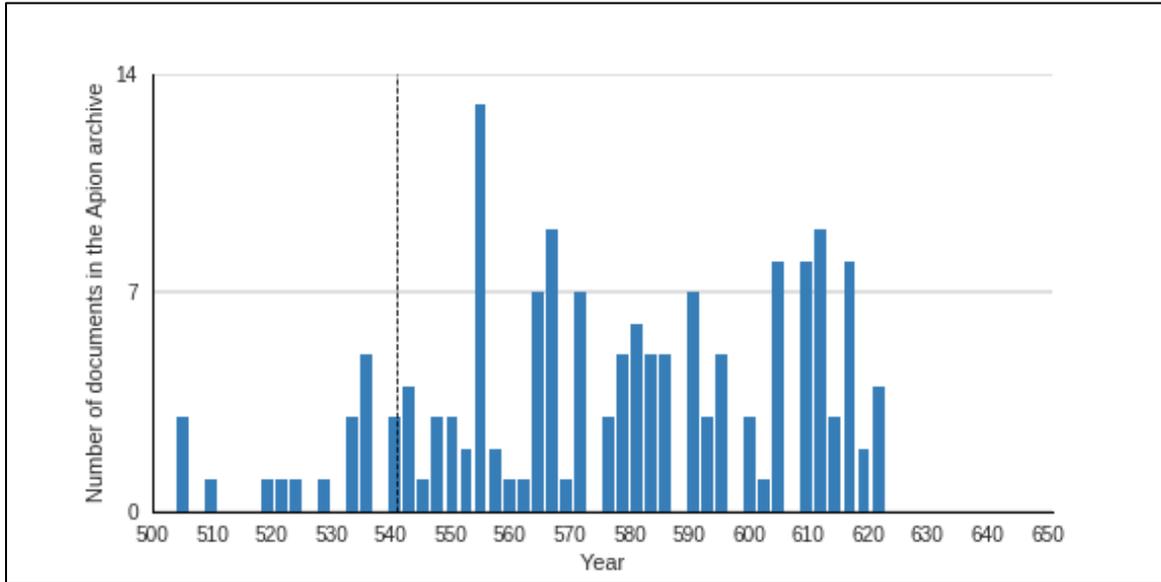
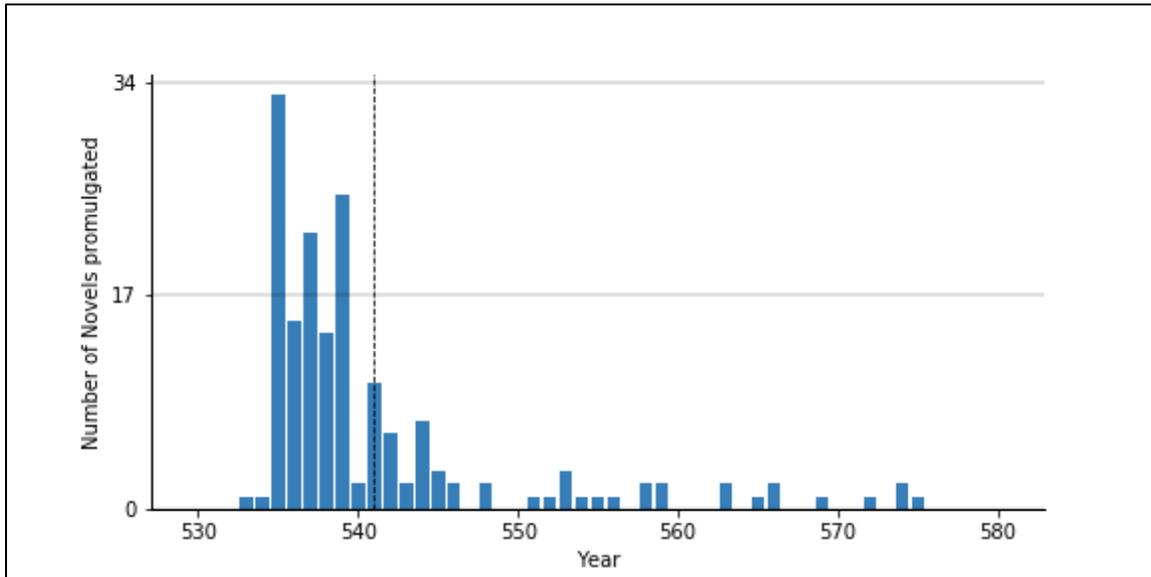


Government Documents



Dated documents of the Apion archive, up to 3-year resolution. The first outbreak of plague in 541 CE is marked as a vertical dashed line.



Legislation (Novels) promulgation per year. The first outbreak of plague in 541 CE is marked as a vertical dashed line.

What does this evidence tell us about plague? If there was a massive plague outbreak, should there be fewer government documents? What might be other explanations?

Procopius, *History of the Wars*, II.xxii-xxxiii (542 CE)

Give us some examples of what happened! Do you believe there was an actual plague outbreak? How many people died (you might have to do a little math)? Are these numbers believable?

DURING these times there was a pestilence, by which the whole human race came near to being annihilated...But for this calamity it is quite impossible either to express in words or to conceive in thought any explanation, except indeed to refer it to God. For it did not come in a part of the world nor upon certain men, nor did it confine itself to any season of the year...it embraced the entire world, and blighted the lives of all men, though differing from one another in the most marked degree, respecting neither sex nor age...

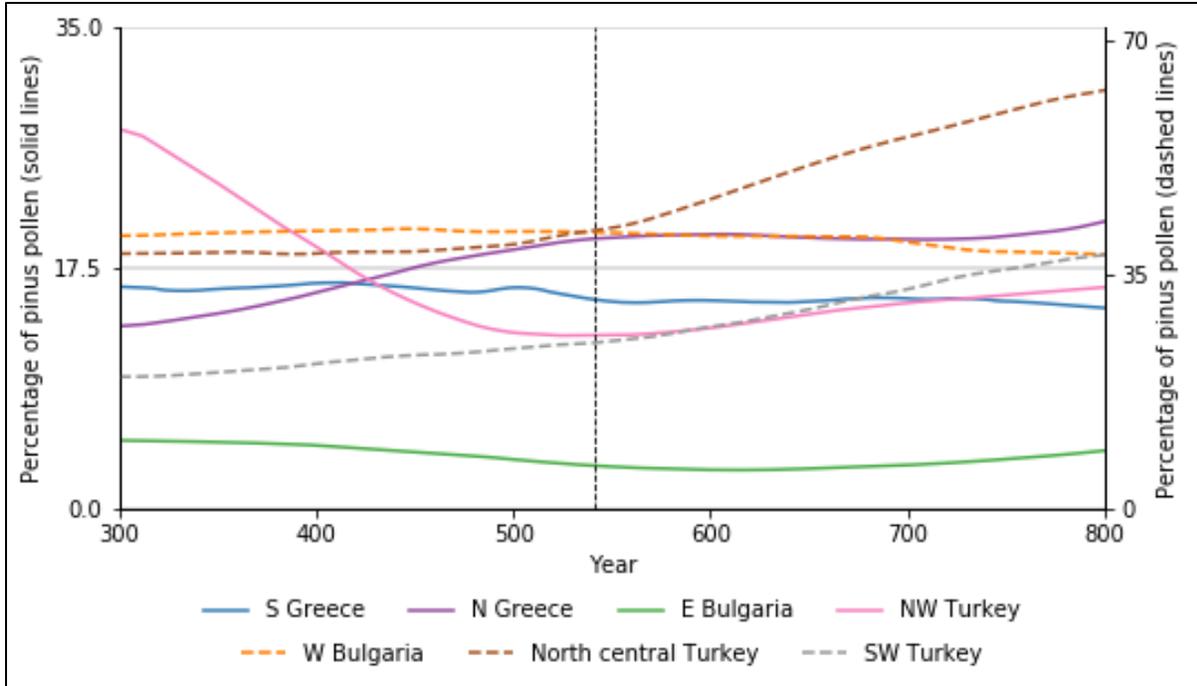
And in the second year it reached Byzantium in the middle of spring, where it happened that I was staying at that time. And it came as follows. Apparitions of supernatural beings in human guise of every description were seen by many persons, and those who encountered them thought that they were struck by the man they had met in this or that part of the body, as it happened, and immediately upon seeing this apparition they were seized also by the disease. Now at first those who met these creatures tried to turn them aside by uttering the holiest of names and exorcising them in other ways as well as each one could, but they accomplished absolutely nothing, for even in the sanctuaries where the most of them fled for refuge they were dying constantly. But later on they were unwilling even to give heed to their friends when they called to them, and they shut themselves up in their rooms and pretended that they did not hear, although their doors were being beaten down, fearing, obviously, that he who was calling was one of those demons. But in the case of some the pestilence did not come on in this way, but they saw a vision in a dream and seemed to suffer the very same thing at the hands of the creature who stood over them, or else to hear a voice foretelling to them that they were written down in the number of those who were to die. But with the majority it came about that they were seized by the disease without becoming aware of what was coming either through a waking vision or a dream. And they were taken in the following manner. They had a sudden fever, some when just roused from sleep, others while walking about, and others while otherwise engaged, without any regard to what they were doing. And the body showed no change from its previous color, nor was it hot as might be expected when attacked by a fever, nor indeed did any inflammation set in, but the fever was of such a languid sort from its commencement and up till evening that neither to the sick themselves nor to a physician who touched them would it afford any suspicion of danger. It was natural, therefore, that not one of those who had contracted the disease expected to die from it. But on the same day in some cases, in others on the following day, and in the rest not many days later, a bubonic swelling developed; and this took place not only in the particular part of the body which is called *boubon*, that is, "below the abdomen," but also inside the armpit, and in some cases also beside the ears, and at different points on the thighs...

Now the disease in Byzantium ran a course of four months, and its greatest virulence lasted about three. And at first the deaths were a little more than the normal, then the mortality rose still higher, and afterwards the tale of dead reached five thousand each day, and again it even came to ten thousand and still more than that. Now in the beginning each man attended to the burial of the dead of his own house, and these they threw even into the tombs of others, either escaping detection or using violence; but afterwards confusion and disorder everywhere became complete...

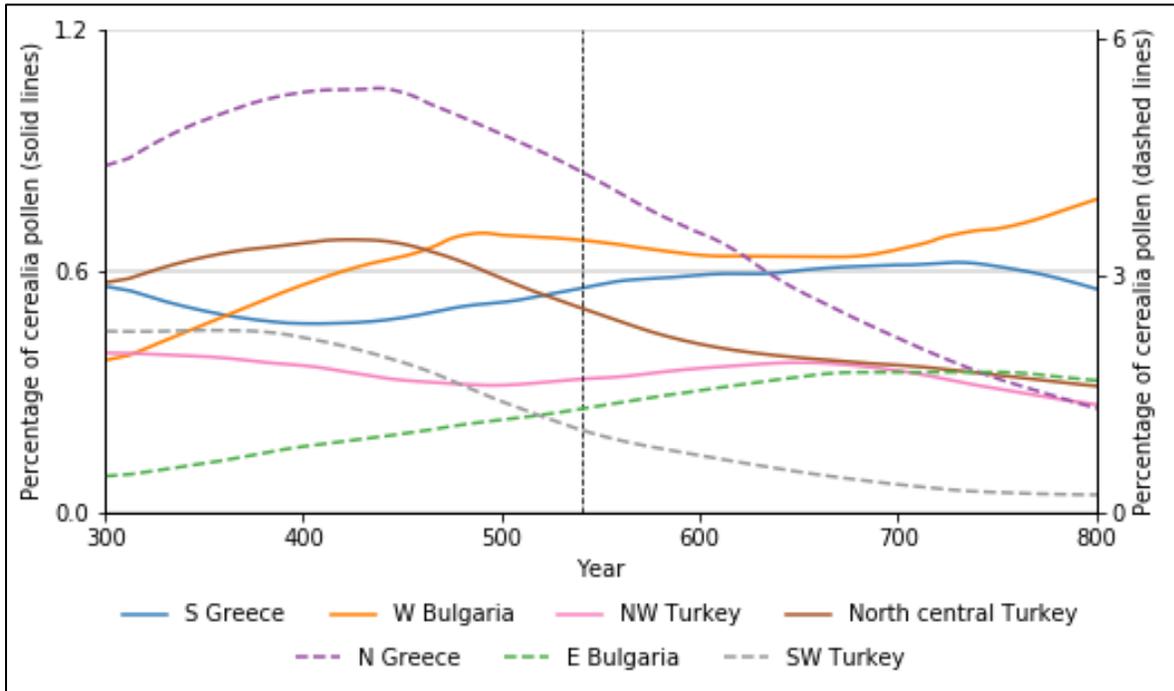
Gregory of Tours, *Ten Books of History, Book 4, Chapter 5*

How does Gregory describe the plague outbreak? Where does it strike and where does it not? How is it stopped? What does this reveal about how religious rituals can prevent plague?

In Saint Bishop Gallus's time, a disease, which they call swellings of the groin (*lues illa quam inguinariam vocant*), raged in various regions. It was particularly bad in the province of Arles, and Saint Gallus was anxious not only for himself but more especially for his flock. He prayed to God night and day that he might not live to see his diocese decimated...Saint Gallus then instituted the Rogations for which all journeyed on foot in the middle of Lent to the church of Saint Julian the martyr, singing psalms as they went...As I have explained, the plague (*lues*) raged through other parts of Gaul, but thanks to the prayers of Saint Gallus it claimed no victims in Clermont Ferrand.



Regional percentage values of pine pollen for selected eastern Mediterranean regions. The first outbreak of plague in 541 CE is marked as a vertical dashed line.



Regional percentage values of cereal pollen for selected eastern Mediterranean regions. The first outbreak of plague in 541 CE is marked as a vertical dashed line.

What kind of patterns do you see with the tree and cereal pollen? What might that tell us (or not) about changes to land use during the plague?

Published isolations of *Y. pestis* DNA for the Justinianic Plague.

Here is a list of every skeleton that has been found with ancient plague DNA from this early medieval plague. Where were they found? How many remains do we have total? How many from each place? How well dated are they?

Think about also: How many positive remains would you need to have to believe there was mass mortality?

Study	Location of Sites Tested	Burial Information	Material Tested	Number of <i>Y. pestis</i> -Positive Individuals
Drancourt et al 2004 (36)	Sens, France	Four ‘mass graves’ C ¹⁴ -dated to 5 th -6 th centuries	Unclear: 10 teeth from 3 individuals or 19 teeth from 8 individuals	Unclear; <i>Y. pestis</i> detected in ‘one mass grave’
Wiechmann, Grupe 2005 (26)	Aschheim, Germany	Cemetery with 438 individuals (see below); both individuals in one double inhumation tested	2 teeth from individual 166, 4 teeth from individual 167	1 (individual 167)
Drancourt et al 2007 (37)	Vienne, France	12-individual ‘mass grave’ C ¹⁴ - (and numismatically) dated to 7 th -9 th centuries	18 teeth from 5 skeletons	2
Harbeck et al 2013 (24)	Aschheim, Germany	Cemetery with 438 individuals (see below); 4 of 8 <i>pla</i> -positive individuals dated archeologically to 530-70, 1 other to 590-630, remaining 3 C ¹⁴ -dated to 431-544, 443-566, 435-631	2 ‘or more’ teeth from 19 individuals from 12 ‘multiple burials’	<i>pla</i> gene / <i>Y. pestis</i> detected in 8 individuals; individual A120 found <i>Y. pestis</i> -positive in 3 analyses preformed
Wagner et al 2014 (25)	Aschheim, Germany	Cemetery with 438 individuals (see below); 2 individuals tested C ¹⁴ -dated to 443-566 (A76) and 435-631 (A120)	4 teeth from individual A120, 1 from A76	2 (individuals A120, A76)
Feldman et al 2016 (23)	Altenerding, Aschheim, Germany	Altenerding cemetery with ~1,450 individuals (see below), Aschheim with 438 (see below); Altenerding individuals AE1175 and E1176 archeologically dated to 530-70 and C ¹⁴ -dated to 426-571; Aschheim individual A120 C ¹⁴ -dated to 435-631	Unspecified number of teeth from 20 individuals from double burials; including 2 teeth each from 2 individuals (AE1175 and AE1176) from a single inhumation;	2 from Altenerding (AE1175 and AE1176), 1 from Aschheim (A120)

<p>Keller et al 2019 (22)</p>	<p>Leobersdorf, Austria; Edix Hill, Britain; Alladorf, Dirlewang, Dittenheim, Forchheim, Grafendobrach, Kleinlangheim, Leobersdorf, München- Aubing, Neuburg an der Donau, Peigen, Petting, Regensburg Fritz- Fend-Str., Sindelsdorf, Straubing Aziburg I/II, Unterthürheim, Waging, Westheim, Germany; Lunel- Viel Les Horts, Lunel-Viel Quartier Centrale, Saint-Doulchard, France; Valencia, Spain</p>	<p>8 sites were <i>Y. pestis</i>-positive: Dittenheim cemetery, archeologically dated to 550-700, with 238 graves and 10 cremations, including 4 double inhumations; Edix Hill cemetery, archeologically dated to 500-650, with 115 graves, including 9 double and 1 4-person inhumations; Lunel-Viel Quartier Centrale grave site, archeologically dated to 400-600, including 6 double inhumations in two trenches; Petting cemetery, archeologically dated to 530-730, with 721 graves, including 2 double and possibly 2 triple inhumations; Saint-Doulchard burial trench in early/high medieval cemetery with 175 graves, 48 distinct singular graves in trench, radiocarbon dated to 650-880; Unterthürheim cemetery, archeologically dated to 525-680, 256 graves , including 14 double, 2 triple and 1 4-person inhumations; Valencia cemetery, archeologically dated to 500-700, with 67 graves, including 3 double, 3 triple, 4 4-person, 2 5- person and 15 >5-person inhumations; Waging cemetery, archeological dated to 500-700, with 67 graves, including 2 double and possibly 1 triple inhumation</p>	<p>171 teeth from “a minimum of” 122 individuals from 21 continental sites; 22 additional sequence samples from Edix Hill, Britain</p>	<p>34 <i>pla</i> gene / <i>Y. pestis</i>-positive samples of 191 teeth sampled; 2 classified as outliers/<i>Y. pestis</i> negative. <i>Y. pestis</i>- positive samples, including genomic analysis, Dittenheim (3, including 1 genome), Petting (3, including 1 genome), Unterthürheim (5, including 2 genomes) and Waging (1, including 1 genome), Germany; Valencia (1, including 1 genome), Spain; Lunel-Viel Quartier Centrale (6, including 3 genomes), Saint- Doulchard (11, including 2 genomes), France; Edix Hill (4, including 3 genomes), Britain</p>
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The first outbreak of plague in 541 CE is marked as a vertical dashed line.

These diagrams show how many inscriptions were made per year in (from top down): western Europe (broadly), Italy, and Syria. If we have mass graves, then there should perhaps be fewer inscriptions made. What does the data show us? Point out specific features!

