

Compensating Tipped Work: Security Cameras as a Tool for Time Use Measurement

Compensation & Benefits Review
1–19

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DOI: 10.1177/0886368718811461

journals.sagepub.com/home/cbr



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Abstract

While tipped labor is common in the United States, it presents potential issues for employers unable to demonstrate how tipped workers use their time, thus violating the Fair Labor Standards Act and attracting lawsuits. According to the Fair Labor Standards Act, if tipped employees spend more than 20% of their workweek completing non-tipped tasks (e.g., cleaning, stocking), then they are eligible for the Federal minimum wage (\$7.25 in 2018) for the hours beyond 20%, rather than the minimum wage for tipped employees (\$2.13 in 2018). Traditionally, employers have used self-report data or observers to determine time use, but these are problematic given self-report bias and the Hawthorne effect. In response, we conducted a study using security cameras to document employee time use in a sample of employees at a large chain restaurant. We found that the sample did not violate the 20% rule. Furthermore, we demonstrated an alternative method to study time use with technology most service-based companies already have.

Keywords

tipped workers, security cameras, determining compensation, time use measurement, Fair Labor Standards Act

Though tipping service workers is a long-standing custom within the United States, it remains a controversial issue for more than 4 million workers.¹ Employers can face lengthy lawsuits and hefty payouts for failing to appropriately compensate tipped employees in compliance with the Fair Labor Standards Act (FLSA). For example, in 2017, the Wage and Hour Division of the U.S. Department of Labor awarded more than \$270 million in back wages from companies found in violation of the FLSA² and concluded 28,771 cases.³ Of these, 5,446 cases were in the food service industry and yielded nearly \$43 million in back wages for 44,000 workers, which is the focus of the current study. It should be

noted, however, that this estimate only includes the cases that have been litigated and underrepresents the magnitude of the problem. Restaurants can violate these regulations in several ways, but of particular interest is not compensating tipped workers sufficiently for *non-tipped* work (i.e., not directly related to producing tips) they perform. For example, the wait staff in restaurants will often spend time setting and bussing tables, making drinks, and cleaning (non-tipped) in addition

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to directly serving customers by taking orders and delivering food (tipped). Should a tipped worker spend more than 20% of her or his work time performing non-tipped work,⁴ the employer is required to compensate the worker at the federal minimum wage, which is \$7.25 per hour (minimum wage for tipped work is \$2.13 per hour; FLSA, 29 U.S.C. § 201, et seq., Section 3m). Any amount of time less than 20% spent on non-tipped work is considered a tip credit for the employer and they are not required to compensate the worker differently. While seemingly straightforward, this tip credit option focused on how tipped workers use their time introduces complexities to regulating and appropriately compensating this work.

The difficulty for employers is how to determine the percentage of time devoted to non-tipped work. Simply asking managers or employees to estimate the time is subjective and fraught with the many well-known weaknesses of self-report measures.⁵ Asking managers and employees to record the time worked on various tasks is likewise limited by estimation errors, as well as by ensuring compliance with the record keeping. Instructing managers and employees not to exceed 20% is equally uncertain to be effective not only because of compliance but also because unexpected circumstances occur and people forget about (or make exceptions to) the rule. As mentioned, this issue has become the subject of lawsuits, costing employers millions of dollars. In fact, some law firms specialize in this type of suit and are going across the country suing similar employers, who are usually unable to prove that the non-tipped work is not more than 20%.⁶

So what is the best way to objectively determine the amount of time employees are spending doing non-tipped work? Historically, the solution was to conduct a “time study” wherein employees are observed performing the job and their tasks timed with a stopwatch. However, such a methodology is very costly and difficult due to travel required by onsite observations, the need to observe throughout the workday from opening to closing, changes by day of the week, and so on. Further, people may behave

differently when being observed.⁷ For example, the wait staff may perform more or less non-tipped work when they are being observed depending on what message they want to send to management.

One innovative solution that may be available to many if not most establishments is to use security camera systems to make observations. Such camera systems serve many purposes in addition to monitoring security, such as checking the number of customers and workloads so additional staff can be assigned. However, they can also be used to systematically observe the work of employees. The purpose of this article is to demonstrate how security cameras can be used to conduct a time sampling study to determine the amount of non-tipped work performed in an organization. This study occurred in a restaurant franchise, but the methodology could be used in any organization that uses sufficient security cameras.

Currently, managers address issues surrounding the amount of time a tipped worker spends on non-tipped work in a number of ways, but particularly via informal observation of the workers’ tasks, instructing employees about their tasks as well as what time to come to work and what time to leave, asking employees to record their hours and training lower-level managers or team leaders regarding these laws. However, these methods can yield subjective approximations of how tipped workers use their time, thus potentially violating the law and corporate policy based on the law.

Our goal in this study is to contribute to the literature and practice of compensation in three ways. Primarily, we aim to draw attention to this critically important topic and, more specifically, discuss how to remain compliant with laws regarding this type of labor. Second, we identify a methodology that has recently become more available due to advances in technology as a means to help assess compliance. Finally, we illustrate the use of the methodology to determine compliance with non-tipped work compensation laws from an actual application in a large restaurant chain.

Time Study Definition

A time study is the systematic observation and analysis of the performance of a job in order to determine the amount of time spent on each task. A time study was designed as the primary research methodology to determine the time spent by tipped employees performing non-tipped work. The time study utilized time sampling wherein measurements (in this case, observations of tasks) are taken based on a systematically drawn sample to estimate the amount of time spent performing various tasks. Time studies are commonly used to improve efficiency and to determine work standards for the expected amount of time to perform tasks (for illustrative chapters describing time studies and time standards, see Konz,⁸ Matias,⁹ Niebel¹⁰ and Panico¹¹).

Use of Security Cameras

The use of security cameras—or other types of virtual monitoring¹²—in the workplace is not particularly new. Law prohibits use of cameras in bathrooms and other locations where employees are expected to have a reasonable amount of privacy. Furthermore, employees must be informed of the cameras.¹³ Generally, cameras have been treated as a crime prevention tool (e.g., theft, workplace violence),^{14,15} but some say that it is not a sufficient deterrent.¹⁶ While we would expect the cameras to affect behavior (the Hawthorne effect) or perception of management—such as less trust in management¹⁷—research suggests behavior normalizes over time and employees behave as if the cameras are not there.¹⁸

The security cameras in the restaurants allowed the work to be observed on a systematic and unobtrusive basis. Each store has approximately 12 to 16 cameras pointed to different locations. Locations generally included one or more views of the dining room and bar, kitchen, expo station where servers pick up the food, cash register and front entrance, parking lot and the manager's office. The cameras record continuously and could be viewed in real time or using historical archives that maintained up to 2 weeks of

records. The cameras were ideal for the time study because they allowed the work in the restaurants to be observed at any time throughout the day, to go back in time historically, and to observe most work locations in the restaurants. They had the additional advantage of not influencing the behavior being observed, which can happen when people know they are being watched, as noted earlier. Furthermore, they were unobtrusive compared to an observer in that the use of the cameras to observe the work did not get in the way of the work flow as an in-person observer might.

Sampling Design

The franchise consists of 17 restaurants and is a well-known sports bar chain throughout the United States that serves food and alcohol. Virtually all employees are part-time and not all employees work in a given week. Their non-tipped work practices are typical of restaurants. Of the 17 restaurants, nine had cameras that could be viewed on a personal computer, five that could be viewed on a mobile device only, and three either offline or not yet camera equipped. There were no known differences in the restaurants that had the different camera systems because this franchise implemented highly standardized practices and the restaurants were located in approximately the same region of the United States. Therefore, we focused the sample the nine restaurants that could be viewed on a personal computer because a much larger screen made it easier to see the work in detail. Due to technical difficulties with one of the restaurants, we included eight restaurants in the study. There were minor layout differences for some restaurants, but that had no impact on the non-tipped work. Thus, sampling nearly half the restaurants provided a reasonable estimate of the work performed at all the restaurants.

Because the work might vary depending on the day of the week, such as weekends being busier, the sampling plan collected data for 7 days for each restaurant. Holidays were avoided. Because the work varies throughout the day and because of the desire to

yield-reliable estimates of the activities throughout the day, the plan systematically sampled at each hour of the day that tipped employees were working (from 10:00 a.m. to 3:00 a.m.). To avoid any confounds that might occur if certain tasks are performed each hour at a specific time, restaurants were either observed on the hour, at quarter after the hour, at half past the hour or at three quarters past the hour. Half the week was observed on a different schedule for each store to counterbalance any potential differences by schedule. Likewise, two different coders observed half the week for each restaurant to counterbalance by coders.

Although the restaurants have about 12 to 16 cameras, typically some would not be working and some were pointed at locations employees did not work (e.g., parking lot). On the other hand, tipped employees could be working in different locations (e.g., dining room, bar, expo station, etc.) and multiple employees were usually visible at any given time. Therefore, coders recorded the tasks performed by all tipped employees that were visible on any camera at the designated time. It usually took 30 to 60 seconds to record all visible tipped employees and record their tasks. Tipped employees were identified by the uniform. Other non-tipped employees did not wear the same uniform (e.g., hosts, cashiers, and kitchen staff).

Time studies should always query whether any changes have occurred in the jobs recently or other differences that might affect the results. The management of the restaurants stated that the job tasks and job assignment practices have not changed for many years. They also stated that the work is the same throughout the year.

Tasks Recorded

We determined the tasks to code in the time study based on the following:

- The tasks considered to be non-tipped work in restaurants
- Review of the job descriptions and training materials

- Observations of the jobs
- Interviews with restaurant managers and employees

Three goals guided the development of the task coding categories. First, the codes had to capture the main distinctions in the work from the perspective of tipped versus non-tipped work. Second, they had to be simple and limited in total number, so it would be possible to record observations quickly in real time. Third, they had to be complete and logical in terms of the range of work to be observed and what can be observed on the videos.

The final coding categories with example tasks can be found in Table 1. Categories 1 to 6 are considered to be non-tipped work and Category 7 is considered tipped work. Categories 8 and 9 are also considered tipped work because the other infrequent tasks in Category 8 were not alleged as non-tipped work and not working between customers in Category 9 is the nature of tipped work in restaurants. The analyses of the data will consider each task separately and combined. A coding form in Excel was created to allow easy data collection and compilation.

Training Coders and Pilot Testing

Two coders participated in the study. After downloading the camera applications on their computers, they were first trained on how to use the software. Then they were trained to familiarize them with the categories of tasks, the coding form, the sampling plan and the research protocol. After exploring the computer application and becoming competent on its operation, we had a meeting to discuss and resolve technical difficulties and differences in the interpretation of the tasks on the coding sheet.

Finally, we conducted two pilot studies. In the first pilot, the two coders recorded the tasks performed by employees at two restaurants at the same designated times each hour for a full day. This pilot study ensured the feasibility of the research plan, and it allowed an analysis of the statistical reliability and agreement between the two coders. In the second

Table 1. Final Coding Categories.

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1. Setting up and tearing down
 - a. All work before opening and after closing not listed in other categories below.
 - b. All soda machine set-up and tear-down.
 - c. All bar equipment set-up and tear-down.
 - d. Setting up dining room and bar before opening and after closing.
 - e. Moving chairs, umbrellas, rugs, etc.
 2. Stocking
 - a. All stocking and related work.
 - b. Paper goods, silverware, condiments, beer and liquor, etc.
 - c. Expo station, server stations, and bar.
 - d. Minor food preparation (e.g., cutting fruit).
 3. Drink preparation
 - a. Getting ice.
 - b. Making tea and coffee.
 4. Rolling silverware
 5. Cleaning
 - a. All cleaning and related work.
 - b. Setting up cleaning supplies.
 - c. Handling trash.
 - d. Sweeping and mopping floors, and vacuuming carpets.
 6. Bussing
 - a. Bussing dishes from tables between customers.
 - b. Cleaning and resetting tables between customers.
 - c. Carrying dirty dishes and silverware to kitchen.
 - d. All work a busboy would normally do if there was one.
 - e. Except removing dishes, glasses, etc., while customer is still at table or bar, which is part of serving customer (see below).
 7. Serving customers
 - a. All customer interaction.
 - b. Taking and entering orders.
 - c. Getting food and drinks.
 - d. Getting food at expo station.
 - e. Closing out bill.
 - f. Removing dishes, glasses, etc., while customer is still at table or bar.
 - g. All other direct work for the customer while the customer is in the restaurant.
 8. Other work
 - a. Cannot be classified clearly.
 9. Waiting between customers
 - a. Talking to manager and other employees.
 - b. Walking around.
 - c. Idle time between customers.
 - d. Eating.
 - e. Reading cell phone.
-

pilot, a naïve coder who was unfamiliar with the purpose of the study recorded the tasks in the same restaurants and at the same times as the other pilot. This pilot ensured that the results would not be biased by knowledge of the study purpose, as well as providing a further evaluation of the statistical reliability and agreement.

Findings

Preliminary Observations Based on Materials Reviewed and Site Visits

Even though the primary measurement of time spent on tasks will be based on the time study using the security cameras, it is important to review background materials on the

jobs and visit the work sites to observe the jobs in person and interview the managers and employees. This step not only provided information to help plan the time study, but it yielded important insight as to when the non-tipped work occurred, who performs it, and why it might be less than it appears.

First, we discovered that the most obvious non-tipped work is when employees are not waiting on customers and cannot receive tips. Specifically, this is opening work, closing work, and when the employees are relieved from serving customers to perform other tasks.

Second, with some variation by restaurant, day, and staffing levels, both the servers and the bartenders work one of three shifts, ranging in duration between 4 and 8 hours. During these shifts, the non-tipped work occurs at predictable times. For example, during the first shift, most of the non-tipped work consists of the opening (set-up) work and when relieved from serving customers at the end of the shift. During the second shift, the non-tipped work occurs mainly when relieved from serving customers toward the end of the shift. During the third shift, the non-tipped work mainly consists of the closing (tear-down) work, but may also include some “cut work” in the middle of the shift, meaning work employees do when they are cut from waiting on customers. Also, not all employees come in early to set up or stay for the closing work.

Third, the amount of time spent on any of the non-tipped work is not long for several primary reasons. For one, the work is shared among all employees, so no one has to do too much. For another, employees complete their non-tipped work quickly because, with the exception of opening, they can leave when they are complete, and they are motivated to leave because they are not making tips. Also, some of the non-tipped work and the closing work can be done while serving customers, such as cleaning and restocking. Finally, many non-tipped tasks are not required every day such as cleaning windows, hosing down the beer keg room, washing the legs of chairs and tables, and others.

Fourth, many of the tasks are usually performed by non-tipped employees. The support staff, consisting of host, cashier, and expo, is usually responsible for the bathrooms, public spaces, and trash. The kitchen staff does most of the mopping and heavy cleaning. Finally, vendors are used for major cleaning, such as windows, drains, and carpets.

Fifth, the rest of the alleged non-tipped tasks are performed while serving customers, and thus arguably could be considered tipped work because they are part of serving the food and drinks or they increase the likelihood and size of the tips. These include tasks such as pre-bussing while the customers are at the table, minor cleaning and straightening of the dining area between customers, making drinks, getting ice, restocking disposable supplies, and so on.

Reliability of Coding

Table 2 shows the interrater reliabilities between the two coders. These are the correlations between the two coders across the observation times in the two restaurants observed in the pilot study. The correlations on the jobs coded (server vs. bartender) were .88 and .81 at the two restaurants and .82 across both restaurants. The correlations on the nine categories of tasks were .67 and .77 at the two restaurants and .72 across both restaurants. All the correlations are statistically significant (at $p < .05$). Interrater reliabilities above .60 are generally considered adequate, so these are well above the acceptable level. The conclusion of this analysis in plain language is that if one coder observed a task at a given observation period, another independent coder would be highly likely to observe the same task, so the data do not depend on the coder and are an accurate reflection of the tasks that actually occurred.

Table 2 also shows the absolute agreement between the coders. These are the means of the proportion of the tasks observed across observations and across restaurants. Observing all nine categories of tasks at each observation would yield a value of 1, and observing one task would yield a value of .11. As can be seen

Table 2. Interrater Reliability and Agreement Between Coders.

Restaurant	Number of observations	Correlation between coders on jobs	Correlation between coders on tasks
A	16	.88	.67
B	16	.81	.77
A and B	32	.82	.72

Note. Sample size is based on independent observations by each coder for each hour on the half hour from 10:30 a.m. to 1:30 p.m. for one day, which was the entire time employees were working. All correlations are significant ($p < .05$).

Restaurant	Number of observations	Mean across tasks (Coder 1)	Standard deviation across tasks (Coder 1)	Mean across tasks (Coder 2)	Standard deviation across tasks (Coder 2)	<i>t</i>
A	16	.29	.25	.28	.30	.11
B	16	.16	.23	.27	.32	1.24
A and B	32	.23	.24	.27	.30	.80

Note. Same sample as above. Means reflect the proportions of the number of the nine tasks observed. None of the *t* tests are significant ($p < .05$).

in Table 2, the values average about .27, meaning about 2.4 tasks were coded at each observation. Table 1 shows that the coders were very similar in their means and none of the differences were statistically significant based on the *t* tests between the means. The conclusion of this analysis in plain language is that both coders observed about the same number of tasks, which is further evidence that the data do not depend on the coder and are an accurate reflection of the tasks that actually occurred.

Table 3 shows a comparable reliability and agreement analysis between the two coders and the third naïve coder who did not know the purpose of the study. The top panel of the table shows the correlations. The correlations on the jobs observed were .79 and .74 between the naïve coder and the two coders across restaurants, and the correlations on the tasks observed were .79 and .68 between the naïve coder and the two coders across restaurants. These interrater reliabilities are well above .60 and statistically significant, and they are comparable to the reliabilities between the two coders. The bottom panel of the table shows the mean differences on the proportions of tasks coded. The means between the naïve coder and the two coders were again very similar and none were statistically

significant, indicating the naïve coder observed about the same number of tasks. In addition to providing further evidence of interrater reliability and agreement, these analyses show that knowledge of the purpose of the study does not influence the data on the tasks observed. A further conclusion from all of the analyses in this section is that observing the tasks is a fairly objective process and any coders are likely to agree.

Time Spent on Each Task

Table 4 shows the means of the proportions of times each task was observed across jobs, restaurants, days, and times. The table also shows the standard deviations, which reflect the average amount of variation around the means, and the standard errors, which are the margins of error around the means. Some key observations on the results include the following:

1. The proportions of time spent on any one alleged non-tipped task is very small. About 1% of time is spent setting up/tearing down, 3% spent stocking, 1% spent in drink preparation, 3% spent rolling silverware, 8% spent cleaning and 3% spent bussing.

Table 3. Interrater Reliability and Agreement With Naïve Coder.

Between Naïve Coder and Coder 1			
Restaurant	Number of observations	Correlation between coders on jobs	Correlation between coders on tasks
A	16	.81	.81
B	16	.81	.76
A and B	32	.79	.79

Between Naïve Coder and Coder 2			
Restaurant	Number of observations	Correlation between coders on jobs	Correlation between coders on tasks
A	16	.82	.69
B	16	.60	.66
A and B	32	.74	.68

Note. Sample size is based on an independent observation by each coder for each hour on the half hour from 10:30 a.m. to 1:30 p.m. for one day, which was the entire time employees were working. All correlations are significant ($p < .05$).

Between Naïve Coder and Coder 1						
Restaurant	Number of observations	Mean across tasks (Coder 1)	Standard deviation across tasks (Coder 1)	Mean across tasks (Naïve Coder)	Standard deviation across tasks (Naïve Coder)	t
A	16	.28	.30	.32	.29	.84
B	16	.27	.32	.14	.20	1.83
A and B	32	.27	.30	.23	.26	.92

Between Naïve Coder and Coder 2						
Restaurant	Number of observations	Mean across tasks (Coder 2)	Standard deviation across tasks (Coder 2)	Mean across tasks (Naïve Coder)	Standard deviation across tasks (Naïve Coder)	t
A	16	.29	.25	.32	.29	.40
B	16	.16	.23	.14	.20	.47
A and B	32	.23	.24	.23	.26	.13

Note. Same as above. None of the t tests are significant ($p < .05$).

2. The total proportion of time performing the six categories of tasks considered to be non-tipped work is 18%.
3. On average, the proportion of time spent on tipped work includes 62% of time serving, 1% performing other work and 20% not working.
4. If some of the non-tipped tasks are instead considered tipped tasks, then the total proportion of non-tipped work becomes much less. For example, cleaning and bussing may be part of serving, and perhaps even drink preparation and stocking. Counting these tasks as tipped work yields estimates of the total proportion of non-tipped work from 7% to as low as 2%.
5. All of these estimates of average time spent are highly precise as indicated by the extremely small standard errors (SEs). These values reflect the margin of error and have several interpretations. One interpretation is that they indicate that if other samples were drawn in the same manner of the same size as these samples, 64% of them

Table 4. Means and Standard Deviations on Categories of Tasks Across Jobs, Restaurants, Days and Times.

Task category	Mean	Standard deviation	Standard error
1. Setting up/tearing down	.01	.11	0.0019
2. Stocking	.03	.16	0.0027
3. Drink preparation	.01	.07	0.0012
4. Rolling silverware	.03	.18	0.0030
5. Cleaning	.08	.27	0.0046
6. Bussing	.03	.18	0.0030
7. Serving	.62	.49	0.0083
8. Other	.01	.07	0.0012
9. Not working	.20	.40	0.0067
Overall proportion of time spent performing Tasks 1-6	.18	.39	0.0066

Note. $N = 3,500$. Sample size is based on an independent observation by a single coder for each hour (taken at 10:15-1:15, 10:30-1:30, 10:45-1:45, or 10:00-2:00), which was the entire time employees were working, for 7 days for 8 restaurants. Tasks may not total to 1.0 due to rounding.

would be within plus or minus one SE from the mean. For example, if additional samples of 3,500 observations were drawn, 64% of the sample means would be within 0.66% of the mean of 18% on the overall proportion of time spent on Tasks 1 to 6. Another interpretation is that there is a 64% chance that the “true” value of the mean is within plus or minus one SE if we could make all possible observations. The values for each of the individual tasks are comparable or smaller yet. Regardless of the interpretation, these SEs indicate that the estimates of time spent on the tasks are extremely precise.

The conclusions of this overall analysis are as follows. The total proportion of time spent on any given category of non-tipped work is very small, ranging from 1% to 8%. If all the categories of non-tipped work are combined, the total percent of time is 18%. If some categories of non-tipped work are considered tipped work, then the total percent of time performing non-tipped work is 2% to 7%.

Differences by Job, Restaurant, Day of Week and Time of Day

The study explored several factors that may influence the proportion of time spent on the

tasks, including the two jobs, the eight restaurants, the day of the week and the time of the day. These factors were suggested based on the background materials, observations of the jobs by the author, interviews with employees and restaurant managers, and a consideration of the nature of the work and industry. Some other factors were considered but not studied for various reasons. For example, the skill or experience level of employees, differences in types of customers, the type of food or drink order, and others. These were not examined because all tipped employees share in the non-tipped work fairly equally, differences in customers and orders will average out over large numbers of observations, and there was no reasonable way these factors could be coded based on the observation system.

Table 5 shows the differences in tasks by job. The differences in five of the nine tasks are significant based on the t tests. Servers spend more time rolling silverware, bussing, and not working than bartenders, while bartenders spend more time cleaning and serving than servers. The total proportion of time spent performing the alleged non-tipped work was also slightly higher for bartenders (20%) versus servers (18%), but the difference was not statistically significant.

Table 6 shows the mean differences in tasks between the eight restaurants and which ones are statistically significant. The statistical tests

Table 5. Means and Standard Deviations on Categories of Tasks by Job.

Task category	Server			Bartender			t
	M	SD	SE	M	SD	SE	
1. Setting up/tearing down	.01	.10	0.0018	.02	.15	0.0070	1.89
2. Stocking	.02	.15	0.0027	.04	.20	0.0094	1.67
3. Drink preparation	.01	.07	0.0013	.01	.08	0.0038	.47
4. Rolling silverware	.04	.19	0.0034	.00	.05	0.0023	8.40*
5. Cleaning	.07	.26	0.0047	.12	.33	0.0155	3.16*
6. Bussing	.04	.19	0.0034	.00	.07	0.0033	6.85*
7. Serving	.60	.49	0.0089	.70	.46	0.0216	4.10*
8. Other	.01	.07	0.0013	.01	.08	0.0038	.47
9. Not working	.21	.41	0.0074	.10	.30	0.0140	7.10*
Overall proportion of time spent performing Tasks 1-6	.18	.39	0.0071	.20	.40	0.0188	.87
N	3,056			454			

Note. Sample size is based on an independent observation by a single coder for each hour (taken at 10:15-1:15, 10:30-1:30, 10:45-1:45, or 10:00-2:00), which was the entire time employees were working, for 7 days for 8 restaurants.

Tasks may not total to 1.0 due to rounding.

* $p < .05$.

for comparing multiple groups are analyses of variance (ANOVAs, not shown). A review of the means for each task in Table 6 shows the actual differences between restaurants. For example, the overall proportion of time spent performing Tasks 1 to 6 is 18% for all restaurants combined (from Table 3), but individual restaurants range from 13% for Restaurant 8 to 28% for Restaurant 1 (from Table 6). Note that only Restaurant 1 has a percentage above 20%.

Although there are differences in the means across restaurants for most tasks, it is important to note that there is also wide variation within restaurants as indicated by the standard deviations in Table 6. The standard deviations reflect the average difference between each observation and the mean for that task. This variation is due to myriad factors including some we can examine (jobs, days, times) and other factors that cannot be measured (e.g., employees, customers, orders and simple random fluctuation). Because of this amount of variation, the average mean differences across restaurants should be interpreted in light of the total variation due to all possible sources. This analysis is indicated in the values for "Eta Squared" (not shown). These values indicated the proportion of variation accounted for by restaurants compared to the total

variation on that task. These values were extremely small. For example, for the overall proportion of time spent performing Tasks 1 to 6, the value is 1.39%. That indicates that only 1.39% of the total variation in the overall proportion is associated with differences between the eight restaurants. As such, although there are average differences between restaurants, they are small when considered in light of the wide variation within and between restaurants.

Table 7 shows the mean differences in tasks between the days of the week and which ones are statistically significant. The differences were significant for five of the nine tasks. A review of the means for each task in Table 7 shows the actual differences between days of the week. For example, the time spent serving is 62% for all days combined (from Table 3), but individual days range from 56% on Mondays to 66% on Thursdays (from Table 6). Note that the overall proportion of time spent performing Tasks 1 to 6 to time spent completing all tasks is not significant across days of the week. And again, the values for Eta Squared (not shown) indicated that the variance accounted for by days of the week in these tasks is extremely small (about 0.5%).

Table 6. Means and Standard Deviations on Categories of Tasks by Restaurant.

Task category	Restaurant 1			Restaurant 2			Restaurant 3			Restaurant 4			Restaurant 5			Restaurant 6			Restaurant 7			Restaurant 8		
	M	SD	SE	M	SD	SE	M	SD	SE	M	SD	SE	M	SD	SE	M	SD	SE	M	SD	SE	M	SD	SE
1. Setting up/tearing down	.00	.05	0.0023	.02	.14	0.0070	.02	.12	0.0060	.02	.12	0.0067	.02	.13	0.0061	.01	.07	0.0030	.01	.09	0.0043	.02	.12	0.0056
2. Stocking*	.05	.21	0.0095	.06	.23	0.0115	.02	.14	0.0070	.02	.14	0.0078	.01	.11	0.0051	.03	.17	0.0073	.01	.08	0.0038	.02	.14	0.0066
3. Drink preparation	.00	.06	0.0027	.00	.00	0.0000	.01	.09	0.0045	.00	.06	0.0033	.01	.08	0.0037	.00	.06	0.0026	.01	.12	0.0057	.00	.05	0.0023
4. Rolling silverware*	.04	.18	0.0082	.01	.09	0.0045	.02	.14	0.0070	.05	.22	0.0123	.02	.15	0.0070	.08	.27	0.0117	.02	.12	0.0057	.02	.13	0.0061
5. Cleaning*	.16	.37	0.0168	.10	.29	0.0145	.04	.20	0.0101	.08	.27	0.0150	.07	.25	0.0116	.06	.23	0.0099	.06	.24	0.0114	.05	.21	0.0098
6. Bussing	.03	.18	0.0082	.02	.12	0.0060	.05	.21	0.0106	.03	.16	0.0089	.03	.17	0.0079	.03	.18	0.0078	.04	.19	0.0090	.03	.17	0.0080
7. Serving*	.51	.50	0.0227	.56	.50	0.0250	.64	.48	0.0241	.55	.50	0.0279	.63	.48	0.0224	.64	.48	0.0207	.68	.47	0.0223	.70	.46	0.0215
8. Other	.01	.07	0.0029	.01	.09	0.0043	.00	.00	0.0000	.01	.11	0.0048	.01	.11	0.0048	.00	.04	0.0019	.01	.07	0.0032	.00	.07	0.0031
9. Not working*	.21	.40	0.0183	.25	.43	.0216	.21	.40	.0203	.25	.43	.0241	.20	.40	.0186	.16	.37	.0158	.17	.38	.0180	.17	.38	.0176
Overall proportion of time spent performing Tasks 1-6*	.28	.45	0.0204	.19	.40	0.0200	.15	.36	0.0181	.19	.39	0.0217	.16	.37	0.0172	.20	.40	0.0173	.14	.35	0.0166	.13	.34	0.0159
N	487			399			396			322			461			536			443			456		

Note. Sample size is based on an independent observation by a single coder for each hour (taken at 10:15-1:15, 10:30-1:30, 10:45-1:45, or 10:00-2:00), which was the entire time employees were working, for 7 days for 8 restaurants. Tasks may not total to 1.0 due to rounding.

* Differences across restaurants are significant at $p < .05$.

Table 7. Means and Standard Deviations on Tasks by Day of Week.

Task category	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday									
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD								
1. Setting up/tearing down	.02	.13	.0063	.00	.06	.0028	.01	.12	.0056	.01	.11	.0048	.01	.10	.0039	.01	.12	.0050	.02	.12	.0057	
2. Stocking	.05	.21	.0102	.03	.18	.0079	.01	.11	.0051	.02	.15	.0064	.02	.14	.0057	.02	.15	.0064	.03	.17	.0077	
3. Drink preparation	.01	.07	.0034	.00	.05	.0020	.01	.07	.0032	.01	.10	.0044	.01	.09	.0036	.01	.07	.0031	.00	.00	.0000	
4. Rolling silverware*	.03	.17	.0082	.05	.21	.0094	.05	.22	.0105	.03	.17	.0075	.01	.11	.0045	.02	.15	.0062	.04	.20	.0093	
5. Cleaning*	.09	.29	.0141	.08	.27	.0122	.06	.24	.0116	.04	.20	.0088	.09	.29	.0115	.08	.27	.0116	.09	.29	.0136	
6. Bussing	.02	.15	.0075	.01	.12	.0053	.03	.16	.0075	.04	.19	.0086	.04	.19	.0076	.04	.19	.0079	.04	.20	.0095	
7. Serving*	.56	.50	.0243	.59	.49	.0221	.60	.49	.0235	.66	.47	.0210	.65	.48	.0192	.64	.48	.0204	.59	.49	.0229	
8. Other**	.02	.13	.0063	.00	.00	.0000	.01	.08	.0040	.00	.06	.0028	.01	.09	.0036	.00	.00	.0000	.00	.05	.0022	
9. Not working*	.22	.41	.0203	.24	.43	.0190	.23	.42	.0201	.18	.39	.0171	.19	.37	.0149	.18	.39	.0163	.19	.39	.0182	
Overall proportion of time spent performing Tasks 1-6*	.21	.41	.0200	.18	.38	.0172	.17	.37	.0179	.15	.36	.0160	.18	.38	.0154	.18	.39	.0163	.22	.42	.0194	
N		417		499		435		510		621		557		461		557		557		461		461

Note. Sample size is based on an independent observation by a single coder for each hour (taken at 10:15-11:15, 10:30-11:30, 10:45-11:45, or 10:00-2:00), which was the entire time employees were working, for 7 days for 8 restaurants. Tasks may not total to 1.0 due to rounding.

* Differences across restaurants are significant at $p < .05$.

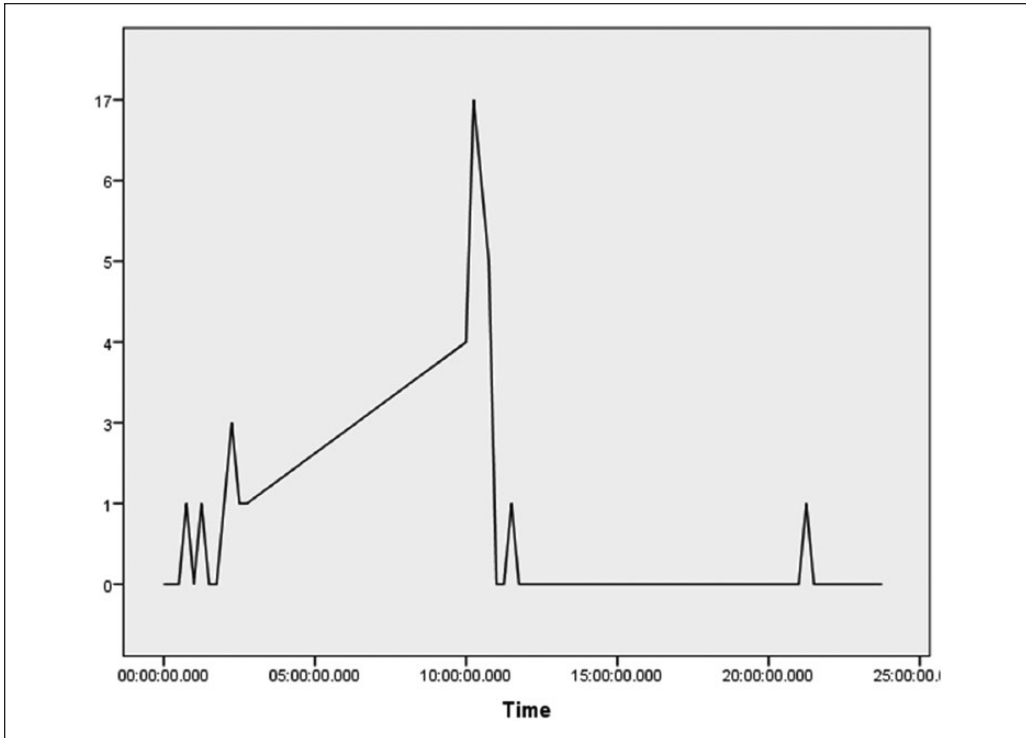


Figure 1. Graph depicting the time tipped workers used to set up or tear down.

Figures 1 to 9 show line graphs depicting the task trends by time. They indicate the mean proportion of time (percentage) performing each task for each hour of the day. Time zero is midnight and the values are in military time ranging from 0 to 2400. They illustrate how the non-tipped work occurs mostly before, between, and after the tipped work, but not usually during the tipped work (when servicing customers). Specifically, most of the setting up and tearing down occurs at the beginning and end of the day (Figure 1), and rolling silverware and cleaning (Figure 4 and 5) occur between lunch and dinner (1300 to 1400) and at the end of the night (2000 and after). Stocking occurs to the greatest extent during set up in the morning, but continues at a lower level throughout the day (Figure 2). Bussing occurs mostly during the lunch and dinner times (Figure 6), which is the same time as the tipped work (Figure 7). The overall proportion of time on non-tipped work is greatest at the beginning of the day and end of the night, with a smaller peak between the meals

(Figure 9). Not working, which is counted as tipped time, occurs with a similar pattern but also has intermittent short peaks throughout the day (Figure 8). Similar to observations made during the visits to the restaurants, these figures show that there is fairly substantial variation in tasks across the work day but tasks occur mostly at predictable times.

The primary conclusions from these analyses of sources of differences in tasks are as follows. There are meaningful differences between jobs, with servers spending more time rolling silverware, bussing, and not working, and with bartenders spending more time cleaning and serving. However, they are not different in the overall proportion of time on Tasks 1 to 6 to time spent completing all tasks. There are differences in tasks across restaurants on most tasks, but these differences do not explain much statistical variation in the data. The overall proportion of time on Tasks 1 to 6 exceeds 20% for only one of the eight restaurants. The results are similar for differences in tasks across days of the week. Finally, the tasks vary

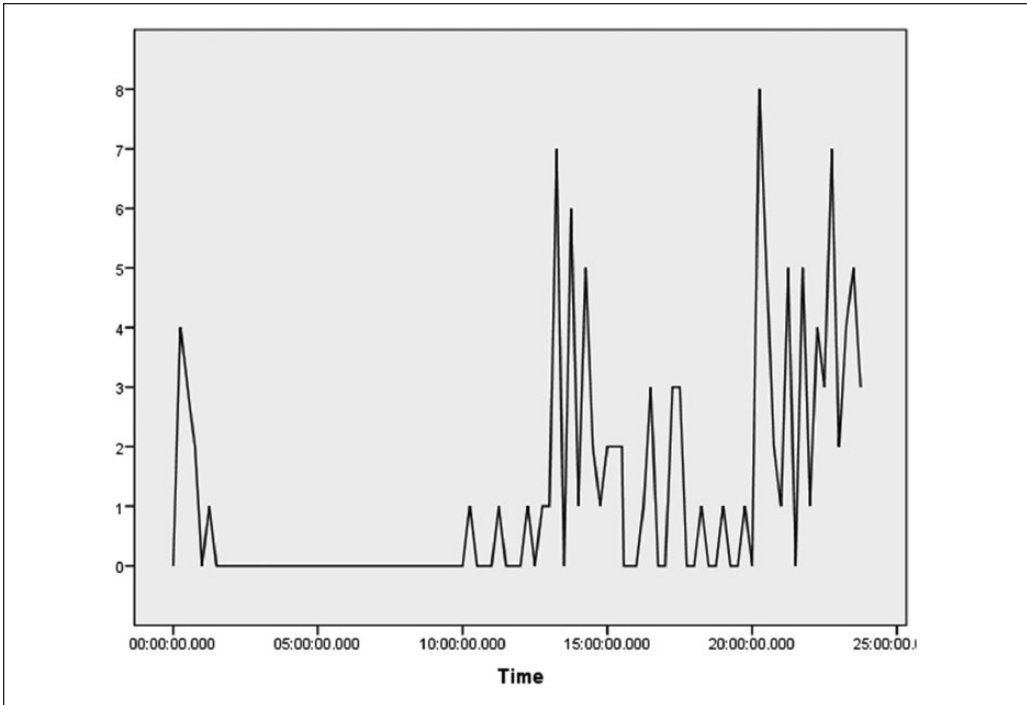


Figure 4. Graph depicting the time tipped workers used to roll silverware.

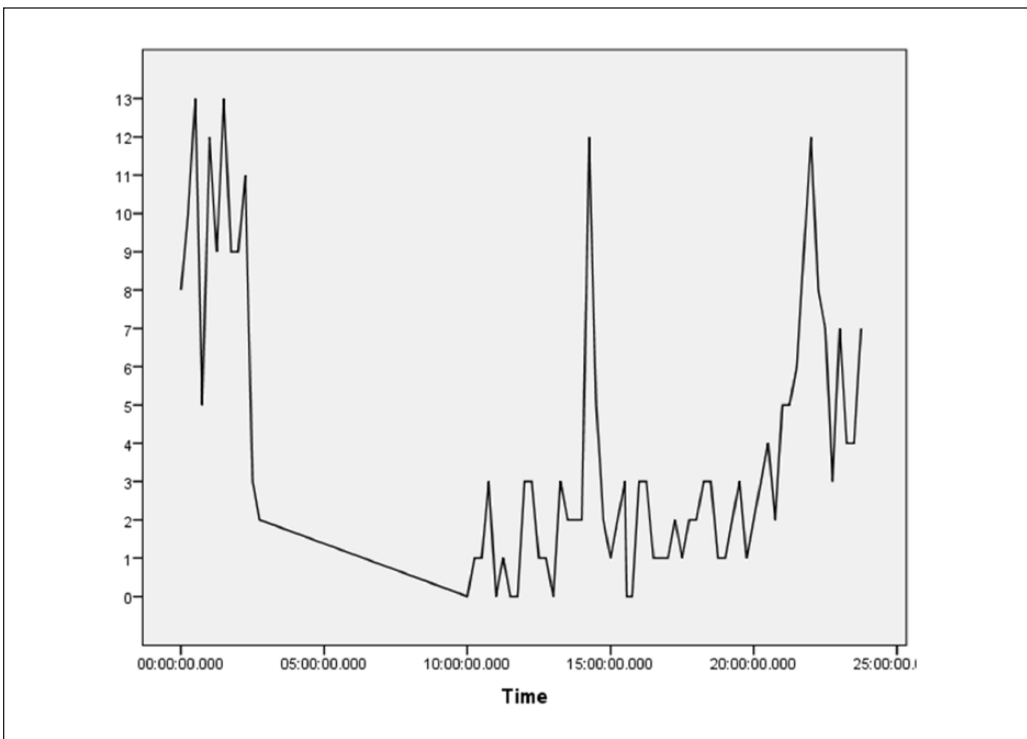


Figure 5. Graph depicting the time tipped workers used to clean.

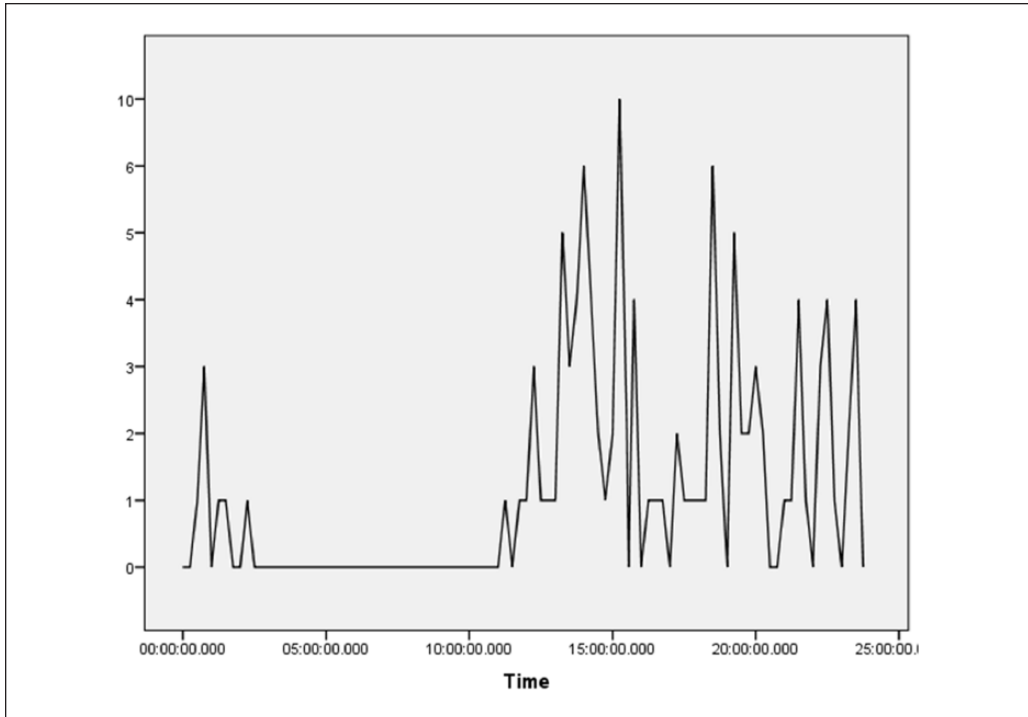


Figure 6. Graph depicting the time tipped workers used to buss tables.

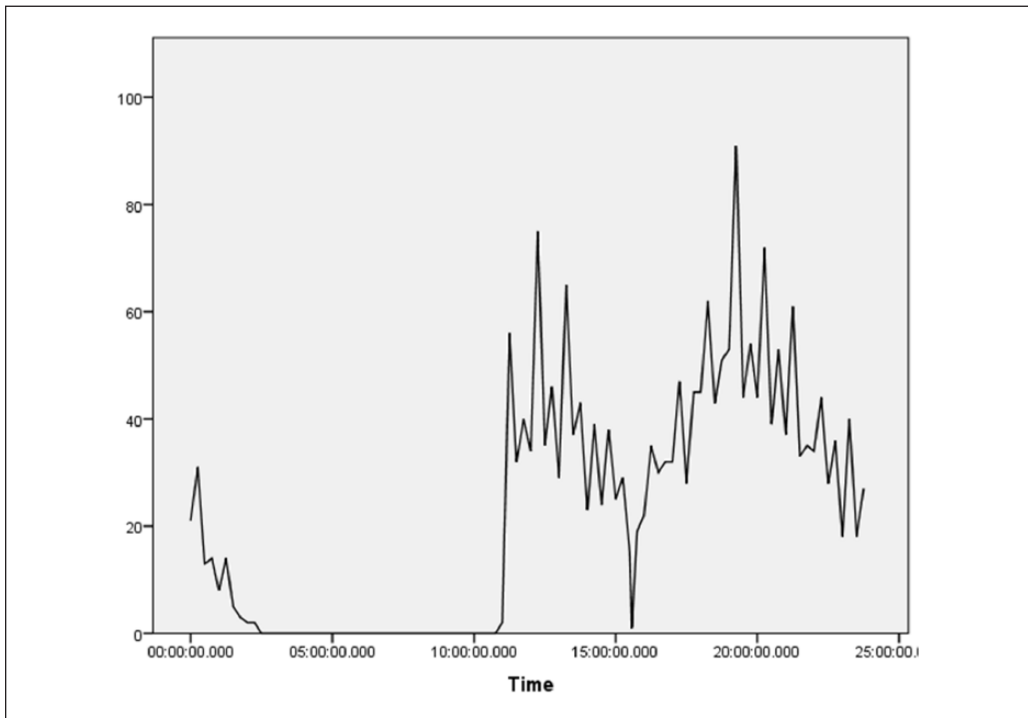


Figure 7. Graph depicting the time tipped workers used to serve customers.

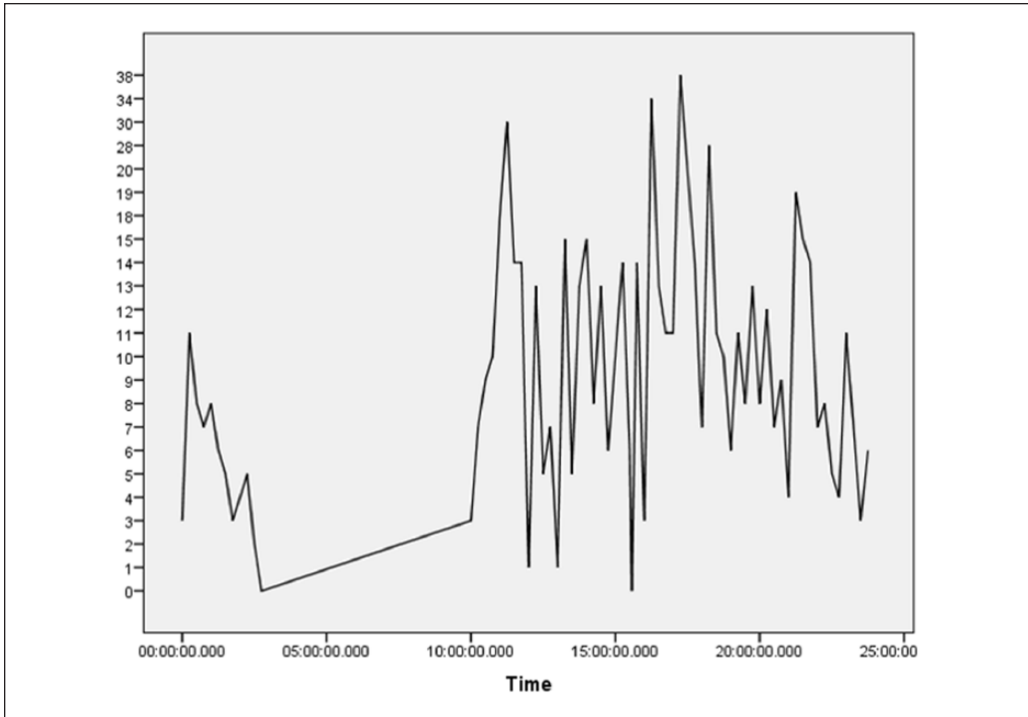


Figure 8. Graph depicting the time tipped workers used not working.

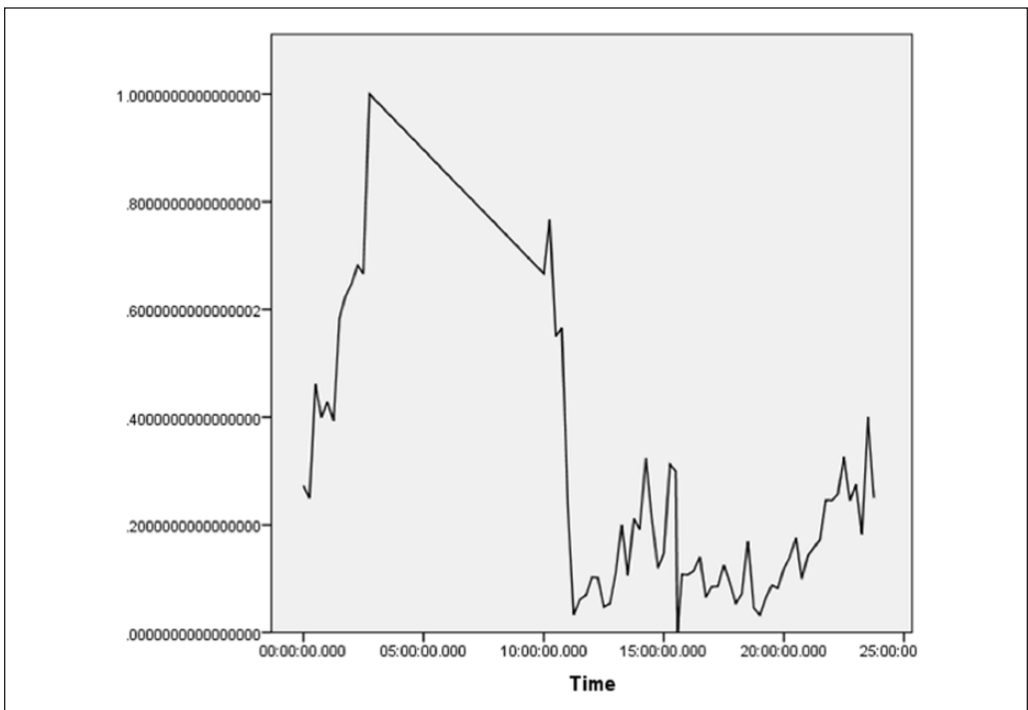


Figure 9. Graph depicting the overall proportion of time tipped workers use to perform non-tipped work.

widely based on time of the day in fairly logical ways, with more non-tipped work occurring at the beginning and end of the day, and between lunch and dinner when there are fewer customers and employees are relieved from serving to perform these tasks.

Discussion

In this study, we demonstrated how an important compensation issue, whether a company can pay tipped wages, can be addressed using security cameras to conduct a time study. In sum, this study yielded four important findings. First, coders reliably rated employee tasks via observation using security cameras. Second, non-tipped work does not generally take very long. For example, the six categories of non-tipped work each took between 1% and 8% of a worker's time. Third, in this sample, workers spent more time not working (e.g., waiting for orders to be ready to serve, waiting for customers), than performing non-tipped work. Finally, we found that the proportion of non-tipped work was below the maximum of 20% when viewed across locations and days of the week at this particular restaurant franchise. As such, we have examined and provided evidence of an objective and scientifically sound method of complying with the FLSA.

The practical implications of this study are clear. Testing security cameras as a medium for time use studies is important because this method allows for companies to avoid potential wage litigation and it is fair to employees. We recommend that organizations that employ tipped labor consider utilizing tools already at their disposal—in this case, security cameras—to accurately and equitably measure how employees' time is being used.

In terms of limitations, although the methods described in this article provide information on the amount and pattern of non-tipped work overall, they do not provide detail as to the amount of time spent throughout the year or by specific employees. As shown in the results, the percentages of non-tipped work exceeded 20% at one restaurant and certain days of the week. As such, management must

still monitor and guide employees on an ongoing and individual basis.

Future research could take many meaningful directions. In addition to studying time use for compensation purposes, we believe that organizational scholars and compensation professionals could use camera data to answer a number of important questions regarding workplace behavior. For example, instead of solely relying on employees to accurately depict their tasks for job evaluation, managers can more objectively determine employee tasks by position and how they use their time. This can have similar uses for job redesign. Furthermore, researchers can use camera data to better understand employee-customer traffic flow patterns and also consider how workplace layout—either in food service or in more traditional office spaces—contributes or detracts from task completion. As technology improves, we suspect other uses may be identified as well.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Notes

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