



Counting the Dead: How the Black Death Killed Half of Europe

Why do we count the dead? The Black Death devastated Europe 700 years ago, and historians still can't agree on the data. But the death toll is only the beginning.



0:00 <i>Images of dead bodies strewn on the ground and in water with numbers on them; paintings of sick and grieving people depicting the effects of the Black Death; map of Europe with orange dots that become pie-charts placed all over it - representing local mortality rates.</i>	Why count the dead? Why go through all the trouble? It's been 700 years since the Black Death struck Europe, and researchers keep revisiting the question of how many died from what was arguably the worst pandemic in history. Numbers don't tell us much about who the victims were as people. But sometimes the scale of the devastation is central to understanding what it was like for those who experienced it. And why so much history changed. So, how many did die? Well, governments back then didn't keep detailed records of their populations. Historians have uncovered over 200 cases where you can deduce mortality rates for smaller, local communities. These were mostly records landlords or churches kept about their tenants or clergy.
0:59 <i>Pie chart titled 'Combined Mortality Rate-Europe' with almost half of it in shattered black fragments that disappear; map with pie chart marker over Coventry & Lichfield; line graph of Deaths Per Month showing dramatic spike in 1349 and plummet in 1350; line graph of Population Drop across Europe; map of Europe showing agricultural impacts; infographic comparing population loss in Europe from the Black Death and WWII.</i>	On average, we see the population dropped by 44% when the Black Death struck. But it's messy data. In fact, only the diocese of Coventry and Lichfield tracked the date of each death. They found 50% died, the bulk of which within an 8-month timespan. But in most cases, all we can see is the drop in numbers, and we can't know for sure if the person died or fled. Also, a recent 2022 study examined fossilized wheat pollen, and found that farming rates did not drop as much as would be expected, suggesting that perhaps less people died. So there's no clear answer, but historians generally say that the Black Death killed between 30% and 60% of Europe's population. It also infected regions outside of Europe. For comparison, World War II, which lasted roughly the same number of years, killed 10% of Europe's population. That includes military and civilian deaths. A reminder of just how lethal tiny pathogens can be.
2:06 <i>illustrations of Yersinia pestis, a variety of small mammals, fleas, and a family all interconnected with arrows; topographic map of Asia highlighting Tian Shan; map of Europe with a massive amount of it highlighted in deep red; map of Asia with a large amount of it highlighted in purple representing the entities of the Mongol Empire.</i>	Modern genetic testing has confirmed what most historians believed, the Black Death was caused by <i>Yersinia pestis</i>, a bacteria that actually wasn't new at all. <i>Yersinia pestis</i> infects many different types of animals, especially small mammals, including marmots and rats. It also infected fleas who fed on the mammals, and these fleas are believed to be a key way that <i>Yersinia pestis</i> transferred from animals to humans. In the century before the Black Death, <i>Yersinia pestis</i> was most prevalent in marmot populations in these areas, we think. And at times it infected human communities, and there were some terrible outbreaks. But it didn't become what we call the Black Death until 1346 or 47, when it moved into Europe. And we'll get into why it exploded so rapidly in Europe. But first, let's set the stage. Asia, during the century prior, came under control of the Mongol Empire, founded by Genghis Khan. It grew to be the largest land empire in history, and then started to break apart.
3:07 <i>Map of Europe displaying kingdoms and empires with distinct colors; Chart showing the Black Death pandemic in 1350 intersecting with the building of Cathedrals; marker</i>	Europe, meanwhile, was controlled by these major kingdoms. It was at the peak of the high Middle Ages. Take, for example, the most dramatic cathedrals ever built, many were constructed during this period. There were also numerous smaller kingdoms, duchies, and merchant republics. Borders were often under dispute, and small battles were frequent across Europe.



<i>over Caffa; infected bodies being slung over a guarded fortress wall; map with marker over Constantinople; panoramic illustration of Constantinople; image of Emperor Kantakouzenos surrounded by religious figures; highlighted passages in a historic text.</i>	And speaking of battles, according to legend, the first Europeans got infected in 1346 when corpses of those who died from the plague were catapulted into the city of Caffa by Mongols who were besieging the city. But some historians don't believe this account. What is clear is that the first major metropolis to fall was Constantinople, the capital of the Byzantine Empire. In one of the largest cities in Europe, one eyewitness to the devastation was Byzantine Emperor Kantakouzenos, who described a disease like no other, that killed indiscriminately. He detailed with anguish the suffering and despair of his people. And revealed that his own son, Andronikos, died after three days of illness.
4:14 <i>Map tracing The Silk Road trade routes with red lines; map depicting trade channels and zooming into a trade route from Messina to Constantinople; painting of docked ships in a busy port that zooms into a ship loaded with sick people; animation of a rat debarking a ship onto land; map highlighting cities by water infected by the Black Death; infographic comparing travel speeds in miles by foot and sea.</i>	Constantinople was a major trade hub, a bridge between Europe and Asia. And new trade routes allowed goods, people, and pathogens to travel between the two continents like never before. And these trade channels are a big reason it flared up so quickly in Europe. It moved fastest overseas, but not fast enough for passengers to survive the trip if a ship departed with the plague on board. In October 1347, twelve Genoese galleys docked in the Sicilian port of Messina. Witnesses found the few remaining survivors covered in black boils, delirious with pain. The ships were ordered out of the harbor, but it was too late. One theory is that rats, who were living in the ship's rigging, climbed to shore and infected local rat populations, and in turn fleas. By 1348, the plague had infected major cities by seaport: Genoa, Venice, and Pisa. On land, the disease traveled more slowly — roughly 2 to 5 miles per day — the speed of a cart or a walking human. Typically, once it arrived in a populous city, take Florence or Siena, it spread within the population quickly, and the infrastructure collapsed soon after.
5:25 <i>Animated timeline of symptoms of the Bubonic Plague over 10 days; timeline of symptoms of Pneumonic Plague over 4 days; images of sick and grieving people, bed-ridden patients, Giovanni Boccaccio, historical text, sick child under religious arches their parents turned away from them, mass burials, and bodies being dumped into a dark pit.</i>	A person who got infected would walk around for days, spreading the bacteria before showing symptoms. The first symptoms were usually fever and chills. Many would cough up blood. Then came the “buboes” — apple-sized, painful swelling in the groin, armpits, and neck. Then, internal bleeding caused black blotches under the skin. The most common version of the Black Death, the bubonic plague, killed 80% of those infected. When the same bacteria infected the lungs, it became pneumonic plague, which killed 90%. The pneumonic version also allowed transmission to happen more easily from person to person. With such a high death rate, an individual's best hope was to avoid infection. Even though people didn't yet understand the science of germs, many did know to avoid sick people. The Italian writer Boccaccio, who witnessed the plague in Florence, wrote that “brother abandoned brother...and oftentimes husband abandoned wife.” Parents sometimes stopped visiting their sick children, leaving some victims to die alone. There are not enough priests to perform last rites. Too many deaths to perform funerals. Not enough coffins to hold the dead. Mass graves, known as plague pits, were dug on the outskirts of towns, and bodies were stacked in layers, separated only by a thin covering of soil.



6:42 <i>Portrait of Pope Clement VI; bodies being tossed into a river; map showing the spread of the Black Death across Europe; pie charts comparing deaths in London and Paris; paintings of locals tending to livestock; map of United Kingdom showing infected areas; map of Europe almost entirely highlighted in deep red to represent the spread of the Black Death; medieval healthcare and spiritual practices during outbreak of the Black Death.</i>	Pope Clement VI was eventually forced to bless the entire Rhone River so that bodies could be thrown into it, as the land could simply hold no more. In the summer of 1348, the plague moved north into France. By June, it crossed the English Channel. London and Paris suffered some of the highest death rates of the pandemic. Their dense population and poor sanitation systems likely accelerated the spread. Even in cities, livestock often slept in the same room as the family to generate heat, creating a perfect breeding ground for fleas. But overall, less populated areas fared better. Many rural sections of Ireland, for example, had relatively few deaths. In 1349 and 1350, the plague pushed into Scandinavia and Scotland. It eventually curled back towards Russia, completing its movement across Europe. Societies responded to the crisis in a wide range of ways.
7:38 <i>Religious procession with most carrying whips; people whipping themselves; group of religious people killing another group of people; Jewish people being burned alive; painting of a chaotic violent scene; man in bed being studied by a group of doctors; map with a marker over Dubrovnik; ships anchored in water near a port text '40 Days' is overlaid; images of bed-ridden patients receiving care; pile of dead bodies.</i>	Some behaviors looked like madness, from today's perspective. Flagellants or, religious zealots, roamed the countryside whipping themselves, hoping that self-punishment would help satisfy God's apparent thirst for human suffering. Some communities accused Jewish people of poisoning wells, and thousands were massacred in what is believed to be the most violent outburst of medieval anti-semitism. In many cities, those tasked with collecting the dead were so affected by trauma that they became hostile, even violent, towards people around them, adding to the chaotic horrors of the streets. On the positive, some cities did learn lessons for containing pathogens that are still practiced today. In what is now Croatia, incoming ships are ordered to anchor in isolation before docking for 30 and then 40 days — a quarantine. And this is where we get the modern word: Quarantine. There are also many cases of heroism and sacrifice documented by chroniclers, like Jean de Venette, who described how sisters of the Hôtel-Dieu tirelessly tended to patients, knowing they too would likely succumb. The long-term impacts of the Black Death were dramatic. Notably, with so many people dead, there was a massive labor shortage.
8:54 <i>A reeve supervising serfs tending to wheat; a man with livestock having a conversation with a group then chopping an animal in pieces; farmers at work; line graph of Income Growth in four European regions; clergy person being attacked; drawings of chaotic and violent death scenes; a group dissecting and studying a human body; etching of the maritime quarantine station Lazzaretto di San Rocco; an infected person being</i>	Before the Black Death, about half of Europe's rural population worked under feudalism, where peasants were tied to the land, and generally powerless and poor. Labor suddenly became a scarce commodity, so peasants could demand higher wages from their desperate lords and landowners. In the centuries following The Black Death, peasants had more disposable income, lived healthier, and had greater social mobility. Other cultural changes were profound. The church, the bedrock of medieval life, suffered a crisis of confidence, as the plague killed the faithful, the unfaithful, and priests alike. And cities began taking control of healthcare away from the church. The first secular "Boards of Health" would be established in places like Florence and Venice. Special hospitals and quarantine centers were built, designed specifically for isolation and medical treatment.



tended to; scientific image of Yersinia pestis; small mammals; newspaper articles about the Black Death.

10:05

Horizontal bar chart comparing travel speeds by foot, sea, and air – with air having a significantly longer bar; clips of a busy airport taxiway, large warehouse, city skyscrapers, crowded street crossing, protective and sanitary gear at medical facilities, water treatment plant, industrial liquid filling; chart of Modern Outbreaks over time highlighting major outbreaks with pictures of correlating animals; cattle inspections; dot-patterned map of Europe illustrating the impact of the Black Death; medical labs; crowded chicken coop; caged bats; children playing amongst pigeons; pair of marmots in nature.

And what about Yersinia pestis? Is it still around today? It is. It still infects rats, and gerbils, and rabbits, and marmots. And there were even some infections in humans in recent years. But today, people who get infected can be treated with antibiotics, which weren't around at the time of the Black Death.

See, some things that allowed the Black Death to spread so quickly in Europe are still with us — and have even grown as risk factors. We travel faster and more frequently. Our trade routes are more complex. Our cities are bigger and denser. All this allows pathogens to more rapidly travel through populations, and across the globe like never before. Fortunately, in other ways, we're better off. We know about germs, we live more hygienically. People don't have fleas like we used to. And our cities have advanced sanitation systems. And we have new medicines: notably antibiotics and vaccines.

The Black Death also highlights a pattern. With it, and the most recent major pandemics — a pathogen that we already knew about became deadly — due to a mutation or change in human behavior. And, in all these cases, animals played a key role in enabling the catastrophe. That's why epidemiologists advocate for globally adopted rules and best practices that reduce how much exposure humans have to high-risk animals.

One reason to retell this story today, is to remind us what's at stake. A pandemic as deadly as the Black Death, with current population levels, would kill between 200 and 400 million people — in Europe alone.

Researching diseases and developing new medicines, especially antibiotics and vaccines, is clearly one of the most important things we should be doing. There will be new pandemics in the future, and the last thing we want to do is slow our efforts to ready our defenses.