effect is known as “herd immunity.”

For example, in urban areas and nations with good communication networks, fewer than one in a hundred inhabitants died. Mortality was three to eight times higher among indigenous people than among white majority populations



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Self-portrait with the Spanish Flu by Edvard Munch, oil on canvas, 59 x 51.5 inches, 1919



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At Kanakuk Hospital in Dillingham, Alaska, Dr. Linus French surveys Iñupiat children orphaned by the Spanish flu in 1919. Although many communities in the region were devastated, some were bypassed by the pandemic.

in the United States, Canada, Pacific Islands, Australia, New Zealand, and Scandinavia. In extremely isolated areas in Alaska and Labrador, nine out of ten inhabitants died. The global death toll, estimated to have been between 50 million and 100 million, represented a mortality rate of between 2.8 and 5.7 percent of the world population. However, during the disastrous second wave of influenza, loss of life was so overwhelming in some isolated areas that the demand for burial services, grave digging, and coffins could not be met. Many of the victims were buried without coffins and in mass graves. This was the case in Brevig Mission, Alaska, where 90 percent of the Iñupiat inhabitants died—including *all* the adults. Only a handful of children aged five to fourteen years survived. In the Moravian Inuit mission of Okak, Labrador, 80 percent died; afterward the settlement was abandoned.

In addition to poor immunity against influenza, a high concurrent disease load from other pathogens (such as tuberculosis), crowding, and low genetic variability may also have played a role in the extremely high mortality of the isolated indigenous groups. And reports from Alaska and Labrador indicate that sick individuals, who might otherwise have survived, froze or starved to death because there was nobody around to stoke the fire, prepare food, and fetch water.

While mortality could reach 80 to 90 percent among certain communities of Iñupiat on Seward Peninsula in Alaska and Inuits living at Moravian Missions in northern Labrador, similar groups in nearby or distant inland villages could be unaffected by the pandemic. Up to 20 percent of settlements in Alaska and Labrador had no reports of illness or death. Why this was so remains a mystery. The normal seasonal freezing of navigable rivers combined with the high morbidity and mortality may have effectively stalled all travel and thus the spread of the disease from the coast to the inland. Strict quarantine imposed in several inland

areas of Alaska (but not in Labrador) may also have had an effect. So while experiencing the world's highest recorded mortality rate from the pandemic, Alaska and Labrador also provided refuges where people escaped the disease.

Many Spanish flu survivors of different ages displayed a variety of psychiatric symptoms, such as insomnia, that made it hard for them to cope with work and everyday life for months or even years afterward. Some fell into a temporary or long-term coma and were assigned a psychiatric diagnosis of encephalitis lethargica. This disease, often called “sleeping sickness,” was widespread in the period 1918–1928 and caused more than 500,000 deaths globally. How or whether infection by the Spanish flu precipitated or shaped this disease remains a matter of debate. Many patients who initially recovered from the sleeping sickness subsequently developed a profound, chronic Parkinsonism that prevented them from moving on their own. In his 1973 book *Awakenings*, Oliver Sacks described his partial success, decades later, in reviving some of the latter patients with the drug L-DOPA.

The emotional stresses during historical influenza epidemics are impossible to measure in statistical terms, but the suffering of bereavement from the sudden loss of loved ones cannot be ignored. The mortality toll of the 1918–1920 pandemic was not only high but also involved an unusually large proportion of victims between twenty and forty years of age. One consequence was a markedly high number of young widows and widowers and the orphaning of small children.

A significant rise in suicides was reported from several countries across the globe. In the U.S., an increase of one unit in excess flu mortality (one more death per year per 1,000 population) increased the rate of suicide by 10 percent. That statistic takes into account the possible confounding

role on the suicide rate of World War I casualties (which proved not to be significant) and the decline in alcohol consumption between 1910 and 1920 (which acted to lower the incidence of suicide). Many suicides can be related to mental disturbances resulting from the fear of contracting the disease (a stricken person could be dead in three days) or stress of infection with the flu itself. However, the unbearable loss of a spouse, children, or close relatives also contributed, as did a fall in social integration due to school closures, curtailment of public events, and so on.

Economic stress was also high. In that era, very few countries had public social security schemes or widows' pensions. Young widows with many children to care for were especially vulnerable financially. In Sweden the pandemic led to a significant rise in poor-house rates in the 1920s. South Africa's introduction, in 1921, of pensions for the white minority to support widows and their children was likely in response to the Spanish influenza.

There was a fertility bust in 1919, followed by a fertility boom in 1920, well documented for the U.S. along with several European and Asian countries. It has been debated whether the bust was driven by biological factors, in the form of fetal deaths, or by social factors. Recent studies of that era for Japan and Taiwan (then under Japanese colonial rule) show that a fertility bust there followed the 1918 pandemic peak with a lag of nine months. That indicates a decline in conceptions in 1918 that can largely be attributed to social causes, both bereavement and people abstaining from sex due to fear of infection or illness. To a lesser degree, the studies also point to a rise in early miscarriages.

The 1920 baby boom was due to a catch-up of postponed conceptions in addition to re-marriages and replacement of dead children. That baby boom has received less attention than the one that followed World War II, and was for a long time thought to be similar, a simple resumption of the marriages and births that the war had prevented. Yet the 1920 baby boom occurred with similar intensity in neutral countries, where the pandemic was the main factor.

A woman infected with influenza was at higher risk of death when pregnant, or of having a miscarriage. She was also at a higher risk of giving birth to a child with congenital deformations or mental impairment. In the U.S., individuals who were in utero during the peak months of the pan-



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*Designed and carved by Tene Waitere, a cenotaph was erected in New Zealand at the Te Kōura marae, or meeting place, in memory of Maori who died in the 1918 pandemic.*

dem, in the autumn of 1918, generally fared less well as adults compared with those who were in utero some months before and after the height of the pandemic. They experienced significantly lower education and income, with a greater high school drop-out rate and more unemployment. They were the recipients of more welfare and physical disability payments, and were more likely to suffer and die from a variety of diseases.

The Spanish flu was unusual in targeting so many young parents and prime members of the working population. The poor, isolated indigenous groups, and pregnant women were other victims. In international and national pandemic preparedness plans, most of these are identified as “at-risk groups” that should be first in line for pandemic vaccines. But not the poor: although reducing social inequality in health is central to all international public health work today, it does not figure in any international or national contingency plans against pandemic influenza. This is striking, since mortality from pandemic influenza seems to hit the socioeconomically disadvantaged the hardest. This was true not only in 1918 but also in 2009, when we had a second, though milder, H1N1 pandemic.

Three of the United Nations' seventeen Sustainable Development Goals for 2030 are to eradicate poverty, reduce social inequality, and ensure good health and well-being for all. Part of that effort should be giving priority for scarce pandemic vaccines to low-income countries and socioeconomically disadvantaged groups within all countries. Currently in line are categories defined from a biomedical perspective—high-risk age groups, the previously sick, the pregnant, and indigenous groups. In the case of a pandemic, taking account of poverty as well will save more lives and reduce the total social and financial costs. It will also stem the perpetuation of health inequalities and the cycle of poverty.



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