Eating Smoke
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Quantitative data played an important role in this study of the history of fire protection. Over the course of the project, I examined a variety of quantitative materials. These included several data sources whose procedures for use have been amply discussed by historians, including the Integrated Public Use Microdata Series (IPUMS) and the United States Census. However, in addition to exploring these more standard sources, I also analyzed two databases that I created from the personnel files of the St. Louis and Philadelphia fire departments. Although this data has helped me to better understand how the experiences of firefighters changed over time, making sense of them required me to move into territory not normally traversed by historians. With this appendix, I want to outline, briefly and generally, the procedures and approaches that I followed in order to make the data in the personnel files of these fire departments suitable for analysis.*

The process began with studying the methods that each department utilized to keep personnel records. The Philadelphia Fire Department kept a membership ledger, divided alphabetically by last name, though within alphabet category, the names were listed by order of the firefighters’ year of first entry into the department. The ledger to which I was given access covered the period from the department’s inception in 1871 until 1955. Unfortunately, the PFD appears to have stopped using the ledger abruptly in 1955. As a result, any information about firefighters whose careers continued after that date was absent from the ledger. The PFD ledger, then, represents a complete record of the department between 1871 and 1955. However, it does not contain an exhaustive record of all those firemen’s careers. The St. Louis Fire Department kept personnel records in three different card files that were used over different but overlapping time periods. The card files to which I was given access included firefighters who began their careers at the department’s inception in 1857 through about 1953. The cards were used and updated regularly after 1953. Thus these cards represent a more complete record.

Organizing the data in a fashion that made it amenable to analysis required a long, though relatively simple process that I performed in consultation with quantitative historians, especially John Modell. The first step involved entering data. I first assigned a basic identifying tag (a page, card file, and item number), and then entered the name of the firefighter, the date of entrance, the date of exit, and the reason for his final exit from the department. After entering this information, I “cleaned” the data, looking for duplications, correcting entry errors, and ensuring consistency in each database. This process took many hours, turning into months, in that it involved the painstaking process of checking my computerized database against the original records, again and again. Over this time, I organized, sorted, and reorganized the data. Later, as I finished this process, I performed quality checks as well as some preliminary analyses to learn more about the databases, especially whether systematic errors appeared. Once this process was complete, I had created a database of all firefighters who entered the St. Louis Fire Department between 1857 through 1950, which had 3,437 unique names. I also had developed a database of all the firefighters who entered the Philadelphia Fire Department from 1871 through 1955, which contained 8,035 individuals.

Part of the process of exploring the data involved creating a common framework for interpreting the data. It meant examining the different nomenclature used for personnel decisions, which varied slightly over time and between the departments, and then categorizing it. For instance, both organizations used multiple words to describe firefighters’ final separation from the department: discharged, dismissed, dropped, resigned, retired, transferred, died, and killed in action. From these mostly self-explanatory categories, I created three categories: resigned or transferred (voluntary separation), dismissed (involuntary separation), and died. Only one category was ambiguous and that was the category of “transfer.” Although how transfers were determined is cloudy, sometimes it appears to have been used in cases in which a firefighter was either in the twilight of a long career or physically unable to perform his job fully, but not disabled. However, in every instance, these firemen were transferred to other city departments. I kept this category separate, but for the sake of the tables presented here, I treated it as a resignation. Only 1 percent of all Philadelphia firefighters left the department through transfer. Finally, neither fire department consistently listed firemen killed in action differently from firefighters who died at fires from natural causes—say of a heart attack rather than from falling walls.

The process of developing and examining the data revealed certain limitations, especially in terms of record-keeping procedures, which affected its analysis and interpretation. The St. Louis Fire Department recorded personnel information using cards, and the department used three different file systems between 1857 and 1950. As a result these record-keeping methods overlapped. The earliest group of cards, however, contained more missing information than the later card systems. Therefore, the database of the STLFD did not reflect the experiences of firefighters who entered the department prior to 1870, and especially during the Civil War, as fully as it did those who entered after that year. It also seems likely that the data for this era was skewed slightly toward long-serving firefighters, because it stands to reason that they would more likely be recorded on the personnel cards. However, there is little evidence to back this suspicion or to quantify this effect. Even so, this flaw in the data does not lessen the value of using the entire dataset to compare change over time or as a tool for contrasting the careers of St. Louis firefighters with the careers of firefighters serving in the Philadelphia Fire Department.

By contrast, I discovered exactly the opposite dilemma existed with the records of the Philadelphia Fire Department. The PFD kept its personnel records on an oversized ledger, beginning in 1871 and running through 1955. The ledger contains little or no information on the service of any firefighter after 1955. Very
basic information on careers is missing after that date—especially data on the date of exit and reason for a firefighters’ separation from the department. As a result, the ends of firefighters’ careers are systematically absent in this database—which is evident in records dating to the first decade of the twentieth century. This characteristic became more pronounced over the century. For example, 1.8 percent of firefighters who entered the PFD in the first decade of the twentieth century remained active in 1955; for those who entered in the 1910s the figure was 7.6 percent; for the 1920s, 24 percent; for the 1930s, 80.4 percent; for the 1940s, 91.0 percent; and of those firefighters who entered from 1950 through 1955 91.4 percent were active in 1955. (I calculated the extent of this systematic error by placing all firefighters who were still active in 1955 into a unique category. I then determined what percentage of firefighters in each cohort—1900s, 1910s, 1920s, etc.—were active.) As a result of the missing exit information, the database of the Philadelphia Fire Department systematically omitted the experiences of long-serving firefighters. Rather than compensate for this condition, I chose not to evaluate the records of those long-serving firefighters. Ultimately, the database of the Philadelphia Fire Department contained not 8,035 unique records, but 4,947. Although this flaw made the data more difficult to interpret, its effect was clear, and I organized my analysis and interpretation accordingly. The tables presented in the appendix include the percentage of active firefighters as a category, thus allowing readers to draw their own conclusions.

Once the databases had been organized, I began to analyze them. Generally speaking, this was a straightforward process, and I examined the data in three ways. First, I analyzed them by cohort of entrance. Studying the databases in this fashion provided a longitudinal portrait of firefighters over their careers, from their first entrance to their exit. These firefighters experienced the same shifts in their occupation and departments: the organization of labor, bureaucracy, procedures, and techniques. Though categorizing firefighters into cohorts, delineated by decade, is artificial, these groupings indicate how structural changes affected firefighters actually working in engine houses. Additionally, I categorized the data by decade of a firefighters’ final separation from the department. This approach produced a cross-sectional portrait of the folks leaving the departments at different moments, offering a subtly different perspective on the changes in firefighting and fire departments. Finally, because the database of the St. Louis Fire Department held more complete information for all firefighters who entered the department between 1858 and the 1950s, I examined these records with greater attention to administrative details, such as transfers, promotions, disciplinary incidents, and other categories. In order to do this in a parsimonious fashion (and rather than en-
tering all the administrative data for each firefighter) I created a random and representative sample of firefighters who entered the St. Louis Fire Department between the years 1857 and 1950. To be sure that my sample included enough firefighters from the earliest period, I oversampled records of firefighters who began careers before 1880. Later, I assigned a weight to these early records that accounted for the oversampling. Next, I reentered the relevant information from the personnel files for the 732 unique names that my sampling procedure yielded. (Once the sample weight was figured in, the sample size was 628.) Creating this robust sample allowed me to examine more detailed longitudinal questions about firefighter careers in a reasonable amount of time. Ultimately the data helped shape this study in many ways not explicitly mentioned here or in the text. The analyses resulted from hundreds if not thousands of hours of running and rerunning cross-tabs.

As the book, and chapters 6 and 8 in particular, demonstrate, these quantitative records had great influence on this project—all of which began with a relatively simple hypothesis. Before beginning my analyses, I hypothesized that firefighting careers would become longer over time, on average, and that firefighters’ final separation from the fire service would increasingly be voluntary. I believed that this would occur as firefighting became a unique occupation, with a distinct work culture, improved working conditions, and more formal administrative procedures. Broadly speaking, the data confirmed my hypothesis, and the text discusses my interpretations in greater depth. Most significantly, the data on firefighters’ careers and fire departments paralleled other trends in firefighting, including especially the standardization of work routines and administrative practices. Lastly, this quantitative analysis of firefighters’ careers informs our understanding of the changing work experiences of American workers by providing insight into an exceptional group of workers in the American economy—workers whose longevity in the same job, for the same employer, and sometimes in the same work site, distinguished them from other American workers in the period from the Civil War through World War II.