

Chapter 2

London

Abstract An evolving sensibility produced a consensus that numerical accounts of population were vital to the management of society. Central government ordered that records be kept at the civic level of the parish. Causes of death were recorded by Searchers who wrote down what they could elicit. Accounts of such events were recorded by diarist, Samuel Pepys. Diseases and their treatment by physicians, barber-surgeons, and others are described. The work of John Graunt who analyzed 229, 250 deaths is introduced. Mortality in peak years of plague is presented.

Keywords Quality of life • Life tables • John graunt • Diseases • Plague • Mortality

In Table 1.1 there are data from 97 parishes whose names are fairly diverse; however, there were eight parishes named All Hallows, twelve St. Marks, and seven St. Michael's.

The year, 1657, saw 3,014 deaths, with a further 5,648 deaths in 16 parishes outside the traditional boundary of the city walls. From 113 parishes the Bill for 1657 reported only four deaths attributed to plague, the much feared swift and certain killer which had spread extensively in 1593; in that year, for example, 337 of 506 deaths (66.66 %) were caused by plague in the parish of St. Clements Eastcheap. Subsequent epidemics broke out in 1603, 1625, 1636, and, finally, the great plague of 1665. But city lights still beckoned and growth in the metropolis's population is accounted for by in-migration from the home counties and beyond. The population of London at mid-century was about a half-million people, but estimating the population has proved vexatious. Razzell and Spencer (2007) concluded their detailed study by offering an estimate of 400,000 persons in 1650, with an annual increase of 2 %, adding that the contribution of mortality data in the calculation of the size of the population is complex.

In Table 2.1, The Bill for 1657 presented for the first time the list of attributed causes of death. There are 61 causes of death in a list which is varied and sometimes obscure. "Mother" followed by a zero is odd, five people were "Murthered;" "Spotted fever" was typhus, and nine people were found dead in the streets.

Table 2.1 The disasters and casualties of this year—1657

Abortive and stillborn	617
Aged	1,545
Ague and Fever	5,257
Cancer, Gangrene and Flatula	56
Childbed	625
Chrisomes and Infants	1,258
Consumptions and Tisick	4,808
Dropsie and Tympany	1,478
Drowned	50
Executed	6
Flux and Smallpox	655
Found dead in streets, fields, etc.	20
French pox	86
Gout	5
Grief	46
Griping in the Guts	1,288
Hanged and made away themselves	7
Kings Evil	56
Murthered and shot	9
Measles	2
Overlaid and Starved	49
Plague	68,596
Planett (struck)	6
Poysend	1
Quinsie	35
Rising of the Lights	397
Scurvy	105
Sores, Ulcers, Broken Limbs	82
Spotted Fever	1,929

A subsequent Bill summarized mortality in 1665; it was the year of the great plague and stands out among a total number of 62 ascribed causes of death. The salient number for 1665 is the 68,596 deaths attributed to plague, the organism *pestis yersinia*. The highly infectious disease spreaded panic and the city became depopulated. Figure 2.1 appeared in the outbreak of 1641 and suggested, perhaps morbidly, that flight was not the answer when London's *Charitie* was available. Country folk were not always pleased to have Londoners and their germs as visitors.

At the level of the parish, records took various forms. Sometimes entries were made in a blank document—palimpsests would have been convenient, and there were instances of blank volumes being gifts from parishioners. Parish documents varied in length and shape and disturbances and negligence made their survival a matter of chance. Bills were published weekly, and some were aggregated as monthly reports.

LONDONS LAMENTATION.

Or a fit admonishment for City
and Countrey,

Wherein is described certaine causes of this affliction and visitation of the Plague, yeare 1641. which the Lord hath been pleas'd to inflict upon us, and withall what meanes must be used to the Lord, to gaine his mercy and favor, with an excellent spirituall medicine to be used for the preservative both of Body and Soule.



London, Printed by E. P. for Iohn Wright Junior. 1641.

Fig. 2.1 Londons lamentation

Table 2.1 presents annual data from 1665 on *Christenings and Mortality, Diseases and Casualties*. There were 97,306 interments, of which 68,596 (70 %) were due to one disease, plague. Figure 2.1 illustrates town versus country responses to plague mortality. Country folk were unlikely to accept graciously Londoners bringing all manner of medical problems and social disruption, as is common when populations are dispersed.

In the case of the records of Dublin parishes their survival came about because they were not placed in a central repository. Benign neglect and indifference kept them in their home parishes.

In contrast, Whitelaw's (1805) invaluable set of five hundred tables of population constructed from his 1798 survey of Dublin streets were deposited for safe-keeping in Ireland's national archives; they perished in the violence of 1922 (Jordan 2011). In the case of London's Bills, those from 1657 to 1758 were published in 1759 as a set, and were on sale by the publisher in the Strand.

John Graunt's *Natural and Political Observations...*

When Messrs Martin, Allestry, and Dicas selling books "at the sign of the Bell in St. Paul's Church-yard," printed at the direction of the Royal Society the ninety-page monograph prepared by John Graunt, in 1662, they set forth the first quantitative study of population. That slim work examined the causes and frequency of death in the parishes of London and the hinterlands. Across the seventeenth century London grew from a population of 200,000 in 1600–375,000 at mid-century, rising to 490,000 in 1700 over the next five decades. In 1650, the north bank of the Thames was home to about 290,000 people, and the south bank had a population of about 50,000 (Finlay and Shearer 1986).

Writing in the next century, in a retrospective essay, Dr. Haygarth of Chester, writing to the Royal Society in 1774 focused his question on urban Bills in general asking,

...at what period of life each disease is most fatal to mankind, and is manifestly a sort of intelligence the most important, both to the patient and the physician...the advantage of such information is so obvious to all [but Haygarth regretted a century after Graunt that] no attempt has been made to execute a plan so generally beneficial to Mankind.

Graunt's goal in 1662, as expressed in his Epistle Dedicatory to the Privy Councillor Baron Truro, was to analyze,

the waxing, and waning of Diseases, the relation between Healthful, and Fruitful Seasons, the difference between the City and Country Air, & co.

The "city Air" contained an amount of irony, for about the time the work was completed and Graunt's grasp of mortality in the general population was at its peak, the topic became acutely personal with the near-concurrent deaths of his parents and one of his three daughters.

John Graunt was well established among men of business in the City. Indeed, such was his situation that he was able to arrange a professorship in Musick at London's Gresham College—a sinecure to be sure—for his friend and business partner. Their connection has been questioned in the form of whether Petty, rather than Graunt, was the author of the 1662 publication. The matter was discussed by Glass (1964) who favored Graunt alone. However, in the seventeenth century Petty was widely credited as the author, and he edited a fifth edition after Graunt's death. Graunt's raw material consisted of records at the Parish Clerks' Hall. Those data were acquired originally, in Graunt's words, as follows:

When anyone dies, then, either by tolling, or ringing of a Bell, or by bespeaking of a Grave of the Sexton, the same is known to the Searchers... antient Matrons, sworn to their Office (who) repair to the place, and by view of the same, and by other enquiries, they examine by what Disease, or Casualty the Corps died.... The Parish-Clerk...every Tuesday night carries an Accompt...to the Clerk of the Hall. On Wednesday the General Accompt is made up... and on Thursdays published...(the public) will pay four shillings per Annum for them.

The basic personnel were the Searchers—the “Antient Matrons, sworn to their Office,” in Graunt's expression, and usually widows appointed as a form of parish charity. An illustration of the period shows Searchers wearing a pointed, witch-like hat, and carrying a wand or staff of office. Their skills were minimal beyond a degree of literacy, and their competence has been questioned with regard to the accuracy of their reporting, and so to the validity of Graunt's data. A commentator of the times, John Bell (1665) recorded the widespread opinion that “the searchers are old and simple women,” an opinion he did not share, because, “they are examined touching their sufficiency.”

In times of widespread sickness the Searchers were a familiar sight. In his diary for October 31, 1665, Samuel Pepys recorded

Meeting yesterday the Searchers with their rods in their hands coming from Captain Cocke's house, I did overhear them say that his man Black did not die of the plague (Sims 1993).

Of course, people in an epidemic die from a range of conditions, and in the case of the manservant Black their report probably was correct. Munkoff (2010) stressed the traditional role of women as significant practitioners of medicine in the home as a qualification to be a Searcher. They would, she asserted, have acquired familiarity with common diseases of childhood and adulthood, knowledge which would have helped when they assessed the condition of a corpse.

Central to a consideration of the Bills of Mortality is the question of their validity. Their numerical validity depended on the degree of accuracy at the level of London's many parishes. At that initial level the Searchers' personal conclusions began the transition into the tabular form generated by Graunt. That change is easily under appreciated; the Searchers' idiosyncratic perceptions of deaths are not isomorphic with the apparent objectivity and validity of Graunt's numbers. To the empiricist, Graunt's numbers are self-evident, but on further consideration their

subjective origins need to be acknowledged. Graunt’s own position on validity could be ambiguous. At one point he wrote:

I say it is enough, if we know from the Searchers but the most predominant Symptomes; as that some died of the Head-Ache, who was sorely tormented with it.

The number of 229,250 deaths is probably a minor under reporting due to the exclusion of religious nonconformists such as Presbyterians, Quakers, the occasional Muggletonian, and Roman Catholics. In regard to this last group, Graunt became a Roman Catholic, a step which probably contributed to his eventual bankruptcy, and to a degree of estrangement in his later years from Sir William Petty (Jordan 2007).

Table 2.2 lists examples of the terms by which the Searchers reported the results of their inquiries at the site of a death. It might have been the victim’s home, in which case the Searchers would have asked family members for the cause of death. Were the death an embarrassment, such as a suicide, a seat near the kitchen fire in winter and a reviving dram might well persuade the Searcher to set down Table 2.2’s “*Head-ach*,” or another bland cause of death, “*Head-ach*,” found in Graunt’s *Table of Notorious Diseases*. This category in his 1662 monograph was intended to reassure the anxious and Graunt presented from the 229,250 deaths in his series conditions he demonstrated as numerically rare. In addition, Graunt drew up a “Table of Casualties,” events which he said might reduce the *great fear, and apprehension* in which some people lived. It should be noted that these several sets of terms overlap, and frequently combine diseases with merely the circumstances of death, *e.g.* “*Sodainly*.”

In the Bills are terms which are now obsolete. A *chrysome* was a child no more than a few weeks old, and sometimes not yet baptized; *Tissick* was a form of tuberculosis; *Flux* was diarrhea; *Strangury* was a painful loss of urination; *Plannet struck* was an episode of anxiety; *Rising of the lights* was a disturbance of the organs; *Spotted fever* was typhus, and *stopping of the stomach* was a generic disorder in the abdomen. *Meteorism* was flatulence, and *rising of the lights* was pleurisy.

Tables bring into focus the problem of nosology—diagnosis. The Tables of Mortality recorded whatever the Searchers put down, and those elderly women relied on what was told to them by whoever they interviewed. A physician or

Table 2.2 Graunt’s *table of notorious diseases*, 1662

Apoplex	1306	Leprosy	6
Cut of the Stone	0038	Lunatique	0158
Falling Sickness	0074	Overlaid and Starved	0529
Dead in the Streets	0243	Palsy	0423
Gowt	0134	Rupture	0201
Head-ach	0051	Stone and Strangury	0863
Jaundice	0998	Sciatica	0005
Lethargy	0067	Sodainly	0454

apothecary would offer an explanation in semiscientific terms, while a less sophisticated figure, an Empiric who sold nostrums and pills, would provide whatever fanciful explanation he thought fit. In addition, there is the challenge to understand across nearly three-and-a-half centuries what even an accurate diagnosis connoted (Cunningham 2002). In the plague epidemic of 1665, John Tilton wrote to the Dean of St. Paul's Cathedral, John Tillison,

The practitioners in physic...stand amazed with so many various symptoms, which they find among their patients. One week the general distemper presents blotches and boils: the next week as clear-skinned as may be. But death spares neither (*A Collection...*, 1759).

Apothecaries offered ineffective medicines, but they remained in the city after physicians fled and were a source of information to the Searchers. The group known as barber-surgeons was anomalous; many of them had other occupations as their primary source of income, and some maintained recreational facilities where they set broken limbs and pulled teeth; some sold tobacco and spirits, gave shaves, and offered diversions for the men about town (Pelling 1986). Another group was the empirics who went from house to house dispensing nostrums in which alcohol played a role.

There is an inevitable tendency to place seventeenth century diagnoses in our cultural context; although cancer, for example, in Graunt's day, had connotations of aversion and embarrassment much as it did until recently in this generation. Today, people are less reluctant to face the term, but we cannot impute that degree of objectivity to people in the early modern era. For Graunt's Londoners the premise that malignant vapors caused disease implied that cancer was a real threat to the community because it could spread. In that regard, beyond the autonomous and personal crisis we know it to be for the patient, cancer's social aspect today lies in organized treatment and public funding—neither of which was conceivable in Graunt's day. In the year 1665, cancer was under reported, with only 56 cases. It is likely that the Searchers recorded the victim's apparent condition, e.g., breathing difficulty, rather than the underlying disease. An innovation of the era was listing Rickets as a separate disease in 1634. That was centuries before the role of Vitamin D was discovered (O'Riordan and Bijvoet 2014).

Facts were Graunt's response to the worries of the era an item meriting attention is the reference to being "*Cut of the Stone*." This probably referred to the presence of a kidney stone in the bladder. Physicians expert in this procedure, lithotomists, commanded substantial fees. The Admiralty official, Samuel Pepys, started his decade-long diary in January, 1660 by recording in the opening paragraph, "Blessed be God, at the end of the last year without any sense of my old pain..." (Sims 1987). Such was the ordeal of a lithotomy to remove a kidney stone in the bladder that Pepys formally celebrated the anniversary of his relief every year. Graunt's data suggest that being cut for the stone was improbable, although to the afflicted the problem was acutely painful. An obvious complication was the risk of infection in an age before antibiotics.

Graunt listed events "so that... [people] may better understand the hazard they are in." Here, again, arises the accuracy of reported deaths. The incidence among

Graunt's quarter-million probands of only two cases of "Excessive drinking" seems unlikely. Possibly the moiety of those "Casualties" arose because alcoholism was prior to another mode of exitus, e.g., apoplexy or liver disease, and that less scandalous condition was recorded by the Searchers.

A feature of Graunt's study was its breadth; he set forth 105 *Positions, Observations, and Questions* in the Index which opens, rather than follows, the work. Through *laborious buzzing and groping*, he brought to his inquiry the spirit of the New Learning—the themes of number, dimension, and proportion, together with an aversion to reliance on authority and commonly held suppositions. For example, Graunt refuted the idea "that plagues always come in with Kings' reigns....," an event which had occurred on the occasion of James I and VI's accession to the throne a half-century before.

Life Tables

Of course, Graunt was a man of his times and he took as a fact that Creation was, by 1662, 5,610 years old, a number he probably obtained from his friend, Sir William Petty. Beyond counting deaths and diseases from the Bills, Graunt examined gender effects, migration, urban–rural origins, comparative birth rates, and the number of men available for military service. As an officer in the militia (the Trained Band) he was naturally curious about the nominal pool of recruits (Fig. 2.2).

Graunt generated a life table setting forth the number of persons in a birth cohort who were still alive at later ages. Graunt wrote

Viz of 100 there dies within the first six years... 36. The next ten years, or Decad... 24. The second Decad... 15. The third Decad... 09. The fourth... 6. The next... 3. The next... 2. The next... 1.

From whence it follows, that of the said 100 conceived there remains alive at six years end 64. At Sixteen years end... 40 at 26... 25. At tirty [sic]... 16. At Forty-six... 10. At fifty-six... 6. At sixty-six... 3. At seventy-six... 1. At eighty... 0.

At the end of the century, Edmund Halley (1693), of comet fame, published a table of mortality by age using data from the German city of Breslau. Like Graunt and Petty, Halley revealed a pattern of early deaths, and a truncated life expectancy among those considered elderly at the time.

The static nature of life and death in the era was evident in 1758. In that year, Corbyn Morris analyzed mortality in the Bills for the years 1728–1757. Mortality of children below age 2 years was 363 per thousand (K); between 2 and 5 years mortality was 87 per K (48.40 %) which when aggregated to age 5 years climbed to 450 deaths per K. For those up to age 20 years the cumulative rate of mortality was 484 per K (48.40 %). Nearly one-half of a birth cohort did not reach adulthood.

Among those reaching the second decade of life Morris found in the Bills of Mortality a death rate of 21 per K. In the third decade the rate doubled to 77 per K, doubling to 77 per K before rising to 96 and 97 per K for persons between ages 30

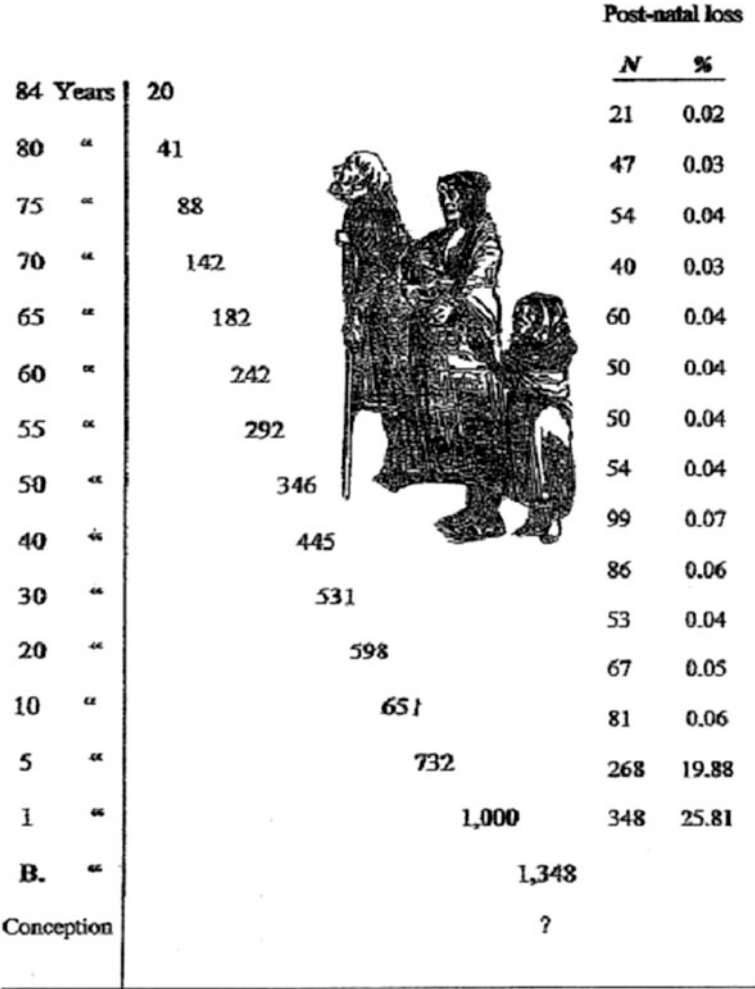


Fig. 2.2 Survival and loss, birth to age 84 years

and 50. The rate declined to 63 deaths per K for those reaching age 60 in a sharply reduced cohort. Morris’s observations, it may be noted, were derived from six groupings of dates; viz., 1728–1732, 1753–1757. The incidence figures given here report Morris’s observations for the period 1728–1757 and surveyed 750,322 deaths across a quarter-century.

Life in the seventeenth century meant daily encounters with the risk of several diseases. Tuberculosis was widespread, and there were seasonal diseases such as influenza. Smallpox was almost inevitable, and children faced it at risk for dying; a moving example of a child’s illness was given by John Evelyn whose diary recorded the slow dying of his precocious son; the cause may have been dysentery.

Table 2.3 Mortality in peak years of plague^a

Year	No. parishes	All deaths	Plague deaths	Percent	Plague intervals
1593 ^b	108	17,844	10,622	59.75	–
1603	–	37,333	31,219	85.49	10
1625 ^c	121	54,265	35,417	65.26	22
1665	130	97,306	68,596	70.50	40
Mean	–	–	–	70.25	24

^aSpeed (1665). ^bBell (1665). ^cHeberden (1759)

Sir William Petty lost two little children to smallpox. For all ages cholera was a threat; survivors often carried scars of the episode for their remaining years.

It was generally agreed by analysts of the era, e.g., John Bell 1665, Samuel Speed 1665 and 1636, that plague would return. Of course, those three dates were complemented by the plague of 1665. Table 2.2 presents data from those years plus 1665. In Table 2.3 it is evident that the city of London and its hinterlands expanded across the 72 years considered. The annual number of deaths from all causes grew, as did the number of plague deaths. More central than mere gross figures is the question of how severely in each year the population was decimated. The fifth column in Table 2.3 provides the percentage of deaths due to plague in each of 5 years. The percentage of plague deaths in this series of five outbreaks is above 60 % (when 1593s percentage is rounded out), and the highest proportion of plague deaths is 85.49 % in 1603; the plague of 1665 is average for the 5 years. Table 2.3 shows the intervals between the major epidemics for the period 1603–1665.

The numbers are small, but the intervals lengthen. In 1759, the anonymous collator would write

...it is very observable, that London has now been free from it for near a century...the plague was never bred in England, but has always been imported from other countries, where it is endemial...we must have had much more of the infection brought to us during the last century...

Thomas Short’s work on provincial populations is described in Jones (2007).

Graunt analyzing his data set by year concluded that “the Year 1603 to have been the greatest plague-year of this age,” and lasted 8 months. However, the outbreak of 1636 persisted to a degree for 12 years.

Three years after Graunt’s analysis was published, in 1665, London experienced an explosion of plague. The organism, Oriental plague, requires summer temperatures to survive, and cold weather ends its life except as its host lives in warm conditions. The overall sequence is as follows:

rat →rat →flea →flea →human →human.

The organism could be transmitted by droplets as in sneezing and coughing, and its vector prior to the outbreak was rodent-borne fleas. Compulsory quarantine of an afflicted person consigned others in the household to death, unless they were very lucky; however, there were instances of resistance to that step, and neighbors sometimes removed locks from the doors of sick friends.

Government from the level of the parish to the Privy Council did little to combat epidemics, although the era saw many proposals from thoughtful people. In 1665 the rich, including Dr. William Petty, simply left town for rural Surrey south of the Thames, physicians rationalizing that they were needed to attend their rusticated clients. As Fig. 2.1 illustrated, country folk sometimes did not receive their city visitors kindly.

Years with major outbreaks of plague in his century were, according to Graunt, 1603, 1625, and 1636. Three years after publication of Graunt's monograph came the plague of 1665. Having lived through the event as a child Daniel Defoe published his vivid work of fiction, *A Journal of the Plague Year*, in 1722. *The London Annual Bill* for 1665, ending on December 19, conveys the scale when plague attacked a city, be it London or Dublin. 48,569 males and 48,737 females were buried in London for a total mortality of 97,306. Of that number 68,596 were due to plague (70.49 %). However, beyond the gross numbers was the individual picture in which people developed buboes, or large welts, on the skin. They suffered with fever and pain, and died in a matter of days. On the other hand, symptoms were unstable and so unreliable for diagnosis. In 1665, bodies were carried through thinning streets for burial in parish cemeteries. Across the months of the epidemic parish resources were taxes, and interment in churches ended.

There were mass graves at the initiative of the Privy Council. At St. Botolph Aldgate a great trench was dug in the graveyard and it eventually contained 1,114 of the dead (Harding 1993).

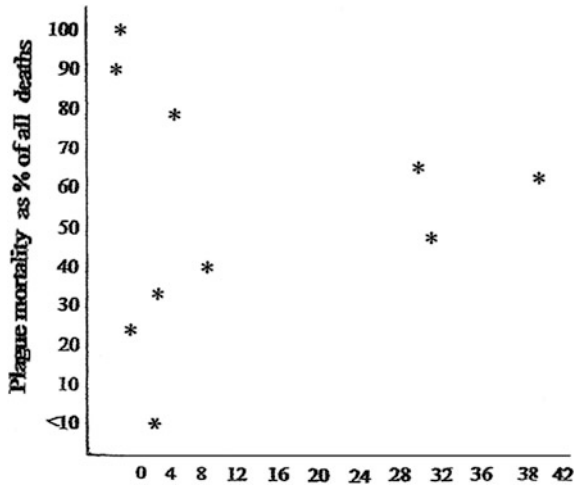
The peak season was summer into autumn, but with the coming of cold weather, people were less likely to be on the streets. Viewed as a whole, the gathering of information house by infected house across London was a large enterprise. From an individual Searcher to an official at the Parish Clerks' Hall, and from weekly jottings to the annual reports, the Bills of Mortality constituted a major innovation in media (Slauter 2011).

The utility of aggregating local data was evident as the weekly Bills aggregated into weekly, and then annual Bills; it was Graunt's insight to combine decades of data into a single monograph.

The annual Bill for 1665 summarized a massive disruption of life in the nation's center of population. Table 1.1 demonstrated the statistical impact of plague across the one hundred and more parishes within and without the historic walls, and in adjoining parishes in the counties of Middlesex and, to the south across the Thames, Surrey. The number and size of parishes waxed and waned with time as population migrated across the metropolitan complex.

In the absence of data on the area of parishes a chorographic display is not possible. However, it is possible to analyze the impact on parishes by calculating for each of 132 parishes the proportion of all deaths due to plague. Figure 2.3's asterisks represent varying percentages along the abscissa among the parishes. The ordinate lists parish mortality rates varying from virtually total in pesthouses to the tiny parish of St. Bennet Sherehog which buried eleven people, but only one of them of the plague. At All Hallows Great there were 426 plague deaths among 455

Fig. 2.3 Intensity of plague across London’s parishes/1665. Frequency of incidence of plague deaths: N = 132 parishes



burials (93.62 %). For all 193 parishes 101 of them had plague mortality rates between 50 and 80 % of all burials. The modal rate of plague deaths was 60–70 %.

Returning to Table 2.3, Mortality in Peak Years of Plague, as an example, the marker on the far right, may be interpreted as follows: from the ordinate (vertical line), a rate of 60–70 % mortality was recorded 39 times along the abscissa (horizontal line) among 132 parishes.

People died from diseases other than plague. In Table 2.4, the incidence of five conditions is traced across two decades, from 1660 to 1680. In the case of plague its decline was steep by 1667, reaching asymptote by 1680. In 1759, our anonymous collator noted:

Table 2.4 The course of major fatal diseases, 1660–1680^a

	1660	1661	1662	1663	1664	1665	1666	1667	1668	1669	1670
Plague	14	20	12	9	6	68596	1998	35	14	3	0
Spotted fever and Purples	146	335	148	128	116	1929	141	96	148	114	121
Consumption ²	3414	3788	3485	3260	3645	4808	2592	3087	2856	3162	3272
Teeth and W ³	1008	1195	1032	904	1122	715	715	812	1077	1463	1470
Ricketts	521	413	395	364	482	171	171	202	252	343	346
	1671	1672	1673	1674	1675	1676	1677	1678	1679	1680	–
Plague	5	5	5	3	1	2	2	5	2	0	–
Spotted fever and Purples	77	112	144	285	143	156	255	204	160	193	–
Consumption ^b	2710	3165	3320	0	3148	3223	3272	3448	3675	3427	–
Teeth and W ^c	1079	1299	1131	1265	910	1216	1196	3448	3675	34,273	–
Ricketts	265	325	339	497	488	442	458	427	394	341	–

^aA collection (1759).... ^bM = 3,256. ^cIn 1663, 1667, and 1668, and 1672–1680 Worms was reported as a separate disease

...it is very observable that London has now been free from it for near a century...the plague was never bred in England, but has always been imported from other countries, where it is endemial

In view of the substantial intervals between outbreaks of plague, this assertion seems tenable.

Mediterranean sites mediated by shipping exchanged in continental ports may be sources. In the case of spotted fever (typhus), its peak coincides with that of the plague, and the years 1674 and 1675 recorded increased deaths from this disease. Consumption-tuberculosis exhibited a different pattern across the two decades addressed here.

It was always relatively frequent across the years of interest reaching a peak of 4,808 deaths in 1665, along with plague and typhus deaths. The year with the least deaths from this disease was 1666, the year of the great fire of London. It may be that the widespread destruction of that year involving housing, and the corresponding emigration of the population to the hinterlands, explains the low level of deaths in that year due to tuberculosis.

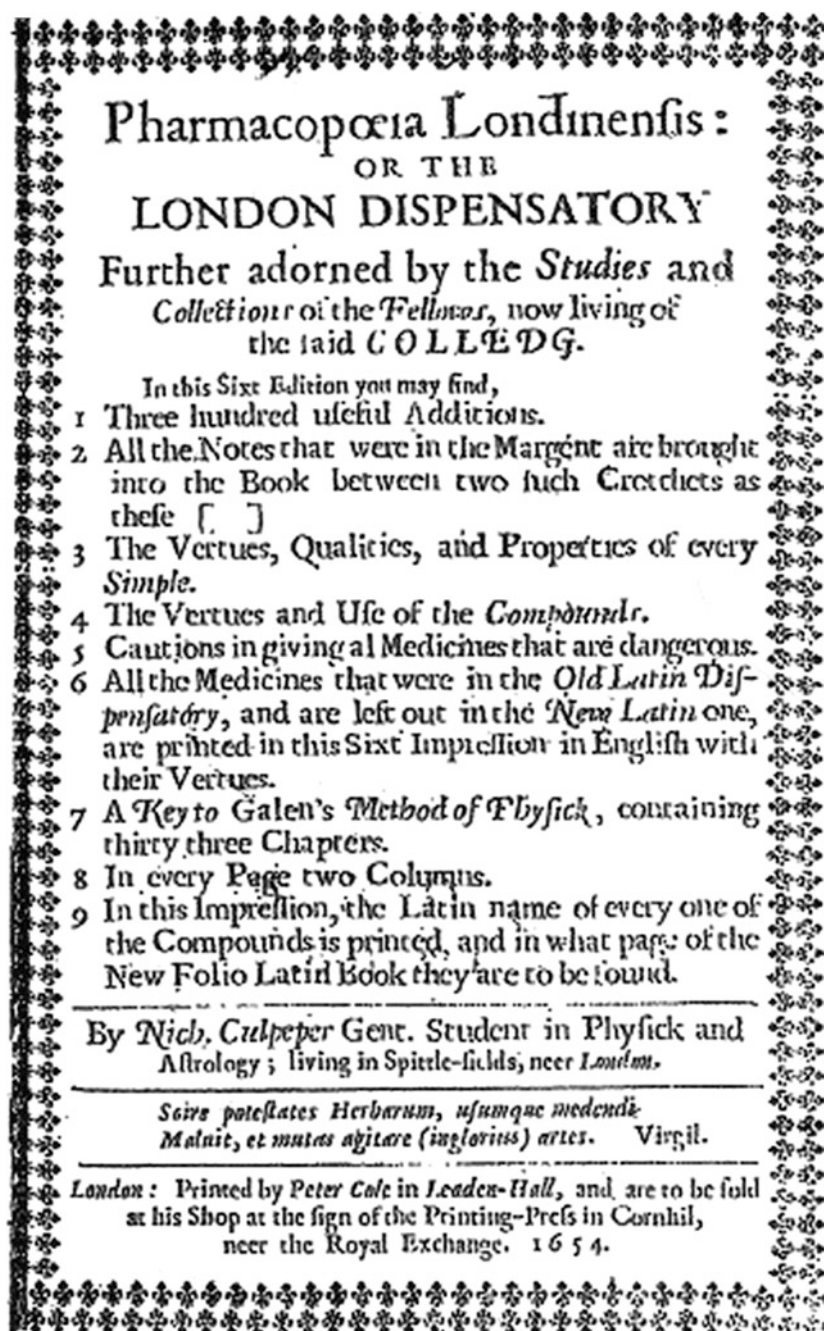
Teeth and worms may be construed as causes of death in infants and young children. The incidence of this cause of death peaked in 1677, and lowest incidence occurred in 1666, the year after the disruption of family life in the year of the great fire. Ricketts, also a disease of childhood, registered its lowest incidence in 1666; speculation suggests the same origin in disturbed family life.

Therapy

The psychology of those living amidst plague and other outbreaks such as influenza would have been one of fear, wondering if they were next. Those most at risk, the young and the elderly for example, probably succumbed more quickly. In either case family, or those still on their feet, were left to cope with the afflicted individual, and to respond to the evening call, “Bring out your dead” (Fig. 2.4).

There were physicians in London and Dublin, and William Petty was one of them, but they had nothing to offer the wealthy except the occasional poppy-based analgesic, alcohol-based nostrums, and the practice of herbal remedies. Late in the century the popular remedy, *Elixir Salutis*, was introduced into London by the daughter of the late Leicestershire clergyman, the Rev. Thomas Daffy. Brandy was a common element in the subsequent formulae for Daffy’s Elixir which was popular into the nineteenth century for treating adults and children.

The general population turned to pharmacists for herbal remedies, and to neighborhood Empirics who offered nostrums and sovereign remedies containing generous drafts of alcohol. Nicholas Culpeper, in 1654, announced to the public the availability of his *Aurum Portabile* which cured “all agues whether Tertian, or Quartan, as it also saved diverse people of the Quotidian...”

Fig. 2.4 Nicholas Culpeper's *aurum portabile*

Bleeding patients was a treatment for a variety of symptoms; it presumed that new blood would be healthier than the patient's current blood. Leeches and lancets were applied to remove blood.

An innovative therapy of the age was the gift of healing hands. Valentine Greatrakes, a pious farmer, found that by divine intervention he could heal a variety of afflictions by massage. "The Stroker," unlike others of that persuasion, did not charge the credulous for his services. Greatrakes' reputation grew and he was presented to Charles I in the early 1640s (Laver 1978).

Quality of Life

Quality of life is a concept defined today largely in terms of social indicators, and among them health-related topics predominate, to the detriment of less urgent, but no less compelling matters.

Quality of life (QoL), is construed today in empirical terms. In recent years, it has been developed and explored in various ways. Patrick Jordan (2010) set forth the concept of The Good Society:

a comprehensive model of well-being incorporating all of the major factors... and grouping them into nine dimensions... Relationships, Economy, Environment and Infrastructure, Health, Peace and Security, Culture and Leisure, Spirituality, Religion and Philosophy, Education, and Governance.

A set of 11 variables was set described by the Organization for Economic Cooperation and Development (OECD 2011). The set includes Subjective Well-Being, and generally resembles the set produced by Patrick Jordan. The OECD document is distinguished by its data from forty countries.

The variety of fatal diseases recorded in the Bills, and in John Graunt's 1662 monograph, indicated that the quality of life in the early modern period was moderate at best. There were illnesses such as influenza which could usually be navigated with rest and a few nostrums, but which turned fatal in some cases. The average person probably took such infections in their stride. However, there was a wholly different class of ill health which was not a routine set of indispositions but a social trauma. Epidemics appeared and tore through a community. Cholera might strike swiftly and often fatally due to contaminated water.

In April 1665, Dr. Ponteous saw his daughter Margaret present buboes on her skin with a rising fever. In a matter of days young Margaret died and became the first documented case in the great plague of that year. She was interred in St Paul's church near Covent Garden. There may well have been other deaths in the Ponteous household when quarantine of the sick was imposed. The great plague of 1665 had broad consequences beyond individual households. As the weekly bills were published and sold for a penny, alarm turned into panic and those who could left London. The decline of commerce increased and jobs disappeared; the poor grew hungry and their quality of life declined rapidly. A corollary was a decline in health

and resistance to other diseases of all kinds. As with the Ebola outbreak of 2014, the authorities in 1665 pored over the weekly Bills and were slow to act, and ripples in the infectious pool spread rapidly. However, apart from quarantine there was little that they could have done. One year later, London was purged in the great fire of 1666.

Another approach to quality of life as an antecedent to the early modern era's high rate of mortality is to invoke current concepts. Of course, the risk is that current concepts and their cultural meaning can be wildly misleading when applied rashly to an era far removed from our own. However, done with awareness of the hazard, selective application of today's social indicators of quality of life can be informative. Not every current formulation can be invoked usefully; the currently useful construct, *subjective well-being* (Diener et al. 1999), is an example of a generation-bound approach. On the other hand, Jordan (2010, 2014) applied selected social indicators to the seventeenth century to provide a current perspective (See Table 3.3).

Another approach to quality of life as an antecedent to mortality is to look at material possessions in the gross sense. Houses and businesses used hearths to heat people, to fabricate materials, and to brew. In the early 1660s the Crown drew up laws designed to tax people according to their material wealth in the form of hearths. There was a gross logic in the premise that those who owned many hearths were richer than those with fewer hearths. Certainly, those with the least number of hearths were usually poor, and the poor died in greater numbers than the rich. It seemed a principal of natural morality to Sir William Petty, the great student and initiator of political economy, that capital in the form of possessions could be taxed. Procedurally, there were a few challenges. There was the vernacular architecture in which two residences shared a common wall with a single hearth (Husbands 1992). Also, the observer on the street might confuse the number of chimney pots with the number of hearths. The reverse situation arose when "W. Smyth, Gent. He stopped up two [earths] since the return" (Schurer and Arkell 1992). At one time, an evidence of material wealth and conspicuous consumption was to build with more chimneys than hearths. Generally, the number of hearths corresponded with occupational titles (Power 1986). In our generation, there is appeal in the relative accessibility of hearth data from the early modern period for research into the urban topology of death. See Jordan (2014).

Life in the seventeenth century was comparatively brief and curious in major towns of the British Isles could follow the risk to life by reading the weekly Bills of Mortality for the price of one penny. There was no shortage of episodes of risk; for Dubliners according to Whelan (2008), plague broke out in 1636, followed by smallpox 3 years later. In the turmoil of the early 1640s pestilence was widespread and it was followed by plague in 1649–1652. In later years came smallpox and pestilence, and 1683 witnessed an outbreak of spotted fever. The great epidemic of the era was plague in London in 1665. From that series of health crises came entries which were recorded weekly, and then aggregated in the annual Bills of Mortality.

An element of urban life, one with implications for long-term health and mortality, was the physical environment. Rivers such as the Thames, Fleet, and Lea in

London served as vectors of disease. Development of the shallow New River from a spring in Hertfordshire to the north brought clean water to London; one of the project's trustees was John Graunt. An aspect of water and mortality was the risk of drowning when people engaged in personal hygiene in rivers and lakes.

Above ground the air quality was heavy with pollutants. Graunt recognized the hazard in what he described as London's "Fumes, steams, and stenches." Pepys's friend, the other major diarist of the age, John Evelyn, wrote on the deteriorating quality of the environment in his book *Fumifugium*, (1661). At the personal level of quality of life, there were odors emanating from bodies which were rarely bathed. Among the entries in his decade-long diary Samuel Pepys noted fleas in his periwig, a condition for which he reprimanded his wigmaker who may well have been a barber-surgeon on the side.

The Intellectual Environment

John Graunt's epic work established that disease and mortality were amenable to analysis in the spirit of the New Learning; the early modern era tentatively introduced a new way to look at the human experience and the quality of life—however brief—through numbers. However, the ethos of intellectualism in the era was deference, and it was verbal rather than numerical. Across the decades Petty's voluminous writings advanced interest in quantitative thinking on social and economic matters, but with little immediate effect. Social policy and its implementation were viewed as parish matters; the attention of the Stuart brothers was fleeting except as the Dutch threatened to sail up the Thames, the French connived, and London burned.

In science, Robert Hooke, Christopher Wren, and Isaac Newton made great strides in their grasp of the heavens; but mortality and health, and topics in commerce and finance remained unattended.

Polity languished after James Harrington's fleeting discussions, and William Petty's insightful proposals for a central register fell on deaf ears. The New Learning was viewed suspiciously as a form of atheism. Conservatives invoked St. Paul's dismissal of worldly wisdom (Harrison 2007), leading Bishop Thomas Sprat to write a defense of the New Learning and the Royal Society, of which Graunt was a member by 1657, at the express invitation of Charles II.

The popular mind, although affected by familiarity with spirits, savored the witches exposed by Matthew Hopkins (1620–1647). Sir Thomas Browne (1605–1682), physician, caused the condemnation of two such women at Bury St. Edmunds (Aldersey-Williams 2015). Joseph Glanvil (1636–1680) promoted broad acceptance of the supernatural in human experience. However, the visit of the Searchers and their empirical reports began a process of reification.

First came the notation of gender and age, and the date plus any other details such as a probable cause of death. When compiled, usually on Tuesdays, the

accretion of information formed a small corpus of numerical data; e.g., four deaths, two of them from tuberculosis. While plague tends to be associated with the seventeenth century, tuberculosis was the scourge of the decades.

The Parish

The parish was both a religious and a civic unit led by a minister of the established church who was assisted by a set of laymen known as the Vestry. In the case of the minister his sectarian beliefs varied over time due to the religious tensions of the age. The minutes of the vestries provide a glimpse into their range of responsibilities and activities. As the nineteenth century evolved the historical value of those documents became more appreciated, and in 1910 J. Charles Cox published a list of 486 registers extant in England. The earliest covered the years 1574–1650 in the parish of Durnford, Wiltshire, and was the work of Sir Thomas Phillips. Cox's series drew on the work of local antiquaries and societies across the counties of England. In the case of Adel, in Yorkshire, the records from the years 1606–1812 were preserved in 1895 by the Thoresby Society, a group still active in the county's history. Of course, not every set of records has been preserved. A bound set of registers was recovered from a flea market in the 1880s. Also, not every parish register is informative; the register transcribed by Hovenden (1887) from the parish of St. James, Clerkenwell, provides merely a long list of names.

An anecdote from the records at Hackness, Yorkshire, in 1659, describes the double interment of a parishoner:

Tewsdai the Third of January was an exceeding stormie day and dyd snow verie fearsley and that day towards the Eveninge Richard Dickinson's wife...being in the chamber...there fell a great drifte or shelve of snow from the hill and drave down the house...and the next day shee was found under the Thatch and snowe dead... after she was byryed the Crowner came and she was unburyed the xxv day of Jann to be viewed which was as snowy and stormey as the Tewsdai (Cox 1910).

More conventional was the record at St. Margaret's, Lothbury at one time the parish in which William Petty built a house he lost in the great fire of 1666. In that parish was recorded the interment of Peter Boouth who "was buried in the middle eile the 5th of Aprill 1665," and Robart Robinson who "was buried at the loer end of the midel eile the 10th of desember 1665." Quite anonymous and barely recorded was the interment at the church of St. Antholin in 1642 of, "A stranger out of ye alley from Widow Chester's." In the same year the deaths of "Abraham and Isaac twin sons of Lewis and Ann Price," would have been mourned widely (Chester 1883), although but briefly noted in St. Margaret's report for the weekly Bill of Mortality. Death was no respecter of rank; "Sir Robert Cotton lost this year 5 daughters which was all the children he then had in 3 days time" (Illick 1975).

In 1659, William Petty, John Graunt, and the publisher John Martin bought property in the rising parish of St. Margaret Lothbury. In 1665, one hundred people

were buried of whom 66 succumbed to plague (66 %), forming one of the lesser events among the roughly one hundred parishes. Plague was selective in its destruction so that the incidence of deaths varied from parish to parish. The poorer, suburban parishes were most affected; such parishes were less able to cope with epidemics than the richer, inner parishes.

An account of the events in 1665 is found in the diary of Samuel Pepys. In the summer of 1665 Pepys recorded:

30 July. It was a sad noise to hear our bell to toll and ring so often today, either for death or burial: I think five or six times.

22 August. In my way seeing a coffin with a dead body therein, dead of the plague...the parish not having appointed anybody to bury it. This disease makes us more cruel to one another than we are to dogs.

26 August. This day poor Robin Shaw at Blackwell's died...the sickness is got into our parish this week...so that I begin to think of setting things in order, which I pray God enable me to put both as to soul and body.

The other diarist of the era was Pepys's friend John Evelyn. Crossing London on his way to St. James on 5 September Evelyn was struck by "so many cofines exposed in the streetes thin of people, and all in mournful silence." A little over a month later, on 10 October, Evelyn was, "invironed with multitudes of poor pestiferous creaures begging alms...a dreadful prospect" (de Beer 1995).

A vital parish function was recording interments, a function usually carried out by the parish Clerk who held a position of status; in London such a figure was John Bedford who belonged to the noted Company of Parish Clerks which aggregated and printed Bills of Mortality (Boulton 2007). However, the Society's action was preceded by that of elderly women Searchers in the parishes. Their diagnoses were fragile in matters of validity, and could be influenced to report salutary rather than scandalous causes of death. John Graunt (1662) noted that a seat by the fire and a relaxing drink could avoid scandal. In some reports the Searchers recorded merely the circumstances of death rather than a cause.

The Searchers reported their findings to the parish Clerk who occupied a position in such matters and who, by law, was a layman usually named the *Register*. This title was employed by Jacob Thring in his Bill for Dublin in late July, 1662. The parish Register provided the broad, pointed hats and white wands of office which distinguished the Searchers.

In Munkoff's (1999) view, the familiarity of parish women with disease, based on their domestic experiences, has been under-valued. They would, she asserted, have acquired familiarity with common diseases of childhood and adulthood, which would have served them well when assessing the condition of a corpse. However, there was a limit to such practicality because symptoms could be ambiguous. In 1665, John Tilton wrote to the Dean of St. Paul's:

The practitioners in physic...stand amazed with so many various symptoms, which they find among their patients...one week the general distemper presents blotches and boils: the next week as clear-skinned as can be. But death spares neither (A Collection 1759).

Quality of Life and Mortality in Seventeenth Century

London and Dublin

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2017, XIII, 70 p. 9 illus., Softcover

ISBN: 978-3-319-44367-6