

Deaths in Early Nauvoo, 1839–46, and Winter Quarters, 1846–48

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That the struggles, the sacrifices, and the sufferings of the faithful pioneers and the cause they represented shall never be forgotten, this monument is gratefully erected and dedicated.

—Heber J. Grant, J. Reuben Clark Jr., and David O. McKay, 1936,
inscription on the Winter Quarters Cemetery Monument

Many people know of the deaths of Joseph and Hyrum Smith in Carthage on June 27, 1844, but the two brothers were not the only martyrs in the Smith family. Between 1840 and 1844, three other men in the family died as a result of persecution: Joseph Sr. died September 14, 1840, Don Carlos died August 7, 1841, and Samuel Harrison died July 30, 1844. In addition to these members of the Smith family, hundreds of Saints died in Nauvoo and Winter Quarters from disease, malnutrition, or exposure to the elements as a result of persecution.

This article focuses on a unique—yet perhaps poorly understood—aspect of American history: the settling of and the exodus from Nauvoo, Illinois, by early Latter-day Saints. In seven years, Nauvoo grew from a mostly unsettled swamp to a city rivaling Chicago in size and significance. Then, even more quickly, its citizens departed, leaving the town almost empty.

We will not address in this article why the Saints clung so tenaciously to their newfound religion. Nor will we try to explain why they were so intensely persecuted, not only in Nauvoo but also earlier in New York, Ohio, and Missouri. Instead, our goal will be to analyze

only one aspect of their sacrifice: the deaths that occurred in Nauvoo and during their migration west to Winter Quarters. And as we do this, it will become evident that there were many more martyrs for the cause than those shot by the mobs.

This article, along with a companion article,¹ analyzes the causes and frequency of death in early Nauvoo, 1839–46. For comparison purposes, data is also included on the deaths in Winter Quarters, 1846–48,² and those in Nauvoo, 1850–65.³

Over a hundred different causes of death are noted in various early Nauvoo records. William Huntington, the sexton of the Old Nauvoo Cemetery, recorded many of the deaths in cemetery records.⁴ Obituaries in the *Nauvoo Neighbor*, the *Times and Seasons*, and the *Wasp* provide another source of death information, and journals and diaries provide a third source.

In our earlier article, “Medical Terms Used by Saints in Nauvoo and Winter Quarters, 1839–48,” we translated these recorded causes of death into modern medical terms.⁵ The medical field has made tremendous advances over the last 160 years. Our current understanding of the causes of death, of historical records and descriptions, and of clues based on seasonal, age, and gender factors has allowed us to reexamine most of the early Nauvoo causes of death using today’s terminology.

Many of the causes of death listed in the early records are not familiar to us today. In some cases, the terminology has changed. In other cases, the stated cause of death was only a symptom. Examples of these symptoms include fever, sore throat, fits, spasms, swelling, and inflammation. In still other cases, the stated cause of death was perhaps not even related to the actual cause. Examples of these stated causes include “teething,” “old age,” “stone quarry,” “cranium,” and “worms.” The data and charts presented here utilize the nomenclature mentioned above. In that effort, we classified the causes of death according to current medical terminology.

Basic Nauvoo Death Data

Teresa Whitehead created an access database of all of the Nauvoo deaths that we located. Data was entered with the assistance of Natalie Freitas, Joy Heiner, and Betty Jo Ivie. These deaths were taken from the records of William Huntington, from obituaries in the Nauvoo newspapers, from journals and diaries, and from other sources.

Deaths by year. There were 1,925 deaths identified during the period in question. We were able to locate a cause of death for 956 of these, most of which came from Huntington’s records. Figure 1 shows

the number of recorded deaths and the number of recorded causes by year for Nauvoo, 1839–46. Almost no causes were recorded until August of 1842, when Huntington became the sexton. There was only one cause recorded in 1846. We are indebted to Sexton Huntington for his careful record keeping during 1842–45.

From 1840 to 1843, total deaths increased almost linearly each year (63, 175, 299 and 435: increases of 102, 124, and 135). The increase in the population of Nauvoo during that period probably accounts for much of the increase in deaths. The numbers of deaths in 1843, 1844, and 1845 were about the same (435, 440, 404). Could this consistency counterbalance the increase in the Nauvoo population and the fact that the swamps had been drained? Finally, in 1846, the Nauvoo death rate dropped to just 37 deaths. After the exodus started on February 4, 1846, and the Nauvoo War, which drove the remaining Saints out, began in September 1846, the town was left with almost no population.

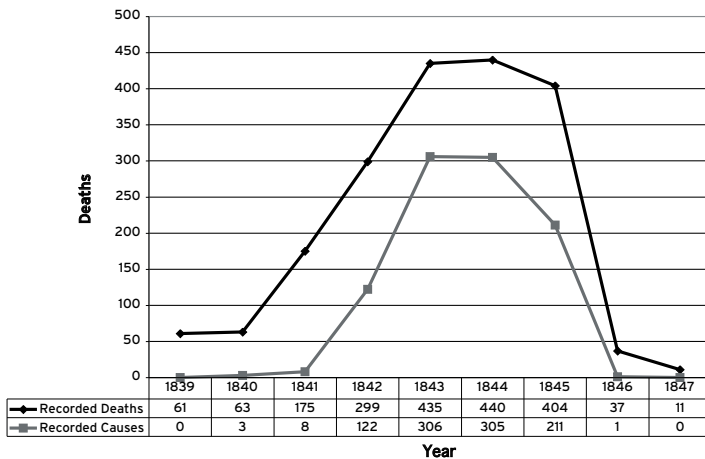


Fig. 1. Nauvoo deaths by year, 1839–47

Causes of Death

There were 956 death records found in which a cause of death was given. Over 100 distinct causes of death are given in these 956 records. These 100 distinct causes have been classified into 37 causes using current medical terminology.⁶ We have focused on the six leading causes of death. Figure 2 shows the six leading causes of death in Nauvoo, plus cholera, which is included for comparison purposes. Other lesser causes that account for at least 1 percent of the total deaths include:

Pneumonia	4.0%
Typhus Fever.	3.3%
Accidents.	3.2%
Whooping Cough . . .	2.8%
Convulsions.	2.4%
Scarlet Fever	2.3%
Dysentery	2.1%
Inflammation.	2.0%
Dropsy (Edema)	1.5%
Gastroenteritis.	1.2%
Nervous Fever.	1.0%
Hydrocephalus	1.0%
Childbirth	1.0%

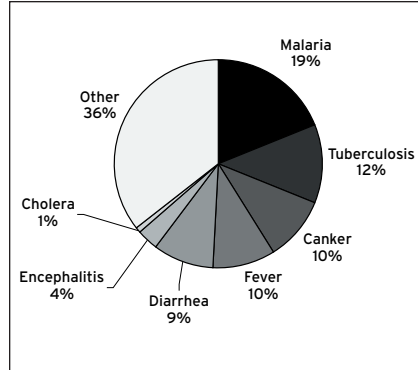


Fig 2. Selected causes of death in Nauvoo, 1839-46

Predilection of Diseases for Age, Season, and Gender

In addition to analyzing the deaths in Nauvoo by time and by cause, we also looked at whether there was any predilection of the cause of death for a given age group, for a given season of the year, or for a given gender. Figure 3 summarizes the deaths for 11 major causes, providing the age range, the mean age, the percent of deaths during the last half of the year, and the percent of male deaths. The following three sections summarize the results for age, season, and gender.

Cause	Deaths	Age	Mean Age	July-Dec.	Pct. Male
Malaria	175	1 mo. to 81 yrs.	28 years	98%	59%
Diarrhea	166	10 days to 86 yrs.	21 years	93%	49%
Tuberculosis	101	1 mo. to 71 yrs.	24 years	38%	48%
Canker (Noma)	93	18 days to 66 yrs.	17 months	88%	49%
Measles	41	1 mo. to 45 yrs.	18 months	73%	56%
Lung Infections	39	24 days to 80 yrs.	16 years	46%	50%
Typhus Fever	32	2 yrs. to 72 yrs.	26 years	50%	41%
Whooping Cough	28	3 mos. to 7 yrs.	13 months	96%	58%

Cause	Deaths	Age	Mean Age	July–Dec.	Pct. Male
Meningitis	27	1 mo. to 47 yrs.	16 months	59%	39%
Scarlet Fever	21	11 mos. to 8 yrs.	3 yrs. 5 mos.	46%	25%
Convulsions/ Fits	21	7 days to 5 yrs.	6 months	50%	52%

Fig. 3. Predilection of deaths for age, season, and gender, Nauvoo, 1839–46

Deaths by age. As figure 3 shows, the mean age of those who died from five of the diseases was eighteen months or less (these are shown in boldface). The diseases that singled out babies and very young children were canker, measles, whooping cough, meningitis, and convulsions/fits. One disease, scarlet fever, affected babies and young children, but was not as strongly skewed to babies, with a mean age at death of three years and five months. For the five other diseases—malaria, diarrhea, tuberculosis, lung fever, and typhus fever—deaths occurred in a wide range of ages, affecting adults, babies, and children.

Deaths by month (seasonal variation). Were there more deaths during certain months or seasons of the year than in others? Figure 3 shows that death occurred mainly in the second half of the year for five of the diseases (these percentages are shown in boldface). These diseases are malaria, diarrhea, canker, measles, and whooping cough.

Figure 4 shows this seasonal death phenomenon differently. Deaths were charted bimonthly over a six-year period. Each point represents a two-month period (Feb.–Mar., Apr.–May, June–July, Aug.–Sept., Oct.–Nov., Dec.–Jan.). There is a striking rise in the number of deaths during the fall of each year, with the deaths peaking in August/September. We have examined seasonal death rates for a few other populations and have found that nineteenth-century deaths often increase in late summer or in the middle of winter.⁷ However, the Nauvoo data represent a very pronounced seasonal variation.

Malaria was the most common cause of death in Nauvoo. Since Nauvoo was a swamp before the Saints arrived, it was undoubtedly a haven for mosquitoes. Malarial deaths tend to peak in August and September in the Northern Hemisphere, because infections occur during the summer months as the mosquito population grows and infections occur. Following infection, there is an incubation period and a symptomatic phase, and finally death occurs in late summer or early fall. There was an average of about 40 recorded deaths each year from malaria, and on average, the total deaths jumped from about 15 in

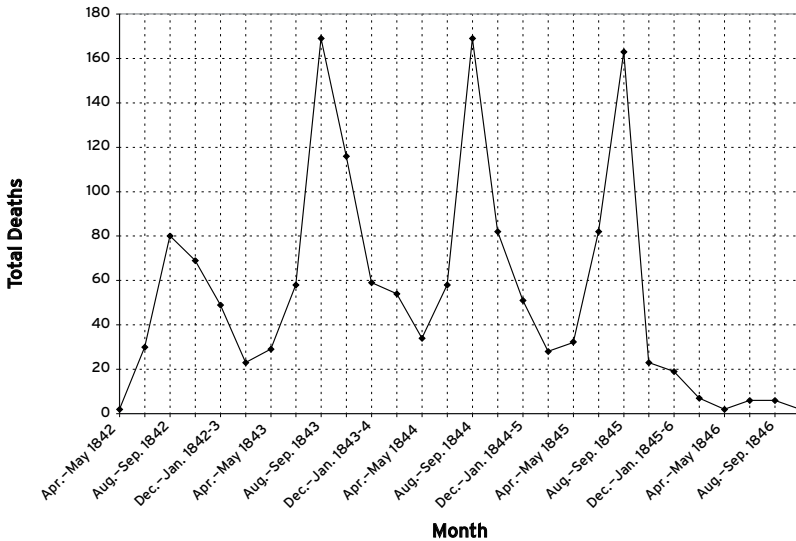


Fig. 4. Nauvoo Deaths bimonthly: April-May 1842 to October-November 1846. Peaks always occurred in August to September.

March to more than 80 in September. This increase occurred because a number of other major causes of death in addition to malaria had a similar seasonal characteristic.

Deaths by gender. Of the six major causes of death in early Nauvoo, only malaria shows much of a predilection for one gender: 59 percent of the malarial deaths were males. Men were more exposed to mosquitoes because they were outside more often than women were and because they dug the drainage ditches. Whooping cough and measles deaths were also slightly more prevalent among males than among women. However, typhus fever, meningitis, and scarlet fever were more prevalent among females. The only two minor diseases that showed a marked predilection for a gender were childbirth (for female, obviously) and accidents, where males made up 87 percent of the deaths.

Comparisons: Winter Quarters and Postexodus Nauvoo

To better understand the results of our study, we compared the death data for the Saints in postexodus Nauvoo to the deaths for the Saints in Winter Quarters, Nebraska, where they resided for a short period before moving on to Utah. This data covers the years 1846–48. The Winter Quarters Information Center provided information on 391 deaths. There was a stated cause of death for 261, or two-thirds of the

deaths. There were 50 distinct causes of death listed.⁸ The recorded deaths for the Catholic Cemetery in Nauvoo after the exodus of the Saints comprised a third comparison group. The period examined for this group was 1850–65, approximately twice the length of time the Saints were in Nauvoo.⁹ There were 664 deaths recorded, with 532 listing a cause of death.

Figure 5 shows the percentage of total reported causes of death for six major causes across three study groups. The percentages of deaths caused by tuberculosis in early Nauvoo, Winter Quarters, and the Catholic Cemetery are almost identical (11 percent, 11 percent, and 10.5 percent). Deaths attributed to diarrhea are also somewhat similar (13 percent, 13.4 percent, and 7 percent). However, there are marked differences across the three study groups for the other four causes of death.

Malaria (ague) was the largest cause of death in early Nauvoo and in Winter Quarters, but almost no malarial deaths were reported for the Nauvoo Catholic Cemetery for 1850–65. One possible explanation might be that the swamps in Nauvoo had been drained by the time the Saints left, leaving a much smaller mosquito population for the future Nauvoo residents. Another explanation might be that an almost completely new citizenry who were not carriers of the disease moved into Nauvoo.

Noma (canker), like malaria, was a significant cause of death in both early Nauvoo and Winter Quarters, but not for the postexodus Catholic Cemetery. As our sister article reports, canker was caused largely by malnutrition.¹⁰ It is evident that insufficient food was a problem the Saints faced in both locations. Many of the Winter Quarters Saints had been driven from Nauvoo without sufficient food and supplies. For example, Latter-day Saint Edmond Durfey had returned to his farm in Yelrom, Illinois, about twenty-five miles south of Nauvoo, to try to harvest some of his crops when he was shot to death in late 1845. In September 1846, the Nauvoo War drove the last several hundred Saints out of the city before they could harvest sufficient food to be prepared to leave. As this data indicates, these expulsions were not merely a matter of relocating the Saints to a new home, but were a matter of life and death.

Cholera was a significant cause of death in postexodus Nauvoo, but not in early Nauvoo or Winter Quarters. Cholera epidemics swept through the United States in 1833–34, 1848–49, 1850–51, and 1865–66, but did not reach Winter Quarters or Salt Lake City. The Saints were

also largely unaffected by the yellow fever epidemics of 1841, 1847, 1850, and 1855. Evidently the Saints' isolation had some benefits.

Neither the Saints nor the Catholics in Nauvoo suffered from scurvy, which is caused by a deficiency of vitamin C. However, the Winter Quarters Saints did. Recently arrived and often exhausted, Winter Quarters Saints had to subsist largely on meat and transported grains. Most cases of scurvy there occurred in March and April 1846, before fresh vegetables containing vitamin C could be harvested.

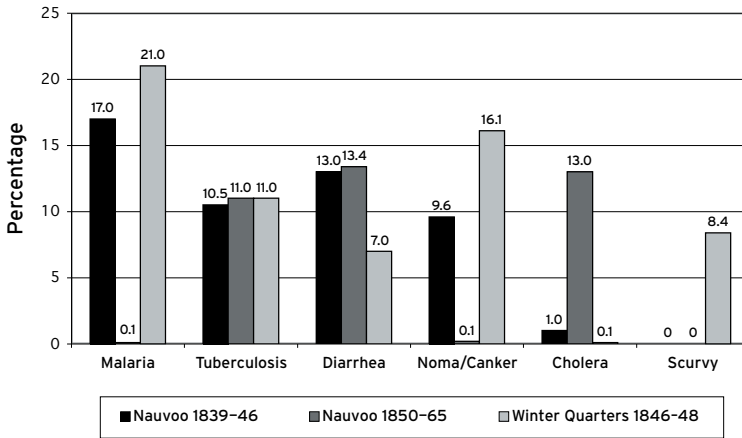


Fig. 5. Reported causes of death in early Nauvoo, 1839-46; the Nauvoo Catholic Cemetery, 1850-65; and Winter Quarters, 1846-48.

Death Rate in Early Nauvoo

One of the goals of this research that we failed to achieve was to determine accurately the mean yearly population of the Saints in Nauvoo from 1839 to 1846. We detail our efforts in the hope that future researchers will be able to obtain more precise data.

To determine the population of Nauvoo, we used various census counts, population counts in newspaper articles and other printed documents, and ship passenger lists. We used these counts to make a chronological chart of the population of Nauvoo by month for the seven-year period. We then averaged that count for each year to obtain the average yearly populations. The death counts came from the access database created for this paper. Figure 6 shows the estimated numbers.

Year	Avg. population	Deaths	Death rate
1839	2,000	61	30
1840	2,700	63	23
1841	5,150	175	33
1842	9,600	299	31
1843	13,200	435	33
1844	15,000	440	29
1845	16,500	404	22
1846	2,500	37	15

Fig. 6. Estimated death rates per 1,000 population in early Nauvoo, 1839–46

Our population counts are not as accurate as we would like them to be, largely because of the following questions:

- Were the counts recorded in the records intended to be accurate or only rough estimates?
- Were the counts over- or underestimated based on the purpose of the estimator?
- Did the counts include nonmembers?
- Did the counts include nearby settlements or only Nauvoo proper?
- Did the counts include visitors as well as residents?

Some of the uncertainty about the yearly death counts are a result of the following:

- We don't know what portion of the database includes people living in outlying settlements and not in Nauvoo.
- Cemeteries for the nearby settlements of Zarahemla, Nashville, Yelrom, and Webster have recently been located and studied. These recent findings are not included in our effort.
- The pavilion at the Old Pioneer Cemetery in Nauvoo includes about 1,765 of the same names as our database. Further efforts will be needed to resolve the differences.

We believe that, despite these uncertainties, our general conclusions approximate the actual situation.

Our desire to consider death rates in Nauvoo prompted us to add this section. In fairness, an entire article could be written including all

the sources we used and how we calculated the average yearly population. You may want to compare our population results with those in an article in *BYU Studies* in 1995.¹¹ That article gives the population of Nauvoo at specific points in time. For example, the population in 1839 is given as 100, which would be correct for the beginning of the year but does not reflect the influx of Mormons during 1839. Our yearly populations are in general higher than the counts given in the *BYU Studies* article, a fact that needs to be addressed in another research paper, along with an analysis of the death rates.

Conclusions

Causes of death. Some diseases that the Nauvoo Saints suffered from (e.g. tuberculosis, measles, whooping cough) were common to most parts of the country. A second category of diseases was the result of persecution. Some persecution-related deaths were caused by malnutrition (e.g. canker, scurvy) while others (e.g. malaria) were caused by the Saints' being forced to occupy undesirable land such as the swamps in Nauvoo. Perhaps 600 of the 1,925 Nauvoo deaths that we studied were persecution related. A third category includes infectious diseases such as those listed as "fever" and "diarrhea," and epidemic diseases such as cholera, yellow fever, typhoid fever, and louse-born typhus. The epidemic diseases such as cholera and yellow fever constitute a fourth category of diseases. In all likelihood, persecution, stress, and malnutrition contributed to the severity of some illnesses caused by infectious disease.

Age, season, and gender predilections. Babies and young children were especially hard-hit by death in Nauvoo. Diseases that particularly attacked babies were canker or noma, measles, whooping cough, meningitis, and convulsions. There was a striking increase in deaths in Nauvoo starting in July and peaking in September. Diseases that exhibited this seasonal peaking included malaria, diarrhea, canker, measles, and whooping cough. The various causes of death in Nauvoo did not generally favor one gender over the other.

Comparison groups (Winter Quarters and postexodus Nauvoo). We compared the causes of death in early Nauvoo to those in Winter Quarters (same people, different location and time) and to those in the Nauvoo Catholic Cemetery records (different people and time, same location). Four of the major diseases showed a marked difference among these three groups. The persecution-related diseases—malaria and noma/canker—were significant killers in both early Nauvoo and Winter Quarters, but they were almost nonexistent in postexodus

Nauvoo. The other persecution-related disease, scurvy, was a major problem only in Winter Quarters. Only one disease, cholera, was epidemic related. The cholera epidemics reached Nauvoo but not Winter Quarters.

Death rate. The death rate in early Nauvoo appears to be 25 to 35 per 1,000, but further work needs to be done in this area. **RE**

Notes

1. Douglas C. Heiner, Evan L. Ivie, and Teresa L. Whitehead, “Medical Terms Used by Saints in Nauvoo and Winter Quarters, 1839–48,” this volume, 151–62.

2. Mormon Trail Center Staff, “Deaths and Burials in the Camp of Israel at Cutler’s Park and Winter Quarters beginning Sept. 1846,” manuscript at the Mormon Trail Center in Omaha, Nebraska.

3. Veronica Christensen, “Nauvoo Death Records: Records from Nauvoo Catholic Cemetery,” manuscript at Nauvoo Restoration, Inc., Nauvoo, Illinois.

4. Fred E. Woods, “The Cemetery Records of William D. Huntington, Nauvoo Sexton,” *Mormon Historical Studies* 3, no. 1 (2003): 131–63.

5. Heiner, Ivie, and Whitehead, “Medical Terms,” 153–61.

6. Heiner, Ivie, and Whitehead, “Medical Terms,” 153–61.

7. See Rose A. Cheney, “Seasonal Aspects of Infant and Childhood Mortality: Philadelphia, 1865–1920,” *Journal of Interdisciplinary History* 14, no. 3 (Winter 1984): 561–85; and Richard Quain, ed., *A Dictionary of Medicine* (New York: D. Appleton and Company, 1885).

8. Mormon Trail Staff, “Deaths and Burials in the Camp of Israel.”

9. Christensen, “Nauvoo Death Records.”

10. Heiner, Ivie, and Whitehead “Medical Terms,” 153–55.

11. Susan Easton Black, “How Large Was the Population of Nauvoo?” *BYU Studies* 35, no. 2 (1995): 93.