

# Does Work Quality Differ between the Public and Private Sectors? Evidence from Two Online Field Experiments

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## ABSTRACT

Understanding the differences between working in the public and private sectors is core to public management research. We assess the implications of a theory of public ownership, testing an expectation that work is of higher quality when performed under public ownership status compared to a private company. We conducted two, pre-registered, field experiments with a routine data processing task and workers recruited through an online labor market. Workers were randomly allocated information about the ownership status of a nursing home as either a public organization or a private company. Work quality was measured as errors workers made in data entry and correcting pre-existing errors in work materials provided to them. The first experiment showed that fewer workers in the public, compared to the private, nursing home tended to make any data entry errors but that they did not correct more existing errors. Exploratory analyses showed a greater effect for those aware of the organization's ownership status. To test this apparent sector attention effect, we conducted a second experiment with a 2-by-2 factorial design randomly allocating workers to a treatment making salient the public or private sector status of the organization, in addition to the initial public or private sector treatment. The results confirmed the effect of public sector status and sector attention in combination; workers who were assigned to a public sector organization rather than a private company *and* who were made aware of the respective sector status were more likely to perform their work tasks without any errors. We discuss the limits of the findings and their implications including that public organizations could boost the quality of work done by making their sector status more explicit to workers.

JEL: D73, H11, H83, J45, L33

## Introduction

Whether people work differently, and with what outcomes, when working for a public as opposed to a private sector organization is a core question for public management as a field of inquiry. Multiple dimensions of public and private differences are recognized including regulation, funding, and ownership (Behn 1995; Bozeman 1987; Hvidman and Andersen 2016; Rainey et al. 1976; Walker and Bozeman 2011). There are large literatures on how work motivation differs across sectors (Perry and Wise 1990; Buelens and Van den Broeck. 2007; Kim et al. 2013). However, less attention has been paid to the implications of differences in organizations' public or private ownership status directly on the quality of work done. This topic is important because if public ownership status matters for work quality, then this evidence can help inform policy decisions concerning the allocation of work between the public and private sectors. Publicly owned organizations could also then potentially boost the work quality of work done by improving the communication of their public status to workers, connecting even mundane seeming tasks with the larger overall public vision of their organization.

In this study, we set out a theory of public ownership suggesting that workers are more motivated to work in ways that raise work quality when working for publicly owned organizations rather than private, for-profit, companies. This

ownership difference applies even in conditions where there are no differences in the private economic incentives they face, for example, in the form of payment for the work task differing between the public and private sectors. Public organizations, by virtue of their ownership status, are subject to a non-distribution constraint meaning that they cannot legally redistribute profits but instead keep any residuals within the public realm and in this way are, at least nominally, set up to serve the public good (Francois 2000; James and Jilke 2020; Weisbrod 1988). Private companies, in contrast, distribute profits to their owners, including shareholders. Thus, workers may perceive their efforts as being at risk of expropriation by private company organizations, whereas they may be used for public good by public organizations. Consequently, people working in a public ownership context are more likely to work in ways leading to higher work quality for the same task compared to a private company ownership context.

The empirical expectations of this theory of public/private ownership differences are consistent with the limited previous evidence about the topic, which comes from laboratory experiments. These experiments showed that students worked more accurately and vigilantly when working for a public rather than a private, for-profit, organization (Brewer and Brewer 2011; see also Lee, Petrovsky and Walker 2021). It is also consistent with research findings that people in public sector contexts—compared to the private sector—are

more willing to contribute to achieving prosocial outcomes for which they are not directly rewarded financially, for example, performing unpaid overtime or contributing to local public goods (Francois 2000; Gregg et al. 2011; James and Jilke 2020; Jilke et al. 2018).

We test the empirical implications of a theory of public ownership effects on work quality in two pre-registered field experiments. This design allows the empirical implications to be assessed for work quality in a real work context. We use a popular online crowdsourcing marketplace where a variety of organizations outsource their work tasks, and where it is common for people to accept tasks from various employers. We experimentally manipulated the sector of ownership (public organization or private company) of a nursing home posting a data processing task for workers to complete. In this way, workers in the experiment performed the same tasks under the same individual economic incentive conditions of being paid a fixed salary for the task regardless of the sector or the quality of their work. We then measured the quality of work done by experimental participants in the public and private ownership contexts.

Identifying the causal effect of public organizations is challenging because workers with certain motivational predispositions tend to select organizations that fit their motivational predispositions, values, and beliefs (Barfort et al. 2019; Christensen and Wright 2011; Kjeldsen and Jacobsen 2013). Furthermore, job tasks often differ between those handled by public and private, for-profit organizations. Organizational ownership status is also a factor that cannot easily be experimentally manipulated, which is reflected in previous studies relying on laboratory experiments with students. Using a field experiment in an online labor market overcomes such difficulties by randomly varying the allocation of these workers to the ownership status of the employer for the same work task.

The findings from our first experiment did not support the overall theoretical expectation of higher work quality in the public ownership condition. However, exploratory analyses showed that the public sector effect was strongest among workers who had noticed the sector of their employer. To test whether this apparent attention effect was, in fact, a causal effect of attention to the sector, or instead caused by some characteristics of workers, we pre-registered and ran a second online field experiment. In the second experiment, workers were randomly allocated to the public or private sector ownership conditions (as before). In addition, they were allocated to another treatment that either further directed their attention to the sector by making information about the ownership status of the organization that they were working for salient, or not. This combination of treatments entailed a factorial 2-by-2 group design. This experiment found that the combination of public sector ownership status and raised attention to public ownership status makes online workers work with higher quality, leading to reduced error in the data entry task.

The first section of this article sets out theory and prior evidence about public ownership and the implications of differences in work quality compared to private companies. It also discusses the context and boundary conditions for the expected effects of public ownership. We then describe in turn the two online field experiments that assess the empirical expectations of the theory and set out the results. We also discuss some additional supplementary analyses we

have undertaken of our data showing exploratory findings and discuss some limitations of the research. We then draw conclusions for the theory about public/private differences and work quality. We further discuss some implications for future replications of the study and broader research, and for organizational practice—in particular that increasing the visibility of organizational status may help public organizations boost work quality.

## Public/Private Sector Ownership Differences and Work Quality

Organizational ownership potentially matters for the quality of work performed by workers because ownership communicates something about the foundational characteristics of the organization. The ownership dimension of publicness has long been theorized to be influential on organizational outcomes (Andrews, Boyne, and Walker 2011; Bozeman 1987). One of the crucial differences between a public organization and a private organization—in the form of a private, for-profit, company—is that the private company distributes profits to its owners including any shareholders. Thus, workers may perceive their efforts as being at risk of expropriation by the organization for private gain. Public organizations, in contrast, are subject to a “non-distribution constraint” (Weisbrod 1988) that involves any residuals from their activities being kept in the public realm rather than being taken out by their owners for private profit. In this way, public organizations are—at least nominally—set up to serve the public good (Francois 2000; James and Jilke 2020).

There is a potential that people may not have such a beneficial view of the practice of public organizations in some respects. However, previous research that has examined the issue has found evidence consistent with the perceived benefits of public ownership status. Specifically, workers in private, for-profit, companies have been found to be less willing to contribute to organizational public goods than those in public organizations. This has been found to be the case for workers doing unpaid overtime in their jobs where workers in for-profit organizations donated less time than those in public organizations (Gregg et al. 2011). The importance of public ownership models has a parallel in the private management literature, which has looked at the effect of different models of ownership on those working within differently owned organizations. For example, Von Nordenflycht (2007:429) suggests the importance of ownership by “insiders” to the organization in contrast to publicly traded (but private for profit) organizations that report to shareholders. His work relates to knowledge-intensive professional services firms and considers intra-private sector differences whereas we consider routine administrative work and focus on differences between public and private firm ownership. However, public relative to private ownership effects on work has also been found in service users’ co-production of local public service when users are considering working with differently owned organizations. The involvement of a public organization increases users’ willingness to contribute to co-production compared to a private company (James and Jilke 2020). In the context of work quality, these related findings suggest a key empirical expectation: workers will similarly contribute more effort resulting in higher work quality when working for a public

compared to a private, for-profit company, even when they are not directly financially rewarded for such extra effort.

Our interest in public ownership status effects on work quality fits within a much broader strand of research examining the relationship between public or private organizational status, work motivations and outcomes for performance. Much of this research is often summarized under the label public service motivation (PSM)—described as the unique predispositions of workers to respond to motives grounded primarily or uniquely in public institutions and organizations (Perry and Wise 1990, p. 368). In the practice of most research, this leads to PSM being defined as “the belief, values and attitudes that go beyond self-interest or organizational interest, that concern the interest of a larger political entity and that motivate individuals to act accordingly whenever appropriate” (Vandanabeele 2007, p. 546). PSM is said to be a unique motivational concept, that is, distinct from workers’ intrinsic, extrinsic, and pro-social motivation (Belle and Cantarelli 2015; Ritz et al. 2020; Vandanabeele, Ritz, and Neumann 2018). The findings from this literature are mixed but tend to show that employees in the public sector on average are more motivated to do good for others and society—even though PSM is found among workers in both public and private sector organizations (Kjeldsen and Jacobsen 2013; for reviews of PSM see Kim et al. 2013; Perry, Hondeghem, and Wise 2010; Wright and Grant 2010).

There is only limited previous research specifically on work quality and public/private differences. However, important work on this issue was conducted by Brewer and Brewer (2011). They used a laboratory experiment with students to examine public/private differences in a psychomotor vigilance task, a method from psychology that consists of participants conducting a task requiring sustained attention over time with a reaction to an occasional stimulus. In their study, the students used computers and were tasked with pressing the space bar each time they observed a time-counter beginning. The time counter began at irregular intervals so participants had to pay close attention in order to maintain accuracy (Brewer and Brewer 2011: i351). They found that individuals were significantly faster, more accurate and more vigilant when their work was described as being funded by a government agency rather than a private business company.

Research by Lee, Petrovsky, and Walker (2021) has found some further partial support for these findings. They used a similar task to Brewer and Brewer (2011) but extended it beyond the original motor task to look at speed and accuracy in a single design. They compared public sector major students, who were recruited with non-monetary incentives, to students from other majors recruited using monetary incentives. About half of the public sector majors additionally received non-monetary incentives for high performance, whereas half of the other majors received monetary incentives. They found that the public sector majors performed lower in terms of both speed and accuracy and recommend that further research should explore these questions.

We build on this previous work in several respects. We use a field experiment to test the empirical implications of a theory suggesting that public organizational ownership status differs from private companies in a way that raises the quality of work done. We use an experimental approach that is more naturalistic in subject pool, task, and context than the Brewer and Brewer (2011) study involving undergraduate students in a laboratory. The task in our study similarly requires

attention by workers but is more realistic in the work task, using an administrative data processing task of the kind relevant to a range of routine activities typically conducted by organizations. Additionally, we use real workers to perform the work in an online field environment in which the subject pool of workers recruited into the study typically operates. The workers temporarily work for the organization via an online crowdsourcing platform used by individuals and businesses to outsource their processes and jobs. These are an important category of workers by themselves but the use of such a group of participants is also important for our research design because it allows us to focus directly on the effect of public/private ownership status differences. The focus on a specific work task allows us to have a clear outcome measure of work quality to assess effects.

We use an organizationally relevant behavioral measure of work quality for routine data processing. Examining differences between the public and private sectors fits within the mainstream view that differences can be identified on multiple dimensions (Andrews et al. 2011; Bozeman 1987; Rainey et al. 1976). We focus on the difference in the dimension of organizational ownership status, and our focus on routine data processing allows us to identify a task of general relevance that is present across sectors. In this way, the research is most relevant to this routine task type, and potentially less directly relevant to highly complex, knowledge-intensive professionalized tasks, for example, the kind considered by Von Nordenflycht (2007), which are also important tasks but which we leave for future research.

We focus on a clear measure of work quality, with higher work quality consisting of work with fewer mistakes made by workers conducting the task. This measure builds on previous measures of work quality in psychology dating back to studies by Adams and Jacobsen (1964), and research on errors in routine processing tasks (Panko and Aurigemma 2010). Focusing on quality as error reduction, we define two measures of work quality as (a) fewer errors in a data entry task and (b) fewer errors in failing to correct discrepancies hidden by us in materials used by workers in the data processing task. Reducing errors of both kinds is important for organizations and is relevant to a wide range of routine administrative tasks. Therefore, we empirically assess the following hypothesis:

H1: Work quality of the same work task will be higher for workers employed by an organization with public ownership status compared to workers employed by an organization with private company status.

This theory of ownership effects, and its empirical implications, has a clear context which sets boundary conditions to the applicability of our study. The theory is of broad relevance because the use of public compared to private for-profit companies is found in many areas of public services, for example, in the sectors of education, health, social care or a range of other local services (such as garbage disposal). However, there are boundaries to the domain of its applicability regarding public/private differences.

First, we examine ownership differences rather than public regulation and/or funding. These other dimensions of public/private difference could be of interest for future research but are currently less clearly theorized in their implications for work quality such that we do not address them here.

Second, we do not suggest that other forms of public/private differences between organizations are unimportant. Especially notable are differences between public and private non-profit provision that is also found in many areas of public services (Amirkhanyan et al. 2008; Buelens and Van den Broek 2007; Rainey and Bozeman 2000). The current study focuses on the public/private company organizational ownership difference because of the theoretical expectations and previous evidence that this dichotomy is important. However, it does not extend to private non-profits which have different organizational aims; future studies could examine this type of ownership structure. A third boundary condition is that we focus on workers who are engaged in short-term employment. This focus is important for our research design in order for us to be able to incorporate a standard work task and a clear measure of work quality, utilizing the opportunity presented by the online labor market. We expect the findings to be most relevant to these contexts but also to have relevance to working for a public organization as compared to a private company more generally because the ownership difference is still evident.

The mechanisms affecting work quality are likely to be more theoretically complex when workers are engaged in long-term employment in a particular sector. Notably, the way long-term socialization effects operate (Moysen et al. 2018) presents an important question to consider. This matter is beyond the scope of our current focus—where we are able to isolate and directly examine public/private differences in a short-term, specific, work task. It is much more difficult to study longer-term work quality and difficult to undertake a randomized experiment to allocate workers to long-term employment which also may involve a more complicated mix of multiple tasks which would make work quality much more difficult to measure.

## Experiment 1

Study participants were recruited from the popular crowdsourcing marketplace Amazon Mechanical Turk (MTurk) to the experiment that was pre-registered (American Economic Association, Randomized Controlled Trials Registry, AEARCTR-0003361 <https://doi.org/10.1257/rct.3361-2.1>). The MTurk platform is widely used by individuals and organizations to outsource their processes and specific tasks. Although MTurk is well known for recruiting participants for research, for example, to complete surveys, this is in fact only a small portion of the work that participants on MTurk do (Pew Research Center 2016). Our use of the platform is relatively unusual in academic research but is consistent with the original purpose of the crowd-sourcing platform as a means for organizations and individuals to outsource so-called Human Intelligence Tasks (or HITs)—small routine work tasks. Whereas the exact public-private distribution of use has not been previously studied, the task of data processing itself is very common across public and private sectors and we are confident of the ecological validity of our study to work of this kind.

We implemented our study within the context of a HIT that is regularly sought by private companies and other organizations to be performed by MTurk workers. Participants were asked to perform a routine data entry task for a nursing care organization and were not specifically aware that they were part of a scientific study at the start of the experiment. This

approach reduces any risk of demand effects because workers would not be able to use the information given to them in setting out their task to guess the purpose of the study. At the end of the experiment—at the study's completion—participants were fully debriefed. The experiment was approved by the Institutional Review Board at Rutgers University (Arts and Science IRB, Pro2018001150, 9<sup>th</sup> August 2018).

Workers on MTurk are required to be of at least 18 years of age, and we limited the study to people based in the United States. Workers received a flat fee financial compensation for participation in the task. All US MTurk workers were eligible, and the task was planned to close as soon as 600 subjects had entered and completed it. Whilst effect size estimates are not clearly established by previous research, our sample size was set based on sample sizes used by previous studies by Brewer and Brewer (2011). They performed their experiment in a laboratory with 40 students over eight time periods (320 time-respondent observations). Our sample size was set to be about twice the size of the previous study.

We described the task that the MTurk respondents were asked to do as transcribing and correcting errors in handwritten time sheets for people working in an elderly nursing care home. The US nursing sector is suitable for this experiment because both public and privately-owned organizations are typically found here. This design feature makes it a Natural Field Experiment in the typology of Harrison and List (2004; see also Czibor, Jimenez-Gomez, and List 2019), meaning (i) that it included the population of interest (online workers) not university students, (ii) that it took place in a natural environment (the online marketplace), and (iii) that participants were not aware beforehand that they were part of an experiment.

Our use of MTurk is consistent with guidance about how to use online platforms as an environment for gathering social science data. Hauser, Paolacci, and Chandler (2019) discuss the potential risks of inattention and low-quality response by MTurkers that can threaten study design. Our study does not suffer from these problems in part because it was a real work task for which they were paid and with which they engaged. We also designed the study consistent with Hauser, Paolacci, and Chandler's (2019) recommendation to give clear instructions to workers. This use of MTurk contrasts with studies that use MTurk workers to answer surveys where the representativeness of the workers of broader populations is central to their use, or where their lack of interest in providing quality responses might threaten the quality of evidence produced (again, sometimes a problem with survey evidence). We also gathered information about the MTurk workers in our study that we report for each experiment below (contained in Table A1 for experiment 1 and Table A2 for experiment 2), enabling comparisons with other samples and populations.

Individual workers were the unit of randomization and were randomized into one of two arms of the experiment using Qualtrics' randomization procedures. The public or private company ownership status cue allowed the experiment to indicate ownership status in a realistic way. Ownership status is typically evident to workers from the name and associated information about the organization they work for without the need to add further information in a manner that would be unrealistic. We did not have a "neutral" organizational type condition because it is not realistic that an

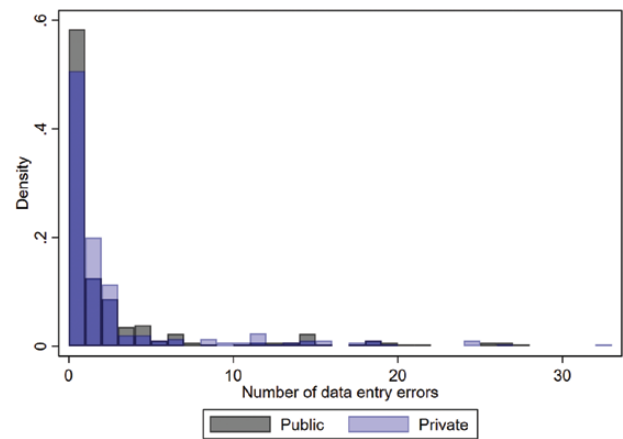
organization has no ownership status. Of course, other ownership status types would be possible but our interest in this study was in the contrast between the public organization and the private company. Even a supposedly neutral condition is likely to trigger participants into making assumptions about the ownership status of an organization.

All study participants had the task described to them in an introductory screen which stated that *we [name of public or private organization inserted here] would like you to fill in hand-written employee time sheets. The task is data entry by typing in the time sheets filled-out by hand by our employees. The handwriting is too messy for machine reading. We would also ask you to check the employee's calculations of total working hours per day – and correct the total hours if there is a mistake. The next page demonstrates how to do the task. The page that follows is a trial session that we have already typed in; we use this to confirm that you understand the task.* After the introductory page and the trial page, workers had to complete a total of six hand-written time sheets to receive compensation. The flat fee was paid to them for completion of the task and workers were not incentivized or penalized for making mistakes. This design gave each worker some discretion in whether they took care to complete the task, or just rushed through it, in order for us to be able to assess the consequences for work quality.

An example of the time sheets comprising the work task is provided in the Appendix. Figure A1 presents the full description of the HIT as described to participants in the case of a nursing home run by a private corporation. Figure A2 presents the timesheet for the case of a public nursing home. The difference in timesheets is the sector cue embedded in the name of the nursing home. The private nursing home is called: “Bergen Nursing Home Corporation” (Figure A1). The public nursing home is called: “Bergen County Nursing Home” (Figure A2). In addition, the same cue about ownership status was placed on the introduction page as a HIT for Bergen Nursing Home Corporation, a for profit private nursing home or as HIT for Bergen County Nursing Home, a public nursing home.

The data entry task was placed below each of the time sheets (in both public and private conditions) (see Appendix, Figure A3). Our outcome measure is the quality of work done and the primary outcome measure to test our hypothesis, as specified in the study's pre-registration, was mistakes/errors made by workers. We used two measures of error to reflect differences in the kinds of error recognized in the study of human administrative work and the assessment of worker performance for such tasks (Adams and Jacobsen 1964: 21; Panko and Aurigemma 2010). This approach gives us clear criteria for what counts as an error in terms of failing to execute instructions to produce the correct outcome in the data processing task.

The first measure of error is “data entry error.” It is defined as the errors in the entry of data as times in columns for total hours and minutes for each day. Workers were asked to type in the screen boxes the hours and minutes exactly as written by hand in the time sheets. This creates a measure of mistakes in cases where workers did not enter the figures as they appeared in the sheet (e.g., inserting a wrong figure or leaving it blank). The total number of data entry errors is the sum of missing values and typos in all the Total Hours fields (for hours and minutes). The



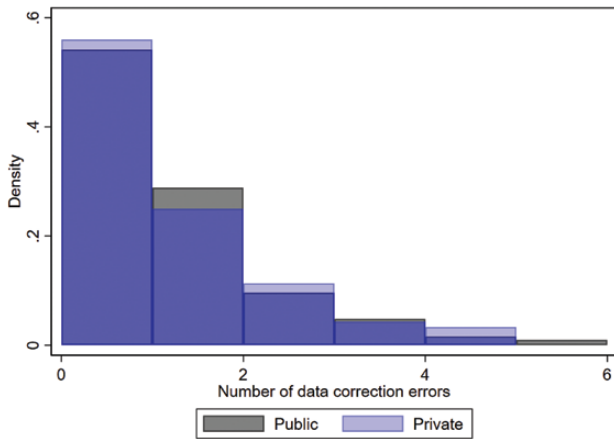
**Figure 1:** Distribution of Data Entry Errors by Public/Private Ownership Status.

data entry error measure could vary from 0 (no mistakes) to 98 (a mistake in each of the possible entries for total hours and minutes on each of the sheets). There is a qualitative difference in work quality between making no mistakes (i.e., performing the task without error) and between making some mistakes. Additionally, figure 1 shows that the distribution of errors is highly skewed with more than half of respondents making zero mistakes. This means that there is a real risk that outlier observations bias the results. Therefore, we dichotomize the outcome variable to measure whether a worker either made a mistake or made no mistakes at all (i.e., zero mistakes).

The second error type measured is “data correction errors.” This error is whether workers failed to correct errors that were deliberately introduced into the material by the research team. In the course of processing the task, workers inspected the start and finish times to check whether each total hours entry was correct by calculating the correct total hours and minutes. If there was a mistake in the hand-written time sheet, workers were asked to enter the corrected value into a separate set of columns for corrected hours and minutes in the sheets (see Figure A3). Six errors were deliberately placed by the researchers in the calculated total hours and all could potentially be detected by workers conducting the task. Avoiding mistakes entails entering the corrected values and is a more engaging work task than simple data entry because it involves calculation and requires that the worker continuously looks for errors in the hand-written calculations. In this way, failing in error correction is a qualitatively different kind of worker error from data entry errors (Panko and Aurigemma 2010). The data correction variable takes the value 0 where workers entered the correct values in corrected hours and minutes, increasing in increments of one when a non-correct value or no value was entered, up to a value of six when none of the mistakes were corrected. Figure 2 shows the distribution of the variable for the public and the private group.

## Experiment 1 Results

The characteristics of workers participating in the first on-line field experiment are summarized for gender, a work-related personality index (based on nine items that tap the



**Figure 2:** Distribution of Data Correction Errors by Public/Private Ownership Status.

individual’s personality in terms of their conscientiousness taken from the Big Five personality traits inventory), and working for a not-for-profit or public organization (compared to a private, for-profit, or other organization). This information is presented in Table A1 in the Appendix, which also reports balance checks for experimental groups showing no statistically significant differences between the groups. In the introductory section and interactive instructions, respondents were shown what the task consisted of (as is usual for online crowdsourcing workers who often consider whether or not they want to proceed to do the work). There were 1,391 potential workers who initially clicked on the HIT. All MTurkers who were presented with the task (as either working for the public or private) have been randomized with 779 dropping out before measurement of the outcome variable commenced. In total, 612 workers proceeded to undertake and complete the task.

To assess the possibility of differential attrition of participants between experimental groups we examined the proportions of workers who were subject to attrition across the two groups for the full set of 1,391 workers. The proportion in the public condition who dropped out was 0.55 and in the private 0.57 (a difference of 0.02, with a Z test failing to reject the null of no difference in proportion between the two groups.  $Z = -0.62, p = .53$ ). We report checks on attrition to confirm no differences between groups in Table A3 in the Appendix.

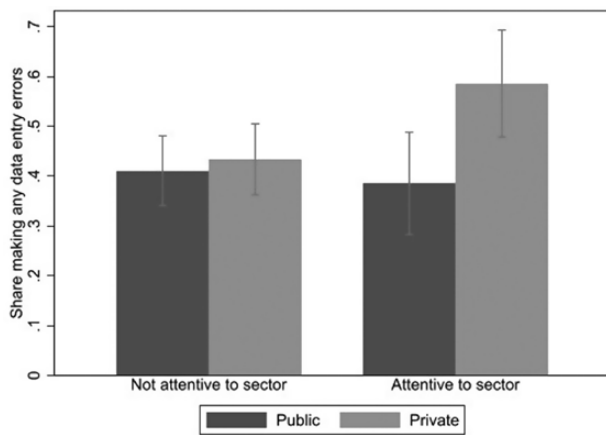
Table 1 presents the results from experiment 1. In Model 1, we test whether workers in the private condition were more likely to make any data entry mistakes. For the variable of ownership status, the ratio of odds for private (compared to the public) is 1.36 (95% CI, .99, 1.88), indicating that workers in the private sector ownership condition had a higher propensity to make mistakes (albeit it narrowly fails the conventional 0.05 level of statistical significance with a  $p$ -value of .057). In Model 2, we present the results for the second measure of error in data correction (with error as the number of deliberate mistakes in the processed data that workers failed to correct). It shows no statistically significant difference between the public and private conditions. Appendix Table A5 shows results when we use alternative specifications of the dependent variables, namely counting the number of entry errors, and using a binary indicator of whether any errors were corrected or not.

We included an attention check in the experiment to see if workers were able to correctly report the organizational ownership status of the nursing home that they were allocated to in the experiment. We interacted the attention check results with ownership status because individuals who were able to state the correct ownership status should be more likely to be influenced by that status. This analysis is exploratory and, in this sense, contrasts with the pre-registered confirmatory hypothesis testing of Models 1 and 2. The results are shown in table 1, Models 3 and 4. Model 3 for the binary outcome of making a mistake in data entry shows an odds ratio of 2.04

**Table 1 :** Results from Experiment 1

	(1)	(2)	(3)	(4)
	Any Entry Errors	Correction Errors	Any Entry Errors + Attention	Correction Errors + Attention
Private	1.363* (0.222) [.057]	1.013 (0.117) [.911]	1.100 (0.229) [.646]	0.923 (0.139) [.596]
Attention check			0.904 (0.239) [.702]	1.008 (0.187) [.968]
Private × attention check			2.038* (0.766) [.058]	1.218 (0.322) [.456]
Ln alpha		0.714* (0.143) [.093]		0.681* (0.153) [.087]
Observations	612	612	549	549
Pseudo R <sup>2</sup>	0.004	0.000	0.012	0.001
Model	Logit	Neg bin	Logit	Neg bin

Notes: Exponentiated coefficients, standard errors in parentheses,  $p$ -values in square brackets. \* $p < .1$ ,  $^*p < .05$ ,  $^{**}p < .01$ ,  $^{***}p < .001$ .



**Figure 3:** Proportion Making Any Data Entry Errors by Public/Private Ownership Status and by Attention Check Category.

( $p = .058$ , 95% CI: .97, 4.26) for the interaction between private status and paying attention to status. To illustrate this result, figure 3 shows the shares of workers making one or more data entry mistakes by public/private organizations and how they scored on the attention check. We see that among workers not attentive to the sector of the employer, there is no difference in the share of workers who make one or more mistakes (around 40%). However, among those attentive to the sector, workers working for the private nursing home are much more likely to make mistake(s) (close to 60%). For the measures of correction errors (Model 4), we find no statistically significant interaction term.

These results clearly point to the potential importance of the salience of the organizational status cue for focusing workers' attention on the sector and provide an important, albeit exploratory, insight. It suggests that the differences between the public and private status groups in the initial analysis of the primary effect in Model 1 may be driven by attention to the sector cue. However, because the results were exploratory, and did not involve experimental manipulation and involve a post-treatment variable, we are careful not to give them inappropriate causal interpretations. It might be that it was not attention itself that moderated the effect of the sector cue but some other characteristics of the attentive workers. We, therefore, used the results to inform a second, also pre-registered, experiment where we experimentally varied the salience of the ownership cue to examine this issue within a confirmatory hypothesis testing framework.

## Experiment 2

Experiment 1 showed a greater public ownership effect on workers making data entry errors, especially for those who were attentive to the organization's sector status. This finding produced an important suggestion that attention towards sector ownership itself actually causes workers to produce work of higher quality. However, there is a plausible alternative explanation of the same result, namely that those who are attentive to the organizational ownership status are also characterized by other factors such as feeling more exploited by private companies if they put extra effort into their job (what we may call pro-public workers). If the result was

indeed confounded by such unobserved characteristics of the participants, directing workers' attention to the sector of the organization they work for would, by itself, not have an impact on work quality.

In the second experiment, we similarly expect public ownership status to raise work quality compared to private ownership (as assessed in the first experiment that varied public/private ownership status experimentally). However, we are also able to test if this effect is dependent on, in the sense of being moderated by, workers paying attention to the sector status. Therefore, in experiment 2, as well as experimentally varying the ownership status through random assignment of workers to public or private status, we additionally randomly assign workers to conditions that either raise a worker's attention to the ownership sector (by asking them to confirm features of the ownership) or do not raise their attention. This experimental intervention creates exogenous variation in attention to ownership status (i.e., variation in attention that is not correlated with observed or unobserved background characteristics of the workers). In this way, as well as the existing H1 from the first experiment, the second experiment tests an additional hypothesized effect:

H2: Increasing the salience of the public versus private ownership status difference of the organizations by making participants more aware of the organization they are working for increases work quality in the public ownership condition.

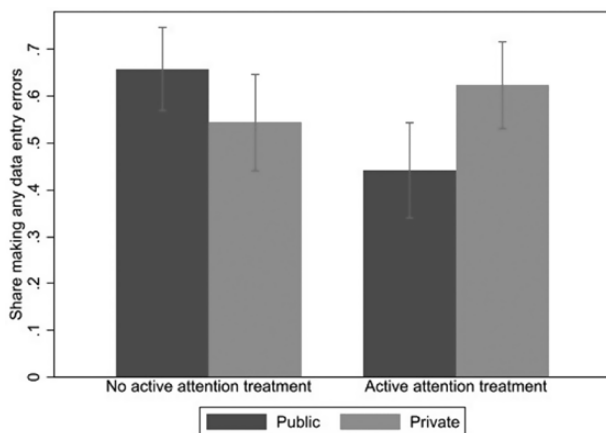
The design of experiment 2 was separately pre-registered (American Economic Association, Randomized Controlled Trials Registry, AEARCTR-0005818, <https://doi.org/10.1257/rct.5818-1.1>) and the research was approved by Institutional Review Board at Aarhus University (IRB 2020-04,26 March 2023). The second experiment is a further test of the empirical implications of the theory of ownership because it allows us, through an additional experimental manipulation, directly to vary the extent to which we draw participants' attention to the ownership status of the organization they are working for. Testing the H2 experimentally allows us directly to examine the moderating effect of active reinforcement of workers' attention to ownership.

The second experiment used the same work task materials as in the first experiment and was conducted in May/June 2020. Its experimental set-up was in a two-by-two factorial design. Factor one is the organizational ownership cue, as in experiment 1. As the second factor, the sector cue information was reinforced by incorporating a short section described to participants as confirming the details of their work task. The passive version of the treatment (i.e., the control group) merely confirmed the task as a data entry. The active version did the same but also asked participants to enter the full name of the organization they were working for and then to confirm what kind of organization (public nursing home organization or private nursing home corporation) they were working for. Participants were recruited as MTurk workers for the Human Intelligence Task in the same way as for the first experiment. The characteristics of the participants of experiment 2 are summarized in Table A2 in the Appendix.

**Table 2:** Results from Experiment 2

	(1)	(2)	(3)	(4)
	Any Entry Errors	Correction Errors	Any Entry errors + Attention	Correction errors + Attention
Private	1.159 (0.235) [.467]	0.955 (0.144) [.758]	0.622 (0.181) [.103]	1.020 (0.220) [.928]
Active	0.748 (0.151) [.151]	1.085 (0.164) [.589]	0.413** (0.119) [.002]	1.155 (0.243) [.493]
Private × active			3.364** (1.373) [.003]	0.879 (0.265) [.669]
Inalpha		1.699*** (0.204) [.000]		1.698*** (0.204) [.000]
Observations	405	405	405	405
Pseudo R <sup>2</sup>	0.004	0.000	0.021	0.000
Model	Logit	Neg bin	Logit	Neg bin

Notes: Exponentiated coefficients, standard errors in parentheses, *p*-values in square brackets.  
\**p* < .1, \*\**p* < .05, \*\*\**p* < .01, \*\*\*\**p* < .001.



**Figure 4:** Proportion Making Any Data Entry Errors by Public/Private Ownership Status by Active/Passive Attention.

## Experiment 2 Results

The results of the second experiment are summarized in [table 2](#). We do not see a statistically significant average effect of the private sector treatment on any of the outcomes in Models 1 and 2. However, when interacting the sector treatment with the treatment that actively directed the workers' attention towards the sector of the organization, we see that the odds ratio of workers in the private condition making one or more mistakes is 3.36 (Model 3) (*p*-value = 0.003, 95% CI: 1.51, 7.49). [Figure 4](#) illustrates this result. In the group that received the active attention treatment, the share of workers making one or more mistakes was 44% in the public condition and 62% in the private condition, 18% points higher. This result is similar to the results from the first experiment using the attention check for those that noticed organizational status. Also similar to the first experiment, we did not observe any statistically significant effect

of the public/private treatment on the number of correction errors.

Alternative specifications for both dependent variables (i.e., number of entry errors and any correction errors) are provided in [Table A6](#) in the [Appendix](#). Similar to experiment 1, there was attrition of workers during the work task. This is assessed in [Appendix Table A4](#) and shows no differential attrition between experimental groups. In the same way, as for experiment 1, we report the characteristics of the workers in experiment 2 and ran balance checks. These are reported in [Table A2](#) in the [Appendix](#), the minor differences reaching statistical significance on three of the variables in the balance checks are no more than would be expected by chance when running 27 statistical balance checks across the experiments.

## Exploratory Analyses

We undertook an exploratory analysis of relationships between attention paid by workers in the first experiment and between organizational ownership status and a range of other outcomes. These were not the subject of confirmatory hypothesis testing about the primary impact of the treatments. However, they are relevant to considering the motivations and attitudes of workers in the study. We undertook an analysis of a range of outcomes that help further characterize the work task that they undertook. We measured the time taken to complete the work task, the ratio between mistakes and time, and whether workers agreed to do an additional worksheet without any additional payment (after completing the worksheets), which ought to measure their prosocial work behavior. The results of this exploratory analysis did not reveal a clear pattern and the results for experiment 2 are summarized in [tables 3](#) and [4](#). For example, whereas the odds ratio for a worker agreeing to volunteer to complete an additional worksheet is reduced in the private condition the difference from one is not statistically significant.



**Table 3** : Exploratory Results from Experiment 2

	(1)	(2)	(3)
	Meantime Used	Mistakes Pr. Minute	Additional Worksheet
Private	0.180 (0.237) [.447]	-0.079 (0.085) [.354]	0.857 (0.174) [.448]
Active	0.061 (0.237) [.797]	0.155* (0.085) [.070]	1.175 (0.239) [.428]
Constant	3.278*** (0.198) [.000]	0.251*** (0.071) [.000]	1.463* (0.249) [.025]
Observations	405	405	405
R <sup>2</sup>	0.002	0.010	
Pseudo R <sup>2</sup>			0.002
Model	Linear	Linear	Logit

Notes: Standard errors in parentheses, *p*-values in square brackets.  
\**p* < .1, \*\**p* < .05, \*\*\**p* < .01, \*\*\*\**p* < .001.

**Table 4**: Exploratory Results from Experiment 2

	(4)	(5)	(6)
	Meantime Used	Mistakes Pr. Minute	Additional Worksheet
Private	0.401 (0.337) [.234]	-0.082 (0.121) [.499]	0.925 (0.266) [.787]
Active	0.275 (0.332) [.407]	0.152 (0.119) [.204]	1.270 (0.366) [.407]
Private × active	-0.437 (0.474) [.357]	0.006 (0.171) [.971]	0.857 (0.349) [.704]
Constant	3.179*** (0.225) [.000]	0.252** (0.081) [.002]	1.413+ (0.272) [.073]
Observations	405	405	405
R <sup>2</sup>	0.004	0.010	
Pseudo R <sup>2</sup>			0.002
Model	Linear	Linear	Logit

Notes: Standard errors in parentheses, *p*-values in square brackets.  
\**p* < .1, \*\**p* < .05, \*\*\**p* < .01, \*\*\*\**p* < .001.

Our study finds that the combination of public sector ownership and raising attention to public ownership status leads to reduced error in the data entry task but does not change the number of errors made in the data correction task. In terms of mechanisms for factors affecting work quality as data entry, the results are consistent with workers attributing public ownership with contributing to the public good, and private, for-profit ownership with private gain for the company. Making people aware of the ownership status of a public employer therefore provides an implicit connection between a mundane data entry task and the public, pro-social, orientation of the organization. We further ran models with

covariates for experiment 1 (Appendix Table, A7), experiment 2 (Appendix, Table A8) and for the exploratory analysis from experiment 2 (Appendix, Table A9) to use the covariates affecting work quality outcomes to look at robustness to the inclusion of these variables and potentially to improve efficiency of estimates but this analysis does not change our findings.

We investigated what factors were associated with participants paying attention to the sector they worked in. To do this, we regressed participants' attention on a range of demographic and other variables; the results are reported in the Appendix, Table A10. The results do not show a clear

pattern that helps predict which workers paid attention in the study on the basis of workers' age, female/male gender, the personality index, or working for a not-for-profit or public organization (compared to a private, for-profit, or other organization).

A strength of this study is the real work task with behavioral outcome measures within a naturalistic setting. This approach addresses potential criticisms that such "behavioral" research does not extend to actions, but is limited more to knowledge, perceptions or attitudes. At the same time, we want to emphasize that while we find statistically significant effects for data entry errors there is always a risk that any individual result is caused by chance. However, the fact that we find similar results for the same outcome in the separate, second experiment substantially increases the credibility of our initial result. In any case, our results further show that *if* public sector motivation is able to make online workers more conscientious in their work effort, this effect does not extend to the more demanding task of vigilantly checking and correcting all existing, handwritten entries for any errors. In the additional exploratory analysis, motivation also does not extend to typing in an extra time sheet without additional payment, perhaps because this is a different extra demand on the worker.

## Conclusion

We find evidence that fewer workers who were working for a public organization made a data entry error compared to those working for a private organization when the workers paid attention to the status of the organization. This finding was confirmed in a second experiment which experimentally varied not only the private or public status of the organization but also the emphasis on public or private ownership status in the information given to workers. The influence of making ownership status more explicit to workers is consistent with research in other contexts that has found connecting work tasks to organizations' mission and aspirations helps provide workers with meaning in performing their tasks (Carton 2018). Our findings are also consistent with evidence that private, for-profit, organization creates concerns about the expropriation of work effort -reducing donated unpaid labor (Gregg et al. 2011) and reducing service users' willingness to coproduce (James and Jilke 2020).

A greater match between work tasks and a positive organizational mission, such as contributing to the public good, has been found to enhance work morale, motivation, and ultimately work performance (Wright 2007). By contrast, workers' concerns about the expropriation of labor may contribute to feelings of alienation which has in other areas been shown negatively to affect work-related outcomes (Tummers 2013). We suggest that public/private difference in work performance, as observed in prior studies, is contingent on making the public status of such organizations salient to those working in them. A significant policy implication is that public organizations can use the provision of information about their public ownership status as a means for improving the quality of work.

The findings suggest lines for future research including replications of the current study with "exact replications" using the same research procedures, measurement, and analysis in the same context but with different samples, and

"empirical generalization" replications using samples from different populations (consistent with Walker et al. (2017)). There would be benefits from exact replications of the study in other samples from the same population of online workers for nursing homes where public and private companies operate. These studies could also build on the findings of the current research, for example, to examine whether heterogeneous treatment effects are evident based on different levels of public service motivation making some workers more responsive to public sector ownership status. Replications with empirical generalization could be conducted to other populations of workers in related contexts in health, education, and social care more broadly.

The findings have implications for the users of public services because work quality is likely to impact organizational performance. In the expectancy disconfirmation framework, users' satisfaction with services is in part determined by perceived performance and in part by expectations about performance, with performance exceeding expectations generally being positively related to satisfaction (Van Ryzin 2004; Zhang et al. 2022). Higher work quality in the public sector would boost organizational performance but may, over time, also raise users' expectations about the quality of service from public organizations compared to private firms. A future line of research is suggested by Grimmelikhuijsen and Porumbescu's (2017) study which found that giving people an expectations cue can itself directly affect their perceptions of service performance. In this way, when users become aware of the public or private ownership status of the organization providing their services, they may change both their expectations and perceptions of performance.

The findings open a further research agenda to consider the implications for other work tasks including non-online, and more complex, work tasks. We suggest that the findings have broad relevance for tasks that require workers to pay attention, which is not only important for the routine task we set out in the experiments but also an important aspect of more complex, knowledge-intensive tasks (Von Nordenflycht 2007). However, the extent to which this is the case should be established by studies across a broad range of tasks. There is also an agenda relating to the generalizability of the findings to longer durations of work tasks. Public sector motivation has been found to be changed after people enter the workforce (Kjeldsen and Jacobsen 2013). The importance of ownership for work quality could reasonably be expected to apply to workers on longer-term contracts who are also likely to be aware of the sector they are working for. Studying longer-term employment effects is an important avenue for future research, even if it is potentially more difficult to study, including experimentally—for example, being more difficult randomly to allocate workers to longer-term roles. Observational studies are a valuable way to examine longer-term effects, for example, the effect of long-term socialization in working for public versus private, for-profit organizations.

Finally, in our current study, we examine the difference between private firms and public organizations. Future research should address other kinds of ownership status, particularly whether making workers aware of non-profit private ownership status has favorable outcomes for work quality compared to privately owned companies. An extension of the theory leads to the empirical expectation that work quality for non-profits is higher than that for private companies because they, in common with public organizations, do not have

the risk of appropriation of workers' additional effort being used to boost private profit.

## Data Availability Statement

The data and code to reproduce the results reported in this article are available at the Open Science Foundation doi: <https://osf.io/8f95q/>.

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