

THE UNIVERSITY OF WISCONSIN-EAU CLAIRE

ANATOMY OF A PLAGUE: A GLIMPSE OF AN EPIDEMIC THROUGH THE
OBSERVATIONS OF ONE LONDON PARISH

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Abstract

The Great Plague of London in 1665 was the last major outbreak of the bubonic plague in Great Britain. The wide effects of the plague impacted every aspect of the population. There is much research on the plague and the effects on Tudor-Stuart England. However, much of the research fails to combine not only a historical/demographic analysis of the 1665 plague, but also biomedical model of the plague. This study combines the biomedical model of plague research with a historical demographic model. St. Giles of Cripplegate is utilized as a representational case study for the impacts of the 1665 plague of London. The parish records from St. Giles of Cripplegate are used for the demographic database and the results from the database were compared to various 1665 narratives and pamphlets for the impact of plague on a society.

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“This is a terrible enemy of mankind, that sends its arrows abroad by day, and walks all stained with slaughter by night; that turns the vital into noxious air, that poisons the blood and kills us by our breath...Before it are beautiful gardens, crowded habitations and populous cities; unfruitful emptiness and howling desolation.” –The City Remembrancer, Being Historical Narrative of the Great Plague.

Introduction

Life for Samuel Pepys could not have been better. He was a successful merchant, with connection to much of the nobility throughout London in the 1600s. He had a beautiful wife and wealthy household. In the summer months of 1665, Pepys witnessed changes to his comfortable environment. The changes began on June 28th 1665, Pepys observed several plague houses boarded up along the Palace and King’s Street.¹ In the span of a day, Pepys observed masses of London citizens fleeing the city. Londoners had lived through previous plagues and remembered vividly the macabre scenes of sickness and death within the city. The fatalities on the Bills of Mortality rose and even the “Queen mother set out for France on this day”.² Pepys, not an exception to these worries, sent his wife and mother out of the city on July 5th 1665. Being a merchant of considerable means, Pepys was not able to flee the city and leave his business in the hands of others. He stayed behind to continue his trade.

As the summer continued into the middle of July, Pepys’ observations began to take a more serious tone. The governmental authorities issued a fast day on July 12th 1665 in an attempt to deal with the sinful nature of the population and prevent the spread of the plague. Even with government interventions, the fatalities continued to increase around London. Pepys vividly illustrated the observations of the rapidly rising body count, “I was much troubled this day to hear at Westminster how the officers do bury the dead in the open Tuttle-field, pretending

¹ Samuel Pepys, *The Diary of Samuel Pepys*, ed. R.C. Latham and William Matthews (1825; repr., Los Angeles: University of California Press, 1972), 6: 141.

² *Ibid.*, 142.

want of room elsewhere; whereas the New-Chapel church-yard was walled in at the public charge in the last plague-time merely for want of room, and now none but such as are able to pay dear for it can be buried there”.³ Pepys, a member of the upper class, observed the proceedings from an economic viewpoint, his understanding based upon the politics that the plague caused. By August 12th of 1665, the flippant attitude that Pepys had displayed previously became tinged with fear. The death toll became evident by the visibility of the corpses:

The people die so, that now it seems they are fain to carry the dead to be buried by daylight, the nights not sufficing to do it in. And my Lord Mayor commands people to be within at 9 at night, all (as they say) that the sick may have liberty to go abroad for ayre....I am told too that a wife of one of the groomes at Court is dead at Salisbury, so that the King and Queene are speedily to be all gone to Milton. God preserve us.⁴

Pepys continued with his business and social transactions. He wrote to describe the state of business, what suit he wore during a day, and what pretty noblewoman’s hand he kissed. In early September 1665, the effects of the plague on deaths within London could not be easily dismissed any longer, even for a hardened observer such as Pepys:

Thus this month ends, with great sadness upon the public through the greatness of the plague, everywhere through the Kingdom almost. Every day sadder and sadder news of its encrease. In the City died this week 7496; and of them, 6102 of the plague. But it is feared that the true number of the dead this week is near 10000-partly from the poor that cannot be taken notice of through the greatness of the number, and partly from the Quakers and others that will not have any bell ring for them.⁵

The effects of increased fatalities due to an uncontrollable disease began to take its toll on the bodies and psyche of the population, including the upper classes. No longer could one deny the

³ Samuel Pepys, *The Diary of Samuel Pepys*, ed. R.C. Latham and William Matthews (1825; repr., Los Angeles: University of California Press, 1972), 6: pg 162.

⁴ *Ibid* 189.

⁵ *Ibid* 204.

potential threat of the disease when the numbers became staggering. Pepys' despair climaxed when the plague hit its peak in September of 1665:

Then on the other side-my finding that though the Bill in general is abated, yet the City within the walls is increased and likely to continue so and it is close to our house there, my meeting dead corp's of the plague, carried to be buried close to me at noonday through the City in Fanchurch-street-to see a person sick of the sores carried close by me by Grace-church in a hackney coach-my finding the Angell tavern at the lower end of Tower-hill shut up; and more than that, the alehouse at the Tower-stairs; and more than that, that the person was then dying of the plague when I was last there-to hear that poor Payne my waterman hath buried a child and is dying himself....⁶

The plague infiltrated every aspect of Pepys' world, from his family life and social life, to his business life. Pepys was one of thousands of London citizens affected by the disease epidemic. The impact of the incredible number of casualties by an unexplained disease is the focus of this study.

The Great London Plague in 1665 was a disease outbreak that reached epidemic proportions. Epidemics have a wide range of effects upon any society. The effects reach beyond initial infection and social reactions. To understand the impact of an epidemic on a population, examining fatalities caused by disease gives insight into the spread of the disease, the vectors that aid in the transmission and insight into why certain individuals were susceptible to the disease. The surviving records from 1665 London are not, unfortunately, as complete and detailed as current census records and vital statistics. However, by examining the records that are available from 1665, a picture can be painted of how the disease affected early modern London and how London reacted to a disease of this magnitude. This study utilizes one set of parish records, St. Giles of Cripplegate, as a microstudy to paint a demographic picture of one of the most devastating biological outbreaks in European history. The increased fatalities in St.

⁶ Samuel Pepys, *The Diary of Samuel Pepys*, ed. R.C. Latham and William Matthews (1825; repr., Los Angeles: University of California Press, 1972), 6: pg 225.

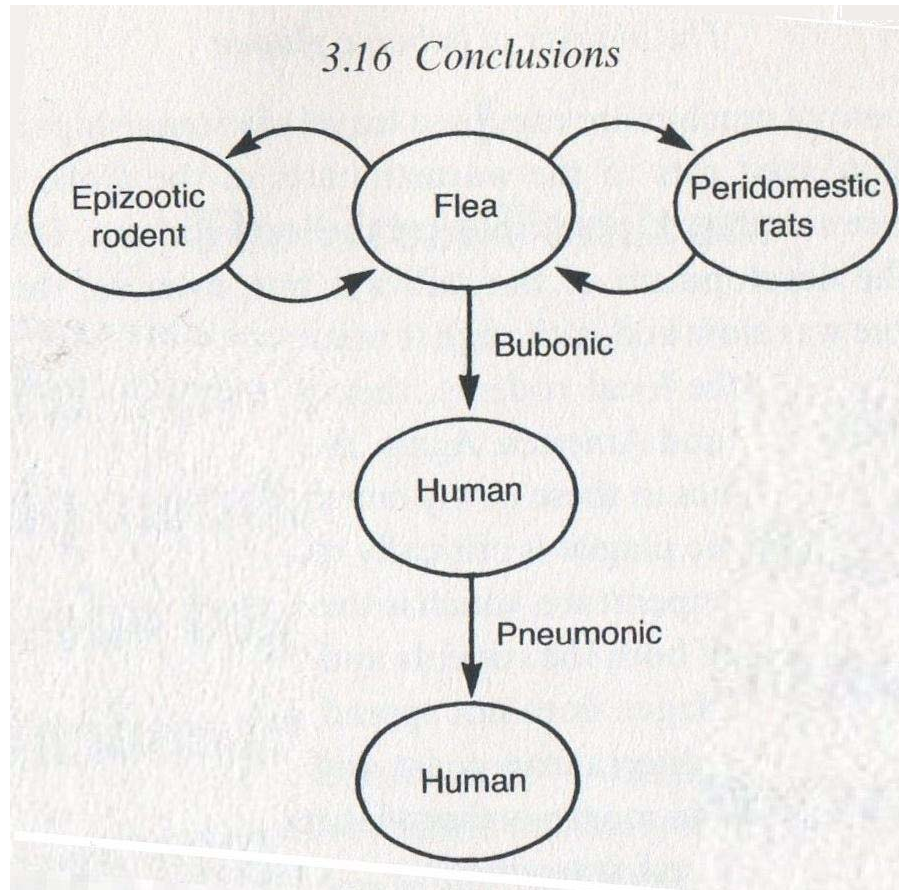
Giles parish, the increased fatalities of plague among all members of the family, and the increased fatalities from other diseases, all indicate the presence of a very specific disease epidemic. The results from this study will show that plague was indeed present in London in 1665 and the majority of the fatalities can be confidently blamed upon the bubonic plague.

Background to an Epidemic

Understanding the Biology of the Plague

The research as well as the debates that surround the 1665 plague of London are varied. The epidemiology (study of the way in which a disease moves and manifests itself within the human population) of the 1665 London plague is central to understanding the effect it had on London's population. Susan Scott and Christopher Duncan, a historical demographer and professor of zoology created one of the most extensive combination studies (biological/historical model) on the extensive epidemiology and as well as historic demography of the 1665 plague of London. The bubonic plague was a very fragile disease. Without a very specific disease path, the transmission to humans would not be possible. The cycle of transmission was specifically flea-rat-man. Figure 1 maps the transmission of the plague bacteria.

Figure 1 Epidemiological Transmission Path of Bubonic Plague



Source: Susan Scott and Christopher J Duncan, *Biology of Plagues: Evidence from Historical Populations* (New York: Cambridge University Press, 2001), 79.

The flea acquired the disease from contact with a wild rodent. To become infectious, the flea needs to incubate the bacteria for 21 days. The flea then connected with a more domestic rat species, usually the black rat, which lived in close proximity to a human population. The transmission needed to be made quickly; the bacteria can only survive for two days outside of a vector. The only way the bacteria could spread rapidly was to have an equal number of susceptible and resistant hosts. If only susceptible hosts are present, the disease dies within a

few days. The disease was not forced to mutate and become stronger. The stronger the virus, the more deadly the results.⁷ It is therefore acceptable to assume that with the length of the outbreak in 1665 London, there was a mixture of resistant and susceptible hosts.

The physical manifestations of the plague were the only way for the medical authorities of 17th century London to identify the victims of the plague. There were three manifestations of the bacterial plague, bubonic, septicemic, and pneumonic. The only difference between the bubonic and septicemia plague was the intensity of the infection. Two to six days after exposure, symptoms began to appear. For the purpose of this study, we will only concentrate on the bubonic plague and pneumonic plague, there was really no difference in symptoms between bubonic and septicemic plague. The plague manifested itself similar to many infectious diseases such as consumption and pneumonia: fever with chills, severe headache, body aches, and abdominal pain. As the infection progressed, the patient showed signs of the diagnostic symptom, the bubo. A bubo was a painful swelling of lymph nodes, most commonly in the neck and armpit areas. These areas became infected and turn a dark blue-black color, a phenomenon that many believe explains how the term “Black Plague” originated.⁸ It was also by these buboes that individuals were diagnosed with plague during the 1665 outbreak. If a patient was going to succumb to the plague, the buboes would be followed by disorientation, confusion and sometimes violent behavior.

The more deadly manifestation of the plague outbreak was pneumonic plague. This manifestation was the most dangerous and the most deadly. Bubonic plague had a fatality rate of between 30-50%. Pneumonic plague spread human to human, without the vector of the flea.

⁷ Susan Scott and Christopher J Duncan, *Biology of Plagues: Evidence from Historical Populations* (New York: Cambridge University Press, 2001), pg 57.

⁸ Ibid., 66-67.

The plague became airborne and humans could directly infect each other. Mortality was high and rapid. Victims died around the third day and never later than the sixth day. The disease, when pneumonic, was nearly always fatal.

The Plague in 1665 London

The cause of the plague of London in 1665 has been a hotly debated concept for many historians. Many historical works, including that by Scott and Duncan's *Biology of Plagues: Evidence from Historical Populations*, point to Dutch traders as the origin of the 1665 outbreak. It had been a policy of the British government to regulate and quarantine ships from outside the region to protect against infection of the plague. It was widely acknowledged that shipping routes, due to increased contact with rodents, carried the ability to transmit disease. The plague had been carried from East to West through shipping routes for a decade prior to 1665.⁹ It is inferred by some that a Dutch ship slipped through the quarantine measures at the docks and a bolt of silk, which contained the fleas infected with the disease, was distributed to St. Giles in the Fields parish on the west side of London.¹⁰ It was there that the first plague death at what was considered the time of the "epidemic" was reported.

The theory of the "Dutch Vector" is disputed by those who support an endemic origin of the 1665 London outbreak. A disease that is endemic is a disease that is always present in a population but will erupt into an epidemic if conditions are right. Some have argued the plague was endemic to Britain throughout the Tudor-Stuart period: the 1665 plague was caused by specific conditions that transformed an endemic disease to into an epidemic. These conditions

⁹ Susan Scott and Christopher J Duncan, *Biology of Plagues: Evidence from Historical Populations* (New York: Cambridge University Press, 2001), 66.

¹⁰ Graham Twigg, "Plague in London: Spatial and Temporal Aspects of Mortality," *Epidemic Disease in London*, no. 1 (1993): pg 4.

included the mild summer temperatures as well as the increase urban population due to the summer trade.

These two theories are challenged by Graham Twigg, who argues that the fatalities during the 1665 plague of London were a consequence of multiple disease epidemics which simultaneously affected the population. Twigg claims that fatality statistics reveal that ALL causes of death by disease, including, consumption, fever, and even tooth abscesses increased in London during the 1664-1666 London.¹¹ One theory pins the cause of the emergence of any of the epidemics on the infected colonies of rats within the urban areas. The basis for this theory was founded on the majority of fatalities were within the outskirts of the urban center rather than in the most concentrated area of the population i.e. the center of the city, therefore, it was not spread from person to person but depended on a rat population.

Once the plague was introduced into the population of London, the disease spread through the population rapidly. Previous plague outbreaks had originated in the city center, due to high population density and concentrated rat population. However, the first recorded death from the 1665 plague was on Christmas Eve 1664 recorded in St. Giles in the Fields which was on the Western outskirts of London. The plague began not in the city center but along the outer walls. The fatalities moved from St. Giles in the Fields along the Holborn road to St. Andrew of Holborn. The epidemic then traveled up to the Northern area of the London surrounding areas, around St. Giles of Cripplegate and St. James of Clerkenwell. It was the surrounding areas that were hit hardest by the plague.¹² It traveled into the inner walls of the city (inside the walls of

¹¹ *Ibid* 11.

¹² Paul Slack, *The Impact of Plague in Tudor and Stuart England* (1985; repr., New York: Oxford University Press, 2003), pg 13.

London). Although many of these parishes were hit by the plague, the epidemic did not decimate these parishes.

The reactions of London society to the 1665 outbreak were based upon the memories of the society to previous outbreaks as well as the conclusions by London experts regarding the causes of this outbreak. The last major outbreak in London had been in 1558-1559 and there had been at least three major outbreaks previously beginning in the 1300s. There were two schools of belief among London's authorities regarding the origin and transmission of the plague. The first was based upon the religious authority of the time. According to this theory, the plague was based upon the sins of those that were infected.¹³ The plague could be incredibly unpredictable and it was no wonder that many looked to one of the highest authority for answers, the Church. It was not a substantial leap to draw the conclusion that it represented "God's Judgment" against the wicked. Any sin could cause the plague, from laziness to swearing. This religious argument encouraged already common beliefs in this period that the poor (who were disproportionately hit by the plague) were "sluttish" and this "sluttishness" bred and spread disease.¹⁴ The impact of

¹³ Thomas Rosewell, "The Causes & Cure of the Pestilence, or, a Brief Collection of Those Provoking Sins Recorded in the Holy Scriptures, for Which the Lord Hath Usually Sent the Sore Destroying Pestilence or Plague Among a People: Together with Some Special Receipts and Preservatives [sic] against the Further Encrease of This Pestilential Disease, and May Serve as a Seasonable Call from the Lord to Invite All Sorts of People to a Speedy Return unto the Lord, and a Forsaking of Those Sins, Which Otherwise Will Cause the Wrath of the Lord to Break Out Among Us, So That There Will Be No Remedy," 1665, London, Harvard University Library, <http://pds.lib.harvard.edu/pds/view/6936547> (accessed April 27, 2010).

¹⁴ Royal College of Physicians of London, "Certain Necessary Directions as Well for the Cure of the Plague, as for Preventing the Infection: With Many Easie Medicines of Small Charge, Very Profitable to His Majesties Subjects," 1665, London, Harvard Open Collection Program, <http://pds.lib.harvard.edu/pds/view/7322582> (accessed April 27, 2010).

the plague upon the poorest areas of the city illustrated to the religious authorities in London, the concentration of plague on the sinful.

London's medical experts also had their theories as to the cause and spread of the 1665 plague. The first of these theories was the idea of the "miasmatic air". Miasmatic air was created by an over accumulation of "stinking vapors" which, when blowing over the city of London, carried the plague. Miasmatic air could occur, according to the experts, due to astrological phenomenon, such as various constellations and planets aligning. The more practical explanation for the presence of miasmatic air was the infected air that was created by the various graveyards, dumping piles and stagnant pools throughout London.¹⁵ Specifically, any odor that was considered to be the least bit unpleasant was considered to be contributing to the infectious cloud. Many of these noxious odors concentrated around the concentrated urban centers of London. It was the correlation between the urban centers and consequently, poorer districts of London, and the miasmatic air that created an increased concern among the practicing medical experts for the urban poor specifically. The theory of miasmatic air came close to the idea of diseases being airborne transferred, however, the air was not seen to be a mode of transportation for microscopic particles but rather the source of the disease itself. Although the theory did encourage the London government to focus on the sanitary conditions of the poorer sections of London, it also encouraged containment and seclusion of those neighborhoods, which often proved fatal to those quarantined within them.¹⁶

The previously described theories created a wide range of preventative cures and treatments for the plague. Both the religious and medical authorities in London made specific

¹⁵ *Ibid*

¹⁶ Nathaniel Hodges, *Loimologia, or, An historical account of the plague in London in 1665 : with precautionary directions against the like contagion* (London: E. Bell, and J. Osborn, 1720), 16, <http://ocp.hul.harvard.edu/dl/contagion/005749432> (accessed April 26, 2010).

recommendations to contain the plague (and curb the panic of citizens of London). Religious authorities urged people to repent and lead clean, sin free lives to prevent God's punishment manifested through the plague.¹⁷ The medical authorities, on the other hand, urged containment of the disease through a mandatory quarantine. All members of any household suspected of being infected with the plague were required to be locked in their home for 45 days. There were guards specifically assigned to guard the homes of those that had the "black mark" on their door, indicating infection. There were also numerous treatments that were created by everyone from medical experts to medicine woman.¹⁸

There was one preventative method that both the medicinal experts and religious authorities agreed upon, the need to flee. To the majority of Londoners, the plague was an unexplainable phenomenon which struck with no rhyme or reason. The only prevention that was a viable option for many London citizens was to run from the infection. The most obvious social group to attempt this option was the nobility. They had the resources and the transportation options to flee the city. The 1665 outbreak in London was unique in that the nobility reacted quickly to the rumors of the outbreak. Most noble flight began in the early spring of 1665 when the government of London made an urgent appeal for all citizens to leave.¹⁹ Many attempted to flee, however most were unable to do so. Many of those in the merchant classes as well as the working class were forced to stay behind to maintain businesses and continue running a household. Unlike the nobility, who were able to leave servants behind to maintain the upkeep

¹⁷ Rosewell, *The Causes and Cures of Pestilence*.

¹⁸ Nathaniel Hodges, *Loimologia*.

¹⁹ Royal College of Physicians of London, "Certain Necessary Directions as Well for the Cure of the Plague."

of their manors, merchant and working class families had no resources to sustain two households.

Review of Literature

The events that transpired during the epidemic of 1665 have been extensively studied. One of the first demographic studies of the plague ever conducted was by John Graunt in his work entitled *Natural and Political Observations Made upon the Bills of Mortality*, published three years before the 1665 outbreak. His work explored methods in which the government could predict the spread of the plague by investigating where the fatalities occurred within a population. The main source of information for Graunt's study were the Bills of Mortality. Graunt examined the reliability of the Bills of Mortality as a tool to explain the plague and other diseases though it's weekly documentation of every fatality and their causes, from plague to women dying in child birth. His main argument did not focus on any particular explanation of disease from the Bills of Mortality, but rather on their importance as a useful tool to improve the public's health. Not only should the Bills be used as a guide to create public health policy, he argued, but the Bills were a necessary means of defense against plague outbreaks.²⁰ Some call Graunt the first modern demographer, for utilizing aggregate data, in other words, Graunt was one of the first epidemiologists. Graunt's final numbers may be outside the scope of this study, but he was the first demographer and epidemiological historian of the plague in Tudor-Stuart England.

There were two main demographic studies that have become the foundation for our current understandings of the 1665 outbreak. Paul Slack's 1985 book, *Impact of Plague on*

²⁰ John Graunt, *Natural Observations Mentioned in the Following Index and Made Upon the Bills of Mortality* (1662; repr., London: Roycroft, for John Martin, James Allestry, and Tho: Dicus, at the Sign of the Bell in St. Paul's Church-yard, MDCLXII. , 1996), 12, <http://www.edstephan.org/Graunt/0.html> (accessed April 26, 2010).

Tudor-Stuart England remains one of the most comprehensive studies of the plague. His study spanned the early outbreaks of 1485 and subsequent outbreaks, culminating in the 1665 plague. The main object in his work was to explore the immediate impact on the plague in specific areas of England by examining parish records in comparison to the Bills of Mortality, including not only London but the urban communities in surrounding regions.²¹ Slack estimates that 60-80% of those who were infected died. Slack utilizes the Bills of Mortality for the majority of his work. To obtain the demographic data for his conclusions, Slack used a Crisis Mortality Ratio, which was the average of plague deaths from the previous decade compared to the 1665 plague totals. Therefore, his results which were extensive and impressive, were based upon ratios and estimates. Although many of his arguments about socioeconomic status as a primary cause for the increased risk of plague fatalities were compelling and ones that this author agrees with, the use of parish records would have made a more compelling study.

Demographics and the socioeconomic effects on plague fatalities in the 1665 plague have also been studied in an extensive study by J.A.I Champion. His work examined the theory of how the social environment such as built structures, social stratifications, and socioeconomic factors, was and did impact the disease spread as well as public reaction to the plague of 1665.²² This study differs from Paul Slack's work because of "the question of the relationships between patterns of death (seasonal, sexual and spatial) and social structures in Restoration London and Westminster by eschewing biomedical theory and concentrating instead upon the material

²¹ Paul Slack, *The Impact of Plague in Tudor and Stuart England* (1985; repr., New York: Oxford University Press, 2003), pg. 145.

²² J.A.I Champion, *London's Dreadful Visitation: The Social Geography of the Great Plague in 1665* (London: Historical Geography Research Group, 1995), pg 2.

structures of urban life”.²³ Champion was aware of the work that had previously been done by Slack and adamantly stated he was not out to replicate the results. Champion followed the model of historical epidemiology not focusing specifically upon the pathogenic quality of a disease but by examining epidemics from a holistic approach. Champion does attempt this feat well. He utilized parish records, hearth taxes, the London Bills of Mortality, and narratives to create a well rounded picture of the social structures that affected fatality in 1665 London. Champion argues that his results prove social and economic dynamics contributed to the patterns of disease in 1665 London. He also argued that the classic flea-rat-human model is flawed and ineffective to explain the disease pattern of this particular plague.²⁴ Although Champion had some excellent research and data to substantiate this argument, it is inconclusive to erase biomedical models completely from any epidemic. Champion’s conclusions on disease impact in London.

A more narrative study was conducted by A. Lloyd and Dorothy Moote. The Mootes’ main purpose for their study was to create narrative based research study documenting the chronological events of the plague year from its outbreak through its peak. Moote’s research included an examination of St. Giles of Cripplegate parish. The Mootes found the valuable parish records that Nicolas Pyne, parish clerk of St. Giles left behind. These records were then used to look at totals of non-plague deaths in 1665 as compared to the averages from the previous ten years. Their conclusion from this analysis was that other diseases increased substantially during the plague years, percentage-wise more than plague deaths.²⁵ This, the Mootes argued, indicated that plague deaths in St. Giles were not as severe as they initially

²³ *Ibid* pg 2

²⁴ J.A.I Champion, *London's Dreadful Visitation: The Social Geography of the Great Plague in 1665* (London: Historical Geography Research Group, 1995), pg 98.

²⁵ A Lloyd Moote and Dorothy C Moote, *The Great Plague: The Story of London's Most Deadly Year* (Baltimore, MD: John Hopkins University Press, 2004), pg 135.

appeared in the Bills of Mortality. Moote's strongly suggested the plague was multiple disease epidemics which affected London in 1665. This study explores the possibility of not multiple disease epidemics, but misdiagnosis of plague. All diseases with symptoms close to plague symptoms would rise during a plague year due to misdiagnosis and fear of increased plague deaths. Moote's research was based around the premise of the multiple disease epidemics, while this study will focus on bubonic plague as an epidemic and the rise of other diseases being an illusion. Moote also focused on occupations of those who died within St.Giles while this study will focus on relationship to head of household as well as examining christening records to explore the idea of flight from London.

There has been a concern in both Slack's and Champion's work and is the main reason for this study. The majority of the figures for Slack's and Champion's work were based upon the 1665 London Bills of Mortality. These Bills, although also utilized in this study, provide a good, overall picture of the London plague, but only the amount of total plague victims from each city parish. The Bills have relatively little other information to create a more comprehensive look at how a disease epidemic can affect an urban population in 1665. Instead of examining only the Bills of Mortality and estimation of deaths through a Crisis Mortality Ratio, this study examines the parish records themselves for definitive cause of deaths, specific plague deaths, and other information that can provide clues regarding the impact of the plague.

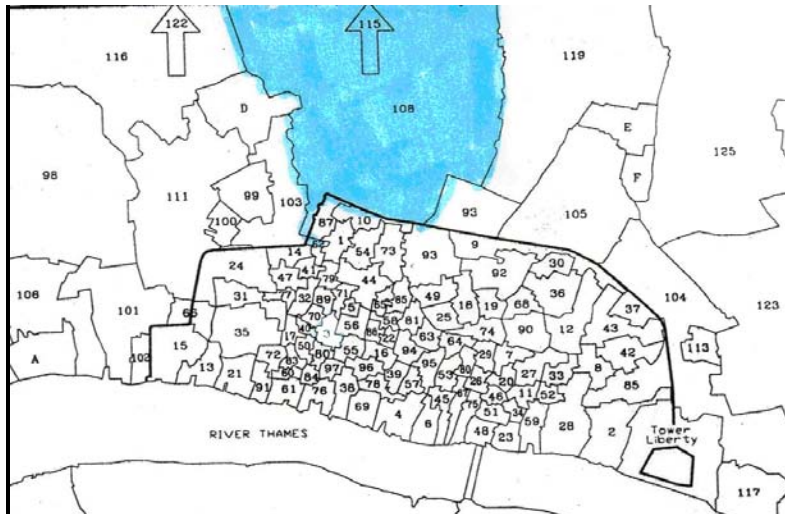
Limitations of the Study

There are some limitations to be aware when conducting a demographic study of the 1665 Plague of London. There was no census kept in Britain and the most accurate record of fatalities was parish records. The parish records give a sense of how a plague moved through a parish, and consequently illustrated how the plague moved through London, however, without

definite population totals for the parishes, very few definitive conclusions can be made regarding the percentage of the population afflicted. This is always problem in working with information that has not been collected systematically, such as with a census. Nonetheless, the information found within the parish records, Bills of Mortality, and the literature written by the medical authorities of the day, what the demographic profile of plague fatalities, singularly and in comparison with other causes of death. In addition, these sources can collectively provide insights into the intimate social context of plague victims.

Methodology

The first necessary step for this research was to choose a parish that would be as representational as possible of London. In particular, the parish had to illustrate the sequence of fatalities occurring in London during the 1665 outbreak. In addition, the parish would not only have to have complete burial and christening records for 1660-1665, the records needed to have plague fatalities labeled for an accurate count of plague victims. After an examination of thirteen parishes' records I determined that St. Giles of Cripplegate was the best option for this case study. St. Giles of Cripplegate was located in the upper northwest corner of London, outside of the walls that divided the city proper.



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Figure 2 Map of 1665 London Parishes 1

Source: J.A.I Champion, *London's Dreadful Visitation: The Social Geography of the Great Plague in 1665* (London: Historical Geography Research Group, 1995), pg 98.

Above is a map of London parish boundaries in 1665. The area shaded in blue was St. Giles of Cripplegate. St. Giles of Cripplegate was one of the largest parishes in the London as well as one of the hardest- hit parishes. St. Giles not only had complete parish records, but also recorded causes of death for every burial from 1655 onward. This was highly unusual at the time; although all of London's parishes reported to authorities the weekly death counts that were printed in the Bills of Mortality, very few recorded causes of death in their own parish burial records. St. Giles offers unique insight into the distribution of fatal disease through a London plague and consequently proven through various means, representational of the whole of London. It was for these reasons that St. Giles was chosen as the best representation of the 1665 Great London Plague.

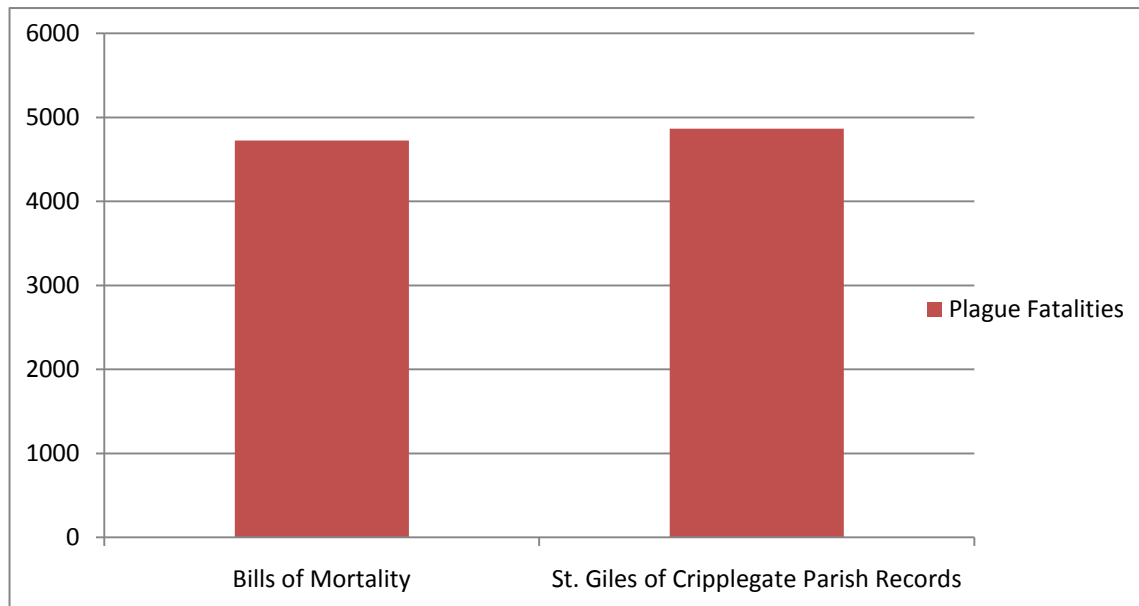
The second step in this study was to create a database that recorded each individual burial record and the vital statistics of those records. Each entry from the year 1660 to 1665 was coded for various demographic data contained within the record. Each death was coded for parish, gender, month and year of death, cause of death, and relationship to head of household. A more simplified process was performed on the christening records from St. Giles. The only information that was recorded from the film were the total number of christenings for each month between the years 1660 and 1665. These records were then entered into a table and graph format to plot a longitudinal analysis of christenings.

Before St. Giles could be utilized as a micro study for the city of London as a whole, St. Giles needed to be established as a representation of London. The best method to determine representational value of St. Giles was to examine the parish means of total numbers of plague deaths for London based on the London Bills of Mortality. As previously stated, the Bills of Mortality documented all of the fatalities from all Anglican parishes throughout London. These documents are important to this study because plague deaths were documented separately from the other fatalities. To illustrate if St. Giles of Cripplegate was representational of the London proper, the total of plague deaths was found for all of the weeks of plague in the Bills of Mortality from April 1665-January 1665.²⁶ These totals were then compared to totals that were found from the St. Giles parish records. Figure 1 illustrates the comparison between the Bills of Mortality and St. Giles parish records. This information is vital to validating the accuracy of the Bills of Mortality. This information is vital to validating the accuracy of the Bills of Mortality, as well as determine whether the course of the plague in St. Giles was representational of London

²⁶ The Bills of Mortality were only available in text from April 1665-last week in December 1665. The totals from St. Giles of Cripplegate were adjusted for this limitation.

as a whole. As Figure 1 shows, there is little difference between the totals recorded in the Bills for St. Giles of Cripplegate and the number of fatalities recorded in the parish records.

Figure 3 Comparisons between Bills of Mortality Fatalities and St Giles of Cripplegate Fatalities



Once the validity of the Bills of Mortality have been established, the comparison between the total plague deaths from the Bills of Mortality for the individual months of 1665 and the St.Giles parish records can be conducted. The Bills of Mortality had to be grouped within each month from 1665, this was done as accurately as possible in understanding of the fact that the Bills were published weekly.

Figure 4 Bills of Mortality Versus St. Giles Parish Records Monthly Tally²⁷

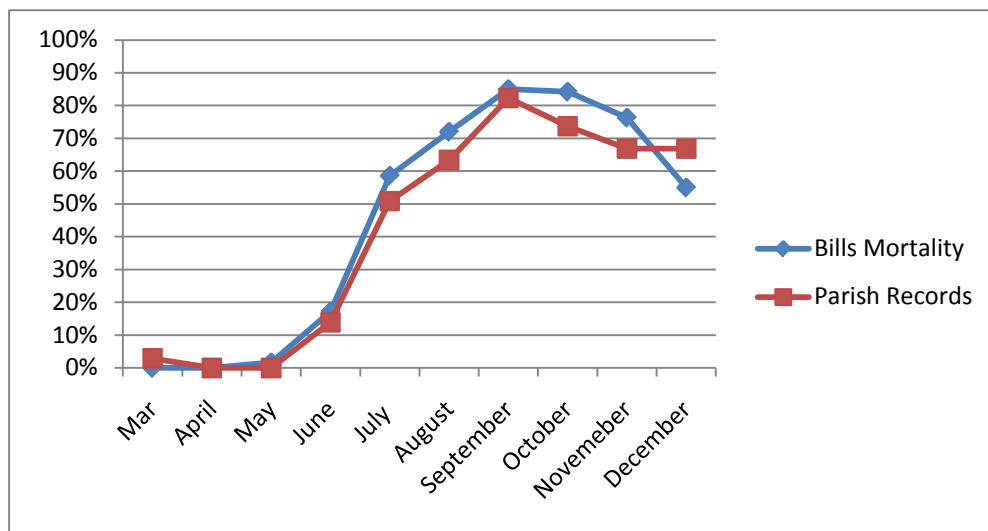


Figure 3 illustrates the results from the comparison between the Bills of Mortality and the parish records from St. Giles by month. Instead of graphing totals, a more accurate representation of the plague deaths over time is graphing the percentage of plague deaths to total deaths per month of 1665. This demonstrates the increase in percentage of plague deaths over the months of 1665. Fewer than 10% of the deaths were on account of the plague until June of 1665. From June 1665 to August of 1665, plague deaths rose sharply and peaked in the late summer months. In September, the percentage of plague deaths began to gradual decrease and the curve began to slope downward, indicating the peak of the epidemic had passed. Both the Bills of Mortality and St. Giles Parish records followed this peak curve, being excellent evidence that St. Giles is a similar enough comparison to the total Bill of Mortality to use as a case study for the examination of its fatalities and consequently, an accurate micromodel of London's epidemic.

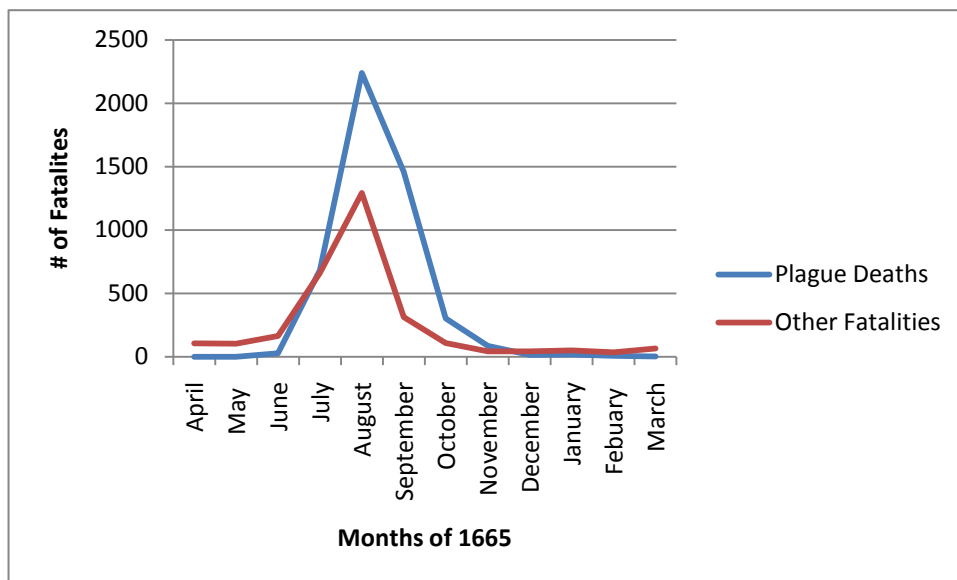
²⁷ 1665 London used the Gregorian calendar. January 1st was celebrated as New Years but the legal start to each year was March 25, therefore all charts follow the legal calendar for London 1665 due to these dates being recorded in the parish records.

Results

The Big Picture

The total number of deaths experienced by St. Giles of Cripplegate as well as movement of the plague through the parishes can be seen by the changes in the number of fatalities through the year 1666. The total number of fatalities in this parish for 1660-1666 was 14,685.²⁸ This number included not only plague deaths but also the fatalities from other diseases. The total number of labeled plague deaths for 1660-1666 was 4,868. Although this may not seem significant, the fatalities must be compared to the deaths for each month of the plague year to get an accurate observation of the mass casualties related to plague.

Figure 5 Comparisons between Plague Deaths and Other Diseases over Time



The figure above shows a monthly representation of plague deaths versus all other fatalities during the years of study. As was seen in the previous graphs, the epidemiological curve is

²⁸ All charts and graphs were totals obtained from the following microfilm, Church of England. "Baptisms, marriages, burials 1657-1667. ." FHL BRITISH Film 380201 . Parish registers of St. Giles Cripplegate Church (London, 1559-1936) . Family History Library, Salt Lake City.

intact, low plague fatalities in the early months of 1665. The plague fatality sharply increased for three months during the summer months, and then decreases quickly during the fall and winter months of 1665. Scott and Duncan both observed this trend in their work as well. Their rationale for this pattern was the fragile incubation cycle of the bubonic plague bacteria. The bacteria can only survive and spread within a temperature range of 29-35 degrees Celsius.²⁹ The weather in the early summer of 1665 was mild but balmy and the perfect temperature for the spread of the plague rapidly through a human population.³⁰ It is also notable that the fatalities that were not specifically caused by the plague also followed the same epidemic curve as the plague fatalities. This supports the Mootes' work however, this author is not convinced that the curve was due to an increase in the incidence of all diseases but is an illusion of the misdiagnosis of plague fatalities. This observation will be explored later in the study.

Relationship to Head of Household

The total number of plague fatalities can give a large but overwhelming picture. To understand how the plague was moving through the population, we need to examine the relationships of those who died to the head of household. There were numerous categories that were utilized to differentiate those who had died during the years of 1660-1665. The categories were based upon the labels that were present within the parish records without regard to age including: head/self, widow, wife, son, daughter, servant, and other. Table 1 gives an outline of the number of total fatalities of the various family members during the four years before the plague as well as through the plague and one year after. As can be seen, sons and daughter were two members who had many fatalities compared to the other members. During the year of the

³⁰ Paul Slack, *The Impact of Plague in Tudor and Stuart England* (1985; repr., New York: Oxford University Press, 2003), pg. 57.

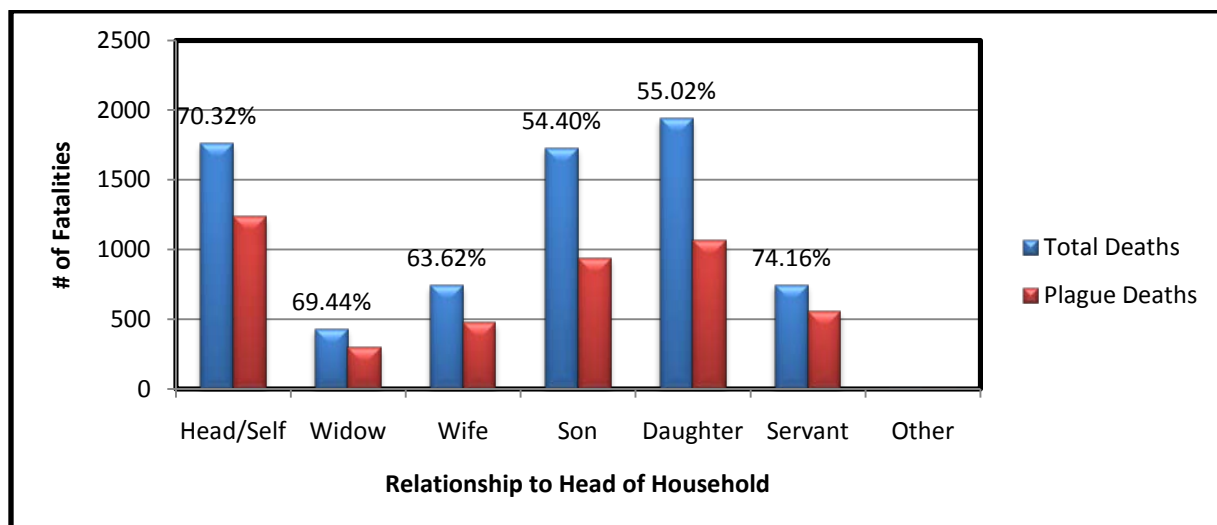
plague, son, daughters and the head of household (male and females) all had large numbers of fatalities.

Table 1 Fatalities Categorized by Relationship to Heads of Household from 1660-1665

	1660	1661	1662	1663	1664	1665	1666
Head/Self	198	236	204	237	301	1762	290
Widow	61	81	76	82	93	432	110
Wife	101	123	96	113	135	745	96
Son	282	352	313	344	379	1728	224
Daughter	268	344	283	315	406	1941	172
Servant	32	65	28	17	22	747	21

The totals of fatalities from 1660-1665 can only give so much information. Breaking down the amount of fatalities between plague fatalities and total fatalities to examine the percentage of plague deaths versus other fatalities can give a better indication of the susceptibility of various roles in a household to plague.

Figure 6 Percentage of Plague Fatalities as Compared to Total Fatalities Broken Down by Relationship to Heads of Household for the year 1665.



Although sons and daughters were the majority of the fatalities during 1665 the percentage of these deaths that were plagues were a little over half. The heads of households and the servants had a larger percentage of plague deaths compared to deaths overall than any other category, which could indicate a possible susceptibility that was not present in other relationships.

The Impact of Other Diseases

There has been a heated debate among historians what the impact of other diseases were on the plague outbreak of 1665. As discussed earlier, one school of thought was based around the theory of the bubonic plague as the sole cause of the epidemic. This theory was supported by JFD Strewsbury and his observations of the London Bills of Mortality and various parish records. The theory stems from the sharp epidemiological curve during the summer months, when plague was the most able to survive.³¹

The second school of thought was suggested by Champion as well as Morris. It was this theory that argued that the diseases that had been the previous causes of fatality in 17th century London combined with the outbreak of plague to become a multi-disease epidemic. In other words, there was an outbreak of plague; however the all diseases were in epidemic proportions during the summer of 1665. The combination of weather, urban conditions, and other environmental conditions caused resurgence in disease. Although this school of thought has some merits, which the following results will show, there is still no denying the fact that plague victims increased on a massive scale during the summer of 1665.

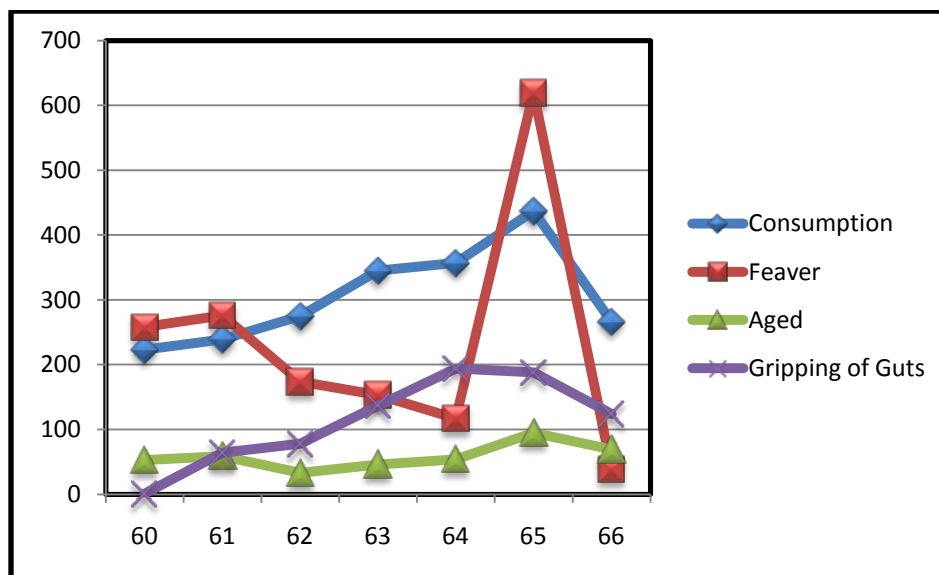
The diseases that caused many of the fatalities in London had been endemic for many years. There are four main diseases to observe when looking to other disease impacts during the

³¹ J.A.I Champion, *London's Dreadful Visitation: The Social Geography of the Great Plague in 1665* (London: Historical Geography Research Group, 1995) 92.

plague are consumption, fever, “gripping of guts”, and unidentified death of the elderly (aged).³² Death during childbirth will also be examined later in the study. The former four diseases were picked for observation due to the similarity of symptoms to the plague. Although the diagnostic sign for plague were the buboes on the body, as was previously stated, if plague had changed to a pneumonic form, death occurred in less than two days, without the presence of buboes. The following results explore the distribution of diseases throughout St. Giles of Cripplegate.

The first analysis is a monthly analysis of the distribution of the four previously stated diseases over 1660-1666. Figure 5 illustrates the number of fatalities due to each of the four

Figure 7 Longitudinal Analysis of Four Disease Fatalities between 1660-1665



diseases between 1660-1666. Although the curves do not fit as perfectly into an epidemiological curve as the plague outbreak, a spike can be seen for each disease during 1665. This is especially true in for the rates of consumption, feaver, and aged. Whether this spike is due to an actual increase in the incidence of disease or increased fatality to already present diseases, or misdiagnosis of the plague is impossible to discern, however, any of these explanations could be

³² Terms as recorded in the 1660-1666 parish records, parish clerks classification of disease.

the cause for the obvious spike in fatalities during this time. There has been some speculation by historians that the prime environmental conditions which allowed the growth and transmission of the plague, also contributed to the growth of other diseases as well, making London during this time “a rats nest” of bacterial growth. Some make the argument that due to the environmental conditions, and the stress caused by the plague on the population, more fatalities were occurring with otherwise endemic diseases.

Finally, the four diseases that were chosen to illustrate their longitudinal process over the course between 1660-1665, had symptoms that may have been plague but were misdiagnosed. Dr. Nathaniel Hodges was one of the few physicians from the Royal Academy of Physicians who stayed behind to care for those afflicted by the plague. His observations were some of the best records surviving that document an eyewitness, medical authorities account of what transpired during the 1665 plague. The only diagnostic symptom for the plague was observation the black buboes on the victim’s body. Hodges described one such patient, “...two rifings about the Bigneys of a Nutmeg broke out, one on each thigh upon Examination of which, I foon discovered the Malignity, both from their black Hue and the Circle round them and pronounced it to be the Plague, thereby confirmed by lubfequent Symptoms, although by God’s Bleffing the Patient recovered”.³³ As was explained previously, some plague forms killed faster than buboes could show upon their patients, and some plague forms did not cause buboes to appear. Without this tell tale symptom, according to a medical expert of the time, plague was not diagnosed as a cause of death. The other symptoms of plague such as fever, bloody, productive cough, and vomiting, would have been observed and diagnosed as feaver or consumption, which may have

³³ Nathaniel Hodges, *Loimologia, or, An historical account of the plague in London in 1665 : with precautionary directions against the like contagion* (London: E. Bell, and J. Osborn, 1720), pg 6, <http://ocp.hul.harvard.edu/dl/contagion/005749432> (accessed April 26, 2010).

been an explanation for the increase in the four diseases, particularly during the main summer months, coinciding with the plague outbreak.

The buboes were one form of misdiagnosis, but those that were appointed to label the deaths were not considered to be the most reliable sources. Hodges described these women (always women) in scathing terms: “Wicked Practices of Nurfses (for they are not to be mentioned but in the most bitter terms). Thefe Wretches out of Gracedivefs to plunder the Dead would frangle their Patients and charge it to the Diftemper in their Throats; others would fecretly convey the peftilential Taint from Sores of the infected to Thofe who were well”.³⁴

Those that were responsible for going into houses and when an individual had died were not necessarily the medical authorities due to the high death rate of the summer. The “searchers” were the woman that Hodges described in his pamphlets. These women were not highly regarded and only trained in enough medicine to identify the buboes on the victims. As untrained individuals, it is even more likely that many plague victims were diagnosed incorrectly without a bubo, again pointing to the conclusion that plague victims were mislabeled according to their symptoms and not their disease.

Christenings and Flight

The final demographic feature that will be explored in this study is how to determine the demographic impacts of flight. Flight was a not only a reaction by the people of London, it was dictated by the Royal Society of Physicians as well as the King. To understand the complete picture of the plague and its impact on the fatalities within a parish, exploring flight is a necessity. Champion utilized christening records, found within parish records, to explore the

³⁴ Nathaniel Hodges, *Loimologia, or, An historical account of the plague in London in 1665 : with precautionary directions against the like contagion* (London: E. Bell, and J. Osborn, 1720), pg 8, <http://ocp.hul.harvard.edu/dl/contagion/005749432> (accessed April 26, 2010).

idea of flight. It was his theory that documenting the total of christenings that a parish would have for the ten years prior to the outbreak of 1665, and then the year 1665, there may be a significant decrease in the number of christenings due to children getting christened outside of the parish they had fled.³⁵ In early modern England, children were christened immediately after birth due to the high percentage of child fatalities. With an outbreak of the plague, coupled with the flight from London, parents would be even more anxious to get their children christened as soon as possible after birth. If there is a substantial decrease in the number of recorded christenings for St. Giles in 1665, it could be an indication of flight from the home parish to parishes outside of London.

Christening records from the five years prior to the plague show a fairly steady increase up until the plague year of 1665. Figure 7 illustrates the change in total annual christenings over time. The dramatic drop in 1665 is obvious. The another interesting aspect to note, is the significant increase after the 1665 plague, to totals that surpassed even total in 1663, which was the highest.

³⁵ J.A.I Champion, *London's Dreadful Visitation: The Social Geography of the Great Plague in 1665* (London: Historical Geography Research Group, 1995), [page #s](#).

Figure 8 Longitudinal Analysis of Christenings from 1660-1666

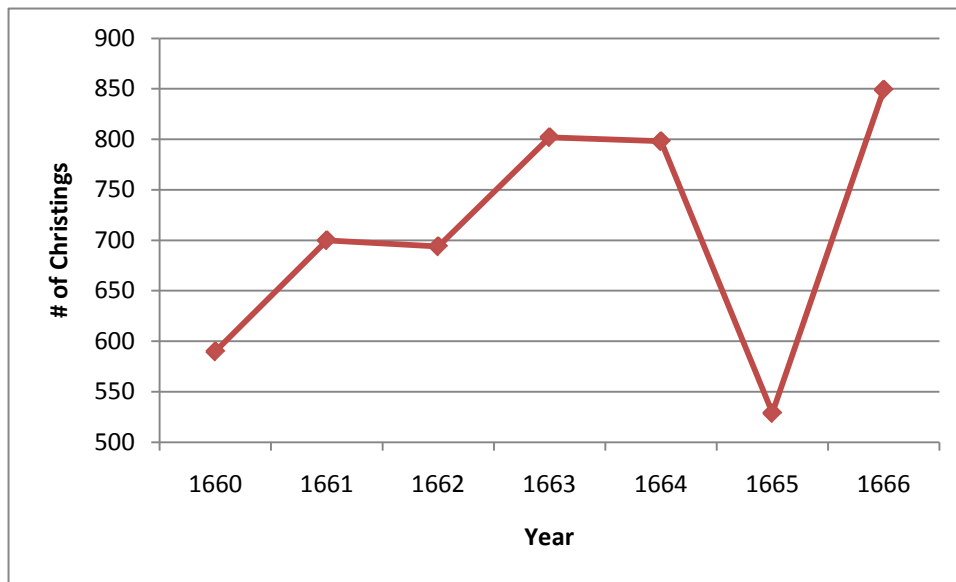
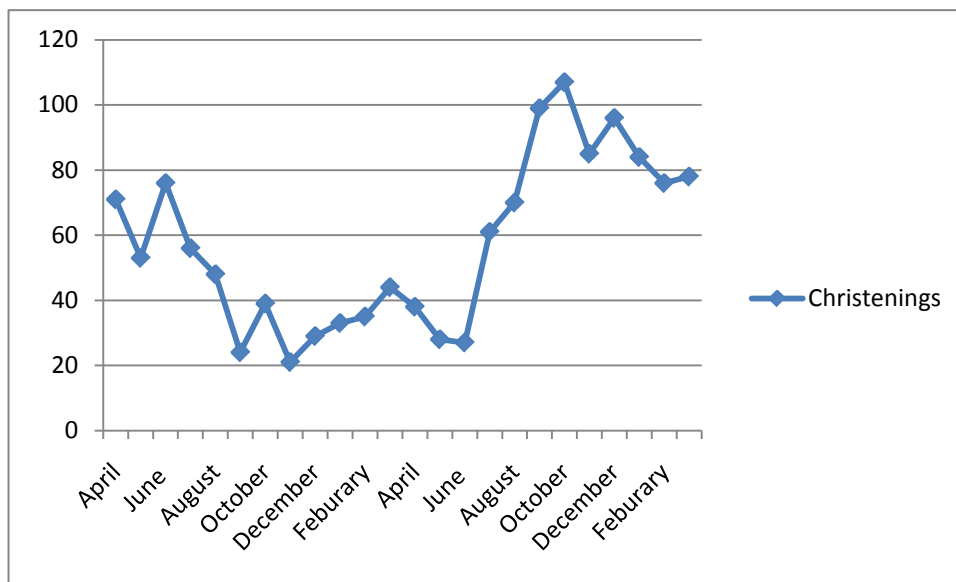


Figure 8.1 illustrates the year 1665 by month to better observe the trend during the actual plague year of the fatalities.

Figure 9 Longitudinal Analysis of Christenings for 1665



This could be indicative of various causes. The first is that, just as with many other crises within a population such as war or famine, birth rates increase when the crisis begins to abate. When the plague was beginning to fade in the winter of 1665, it may have been an ample time to begin to reproduce. A second explanation assumes that those who had participated in the flight returned rapidly during 1666 and immediately had their children christened in the home parish, which is why we see such a dramatic increase in 1666.

Conclusions

The effects of the plague affected St. Giles as well as the whole of London in epidemic proportions unseen in any time since. Although studied extensively, the combination of epidemiological and historical analysis has been a difficult combination for scholars to obtain. The impact of the plague can only be holistically viewed, as Champion suggests from a view of the plague as a disease and subject to the social constructions of the day. Observing the parish records of St. Giles of Cripplegate with a biomedical/historical model gives extensive insight into the how disease killed in a population.

The results accurately indicate that there was a severe outbreak of the plague in 1665. The fatalities that had been identified as plague could not have been misdiagnosed. The buboes were a very specific disease feature and only if this sign presented itself would a death be labeled as the plague. The increase in four diseases could have been misdiagnosed plague victims. There is no evidence from either a historiographical model or a biomedical model that plague was only surfacing as an endemic disease. This was clearly an outbreak of epidemic plague. The relationships to heads of household do show that servants and widows were a large percentage of plague fatalities compared to the overall number of deaths. This would be a

logical conclusion due to the nature of the work and the manifestation of pneumonic plague during the outbreak.

Finally, the rapid decrease of christenings can be a sign that there was massive flight from St. Giles during the 1665 plague. Although not wholly conclusive evidence, it does give a basis for further research into the significant drop in christenings during 1665 as well as the rapid growth of christenings immediately following the plague.

The knowledge gained through the deaths of a population for plague have enormous impacts on how a society responded to a major biological crisis. Due to the incomplete records available to historians from 1665, examination of plague fatalities are the best source for this evidence. Much of this demographic study gave guidance for future studies into the more detailed aspects of the plague.

Further Research

Although well researched, the plague of 1665 still has many areas that deem more exploration. One of these areas is to make a more reliable means of calculating total populations for the various parishes. In this way, percentages of fatalities can be measured more accurately. More integrated research by historians and epidemiologists would be valuable to understand not only how the plague moved through the population, but also how the social environments in which disease flourishes impacts its biological spread. St. Giles of Cripplegate is just a microstudy of a massive epidemic, however a snapshot can quickly turn into a panoramic view when coupled expanded with the right research. This research can then aid in exploring how past mistakes in the past can be lessons to be learned for epidemics in the future.

Appendix

1665 Plague of London Database Codebook

Parish Codes

00=unknown
01=St Giles of Cripplegate
02=St Andrew of Holborn
03=St James Clerkenwell
04=St Mary Aldermary
05=St Thomas Apostle
012=St Micheal Cornhill
013= St Bene't Paul's Warf
014=Kensington
015=St Mary Woolnoth
016=All Hollows Breadstreet
017=St John the Evangelist
018=St Mary Le Bowe
020=St Pancras Soper Lane

Months of Death

01=January
02=February
03=March
04=April
05=May
06=June
07=July
08=August
09=September
10=October
11=November
12=December

Cause of Death

00=unknown
01=Plague
02=Maternal/Reproductive
03=Stillborn
04=Feaver
05=Aged
06=Consumption
07=Other
08=Spotted Feaver
09=Flox
10=Convulusion
11=Stopping of Stomach

12=Winde
13=Smallpox
14=Gripping of Guts
15=Dropsy

Relationship to Head of Household

00=unknown
01=Head/Self
02=Widow
03=Wife
04=Son
05=Daughter
06=Servant
07=Other

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