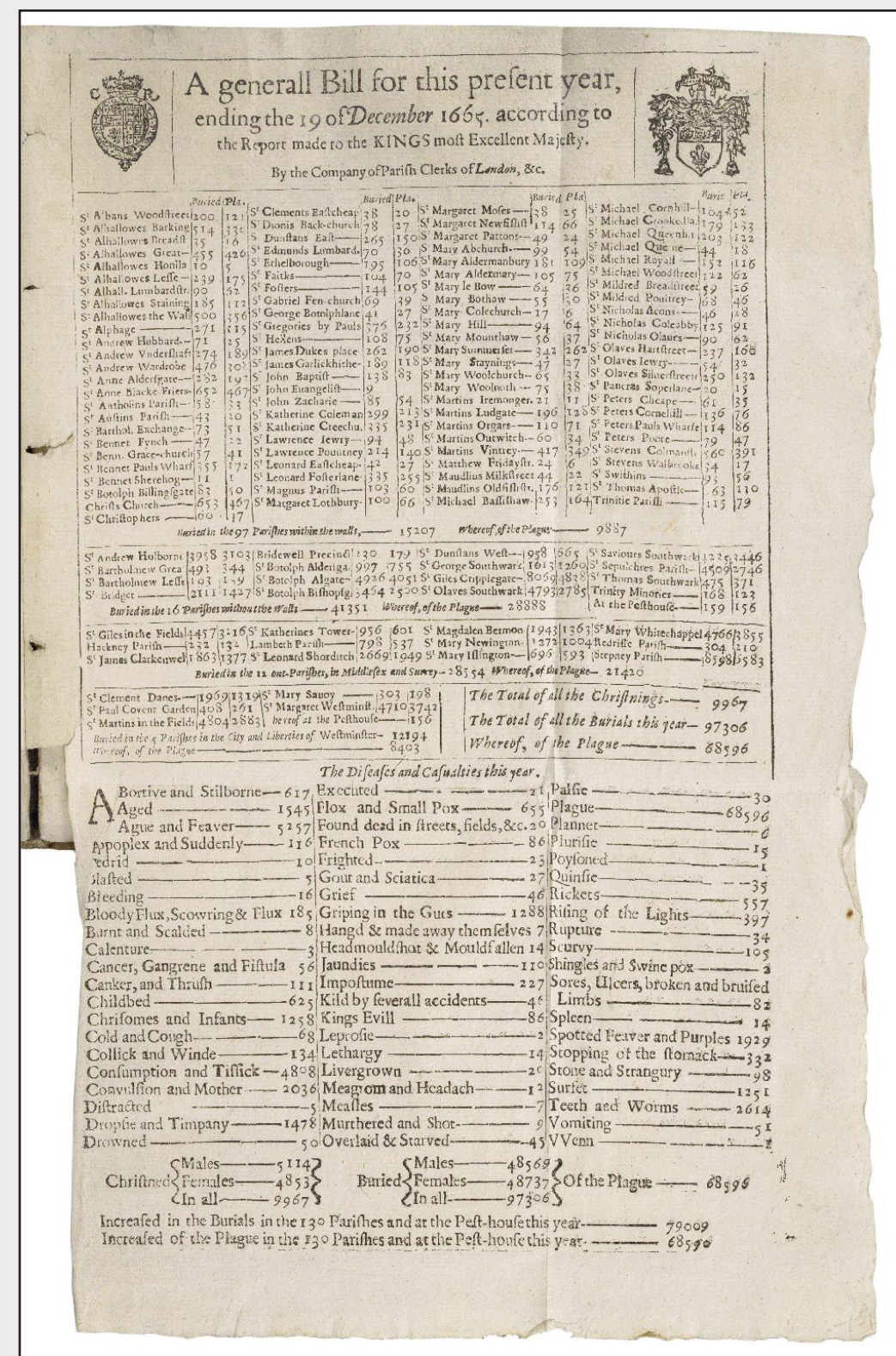


Death By Numbers: Bills of Mortality in Early Modern London

Plague in Early Modern England

Plague first entered England in 1348, as part of a continent-wide epidemic that killed approximately one third the population of Europe. Thereafter, England suffered continuous outbreaks of plague through 1679, and fear of the plague lasted well into the eighteenth century.

The most well-documented epidemics of the early modern era were in England's cities, particularly London, which suffered six major epidemics in the century between 1563 and 1665, and lost an estimated 225,000 people to plague.



Bills of Mortality Database

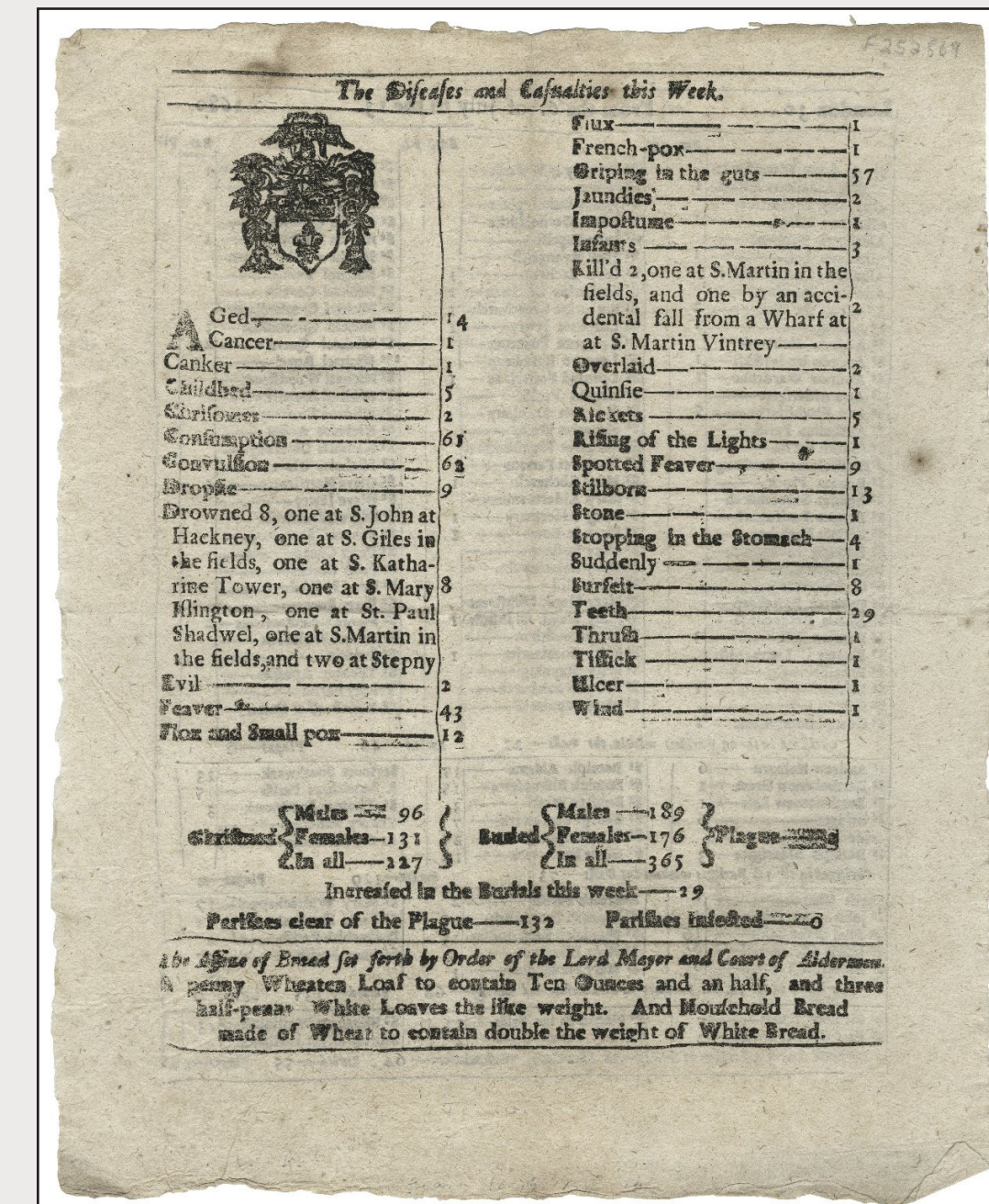
To date, I've taken approximately 10,000 photos of (double-sided) bills from the late sixteenth through early eighteenth centuries, primarily from the Wellcome Library, Guildhall Library, British Library, and the National Archives. I am now transcribing images.

In principle, all quantitative information from the bills will be included in the database, whose working schema is shown to the right. In practice, many bills are partly illegible due to damaged paper, smeared ink, or too-tight book bindings. These instances will be recorded in the appropriate data fields.

London Bills of Mortality

By the turn of the seventeenth century, there was enough popular interest in plague mortality statistics that London officials began publishing them in a weekly series known as the Bills of Mortality.

The bills included a parish-by-parish list of total deaths and plague deaths, along with running tallies of city-wide christenings, deaths broken down by a variety of causes, and parishes infected with plague. The weekly bills were also supplemented annually with a general account of the preceding year, published on the Thursday before Christmas.



Bills of Mortality Online

Currently, weekly Bills of Mortality from a few select epidemic years are available online, in collections such as Early English Books Online and State Papers Online. Annual bills from 1657 to 1758 were collected and printed in an 18th-century volume now available on Eighteenth Century Collections Online. The images included in this poster are courtesy of the Folger Shakespeare Library's LUNA Digital Image Collection. However the vast majority of bills - and the information contained within them - survive only in a few archives and special collections.

Database Access and Sustainability

My primary goal is to make this database freely available online in as sustainable a format as possible. As such, the first iteration of this resource will be a GitHub repo of .txt and .csv files which can be used as such (for those with fewer technical skills) or in combination with a file of SQL commands (for those who want to build and query a local version of the database).

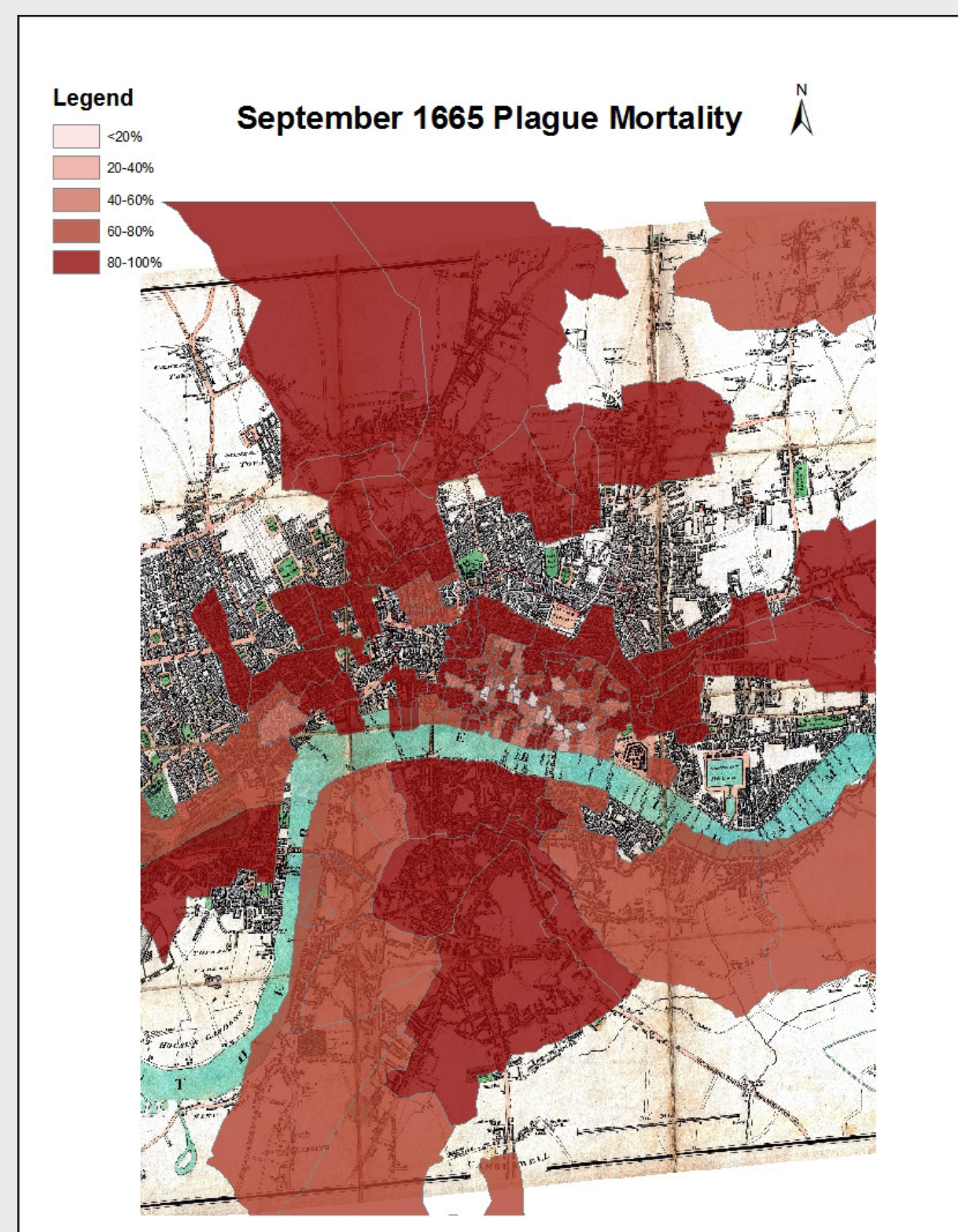
The database will thus be easy to share and version-control, in open-source file formats that should remain readable by scholars in the decades to come.

```
CREATE TABLE parish (id SMALLINT UNSIGNED NOT NULL AUTO_INCREMENT PRIMARY KEY, name VARCHAR(100), start_year DATE, end_year DATE);
LOAD DATA LOCAL INFILE 'parishes.csv' INTO TABLE parish FIELDS TERMINATED BY ',' LINES TERMINATED BY '\n';
CREATE TABLE collective (id SMALLINT UNSIGNED NOT NULL AUTO_INCREMENT PRIMARY KEY, name VARCHAR(100));
INSERT INTO collective VALUES (1, 'Without the Walls');
INSERT INTO collective VALUES (2, 'Without the Walls');
INSERT INTO collective VALUES (3, 'Within the Walls');
INSERT INTO collective VALUES (4, 'Within the Walls');
INSERT INTO collective VALUES (5, 'All');
CREATE TABLE parish_collective (id SMALLINT UNSIGNED NOT NULL AUTO_INCREMENT PRIMARY KEY, collective_id SMALLINT UNSIGNED, parish_id SMALLINT UNSIGNED);
LOAD DATA LOCAL INFILE 'parish_collective.csv' INTO TABLE parish_collective FIELDS TERMINATED BY ',' LINES TERMINATED BY '\n';
```

Mapping Death

Given the geographical basis of the information collected in the bills, one of the most logical ways to analyze them is with mapping (ArcGIS).

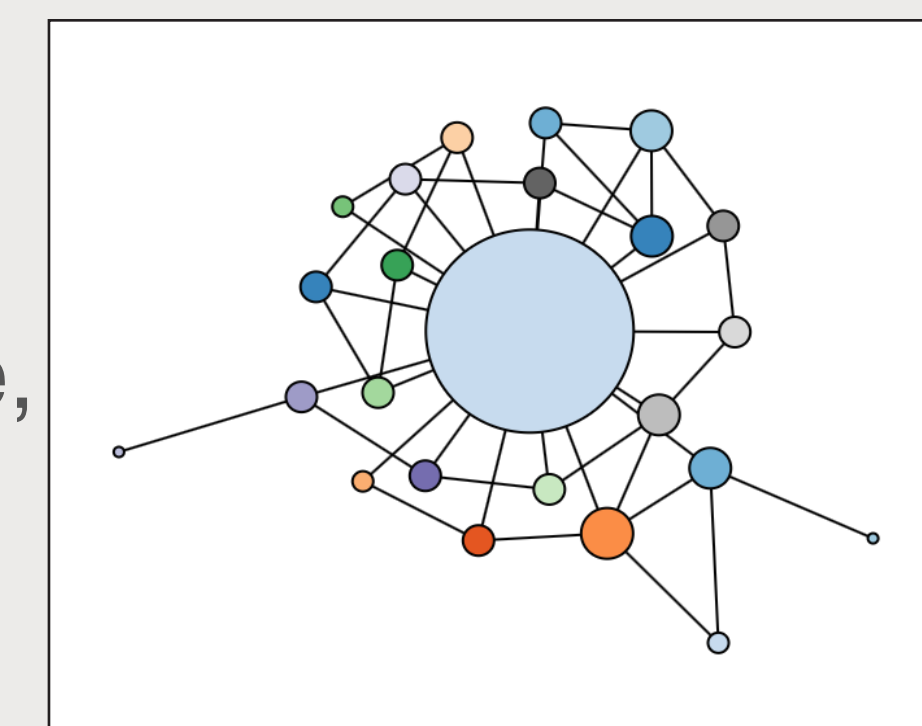
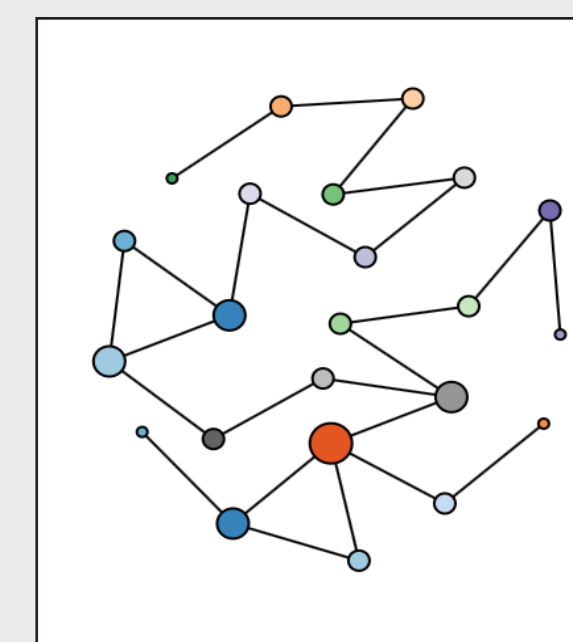
The .shp files of parish boundaries over time - including the reduction of the “Within the Walls” parishes from 97 to 16 following the Great Fire of London in 1666 - will be included in the GitHub repo when complete.



Networking Death

The map to the left implies the River Thames was a moat, a barrier to the disease around it, but the early modern Thames can more properly be likened to a highway. Network analysis can shed light on the transmission of plague throughout the city's parishes, examining the role of features such as rivers, walls, and bridges.

The network above is the riverside parishes connected only by London Bridge, while the network below incorporates the Thames (visualized as the large, pale blue node in the center), giving us a dramatically different network structure.



Future of Death

The database will be released on GitHub in increments, as I finish each analytically meaningful chunk of the complete database. These increments will include both quantitative data transcribed from images (and modifications to the database structure if necessary) as well as associated parish network structures and .shp files of the parishes “within the bills” at that historical moment.

Once the database is complete, I hope to begin a second iteration of the project. In this iteration, I will construct a website to allow scholars more flexible access to the database through a GUI and an API.