Visualizing the History of Pandemics
DEATH TOLL
[HIGHEST TO LOWEST]

200M
Black Death (Bubonic Plague)
1347-1351

The plague originated in rats and spread to humans via infected fleas.

The outbreak wiped out 30-50% of Europe’s population. It took more than 200 years for the continent’s population to recover.

For example, Black Death killed an estimated 25 million people in Europe, which was equivalent to about a third of the continent’s entire population at that time.

56M
Smallpox
1520

Smallpox killed an estimated 56 million people in the 1520s. The disease was particularly deadly among Native Americans, who had no immunity to the virus.

The first ever vaccine was developed to combat smallpox, which was a significant breakthrough in medical history.
The History of Pandemics

Pan·dem·ic /panˈdɛmɪk/ (of a disease) prevalent over a whole country or the world.

As humans have spread across the world, so have infectious diseases. Even in this modern era, outbreaks are nearly constant, though not every outbreak reaches pandemic level as the Novel Coronavirus (COVID-19) has.
Today’s visualization outlines some of history’s most deadly pandemics, from the Antonine Plague to the current COVID-19 event.

**A Timeline of Historical Pandemics**

Disease and illnesses have plagued humanity since the earliest days, our mortal flaw. However, it was not until the marked shift to agrarian communities that the scale and spread of these diseases increased dramatically.

Widespread trade created new opportunities for human and animal interactions that spewed such epidemics. Malaria, tuberculosis, leprosy, influenza, smallpox, and others first appeared during these early years.

The more civilized humans became – with larger cities, more exotic trade routes, and contact with different populations of people, animals, and ecosystems – the more likely pandemics would occur.

Here are some of the major pandemics that have occurred over time:

<table>
<thead>
<tr>
<th>Name</th>
<th>Time period</th>
<th>Type / Pre-human host</th>
<th>Death toll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antonine Plague</td>
<td>165-180</td>
<td>Believed to be either smallpox or measles</td>
<td>5M</td>
</tr>
<tr>
<td>Japanese smallpox epidemic</td>
<td>735-737</td>
<td>Variola major virus</td>
<td>1M</td>
</tr>
<tr>
<td>Plague of Justinian</td>
<td>541-542</td>
<td>Yersinia pestis bacteria / Rats, fleas</td>
<td>30-50M</td>
</tr>
<tr>
<td>Black Death</td>
<td>1347-1351</td>
<td>Yersinia pestis bacteria / Rats, fleas</td>
<td>200M</td>
</tr>
<tr>
<td>New World Smallpox Outbreak</td>
<td>1520 – onwards</td>
<td>Variola major virus</td>
<td>56M</td>
</tr>
<tr>
<td>Great Plague of London</td>
<td>1665</td>
<td>Yersinia pestis bacteria / Rats, fleas</td>
<td>100,000</td>
</tr>
<tr>
<td>Pandemic</td>
<td>Years</td>
<td>Cause</td>
<td>Deaths</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------</td>
<td>--------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Italian plague</td>
<td>1629-1631</td>
<td>Yersinia pestis bacteria / Rats, fleas</td>
<td>1M</td>
</tr>
<tr>
<td>Cholera Pandemics 1-6</td>
<td>1817-1923</td>
<td>V. cholerae bacteria</td>
<td>1M+</td>
</tr>
<tr>
<td>Third Plague</td>
<td>1885</td>
<td>Yersinia pestis bacteria / Rats, fleas</td>
<td>12M (China and India)</td>
</tr>
<tr>
<td>Yellow Fever</td>
<td>Late 1800s</td>
<td>Virus / Mosquitoes</td>
<td>100,000-150,000 (U.S.)</td>
</tr>
<tr>
<td>Russian Flu</td>
<td>1889-1890</td>
<td>Believed to be H2N2 (avian origin)</td>
<td>1M</td>
</tr>
<tr>
<td>Spanish Flu</td>
<td>1918-1919</td>
<td>H1N1 virus / Pigs</td>
<td>40-50M</td>
</tr>
<tr>
<td>Asian Flu</td>
<td>1957-1958</td>
<td>H2N2 virus</td>
<td>1.1M</td>
</tr>
<tr>
<td>Hong Kong Flu</td>
<td>1968-1970</td>
<td>H3N2 virus</td>
<td>1M</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>1981-present</td>
<td>Virus / Chimpanzees</td>
<td>25-35M</td>
</tr>
<tr>
<td>Swine Flu</td>
<td>2009-2010</td>
<td>H1N1 virus / Pigs</td>
<td>200,000</td>
</tr>
<tr>
<td>SARS</td>
<td>2002-2003</td>
<td>Coronavirus / Bats, Civets</td>
<td>770</td>
</tr>
<tr>
<td>Ebola</td>
<td>2014-2016</td>
<td>Ebolavirus / Wild animals</td>
<td>11,000</td>
</tr>
<tr>
<td>MERS</td>
<td>2015-Present</td>
<td>Coronavirus / Bats, camels</td>
<td>850</td>
</tr>
<tr>
<td>COVID-19</td>
<td>2019-Present</td>
<td>Coronavirus – Unknown (possibly pangolins)</td>
<td>207,500 (Johns Hopkins University estimate as of 7.31am PT, April 27, 2020)</td>
</tr>
</tbody>
</table>

Note: Many of the death toll numbers listed above are best estimates based on available research. Some, such as the Justinian and Swine Flu, are subject to debate based on new evidence.

Despite the persistence of disease and pandemics throughout history, there’s one cor
trend over time – a gradual reduction in the death rate. Healthcare improvements at understanding the factors that incubate pandemics have been powerful tools in mitigating their impact.

**Wrath of the Gods**

In many ancient societies, people believed that spirits and gods inflicted disease and destruction upon those that deserved their wrath. This unscientific perception often resulted in disastrous responses that resulted in the deaths of thousands, if not millions.

In the case of Justinian’s plague, the Byzantine historian Procopius of Caesarea trace origins of the plague (the Yersinia pestis bacteria) to China and northeast India, via sea trade routes to Egypt where it entered the Byzantine Empire through Mediterran

Despite his apparent knowledge of the role geography and trade played in this spread, Procopius laid blame for the outbreak on the Emperor Justinian, declaring him to be a devil, or invoking God's punishment for his evil ways. Some historians found that this could have dashed Emperor Justinian's efforts to reunite the Western and Eastern remnants of the Roman Empire, and marked the beginning of the Dark Ages.

Luckily, humanity’s understanding of the causes of disease has improved, and this is resulting in a drastic improvement in the response to modern pandemics, albeit slow and incomplete.

**Importing Disease**

The practice of quarantine began during the 14th century, in an effort to protect coastal cities from plague epidemics. Cautious port authorities required ships arriving in Venice from infected ports to sit at anchor for 40 days before landing — the origin of the word quarantine from the Italian “quaranta giorni”, or 40 days.

One of the first instances of relying on geography and statistical analysis was in mid-19th century London, during a cholera outbreak. In 1854, Dr. John Snow came to the conclusion that cholera was spreading via tainted water and decided to display neighborhood mortality.
directly on a map. This method revealed a cluster of cases around a specific pump from which people were drawing their water from.

While the interactions created through trade and urban life play a pivotal role, it is the virulent nature of particular diseases that indicate the trajectory of a pandemic.

**Tracking Infectiousness**

Scientists use a basic measure to track the infectiousness of a disease called the reproduction number — also known as R₀ or “R naught.” This number tells us how many susceptible, on average, each sick person will in turn infect.
Measles tops the list, being the most contagious with a R0 range of 12-18. This means person can infect, on average, 12 to 18 people in an unvaccinated population.
While measles may be the most virulent, vaccination efforts and herd immunity can spread. The more people are immune to a disease, the less likely it is to proliferate, n vaccinations critical to prevent the resurgence of known and treatable diseases.

It’s hard to calculate and forecast the true impact of COVID-19, as the outbreak is stil and researchers are still learning about this new form of coronavirus.

**Urbanization and the Spread of Disease**

We arrive at where we began, with rising global connections and interactions as a d behind pandemics. From small hunting and gathering tribes to the metropolis, hum reliance on one another has also sparked opportunities for disease to spread.

Urbanization in the developing world is bringing more and more rural residents into neighborhoods, while population increases are putting greater pressure on the envii At the same time, passenger air traffic nearly doubled in the past decade. These mac are having a profound impact on the spread of infectious disease.

As organizations and governments around the world ask for citizens to practice soci distancing to help reduce the rate of infection, the digital world is allowing people to connections and commerce like never before.

*Editor’s Note: The COVID-19 pandemic is in its early stages and it is obviously impos predict its future impact. This post and infographic are meant to provide historical c we will continue to update it as time goes on to maintain its accuracy.*

*Update (March 15, 2020): We’ve adjusted the death toll for COVID-19, and will contin update on a regular basis.*
How COVID-19 Consumer Spending Impacting Industries

This infographic showcases the industries that will benefit from COVID-19 consumer spending, and the industries that have a very uncertain future.

Published 6 days ago on April 22, 2020

By Katie Jones
How COVID-19 Consumer Spending is Impacting Industries

Consumer spending is one of the most important driving forces for global economic growth.

Beyond impacting some of the factors that determine consumer spend—such as consumer confidence, unemployment levels, or the cost of living—the COVID-19 pandemic has also drastically altered how and where consumers choose to spend their hard-earned cash.
How Oil Prices Went Subzero: Explaining the COVID-19 Oil Crash

How oil prices went negative: this explainer shows how a collapse in demand, a Russia price war, and oversupply led to futures prices going wonky.

By Jeff Desjardins

Explaining the Historic COVID-19 Oil Price Crash

https://www.visualcapitalist.com/history-of-pandemics-deadlies...IwAR0tEACxNidGAk7tXMAJJsUm3lyFiCS9VmHh7PEgm2RkSwOwlsQauIMoQtU
The Great Lockdown continues to turn markets on their head.

Last week, we dug into the unprecedented number of initial jobless claims coming out of the United States, which topped 22 million in a period of four weeks.

It's just days later, and we already have our next market abnormality: this time, traders were baffled by West Texas Intermediate (WTI) crude — the U.S. benchmark oil price — which somehow flipped negative for the first time in history.