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Abstract

The First Pandemic of *Yersinia pestis* struck the Mediterranean world in a series of outbreaks from 541 CE until the mid-8th century. The first wave, known as the Justinianic Plague, reached from Constantinople to Britain. Much is written about this plague in the Byzantine East, but the Western experience is less discussed, especially in Italy. Primary sources such as Paul the Deacon, Gregory the Great, and the *Liber Pontificalis* attribute to the disease severe symptoms, high mortality rate, and significant effects on the people and politics of Italy. Archaeological evidence to support these claims is, however, lacking. Elsewhere in western Europe, *Y. pestis* has been identified in human remains by researchers studying aDNA at five sites. This project uses a dataset of nearly 440 archaeological excavations of the Late Antique and Early Medieval periods to investigate the impact of the First Pandemic in Italy. This includes 275 cemeteries with over 8,000 individuals dating between the 6th-8th centuries, approximately 39 of which evidence multiple or mass burials. With the data, I document patterns in burial practice, religious activity, and political territory during this turbulent period, including early Christian developments and Lombard influence. This research is a step toward better understanding the lives of those who experienced the First Pandemic. I identify over 15 sites that are especially promising for possibly identifying the presence of Y. pestis in Early Medieval Italy.

Keywords*:* plague, *Y. pestis*, Italy, Byzantine, burials, Christianity, Lombards

1. Introduction

"But there are people who by a perversion of the intelligence do not believe what is written, [and] find fault with what is witnessed by others," laments Gregory of Tours, a Gallo-Roman bishop who lived through multiple outbreaks of the First Pandemic, regarding the written word.[1] His works, with their twenty-two mentions of plague, cover instances of the First Pandemic of *Yersinia pestis* in 571 CE and 591–594 CE.[2] Though Gregory of Tours hailed from France, Marius of Avenches corroborates his writing on the 571 outbreak in Italy and Gaul; his 591 telling of the plague in Rome corresponds with the *Liber Pontificalis*, the works of Gregory the Great, and the *History of the Lombards* by Paul the Deacon. More important, however, is that his words remind us that behind every written work on this plague was a person. These are not just stories, though they employ rhetorical tactics, but testimonies.

The First Pandemic of *Yersinia pestis*, the same pathogen behind the 14th-century Black Death, struck the Mediterranean world in a series of outbreaks from 541 CE until 750 or 767 CE, a date which remains debated by scholars of this plague. Not only did the lesser-known First Pandemic share its causal pathogen with the Black Death, but also the brutality of its impact. The first wave broke out during the rule of Byzantine Emperor Justinian, earned the title of the Justinianic Plague, and affected regions from Constantinople to Britain in rapid succession. Probably originating in Egypt, the first wave of the First Pandemic occurred under Byzantine Emperor Justinian, earned the title of the Justinianic Plague, and struck regions from Constantinople to Britain in rapid succession.[3] While there is plenty of scholarship on this plague for the Byzantine East, much less exists for the West, especially Italy. The plague likely reached Sicily by the end of 542 and then the mainland in 543. It returned in 565, entered Rome from 590-591, and surfaced once more in Naples and Sicily around 749.[4] Primary literary sources attribute to this plague severe symptoms, rampant death, and significant consequences for the people, politics, and society of Italy. It spanned a vast territory, harmed millions, and cannot be generalized across the post-Roman world.

Archaeological evidence to support these claims is, however, lacking. Elsewhere in western Europe, Y. pestis has been identified in human remains by researchers studying aDNA at five sites, though none have been sampled in Italy. This poster uses a dataset of 439 archaeological excavations, compiled by myself and Professor Franconi of Brown University, spanning the Late Antique and Early Medieval periods to investigate the impact of the First Pandemic in Italy. This dataset includes 275 cemeteries with over 8,000 people dating between the 6th and 8th centuries, approximately 39 of which have evidence for multiple or mass burials. We examine these data and document patterns in burial practice, religious activity, and political territory during this turbulent period, including early Christian developments and the differential

[1] Gregory of Tours, *Liber Vitae Patrum*, tr. E. James (Liverpool: Liverpool University, 1985), 104.

[2] Michael McCormick, "Gregory of Tours on Sixth-Century Plague and Other Epidemics," *Speculum* 96, no. 1 (January 2021): 38, https://www.journals.uchicago.edu/doi/full/10.1086/711721.

[3] Procopius, *History of the Wars* 2.22-23; Lester Little, "Life and Afterlife of the First Plague Pandemic" in *Plague and the End of Antiquity: The Pandemic of 541-750* (Cambridge University Press: Cambridge, 2007), 3.

[4] Lester Little, "Life and Afterlife," 14.

impact of the disease between the Byzantine and Lombard kingdoms. This research is a first step toward better understanding the lives of the individuals who experienced the period of the First Pandemic.

2. Methods

The First Pandemic occurred across a vast range, affected a variety of people, and cannot be generalized across the post-Roman world. Therefore, this research takes a more localized approach. We begin by compiling literary, epigraphic, and epistolographic sources from Italy to contextualize the lived experience of the First Pandemic. These include Paul the Deacon, Gregory the Great, the *Liber Pontificalis*, *Byzantina Siciliae*, *Inscriptiones Christianae Urbis Romae*, Marius of Avenches, John the Deacon, among others. Analysis of the 439 sites consists of quantifying the people buried, identifying burial practices, examining the presence of multiple or mass graves, documenting early Christian developments, and noting Lombard influence. The 275 cemeteries of the period of the First Pandemic belong to the 6th-8th centuries and the Early Medieval period more broadly for those sites not precisely dated. Only about eight burial sites explicitly radiocarbon date the deceased, while most rely on stratigraphy or grave goods.

The primary sources help to contextualize the illness and demonstrate its symptoms, both allowing scholars to identify the pandemic as *Y. pestis* and providing crucial information when deciding where to search for victims of the pathogen. “[T]here was a pestilence, by which the whole human race came near to being annihilated,” writes Procopius, one of our most significant sources of this plague. “[I]t is quite impossible either to express in words or to conceive in thought any explanation [for it], except indeed to refer it to God… [I]t embraced the entire world, and blighted the lives of all… respecting neither sex nor age.”[5] Although Procopius did not reside in Italy, the unique preservation of his work as a man in the imperial inner circle during the first outbreak of the plague–Justinian himself fell ill–paints a vivid picture, confirming that which the Italian sources describe in fewer words. With such detailed imagery, Procopius underscores how equalizing and human the experience of the pandemic was. Detailing victims' experiences, Procopius describes a “sudden fever” followed by “a bubonic swelling" in the "*bourbon*, 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.”[6]

Authors writing in Italy echo this same sense of mass mortality and rapid disease progression. A tombstone set up for three young boys who died in late December 542 in Sicily might offer proof of when and how the plague first entered Italy.[7] Though on the surface this inscription does not seem to say much, the death of three possibly related young people within a short timeframe during this period is notable–around a month later, in January or February 543, four funerary inscriptions were installed for young siblings who died “one after the other and were buried in the same church” and Marcellinus Comes confirms the arrival of *Y. pestis* in

[5] Procopius, *History of the Wars* 2.22.31-45.

[6] Ibid., 2.22.88-100.

[7] “Byzantina Siciliae,” in *Minima epigraphica et papyrologica IV*, ed.G. Manganaro (2001), 135-137.

Italy by 543.[8] Gregory the Great, in his *Dialogues*, further corroborates that all ages suffered when telling of an infected child who "came to the point of death."[9] In another entry, he relates that "within the space of a few days, no one of [the infected] was left alive" after an outbreak.[10] Gregory of Tours speaks to the appearance of buboes, enlisting what may be a biblical reference when describing a wound in "the shape of a serpent" that "would appear on groin or armpit and the man would be so overcome by the poison as to die on the second or third day."[11] Though writing retrospectively, Paul the Deacon, who relied on contemporary sources such as Gregory of Tours and the lost writings of Secundus of Trent, details "a very grievous pestilence called *inguinal*" which "wasted the people with such great destruction of life that... barely a few remained."[12]

Though it is not certain that the bodies buried at the sites in my dataset contain *Y. pestis*, as I cannot sequence their DNA myself, understanding the epidemiological and sociocultural spread and impacts of *Y. pestis* provides a crucial context in which to analyze them and, possibly, encourage the sequencing of their DNA in the future. *Y. pestis* infections tend not to leave any visible markers, lesions, or other indicators on the skeletons of victims.[13] Thus, anomalous groups of skeletons with no visible causes of death–such as physical trauma, weapon-inflicted wounds, or osteological indicators of fever or other disease–are particularly relevant for this study. Biomarkers left on skeletons originating from other causes can also help to construct the experience of these individuals, whether or not they also have *Y. pestis*. For instance, if one person's bones show significant signs of stress, perhaps they were a laborer, providing a glimpse into their lived reality. Such insight is notable because of the ongoing plague and its consequences, even if not necessarily caused by them. With the undeniable human cost of this plague and the invaluable identification of what the disease was, understanding *Y. pestis* allows for an expanded profile of the sociocultural, religious, and personal realities of the time.

Some sites we can rule out as related to the First Pandemic, such as Poggio Gramignano, a children's cemetery caused by a malaria epidemic, but most in the dataset present evidence worthy of further investigation.[14] The ongoing CAMIS project in northern Italy has recently compiled archaeological evidence for early medieval burials, many of which also feature Lombard influence and great variety in burial practices and funerary traditions denoting a politically and

[8] Dionysios Stathakopoulos, "Crime and Punishment: The Plague in the Byzantine Empire, 541–749" in *Plague and the End of Antiquity: The Plague of 541-75*," ed. Lester Little (Cambridge: Cambridge University Press, 2007), 101-102.

[9] Gregory the Great, *Dialogues* 4.18, tr. O. Zimmerman (New York: 1959).

[10] Ibid., 4.26.

[11] Gregory of Tours, *History of the Franks* 4.31-32, tr. Paul Halsall (New York: Fordham University, 1997).

[12] Paul the Deacon, *History of the Lombards* 3.24, tr. William Dudley Foulke, ed Edward Peters (Philadelphia: UPenn Press, 1974).

[13] B. Bramanti, N. Zedda, N. Rinaldo, and E. Gualdi-Russo, "A critical review of anthropological studies on skeletons from European plague pits of different epochs," *Scientific Reports* 8, no. 17655 (2018): 5, https://www.nature.com/articles/s41598-018-36201-w.

[14] Angelo Castrorao Barba, *LA FINE DELLE VILLE ROMANE IN ITALIA TRA TARDA ANTICHITÀ E ALTO MEDIOEVO (III-VIII SECOLO)* (Bari, 2020), 204-205; D. Soren, "Can Archaeologists Excavate Evidence of Malaria?" *World Archaeology* 35, no. 2 (2003): 193–209, https://www.jstor.org/stable/3560222.

culturally fragmented society.[15] But the rest of the peninsula remains to be synthesized and integrated with this northern dataset.

3. Data Demographics

To identify a site that may be anomalous, it is first necessary to understand what would be typical. Calculating the mortality rate and life expectancy of Italian people during this period is a daunting task, as such numbers are hard to come by and counts vary based on where the dead are buried. Epigraphs were only accessible to the upper class, meaning the rest of the population must be understood via osteological analysis of whichever bones remain preserved.[16] That being said, surviving epigraphic and archaeological evidence suggest that a man who "survived childhood" and was "of middling or high status" tended to reach at least the age of forty.[17] Men could join monasteries, an increasingly prominent path in Early Medieval Italy; as this required they live removed from society and prohibited them from having families, they were unlikely victims of early death brought on by labor, war, or disease.[18] Young women enjoyed far fewer rights and faced a much higher risk of this due to childbirth.[19] Therefore, cemeteries with a high number of young adult men often signify a mass mortality event.

By 1150-1250 CE, most medieval Italian cities outgrew the Roman-era walls that contained them. Presumably, such cities had around the same or smaller population sizes as Roman Italy until this time; this stunted population growth was a departure from the norm, so there was possibly an accompanying spike in death if not caused by migration or captivity after times of war. Though compiled in the mid-20th century, statistics again offered by Josiah Russell Cox depict a clear shift in population to northern Italy, which could partially contribute to population decline in southern areas. He discusses that Byzantine reconquest, Lombard invasion, and wars brought death and unstable territorial delineations that make population counts unclear at best and incalculable at worst. Further, even when considering the loss of life caused by the First Pandemic, there are limitations. Some of the shrinking in Italian cities occurred due to people fleeing from urban areas festering with the disease to towns with lower transmission rates. But Cox's data still speak volumes: the plague possibly reduced the number of people in Italy to "less than 3 million" by 600 CE. It was not until the late eighth to early ninth century that signs of economic revival returned in earnest.[20]

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[15] Alexandra Chavarria Arnau, "People and landscapes in northern Italy: interrogating the burial evidence" in *Interpreting the transformations of people and landscapes in late antiquity and the middle ages*, eds. P. Diarte, N. Christie (Oxford: Oxbow Books, 2018): 163-178; Alexandra Chavarria Arnau, "The Topography of Early Medieval Burials: some reflections on the Archaeological Evidence from Northern Italy (Fifth-Eight Centuries)" in *Polity and Neighbourhood in Early Medieval Europe*, eds. J. Escalona, O. Vésteisson, and S. Brookes (Turnhout: Brepols, 2019), 83-120.

[16] Claire Pilsworth, *Healthcare in Early Medieval Northern Italy. More to Life than Leeches?* (Turnhout, Belgium: Brepols: 2014), 50-52.

[17] Ibid., 52.

[18] Josiah Russell Cox, *Late Ancient and Medieval Population Control* (Philadelphia: The American Philosophical Society, 1958), 144-145.

[19] Ibid., 19-20.

[20] Ibid., 93.

My dataset of 439 archaeological excavations spanning the Late Antique and Early Medieval periods to investigate the impact of the First Pandemic in Italy.[21] Most sites in this dataset have burials, with 275 cemeteries dating between the 6th and 8th centuries, or the Early Medieval period more broadly for those sites not as clear. Only around eight sites explicitly radiocarbon date the deceased, while most rely on stratigraphy or grave goods.[22] Most of the sites include people of all sexes and ages, as discerned by examining any surviving bones for indicators of sex and age, and many of the burials are at rural locations. Italian cities tended to have lower sex ratios (the difference between the number of women versus men), lower percentages of married people, lower frequencies of children, and higher death rates than rural areas.[23] Considering this, my dataset and its rural burials present especially fertile ground to search for the presence of the First Pandemic, as they contain people with various backgrounds regarding sex, age, geography, social status, and class.

Specifically, this dataset includes at least 11,297 individuals, 8,969 of whom were buried within the period of the First Pandemic (Fig 1). 12.5% of the total sites we surveyed specify sex, while sex is only noted at 16.7% of burial sites dated within the period of the First Pandemic. There are more individual men than women specified: 476 to 349 (Fig 2). This is particularly notable considering the frequency at which young women died at this time due to childbirth compared to the relative infrequency of young adult male deaths. Further, 21.2% of the total sites specify age, while age is noted at 26.9% of burial sites of the First Pandemic period. Of the latter, about half reference both adults and children–a category which, in this case, includes fetuses, infants, and sub-adults (Fig 3). There are over double the individual adults than children mentioned (988 to 450). Several sites, such as Scauri Scalo, Vigna Nuova, and Basilica di S. Severo, include families.[24] This does not undermine their significance, but it underscores the need to be more aware and sympathetic of how archaeology handles real people who led real lives and whose stories deserve to be told.

4. Burial Types and Multiple Burials

Of the burial types specified, pit and earthen burials are the most numerous, appearing in nearly every region of the modern Italian state (Fig 4). While 26.0% of the total sites have them, they are present at 33.5% of the cemeteries of the period of the First Pandemic. As pit graves are simple burials involving few materials, they are consistent with those resulting from mass

[21] Tyler Franconi and Edan Larkin, "A database of human burials in early medieval Italy," *Zenodo* (2021): DOI: 10.5281/zenodo.5495521.

[22] Radiocarbon dating is a scientific method using carbon from formerly living organisms to estimate age by comparing how much carbon is left compared to the rate at which it breaks down (See: "What is Radiocarbon Dating?," *Beta Analytic*, 2022, https://www.radiocarbon.com/about-carbon-dating.htm); Stratigraphy is a scientific discipline studying rock layers and their interpretation in terms of time (See: John P. Rafferty, "stratigraphy," *Britannica*, n.d., https://www.britannica.com/science/stratigraphy-geology).

[23] Cox, 21.

[24] Castrorao-Barba 2020, 259-260; S. Campana, "Vigna Nuova," *FASTI Online*, 2018, http://www.fastionline.org/excavation/micro_view.php?fst_cd=AIAC_4490&curcol=sea_cd-AIAC_9900; E. Cirelli, "Basilica di S. Severo," *FASTI Online*, 2009, http://www.fastionline.org/excavation/micro_view.php?fst_cd=AIAC_827&curcol=sea_cd-AIAC_3019.

mortality events like plagues. More involved funerary practices—like sarcophagi, which are at only 2.5% of the First Pandemic period-sites—are less likely due to urgency, shortages, and increased death.

Evidence for multiple or mass burials including two or more people appears in 51 sites, 39 of which date to the period of the First Pandemic (Figs 5-6). Before now, scholars such as Michael McCormick mapped only four mass burial sites in Italy dating to this period: Venosa (samples from this site recently did not test positive for *Y. pestis*), Naples, Castro dei Volsci, and Brescia.[25] This collection of multiple burials significantly expands the current total number of these graves recorded in Italy and Europe in general. This analysis highlights several sites to investigate further, considering that multiple burials are consistent with, though not proof of, mass mortality events like plagues. These burials also emphasize the contribution that excavations in less documented locations pose for reconstructing how individuals experienced events like the First Pandemic.

Further, some of these burial sites include what appear to be entire families. Certain double burials, such as four tombs found at the site of San Martino del Piano, held pairs buried in a nuptial position.[26] This position not only indicates that the two deceased people were romantically involved, maybe even anomalously dying around the same time, but it also once again reminds us of their humanity. These couples shared bonds their heirs chose to honor beyond death, providing insight into their lived experiences and also humanizing the reality of the period of the First Pandemic in Italy. Most of the burial sites, however, do not include this information. This analysis also highlights several sites to investigate further, considering that multiple burials are consistent with, though not proof of, mass mortality events like plagues. These burials, many of which are at rural sites, also emphasize the significance that smaller excavations in less documented locations pose to our understanding of how individuals experienced events like the First Pandemic.

5. Early Christianity

Many sources of the First Pandemic are written by and about Christian figures, including Paul the Deacon, Gregory the Great, and the Liber Pontificalis. Of the mentions of Christianity—churches, monasteries, Christian cemeteries, and Christian images—in the dataset, 63.8% are burial sites of the period of the First Pandemic (Fig 7). Almost all directly relate to or immediately follow the burials chronologically, meaning the burials appeared first or contemporaneously to the Christianizing elements. This is an expected association for cemeteries connected to this plague, correlating with the proposed increase in Christian worship among Italian individuals and creating the rationale to investigate *Y. pestis.* These burials, placed in and around churches, also emphasize the importance of local churches in understanding Early Medieval Italy by

[25] Michael McCormick, "Tracking mass death during the fall of Rome's empire (I)," *Journal of Roman Archaeology* 28 (2015): 325–357, doi:10.1017/S1047759415002512; Michael McCormick "Tracking mass death during the fall of Rome's empire (II): a first inventory," *Journal of Roman Archaeology* 29 (2016): 1004–1046, doi:10.1017/S1047759400073190; Potsch et al, "The origin and legacy of the Etruscans through a 2000-year archeogenomic time transect," *Science Advances* 7.39 (2021): eabi7673.

[26] Oscar Mei and Mario Luni, "San Martino del Piano," *FASTI Online*, 2012, http://www.fastionline.org/excavation/micro_view.php?fst_cd=AIAC_284&curcol=sea_cd-AIAC_5152.

demonstrating the centrality of the church community to the lives of those who experienced this period and plague.

Indeed, Mischa Meier argues that the First Pandemic led to an increase in Marian devotion.[27] In 542, during the first outbreak, Emperor Justinian converted a Feast of Christ to a Feast of Mary to end the plague. In 590, Gregory the Great copied this during an outbreak in Rome.[28] This outbreak killed Pope Pelagius II, leading to Gregory the Great's election as Pope, who then organized a large procession through Rome requesting God stop the plague. Andrew Latham describes how the First Pandemic also launched the Christian monastic movement "to endure the social and cultural devastation" of the plague.[29] According to Latham, the pandemic "transformed western Christianity" and contributed to the fracturing of western Europe, leaving the Church as its governing structure.

6. Lombard Kingdom

One of the most significant primary sources of the First Pandemic is *History of the Lombards* by Paul the Deacon, a Lombard monk and author. In our research, we found Lombard cemeteries documented in 70% of modern Italian regions, in the former Lombard Kingdom and beyond, possibly evidencing interactions between Byzantines and Lombards. Overall, 88.5% of sites that include Lombard references date to the First Pandemic period (Fig 8). While this is partly due to the Lombard Period also occurring from the 6th-8th centuries, Lombard cemeteries can be valuable to search for *Y. pestis*. As Lombards were considered a defined group, at least by primary sources such as the Paul the Deacon, that invaded Italy and possibly found military success there because of the depleted numbers in the peninsula caused by outbreaks of the First Pandemic preceding 568 and Byzantine conquest, burials and any grave goods referencing Lombard culture offer data relevant to this study. Lombard cemeteries also possibly reflect Christian developments, as some scholars say that Lombards adopted Christian burial rites. The evidence supporting this is the Christianizing and/or building of churches in or around existing cemeteries, implying the burials came first. This is shown by the church at the cemetery of Castel Trosino and mentioned by Paul the Deacon at Pavia.[30]

7. Conclusions

Undeniably, this plague harmed countless Italian people and held an influence that modern scholarship seems to have lost. As we continue to endure the sociopolitical tumult unique to pandemic disease in 2022, there remains much to learn from and honor about past victims of pathogens. We have eradicated smallpox, invented a vaccine for polio, and created a shot for COVID-19. Yet what will always connect people across space and time is the

[27] Mischa Meier, "The 'Justinianic Plague' - Die, Justinianische Pest: An 'Inconsequential Pandemic'? A Reply," *Medizinhistorisches Journal* 55, no. 2 (2020): 188, https://www.jstor.org/stable/48586504.
[28] Ibid., 17.
[29] Andrew Latham, "Justinian's Plague and the Birth of the Medieval World," *Medievalists*, 2020, https://www.medievalists.net/2020/11/justinian-plague-medieval-world/.
[30] Malcolm Todd, *The Early Germans* (Hoboken: Wiley-Blackwell, 2004), 237.

inescapability of disease.[31] Considering how personal the COVID experience is today—some have died, lost loved ones, fallen ill—it is paramount to give space to the lived reality of the First Pandemic. In the same passage as the quote with which I began this paper, Gregory of Tours worries, "I fear that I shall be [criticized] by some, who will say, 'You are a young man, so how can you know about the deeds of those in the past?'"[32] To an extent, Gregory's anxiety is not unfounded. Placed in the shadow of the Black Death, the First Pandemic especially has long taken a backseat in disease scholarship.

This research is only a first step toward better understanding the daily reality of those who lived in the period of the First Pandemic but one that they deserve, lest we forget that those we study were people too. The dataset presents a map of where to look next by narrowing down locations with possible evidence of *Y. pestis in Italy*. It emphasizes the importance of rural sites in understanding the people archaeologists encounter, reminding us of our shared humanity. It expands the existing list of multiple or mass burials in Italy and across Europe. It illuminates connections between early Christianity and the First Pandemic as well as the Byzantine and Lombard kingdoms. It offers a starting point for answering many questions: Where did the plague strike? How did it impact those who lived during its outbreaks? How did it affect religious and political structures? What cultural influence did it have? Of the 275 cemeteries dating to the period of the First Pandemic, we identify over 15 of the most promising. One excavation involving Brown University, called Vacone, is ongoing and uncovered 7th-century inhumations (Fig 9).[33] As pandemic scholar Robert Salles rather prophetically wrote in 2007, "There is still room for further research on the Justinianic Plague, and still the possibility of a fourth pandemic in the future."[34] It is crucial we not forget.

[31] "Vaccines and Preventable Diseases," CDC, https://www.cdc.gov/vaccines/vpd/index.html.

[32] Gregory of Tours, *Librae*, 104.

[33] "The Vacone Villa," *The Upper Sabina Tiberia Project*, n.d., https://www.ustproject.org/the-vacone-villa/.

[34] Robert Salles, "Ecology, Evolution, and Epidemiology of Plague" in *Plague and the End of Antiquity: The Pandemic of 541–750*, ed. Lester Little (Cambridge: Cambridge University Press, 2007), 289.

Figures

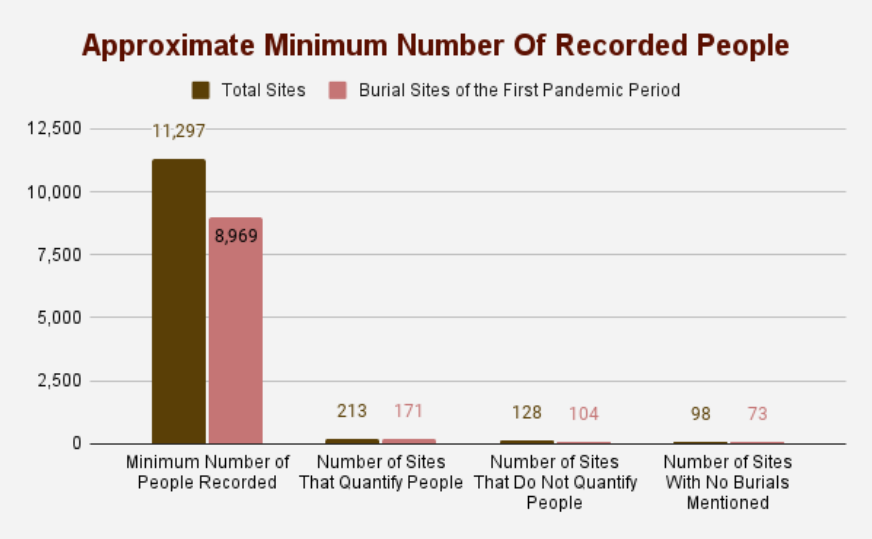

Figure 1: Approximate minimum number of burials based on archaeologist reports from each site.

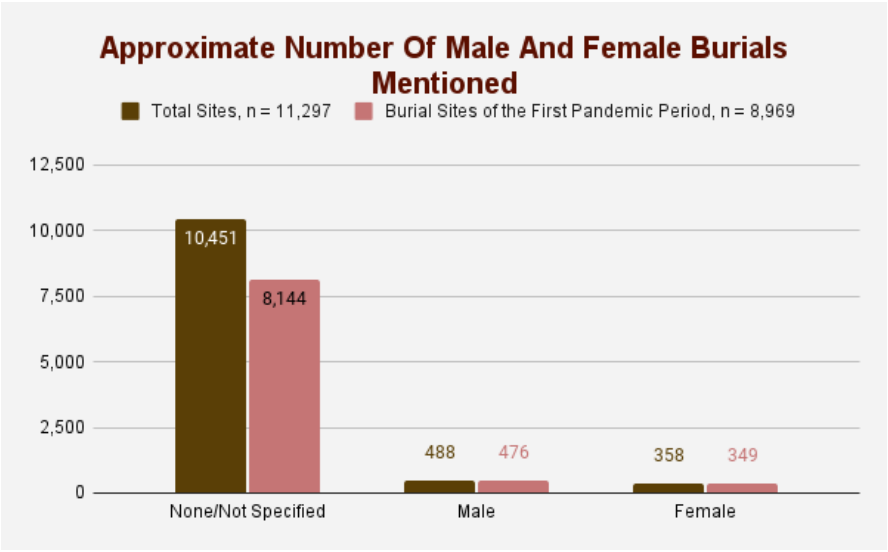

Figure 2: The approximate number of men and women identified as being buried at the sites in the dataset.

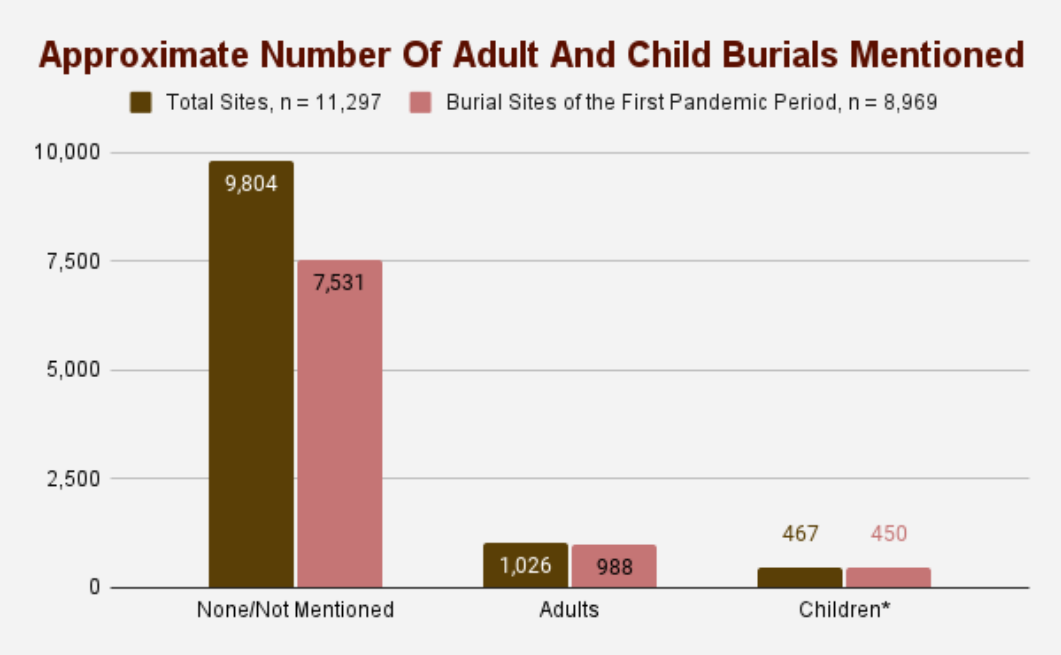

Figure 3: Approximate minimum number of adults and children mentioned in the archaeological reports on the sites featured in my dataset.

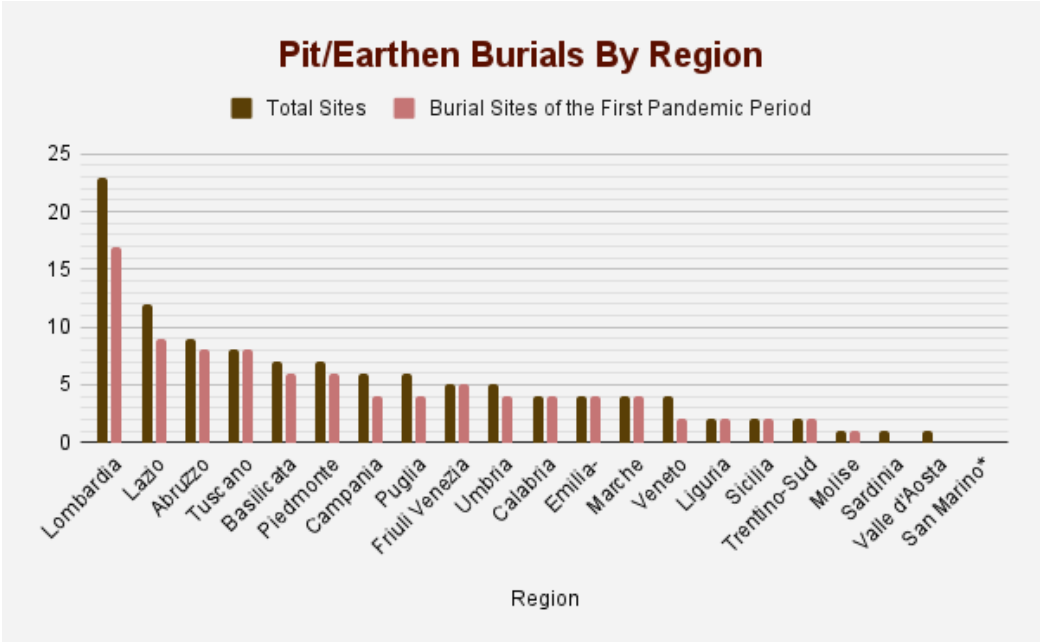

Figure 4: Pit/Earthen burials in the dataset by region.

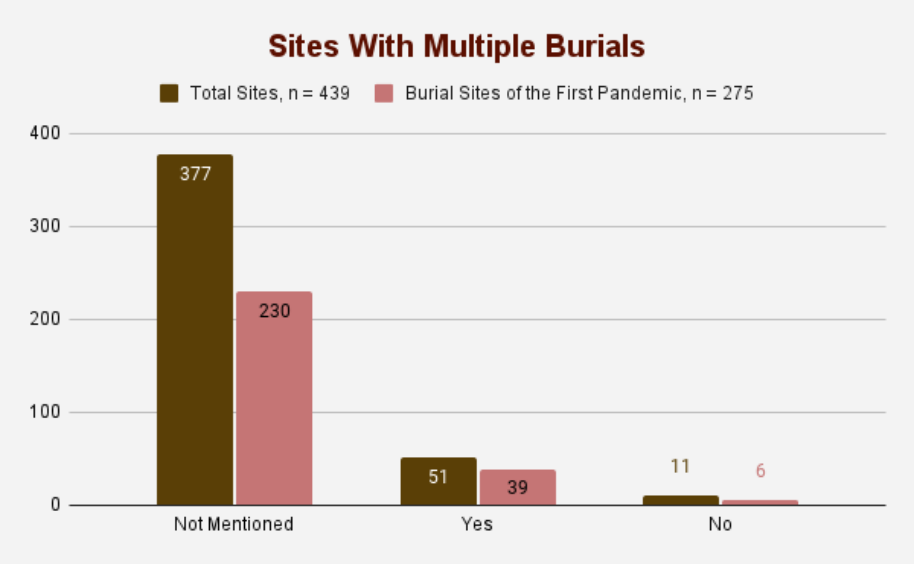

Figure 5: Graph of the number of sites featuring multiple burials.

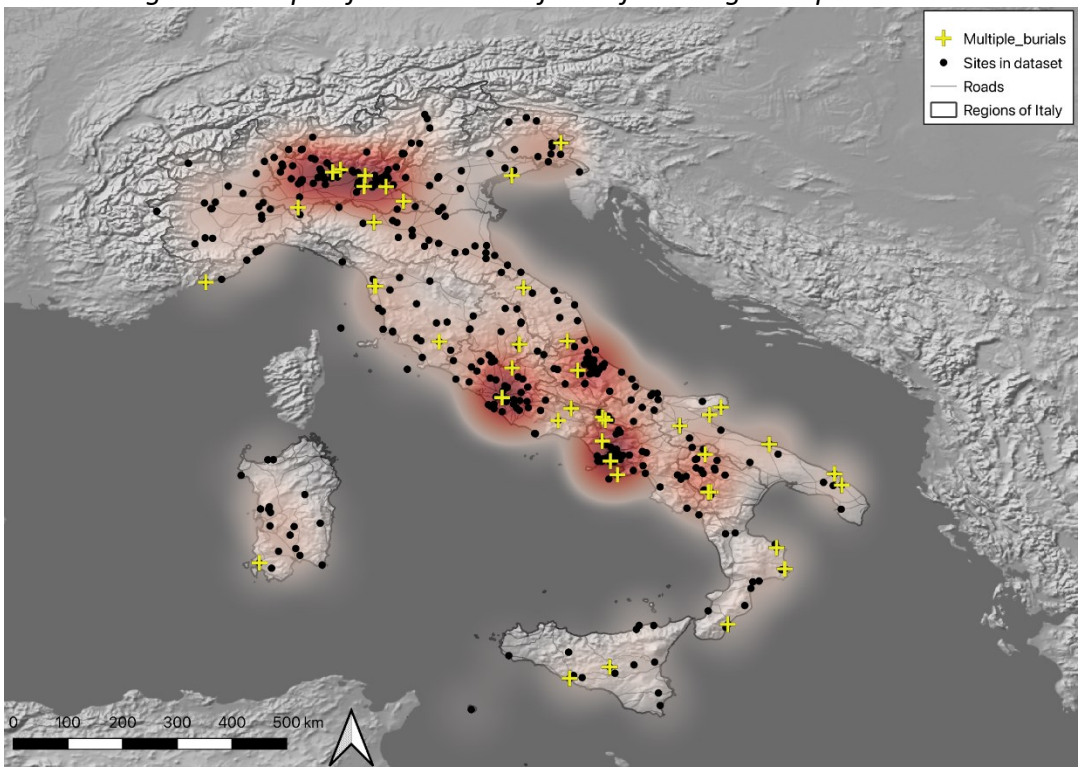

Figure 6: A map, created by Professor Franconi of Brown University, with whom I worked on this project, of all sites in our dataset, the yellow crosses representing those with multiple or mass burials.

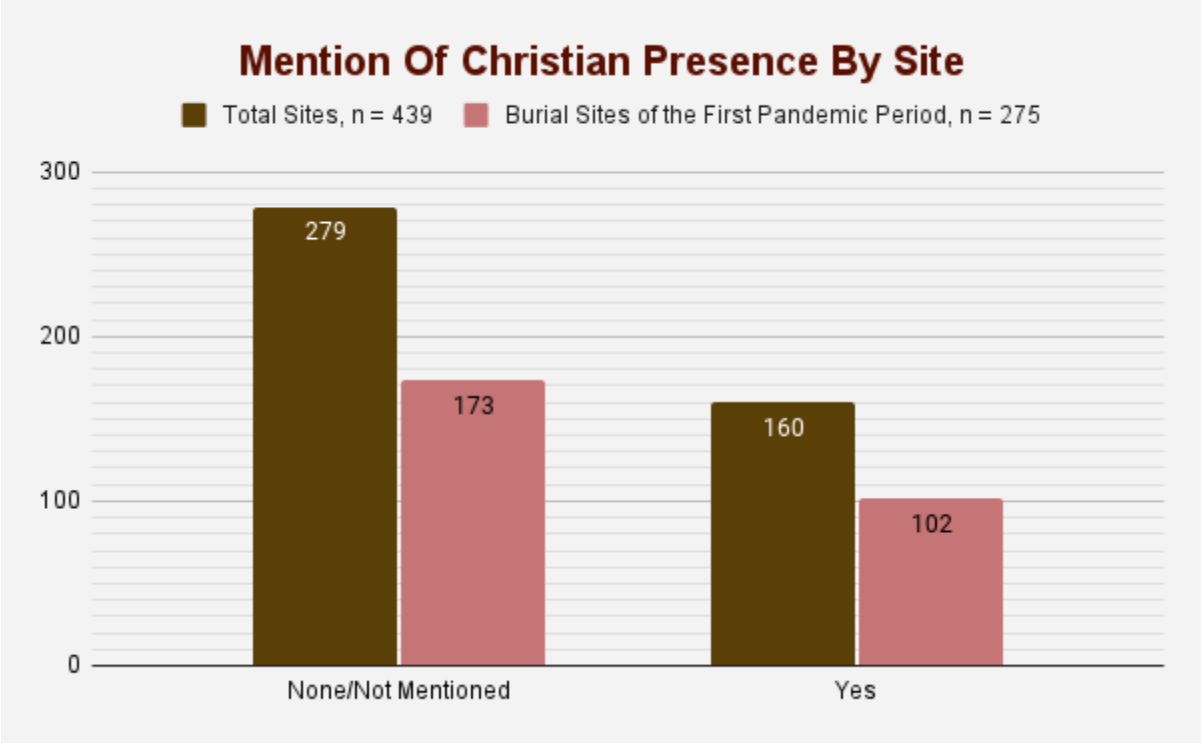

Figure 7: Mentions of Christian presence (churches, imagery, grave goods, etc) by site.

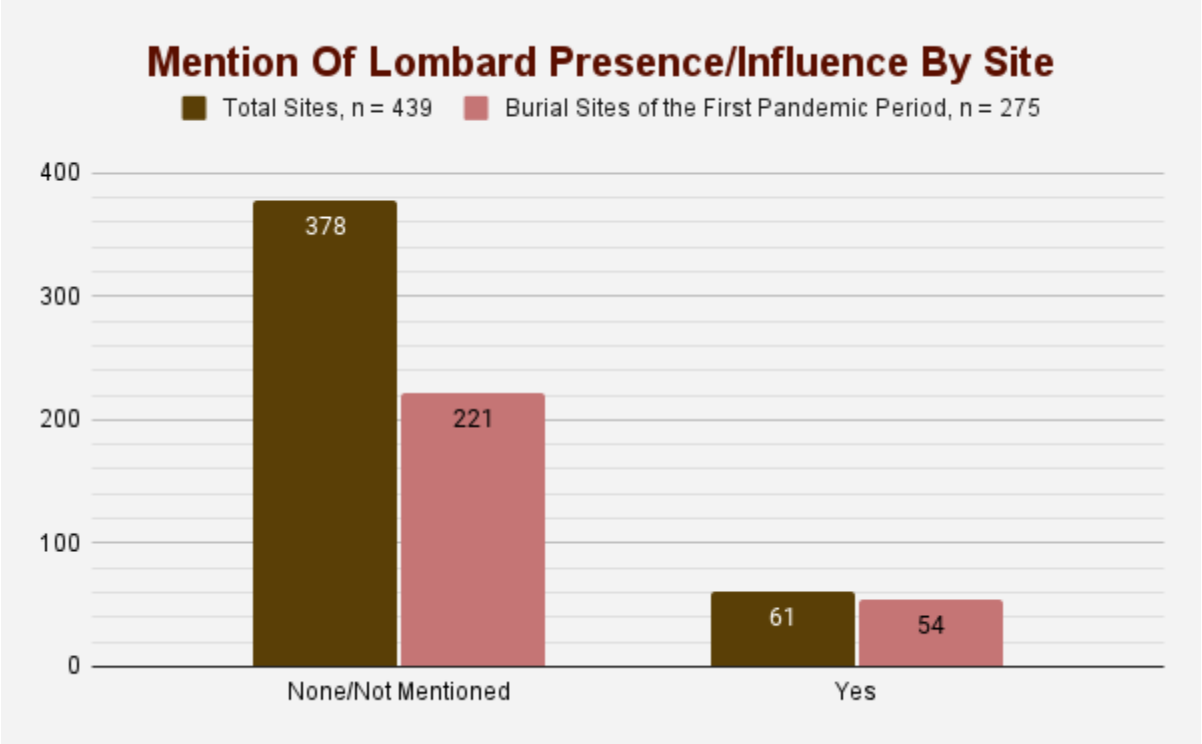

Figure 8: Mentions of Lombard presence (coins, weaponry, grave goods, etc) by site.

Vacone (Ri)	Inhumations dating to the late 7th century have recently been uncovered (Franconi et al. 2019).
Capo Donn (Im)	Inside the basilica, multiple burials were discovered in several sarcophagi, as was a burial in a stone coffin. Another series of sarcophagi, made of Finale stone, was also found. The dating of these burials is unclear. Outside the church, two tombs were excavated, likely dating between the mid-7th and the early 9th centuries AD. The burials in stone coffins each contained one individual: Tomb 14 contained a man over 40 years old; Tomb 15 contained a woman aged 60-69 years old. An 'a cappucina' infant burial, likely dating to the 7th century AD or later, was also found. During the first half of the 6th century, a Christian basilica was built. There is no evidence of the Christianisation of the site before the first half of the 6th century (Castrorao-Barba 2020, 183-184; Pergola and Garrisi 2014-2018).
Villa di Selvicciola (Vt)	The site was abandoned in the 5th century until it was reoccupied between the late 6th and early 7th centuries. It features vast necropolis that dates back to the early 7th century in the Lombard Period. It was used until the 9th century. Numerous burials have been found there, mostly pit and a cappucina tombs. On the more ancient burials, a small church with a basilica was built around the mid-7th century (Castrorao-Barba 2020, 203-204; Micarelli 2020).
Chiesa di San Laverio (Pz)	At this site, burials from the 6th/7th century were found. An early Christian structure was built over a pagan necropolis, likely a cemetery church. A further two areas outside of the small church, to the east, revealed numerous burials amassed one against the other of early Christian and Early Medieval date. In the central nave of the early Christian church, several burials were surrounded by low walls built on a tile surface (Bertelli 2009).
Santa Maria Assunta (Va)	Funerary mausoleums and tombs were inserted in the courtyard, with about 20 tombs ranging from the 4th-6th centuries. After the completion of the cult building in the 5th-6th century, some burials were placed immediately outside the apse, while others were placed inside, in buried sarcophagi (Castrorao-Barba 2020, 151-152; Mariotti 2014, 18).
Monte San Zeno (Bs)	At least 311 tombs belonging to a 7th-century village were discovered. Another cemetery, also for the village, was found in 1995. It had 79 burials and grave goods from the 7th century, including 48 bone and horn combs, making it one of the largest Lombard cemeteries in Brescia (Breda 2006).
Villa of Vada-San Vincenzino (Li)	From the 5th-6th century, burials were placed against the walls of a former Roman villa. Then, between the last quarter of the 7th and the second half of the 8th century, a necropolis with over 100 pit graves, often with several burials inside and devoid of grave goods, developed. The intentional superimposition of some burials could mean that some of the individuals buried were related (Castrorao-Barba 2020, 195-196).
Nervia, Area mura settentrionali (Im)	This site presented 5th-6th century graves of different types from two phases. Three burials, 'a cassa' and 'a cappucina', the latter containing fives individuals, were found. There was also a cemetery with masonry-built and 'a cappuccina' tombs, earth graves, and amphora burials. By 2013, the number of uncovered burials totaled 40. Then a sarcophagus with at least eleven individuals from multiple phases, six other sarcophagi, and twelve more tombs in various forms were found. These included more sarcophagi holding multiple burials, one with at least seven individuals. In 2018, a sarcophagus with 13 individuals was discovered, as were a tomb built of vertically-placed tiles with a stone covering and a second, masonry-built tomb. More multiple burials in sarcophagi, one with seven individuals, and two other tombs were later found as well (MiBAC 2006-2019).
San Martino del Piano (Pu)	Eight inhumation burials were found in 2005, four in 2006, and nine in 2007. Eleven more were discovered in 2008, some 'a cappucina' and some earthen. Excavations produced 44 total tombs, all 'a cappucina' and of 'chaotic' arrangement. Four double tombs with men and women in 'nuptial' positions were found. There was a high percentage of children and adolescents, probably dating to the 6th century. There were no traces of trauma caused by violent death (Luni and Mei, 2006-2016).
Formigosa (Mn)	51 burials of Late Antique date and many different forms and orientations were found, including a double burial with one individual embracing the other. There were also burials of infants in amphorae vessels of the 4th-6th centuries AD ('Formigosa' 2005).
S. Giuliano, piazza Cav. Annunziata (Fr)	The cemetery use of the area began in the 6th century and persisted throughout the 7th. 46 total burials have been identified, some of which have multiple depositions (Tomassetti 2004).
Villa del Casale Madonna del Piano (Fr)	A burial ground of the early 6th to mid-7th century was found with 13 burials. Most of these burials were multiple, resulting in around 165 total individuals, including infants. The tombs were rectangular or trapezoidal, and some reused the pre-existing walls of the former Roman villa. Other graves were in an earthen pit lined by limestone (Castrorao-Barba 2020, 247-248).
Mansio di Vignale (Li)	An extensive cemetery area developed in the 6th-7th centuries, estimated at 100 burials (Castrorao-Barba 2020, 192-193).
Ficarolo (Ro)	The structures of a Roman villa were invaded by 31 pit burials, without grave goods, datable to the end of the 5th through 7th centuries. The necropolis may also have been related to another building of worship before the church of Santa Maria in Trenta, which is attested to in a document from AD 870 (Castrorao-Barba 2020, 157).
Cesana Torinese (To)	33 individuals, none of them infants, were identified in a cemetery with finds dating to the 6th-7th centuries. These included inhumations, coffins, and "indistinct" burials. One body was C14-dated to 340-590 (Garbarino 2007).
Pisa, Via Marche (Pi)	This site featured different types of tombs, including earthen pit graves (some doubles), 'a capuccina' style, enchytrismòs, and a double amphora. "The tombs certainly referable to the Lombard age due to the presence of grave goods, all in an earth pit and distributed in different sectors... are 15, 19, 52, 97, 160 and 161" (Fabiani et al. 2019).

Figure 9: Table of the sites we identify as most promising.

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