Absenteeism in Nineteenth-Century US Manufacturing

Joyce Burnette

Department of Economics

Wabash College

burnettj@wabash.edu

 Our labor market measures usually assume continuous employment. Measures of turnover and tenure assume that a job starts, then the worker is continuously employed, and then the job ends. Little attention is paid to the time when workers are employed but not at work. The purpose of this paper is to document the extent of absenteeism in nineteenth-century manufacturing, to measure its temporal pattern, and to demonstrate what effect absenteeism had on the typical workers' hours of work.

 Absenteeism matters for a number of historical questions. First, the number of hours worked are obviously affected by failture to show up for work. Atack and Bateman (1992) conclude that the typical hours of work in US manfuacturing was 10 hours in 1880. Costa (2000, p. 156-7) claims that

The length of the work day fell sharply between the 1880s, when the typical workers labored 10 hours a day, 6 days a week, and 1920, when his counterpart worked an 8-hour day, 6 days a week. By 1940 the typical work schedule wage 8 hours a day, 5 days a week. . . . This decline in work hours, unmeasured by such common indicators of well-being as income per capita, surely represents one of the larger increaes in the standard of living during this century.

However, if the difference between actual and scheduled hours was large, then nineteenth-century workers did not work as much as we think they did. If absenteeism rates where higher in the past then the reduction in scheduled hours overstates the reduction in actual hours.

 For Britain there has been a great deal of interest in work intensity. Freudenberger and Cummins (1976, pp. 5–6) suggested that around 1750 the number of holidays observed was 40-50 days, in addition to Sundays. They suggested that factory workers of the Industrial Revolution worked 4000 hours per year, rather than the 3000 worked by pre-industrial workers. DeVries (2008) hypothesized that an industrious revolution increased work intensity in the eighteenth century. Voth’s (2000, p. 121–2) evidence supports this hypothesis; he estimates that in London the typical worker worked 208 days per year c. 1750 and 306 days c. 1830.

 We don’t know what workers were doing on the days they were not a work. They may have been using the time for housework or leisure. It is also possible that they were doing other types of work. Did factory workers leave their jobs temporarily in order to work in harvest? If so, we should observe more absences around harvest time. Sokoloff and Dollar (1997) suggest that the US had less seasonal agriculture than Britain, and therefore developed more factory production than cottage industry. They do not consider whether factory workers could participate in seasonal agricultural work.

 Clark (1994) also sees factory work as inflexible. He suggests that factories imposed strict discipline on its workers, and that this discipline increased their productivity and allowed for higher wages. His analysis suggests that factory workers generally obeyed the rules, which led to higher productivity. My results suggest that factory discipline was not entirely successful, at least with regard to getting workers to attend every day. However, work was still more regular than in cottage industry or an artizan’s shop.

**Data**

 This paper exploits the wage accounts of the Pepperell Mfrg Co, an integrated cotton textile firm located in Biddeford, Maine, from 1883. A feature of this source is that the wage account books report not only the wage paid, but also exactly which days each individual worked. This allows me to track not only the total days worked, but when those days were and which days were missed.

 In the 1880s what had previously been two separate companies, Pepperell and Laconia, were in the process of merging. I have consolidated wage records from the merged company. Pepperell operated three different mills, each with separate rooms for carding, spinning, dressing, and weaving. The workforce was divided among the three mills and a “mixed payroll” that covered the non-production workers. The “mixed payroll” included repairmen, night watchmen, cloth inspectors, and accountants. Total employment in March 1883 was 1957 workers, of which 53 percent were female. For this paper I track only the workers in the Mill 3 weaving rooms. (There are two weaving rooms, the upper and lower weaving rooms.) The accounts for these rooms include two sections, “Overseeing” and “Weaving”. Limiting my attention to these weaving rooms allows me to track workers in those room for an entire year. Workers in the weaving room were also less likely to be children than workers in the spinning rooms.

 In 1883 the firm was prospering. Figure 1 shows the total sales of the firm over the period 1875 to 1885. The sales numbers are for fiscal years ending June 30, so this paper examines the last half of the 1883 fiscal year and the first half of the 1884 fiscal year. Sales rose continuously from 1879 to 1883, and then sales fell off a little in 1884. Certainly there are no signs that Pepperell is suffering from a trade depression.

 I know whether the worker worked a whole day, a half day, or not at all on each date. Overseers were sometimes paid for 1.25 or 1.5 days on a particular date, which I interpret as overtime. I do not include overtime hours when calculating the total number of days worked. (The total amount of overtime worked was only 0.3% of the total amount worked. Women never worked overtime, and male weavers rarely did.) Sundays are not listed in the wage book so I conclude that the mill was closed on Sundays. Half days are counted as half of a working day and half an absence. Some firms tried to enforce punctuality by fining latecomers, so it is possible that half-days are the result of a penalty for lateness.[[1]](#footnote-1) Often the penalty took the form of locking the factory gates at a certain time, so that those arriving late could not start work until mid-day. I do not know Peperell’s policy, so when a worker is listed as working a half day I assume the individual only worked half the day. The wage book does not specify the hours per day, but typical hours of work at this time were 10 hours per day (Atack and Bateman, 1992). Yorke (1945, p. 17) reports that in the 1840s hours varied with the season but averaged about 11 hours per day, which was typical for that time period. In 1848 Maine passed a law limiting our of work to 10 hours, but employees were asked to sign a book saying that they agreed to work longer hours (Yorke, p. 24). Between 1840 and 1880 the trend in hours was downward.

 There is some evidence that the firm disapproved of absences. Regulations of the Laconia Company included the following: “All persons in the employ of said Laconia Company are to be punctual and constant in their attendance during the hours of labor designated by the Company, and not to be absent from work without consent, except in cases of sickness.” (Yorke, p. 70) It is not clear whether this regulation was continued when Laconia merged with Pepperell, but if it was the reglation was not very successful.

 Most of the weavers were paid piece-rate wages. Overseers were paid a daily wage, and at any one time there were about a dozen weavers who were paid piece-rates. Daily wages were not part of the learning process because workers did not progress from time-rate to piece-rate wages. Weavers paid daily wages may have been hired as substitutes.

 The wage book does not always list workers in the same order, but I have pieced together continuous work histories for all those working in the weaving rooms. Sometimes the spelling of the name would change, but I considered different spellings of a name to be the same person if name would be pronouned the same (for example, I consider Cyrus Seare and Cyrus Cyre to be the same person). Since I only have the records of part of the firm, turnover rates would be affected if workers move from one section of the mill to another. However, I do have complete records of all the workers in March, 1883, so I can check whether it was a common practice for workers to change rooms. Among the 1957 workers at the firm in March 1883 there are 64 cases where workers of the same name appear in different rooms. In 39 (61%) of these case the two workers could not possibly be the same person because together they work more days than are available in a month. There are only 25 cases where it is possible that the same person worked in two different rooms, meaning that, at a maximum, 1.3 percent of workers moved rooms. I conclude that, if workers did move within the factory, it was relatively rare.

**Absenteeism vs. Turnover**

 Conceptually absenteeism and turnover are distinct. A workers is absent if he or she is still employed at the firm but is not at work, while turnover occurs if a worker is no longer employed at the firm. In practice it it difficult to distinguish between absenteeism and turnover at Pepperell because many workers are gone for weeks and then return to work. I know when the worker was present, but I don’t know if the worker was fired or quit. Employment at Pepperell was quite fluid, so it is difficult to say exactly when a period of employment ends. A worker who misses one day is clearly continuously employed but absent. But what if that worker misses two weeks and then returns to work? Or four weeks, or ten weeks? Since there are many cases of workers being gone for long periods and then returning to work, the distinction becomes somewhat arbitrary.[[2]](#footnote-2) Because the definition is arbitrary, I present absenteeism rates based on three different definitions of when a separation has occured. I use two-week, four-week, and six-week definitions. In the two-week definition, a separation occurs if a worker is absent for more than two weeks, and the worker is counted as absent if he or she is absent for two weeks or less. Similarly, for the four-week definition, a separation occurs if a workers is absent for more than four weeks at a stretch, and the six-week definition allows a worker to be absent for up to six weeks. By construction the six-week definition will result in more absenteeism and less turnover than the two-week definition.

 If we use the 2-week definition we have lower rates of absenteeism, but turnover is quite high. By the 2-week definition, there are 704 total spell of employment among the 543 workers, or about 1.3 spells per worker. Among the 91 workers who worked both January 2 and Dec. 30 there are 156 spells of employment, or 1.7 per worker. Allowing longer periods to count as absences rather than separations reduces the number of employment spells. With the 4-week definition there are 601 total spells and with the 6-week definition there are 591 total spells. Among the 91 workers working Jan. 2 and Dec. 30 the number of spells falls to 119 and 110. Moving from the 2-week to 4-week definition seems to make a big difference, and moving to the 6-week definition is a relatively small change. I favor the 4-week definition, but report absence rates for all three definitions.

 Those at work on January 2 are counted as left-censored: I don’t know when they started work. For other workers I count the first day they work as their start day. Once started, the worker is attached to the firm until such time as they appear in the records for the last time, or miss two weeks in a row (or 4 or 6 weeks), in which case the last day at work is the end day. Workers at work on Dec. 29 are counted as right-censored.

 Besides Sundays, there were six days during the year when no work occured in the weaving rooms: January 1, April 19 (Patriots Day), May 30 (Memorial Day), July 4, Nov 29 (Thanksgiving), and December 25. York (1945, p. 17) reports that in 1845 there were “three regular holidays a year – Fast Day (in April), Fourth of July and Thanksgiving,” so the total number of holidays doubled between 1845 and 1883. I do not count workers as absent these days since presumably they could not have worked if they wanted to. Workers who are attached to the firm are counted as on holiday these days. Workers were not paid for holidays. During the time that a worker is attached to a firm (from their start date to their end date), a worker is either at work for a full day or half day, absent, or on holiday.

**Annual Patterns of Work**

 Figure 2 shows the total number of workers at work each day of the year.[[3]](#footnote-3) The highest number of workers on any one day was 199. The lowest number of workers present, 80, occurred on May 9, the day of the dedication of St. Joseph’s church.[[4]](#footnote-4) Aside from May 9, the lowest number of workers present was 154, or 77 percent of the maximum. The average number of workers per day was 186.8, with a standard deviation of 9.4. The number of workers was lowest in the summer. While the average was 195 in January, it was only 175 (10 percent lower) in July, and 177 in August.

 Figure 3 shows the number of workers counted as absent each day. Absences are low in the first and last week because of how absences are defined. Since a day is counted as an absence only if it falls between two observed days of work, it is not possible for a worker to be counted as absent on Jan. 2 or Dec. 29. Ignoring the first and last week, there are on average 14 workers absent each day by the 2-week definition, 19 workers by the 4-week definition, and 22 workers by the 6-week definition. Once again we see that May 9 was an unusual day, with more than half of the workforce failing to show up. After that, the week of July 4 had the highest number of absences.

 To help us see the seasonal patterns more clearly, Table 1 shows the averages by month. July and August are the lowest months, and January is the highest. Average daily employment declines ten percent between January and July. This decline is largely due to long absences. Between January and June total employment (workers present plus those absent) declined 7.5 percent using the 2-week definition of separations, but only 2.5 percent using the 6-week definition of separations.

 Why were workers more likely to be absent in the summer months? Workers could taking their vacations in the summer, as workers do today, or they could be pulled away by agricultural work. Comparing patterns for men and women may help us distinguish between these explanations. If absences are for leisure then both men and women should be equally affected. If absences are for agricultural work, men should be more affected because they received higher wages in such work.

 Table 1 and Figure 4 compare average monthly employment of men and women. Since almost all the women were weavers and about half of the men were overseers, the gender difference could be influenced by occupation. To allow for better comparison I also present employment of male weavers. Table 1 gives the average number of workers present per day, and Figure 4 indexes employment to January. Over the course of the year the firm seems to be shifting towards a more male labor force, but we also see that male employment is more seasonal than female employment. Female employment falls ten percent between January and August, while the employment of male weavers fall twenty percent between January and July. The fact that male employment is more seasonal than female employment is consistent with workers leaving for temporary work in agriculture. However, the number of workers

 Table 2 presents absence rates for workers at Pepperell. Overall absence rates are between 7 and 10 percent. Females consistently have higher absence rates than males, and this difference is not simply due to the fact that males are more likely to be overseers. Within both occupations and across all definitions, women had higher absence rates than men. Overseers had lower absentee rates than weavers, but this was largely due to the gender composition of the occupations. Male weavers had absence rates similar to those of male overseers.

 Modern absence rates are lower. In 2013 absence rates in manufacturing were 2.6 percent.[[5]](#footnote-5) However, vacations and personal days are not counted as absences. If we assume each manufacturing worker in 2013 had two weeks of vacation per year, that would be equivalent to 3.8 percent of the work year, so modern absence rates would be more like 6.4 percent, or similar to the absence rates of male workers by the 4-week definition. Allowing the correction for vacations, women at Pepperell had higher absence rates than modern workers, but men did not.

Perhaps the vacations offered by firms today simply regularize the time that workers were taking off anyway. The difference is that workers today are paid for their vacations, while workers at Pepperell were not.

**Weekly Patterns**

 Table 3 shows how absences varied with day of the week. The top half of the table gives the average number of days worked and number of days absent on each day of the week (Holidays and the first and last week of the year are ignored.) The largest number of absences was on May 9, which was a Wednesday. This one day is enough to affect the weekly pattern, so in the bottom of the table I present the averages excluding May 9. The only weekly pattern we observe is a tendency for absences to be higher on Saturday, and possibly a slight increase on Fridays. Using the 4-week definition, absences are 8 percent higher on Saturday than the average of Monday through Thursday (and three percent higher on Friday). This pattern is consistent with a leisure-time interpretation of absences. However, the differences are small enough that there is not much effect on total employment; Saturday employment is only about one percent lower than the rest of the week.

 Workers may have taken Saturdays off to make their weekends longer. Did they also extend other holidays by taking off days before and after the holiday? While absences are not well measured around New Year’s Day and Christmas, for the other four holidays I can graph absences on days before and after the holiday. Figure 5 shows the average number of absences by the number of working days before or after a holiday. The figure shows that workers are more likely to be absent immediately before and after a holiday. The day before a holiday has 49 percent more absences than five days before, and the day after has 47 percent more absences than five days after. Nineteenth-century workers, like workers today, liked to extend their holidays.

**Individual Variation**

 Another way of looking at work patterns is to look at the total number of days worked by each individual. The total number of days available was 306 (52 weeks at six days per week, less six holidays). Only one worker, the highest-paid overseer who was in charge of both weaving rooms, worked all 306 days. The shortest tenure was a half a day. Overall 543 workers worked on average 105 days during the year. Table 4 shows the number of workers and number of days worked for the most regularly employed to the most transient workers.

 The most regular workers, those worked at least 48 weeks (or at least 94 percent of possible days) were small in number, and they also account for only a small portion of total days worked. Only 25 percent of days worked by overseers, and 11 percent of days worked by weavers, were worked by someone worked at least 48 weeks in the year. Short-term employees who worked less than 48 days during the year were numerous, but account for a relatively small portion of the total days worked. Compared to weavers, overseers were less likely to be in the middle of the distribution, and more likely to work the full year or only briefly.

**Turnover**

 In fhe literature on historical job turnover there is disagreement about how best to measure turnover, but job tenure is the wrong concept for this labor force because it implies a continuity of employment that did not exist. Workers did not start on one date and then work until they quit or were fired. Instead, workers moved fluidly in and out of employment. A worker might be gone for six months between two spells of employment. The longest spell of non-employment between two employment spells in my data is 32 weeks. If I collected more than a year of data I might discover longer spells of non-employment.

 Carter and Sovaca argue that job tenures in the late 19th-century were fairly long. Jacoby and Sharma (1992) dispute their conclusion. Due to the nature of their data, they do not know whether emplpyment was continuous, or was puctuated by many lengthy absences. The data presented here show that Pepperell weavers did not have long job tenures, at least not long continuous tenures. The tendency of workers to leave and then return after a long spell away suggests that “job tenure” might be longer if we examined all the times an individual worked for a firm throughout their life. But this raises the questions of how we define “a job”. In the nineteenth century workers did not start a job and then work continuously for the employer until a permanent separation. Workers moved in and out of employment more fluidly. (Family leave has recently made it easier for workers to leave for a time and return to the same employer.)

 Jacoby and Sharma find that 15 percent of employment spells in manufacturing were more than one year. I find that 17 percent of my workers were double-censored, meaning that they worked both Jan. 2 and Dec. 29. However, some of these individuals missed enough days during the year that by a four-week definition of turnover they had separated from the firm during the year. If we look instead at employment spells (that end if the individual spends more than 4 consecutive weeks away) there are 65 more spells of employment than workers, and only 10.5 percent of employment spells were double-censored. Relatively few workers were employed for continuously for a year or more.

**Effect on Productivity**

 To study the implications of absenteeism, I examine whether earnings in December are determined by the regularity of employment over the previous 11 months. In Table 5 I measure the determinants of earnings per day for those working in December. For piece-rate workers earnings were a function of the amount of cloth produced, and differences in earnings per day should reflect productivity. For time-rate workers the daily wage rate should equal productivity if wages were competitive, but earnings were not directly based on output.

 Table 5 shows the determinants of earnings per day in December. I control for occupation (overseer vs. weaver) and gender. All overseers worked on timerate wages and most weavers worked on piecerate wages, but there were some weavers working on time rates, so I include a dummy variable indicating weavers on timerate wages. Overseers earned more than weavers, and weavers on timerates earned less than weavers on piecerate. Controlling for occupation, females earned significantly less than males. I also limit the analysis to piecerate weavers, since their wages were more obviously based on output and should measure productivity directly.

 To examine the effect of experience on earnings I include a measure of the total number of days the individual worked during the year. This measure of experience has a positive effect on earnings but the effect is not statistically significant at the 5% level. I then add controls for when the worker first appeared in the wage book and the worker’s absence rate. “Starting month” is the number of the month when the worker first appears. The negative coefficient tells us that those with the least experience (who appeared late in the year) had lower earnings. “Absence rate” is days absent as a percentage of the days the worker was employed at the firm. Controlling for the month when the worker started, the absence rate does not have a significant effect on earnings.

**Conclusions**

 Workers in the Pepperell weaving room had higher rates of absence than workers today, but if we considered the vacation days taken by workers today as absences the difference is not that great: male workers at Pepperell had absence rates similar to today’s workers, while female workers at Pepperell had higher absence rates. We don’t know for sure what Pepperell workers were doing when not at work, but it is possible that they simply took unofficial vacations for which they were not paid. The concentration of absences around holidays is consistent with this explanation.

 While hours of work were long in the nineteenth-century, this was mitigated to some extent by the fact that most workers did not work every day of the year. Only 38 of the 543 workers, accounting for 19.5 percent of the total days worked, worked more than 280 days in 1883. If absenstee rates were 10 percent, or about twice what they are today, then the differences in absenteeism erases one-fifth of the apparent decline in hours worked. If nineteenth-century workers had 60-hour work weeks but were absent ten percent of the time, then they worked on average only 54 hours. If the workweek has fallen to 40 hours per week but absences have also fallen to only three percent, then total work hours are on average 39 hours per week. What appeared to be a decline of 20 hours per week turns out to be a decline of only 15 hours. Ignoring absenteeism leads us to overstate the extent to which our workweek has declined over time.

References

Atack, Jeremy, and Fred Bateman, 1992, “How Long Was the Workday in 1880?” *Journal of Economic History*, 52:129-160

Atack, Jeremy, Fred Bateman and Robert Margo, 2003, “Productivity and the Lenght of the Working Day: Evidence from the 1880 Census of Manufactures” *Explorations in Economic History*, 40:170-194

Clark, Greg, 1994, “Factory Discipline” *Journal of Economic History,* 54:128-163

Costa, Dora, 2000, “The Wage and the Length of the Work Day: From the 1890s to 1991,” *Journal of Labor Economics*, 18:156–181.

DeVries, Jan, 2008, *The Industrious Revolution: Consumer Behavior and the Household Economy, 1650 to the Present*, Cambridge: Cambridge Univ. Press.

Freudenberger and Cummins, 1976, “Health, Work and Leisure before the Industrial Revolution,” *Explorations in Economic History*, 13:1–12.

Leigh, J. Paul, 1983, “Sex Differences in Absenteeism,” *Industrial Relations,* 22:349–361.

Leon, Carol Boyd, 1981, “Employed but not at Work: A Review of Unpaid Absences” *Monthly Labor Review*, 18–22.

Sanford Jacoby and Sunil Sharma, “Employment Duration and Industrial Labor Mobility in the United States, 1880-1980,” Journal of Economic History, March 1992,

52:161-179.

Sokoloff, Kenneth and David Dollar, 1997, “Agricultural Seasonality and the Organization of Manufacturing in Early Industrial Economies: The Contrast Between England and the United States,” *Journal of Economic History*, 57:288-321.

 Voth, Hans-Joachim, 2000, *Time and Work in England, 1750-1830*, Oxford: Clarendon Press.

Yorke, Dane, 1945, *The Men and Times of Pepperell*, Boston: Pepperell Manufacturing Co.

Table 1

Monthly Days Worked

(Average Number of Workers Present per Day)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | All Workers | Males | Females | Male Weavers |
| January | 194.5 | 41.0 | 146.9 | 20.6 |
| February | 192.8 | 42.7 | 142.8 | 22.2 |
| March | 188.6 | 40.3 | 141.9 | 21.1 |
| April | 182.2 | 37.4 | 136.8 | 20.4 |
| May  | 186.5 | 37.0 | 143.4 | 18.7 |
| June | 189.6 | 35.1 | 147.4 | 18.4 |
| July | 175.3 | 35.8 | 136.5 | 16.5 |
| August | 176.5 | 41.0 | 131.2 | 20.7 |
| September | 183.6 | 44.3 | 134.4 | 23.4 |
| October | 191.0 | 45.7 | 138.9 | 25.3 |
| November | 190.3 | 47.4 | 137.1 | 27.7 |
| December | 191.3 | 49.5 | 135.5 | 28.9 |

Note: Male days + female days do not equal days worked by all workers because all workers includes workers of unknown gender.

Table 2

Absence Rates

|  |  |  |
| --- | --- | --- |
|  | Ignoring first and last week | Ignoring first and last month |
|  | 2-week | 4-week | 6-week | 2-week | 4-week | 6-week |
| Overseers, M | 4.7 | 6.4 | 6.8 | 4.8 | 6.6 | 7.1 |
| F | 6.1 | 15.7 | 15.7 | 6.2 | 17.1 | 17.1 |
| Weavers, M | 4.7 | 6.9 | 7.2 | 4.4 | 6.9 | 7.3 |
| F | 7.7 | 10.1 | 11.2 | 7.9 | 10.5 | 11.8 |
| Overseers | 4.9 | 7.0 | 7.4 | 4.9 | 7.1 | 7.6 |
| Weavers | 7.3 | 9.7 | 10.7 | 7.5 | 10.1 | 11.2 |
| M | 4.7 | 6.6 | 7.0 | 4.6 | 6.8 | 7.2 |
| F | 7.6 | 10.2 | 11.3 | 7.9 | 10.6 | 11.8 |
| All | 7.0 | 9.4 | 10.4 | 7.2 | 9.7 | 10.8 |

Total rates are not weighted averages of male and female rates because the total rates include individuals of unknown gender.

Total absences divided by days of work plus absences. Absences are full absences plus one-half the number of half days. Days of work are the total number of full or overtime days, plus one-half the number of half days.

Table 3

Days Worked and Absences, by Day of the Week

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
| Days Worked | 187.0 | 187.2 | 185.7 | 187.9 | 187.1 | 185.5 |
| Absences, 2-week | 13.4 | 13.6 | 15.5 | 13.5 | 13.8 | 14.5 |
| Absences, 4-week | 18.5 | 18.8 | 20.7 | 18.8 | 19.2 | 20.1 |
| Absences, 6-week | 21.3 | 21.5 | 23.3 | 21.4 | 22.0 | 23.0 |
| Ignoring May 9 |  |  |  |  |  |  |
| Days Worked | 187.0 | 187.2 | 187.8 | 187.9 | 187.1 | 185.5 |
| Absences, 2-week | 13.4 | 13.6 | 13.2 | 13.5 | 13.8 | 14.5 |
| Absences, 4-week | 18.5 | 18.8 | 18.5 | 18.8 | 19.2 | 20.1 |
| Absences, 6-week | 21.3 | 21.5 | 21.0 | 21.4 | 22.0 | 23.0 |

Table 4

Individual Variation in Days Worked per Year

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Number of Workers | Percent of Workers | Percent of Total Days |
| All Workers | 288 days (48 weeks) or more | 24 | 4.4 | 12.5 |
|  | 240 – 287.5 days  | 59 | 10.9 | 27.8 |
|  | 192 – 239.5 days | 37 | 6.8 | 14.0 |
|  | 144 – 191.5 days | 46 | 8.5 | 13.5 |
|  | 96 – 143.5 days | 64 | 11.8 | 13.2 |
|  | 48 – 95.5 days | 93 | 17.1 | 11.5 |
|  | 0.5 - 47.5 days | 220 | 50.5 | 7.4 |
|  |  |  |  |  |
| Overseers | 288 days (48 weeks) or more | 5 | 7.7 | 24.9 |
|  | 240 – 287.5 days | 5 | 7.7 | 22.4 |
|  | 192 – 239.5 days | 3 | 4.6 | 10.6 |
|  | 144 – 191.5 days | 2 | 3.1 | 5.4 |
|  | 96 – 143.5 days | 6 | 9.2 | 11.7 |
|  | 48 – 95.5 days | 13 | 20.0 | 15.7 |
|  | 0.5 - 47.5 days | 31 | 47.7 | 9.4 |
|  |  |  |  |  |
| Weavers | 288 days (48 weeks) or more | 19 | 4.0 | 11.0 |
|  | 240 – 287.5 days | 54 | 11.3 | 28.5 |
|  | 192 – 239.5 days | 34 | 7.1 | 14.4 |
|  | 144 – 191.5 days | 44 | 9.2 | 14.5 |
|  | 96 – 143.5 days | 58 | 12.1 | 13.4 |
|  | 48 – 95.5 days | 80 | 16.7 | 11.0 |
|  | 0.5 - 47.5 days | 189 | 39.5 | 7.2 |
|  |  |  |  |  |
| Males | 288 days (48 weeks) or more | 10 | 7.6 | 24.1 |
|  | 240 – 287.5 days | 10 | 7.6 | 21.6 |
|  | 192 – 239.5 days | 5 | 3.8 | 8.7 |
|  | 144 – 191.5 days | 8 | 6.1 | 10.4 |
|  | 96 – 143.5 days | 11 | 8.3 | 10.7 |
|  | 48 – 95.5 days | 28 | 21.2 | 16.2 |
|  | 0.5 - 47.5 days | 60 | 45.5 | 8.2 |
|  |  |  |  |  |
| Females | 288 days (48 weeks) or more | 16 | 4.2 | 11.1 |
|  | 240 – 287.5 days | 43 | 11.2 | 27.1 |
|  | 192 – 239.5 days | 32 | 8.3 | 16.3 |
|  | 144 – 191.5 days | 39 | 10.2 | 15.5 |
|  | 96 – 143.5 days | 50 | 13.0 | 13.8 |
|  | 48 – 95.5 days | 57 | 14.8 | 9.4 |
|  | 0.5 - 47.5 days | 147 | 38.3 | 6.8 |

Table 5

Effects of Experience on Earnings

|  |  |  |
| --- | --- | --- |
|  | All Workers | Piecerate Workers Only |
| Constant | 0.029(0.034) | –0.014(0.041) | 0.076(0.042) | 0.020(0.030) | –0.005(0.034) | 0.067(0.049) |
| Female | –0.080(0.037) | –0.091(0.038) | –0.108(0.038) | –0.070(0.033) | –0.082(0.034) | –0.095(0.035) |
| Overseer | 0.326(0.057) | 0.310(0.057) | 0.307(0.057) |  |  |  |
| Timerate Weaver | –0.423(0.054) | –0.399(0.055) | –0.396(0.056) |  |  |  |
| Total Days Worked before Dec. (/100) |  | 0.031(0.016) |  |  | 0.022(0.015) |  |
| Absence Rate |  |  | 0.267(0.235) |  |  | 0.116(0.281) |
| Starting Month |  |  | –0.009(0.004) |  |  | –0.008(0.004) |
| N | 227 | 227 | 227 | 187 | 187 | 187 |
| R2 | 0.382 | 0.392 | 0.392 | 0.060 | 0.035 | 0.050 |

Figure 1

Total Sales of Pepperell Manufacturing Company

Sales are for fiscal years ending June 30.

Source: Yorke, 1945, p. 114.

Figure 2

Total Days Worked over the Year

Figure 3

Days Absent over the Year

Figure 4

Average Employment per Day, by Gender

Figure 5

Average Number of Absences, by Number of Working Days before or after a Holiday

1. Atack and Bateman, 1992, p. 134. [↑](#footnote-ref-1)
2. There are three cases where a worker is absent more than six months between two periods of work. [↑](#footnote-ref-2)
3. The total does not include overtime, but does count half days as half a worker. [↑](#footnote-ref-3)
4. “The dedication of St. Joseph’s church on Elm street, which occurred Wednesday, rendered that day one of the most memorable in the clerical history of Biddeford. The city had never before contained such an assemblage of eminent and distinguished expounders of the Roman Catholic faith, and a recurrence is not within the bounds of probability.” *Biddeford Weekly Journal*, May 11, 1883. Thanks to Renee DesRoberts of the McArthur Public Library for this reference. [↑](#footnote-ref-4)
5. Bureau of Labor Statistics, Household Data, http://www.bls.gov/cps/cpsaat47.htm. [↑](#footnote-ref-5)