



# Are Teachers Absent More? Examining Differences in Absence Between K-12 Teachers and Other College-Educated Workers

Rui Wang

Shanghai University of Finance and Economics

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VERSION: November 2023

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Rui Wang

Assistant Professor  
School of Public Economics and Management  
Shanghai University of Finance and Economics  
Email: wangrui@shufe.edu.cn

Acknowledgement: The author thanks Erdal Tekin, Seth Gershenson, Anna Amirkhanyan, Robert Shand, and Alberto Jacinto for their constructive feedback on an earlier draft of this paper. Any remaining errors are the author's own.

## **Abstract**

While it is commonly believed that teachers take more absences than other professionals, few empirical studies have systematically investigated the prevalence of teacher absences in the US. This study documents the level of teacher absences and compares it with other college-educated workers. Using the Monthly Current Population Survey between the 1995 and 2019 school years, we conduct descriptive and regression analysis to estimate the level of teacher absences and the absence gaps between teachers and other college-educated workers.

Additional regression analysis using data from the Leave Module of the American Time Use Survey is conducted to explain the gaps in absences between teachers and other observationally similar college-educated workers. The analysis reveals that 7% of teachers are absent at least once weekly, accounting for around 4% of their weekly working time.

Compared to observationally similar college-educated workers, teachers take the same, if not less, amount of absences. Further investigation of teachers' absence behaviour indicates that teachers report fewer demands for absences, have fewer paid leaves, and are more likely to attend work despite needing to be absent. We also find that individuals who prefer fewer absences tend to enter the teaching profession. This study adds to the emerging group of research examining the nature, determinants, and consequences of teacher absences using national-level data. Our findings imply that policymakers may be able to use more support programs to increase teacher attendance.

**Keywords:** Teacher Absence, Teacher Characteristics, Work, Education Policy

## 1. INTRODUCTION

Teachers are among the most important factors directly affecting the provision of educational services. However, some anecdotes and empirical evidence suggest that teachers are often absent, resulting in higher absence rates than many other professionals. Teacher absence refers to situations when a teacher fails to attend work, during which schools may or may not appoint a teacher (usually a substitute teacher or teacher assistant) as a replacement (Liu et al., 2020). The Office for Civil Rights (OCR) estimated that 29% of teachers were absent for more than ten days during the 2015-2016 school year (Hansen & Quintero, 2020). An existing body of literature has investigated the effects of teacher absences on both students and teachers (Clotfelter et al., 2009; Ehrenberg et al., 1991; Herrmann & Rockoff, 2012; Miller et al., 2008b, 2008a). We contribute to this literature by detailing the extent of teacher absences and how they relate to the teaching profession. Using the Current Population Survey (CPS) supplemented with the American Time Use Survey Leave Module, this study aims to explore: What is the prevalence of teacher absences in the US? How do teachers' absences compare to those of workers in similar professions? And how the teaching profession contributes to employee absences.

Our findings indicate a decreasing trend in teacher absences measured by the likelihood of being absent and the time lost index, which measures the proportion of weekly working hours missed due to absences. Although teachers' absence rates (7%) and the proportion of time lost due to absence (4%) are initially higher than other college-educated workers, these differences disappear once employee demographic and job-related characteristics are controlled. Our findings suggest that teachers maintain similar levels of attendance as observationally similar workers, despite receiving lower wages and being exposed to stressful working conditions (Gibney et al., n.d.; Holt et al., 2020; Lankford et al., 2014; McCarthy, 2019; West, 2014).

To explain these patterns, we show that individuals with lower levels of employee absences are more likely to enter teaching, and these teachers are more likely to present to work even when an absence is justified. While the work-leisure model suggests that absence rates could be effectively reduced by offering more extrinsic incentives to work (e.g., wage and promotion penalty) (Allen, 1981), our findings suggest that teachers' attendance is more constrained by attendance ability than motivation. These findings have important implications for understanding teachers' labour decisions and designing effective absence policies. Specifically, leave policies that emphasize well-being and family support to teachers should be considered.

## **2. PREVIOUS LITERATURE**

### **2.1 Prevalence and consequences of teacher absences**

Teacher absence rates in the U.S. rank slightly higher than those in France, England, and Australia (Benhenda, 2022; Bowers & McIver, 2000; Bradley et al., 2007), yet lower than many developing countries (Chaudhury et al., 2006). Studies using administrative data from various locales have documented absence rates ranging between 4.8% and 6.6% in New York (5.5% in 2000-09 school years), Chicago (4.8% in 2003-08 school years), North Carolina (6.4% in the 2003 school year and 4.8% in 1995-2008 school years), California (6.6% between 2011-18 school years), Nashville (6.2% in 2016-19 school years) and an anonymous urban school district (5% in 2003-05 school years). These estimates are higher than the absence rates published by the Bureau of Labor Statistics but are lower than those reported by OCR (Clotfelter et al., 2009; Hansen & Quintero, 2020; Herrmann & Rockoff, 2012; Jacob, 2013; Miller et al., 2008b; Ost & Schiman, 2017; Santelli & Grissom, 2022). Variations in the prevalence of teacher absences across these locales might be attributed to differences in

absence measurement, employment, and attendance policies (Herrmann & Rockoff, 2012; Jacob, 2013) as well as time and geographic-related factors, such as commute time, economic conditions, and local incidents (Santelli & Grissom, 2022).

Research shows that teacher absences could negatively impact students' human capital development process beyond simple monetary loss costs. As the most critical school-provided input, teacher absences could disrupt instruction schedules, reduce instruction quality, and negatively affect students' academic outcomes (Benhenda, 2022; Ehrenberg et al., 1991; Herrmann & Rockoff, 2012; Liu et al., 2020; Miller et al., 2008b, 2008a). For example, empirical studies show that per day of teacher absences in the U.S. could result in 0.6% to 0.32% of a standard deviation decrease in students' test scores (Clotfelter et al., 2009; Ehrenberg et al., 1991; Herrmann & Rockoff, 2012; Miller et al., 2008b, 2008a). While substitute teachers would be hired during teacher absences, these substitute teachers usually have lower quality compared to regular teachers (Kraft et al., 2022) and cannot fully mitigate the negative impacts of teacher absences regardless of whether they are certified or uncertified (Benhenda, 2022; Clotfelter et al., 2009). Nonetheless, many schools district are experiencing difficulties in replacing the teachers who are absent due to a shortage of substitute teachers, particularly in low-income schools and schools with a concentration of students of colour (Gershenson, 2012; Kraft et al., 2022; Liu et al., 2020; Schwartz & Diliberti, 2022).

While attendance is essential to employee and organizational productivity, studies in organizational behaviour have indicated that not all attendance is desirable. Teachers are absent for various reasons, including illness, family duties, service-required absences (e.g., civic obligations and professional development), and vacation. Among those absences, sick

leaves are the most frequently used and least controllable type of absence<sup>1</sup> (Herrmann & Rockoff, 2012). Empirical evidence suggests that teachers are more likely to work while ill than other professionals, such as managers, care and welfare service workers, and commerce-related workers (Aronsson, 2000), which is possible due to teachers' strong desires to teach (Tran & Smith, 2020; Watt & Richardson, 2008) and to prevent students from being negatively affected by absences. However, sickness presenteeism may negatively influence employee productivity and well-being (Johns, 2010). Empirical evidence has shown that presenteeism may limit teachers' ability to manage the classroom, negatively impact the school environment, and prevent teachers from developing good relationships with students (Gray et al., 2017; Jamal et al., 2013; Jennings & Greenberg, 2009). Moreover, sickness presenteeism among teachers could also adversely influence students' well-being (Harding et al., 2019) and result in long-run health problems among teachers (Dudenhöffer et al., 2017; Ferreira et al., 2021). Therefore, access to paid and unpaid leave is critical in helping teachers to avoid presenteeism.

Although the costs of teachers' absences may be higher than many other professionals, understanding the relative level of teacher absence compared to other professionals could help human resources managers benchmark teacher absences' prevalence. Empirical research has used the relative level of teacher absences to assess teachers' performance. In the U.K., Bowers & McIver (2000) compared teachers' absence rates with those of workers in ten other professions (e.g., workers in health, social work, and governmental sectors) and found that teachers' sickness absence rates (3.2%) are lower than nine out of the ten occupations. Only one category of health workers, the 'professions allied to medicine' category, which includes speech and language and occupational therapists, showed lower absence rates than teachers. In

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<sup>1</sup> Sometimes, employee may use sick leaves and family leaves for reasons unrelated to the purpose of these leaves because they cannot accumulate these leaves or they prefer not to.

the U.S., studies often cite absence rates of non-teaching professionals to highlight the high absence rate among teachers (Clotfelter et al., 2009; Ehrenberg et al., 1991). However, differences in data sources, collection procedures, absence measures, and time frames limit apples-to-apples comparisons of absences between teachers and other similarly educated workers. One study that uses CPS data shows that sickness absence rates in teachers were higher than in nurses, public service workers, and all college-educated workers during the school year (Hansen & Quintero, 2020). The present study extends the literature by considering various differences between teachers and non-teachers and provides empirical evidence explaining what contributes to such differences.

## **2.2 Predictors of Absence**

Teachers' absence decisions are affected by various individual and group-level factors. Steers and Rhodes (1978) developed a general absence model proposing that employee absences are determined by an individual's ability and motivation to present to work. The ability to present refers to situations when an individual's attendance is affected due to illness, family responsibilities, and other emergencies and is closely related to demographic and family characteristics. Higher absence rates in teachers are related to pre-existing biological differences and increased family responsibilities, such as being female, married, and having children (Clotfelter et al., 2009; Ichino & Moretti, 2009).

Individual motivations to attend are shaped by one's attitude toward their jobs, working conditions, and other factors such as economic conditions, external incentives, personal work ethic, and group norms. Income, absence culture, students' background, accountability pressures, employment protection and absence policy, and school leadership are important external factors that could affect teacher absences (Bradley et al., 2007; Gershenson, 2016; Jacob, 2013). However, less is known about how teachers' intrinsic motivation (e.g.,

altruism) (Friedman, 2016), desire to teach (Brookhart & Freeman, 1992), and preference for family time and work-life balance affect their absence decisions (Grissom & Reininger, 2012; Heinz, 2015; Watt & Richardson, 2008). Among the factors, gender composition and working conditions could be the most significant contributors to the absence gap between teachers and other workers.

*Occupational segregation by sex.* Teaching has long been a predominantly female occupation. A national survey reveals that 78.2% of K-12 teachers are female, higher than 85% of other occupations (Bureau of Labor Statistics, 2019). Empirical evidence shows that the proportion of female teachers has increased in recent decades and is likely to continue due to gender-role stereotypes, more employment and leadership opportunities for women in secondary schools, increasing numbers of female college graduates, and increased demands to achieve work-family balance (Ingersoll et al., 2021). As such, gender differences in the ability to attend work emerge, contributing significantly to the different absence rates between teachers and other workers. Naïve comparisons of absence rates between teachers and other workers may underestimate teachers' working efforts and mislead policymakers in designing absence management policies.

*Working conditions.* Teachers' working conditions differ from other occupations in several aspects, including absence policies and structures of actual leaves, working schedules, public sector employment status, and rewards from the job (e.g., incomes, prestige, and flexibility of work). Compared to other college-educated workers, teacher absences are regulated by structured policies established by school districts. Typically, paid leave for teachers includes sick leaves and personal leaves with the length of leave varying by the school district. On average, U.S. teachers receive around 11 days for sickness and four days for personal business (Moored, 2012). Depending on district policy, teachers may also receive paid leaves for religious, weddings, graduations, holidays, or bereavement. Like

many other occupations in the U.S., no federal law requires schools to provide paid maternal leaves for teachers. However, unlike other workers, teachers get paid vacation (annual) leaves in the form of school breaks (i.e., spring break) and holidays, which are built into the school calendar to avoid interrupting students' learning. While some school districts offer teachers additional vacation (annual) leaves as their teaching experience increases, the increases in vacation leaves are typically small.<sup>2</sup> Many schools also allow teachers to use sick and personal leaves for purposes including taking care of family and other personal necessities. For example, anecdotes suggest that teachers use these leaves for religious holidays and vacations (*Teacher Contract Database*, n.d.). In addition to accruing unused leaves for future use, public school teachers may be eligible to extend their leaves for specific lengths without pay, receive sick leave donations, and take unpaid leaves for various purposes.

Teacher working schedules also significantly influence their use of absences. Unlike other workers who work for an average of 230 days, most U.S. school teachers sign a 180-working-day schedule due to winter, spring, and summer breaks.<sup>3</sup> Given this schedule, many school districts restrict teachers' use of vacation leaves and, sometimes other leaves, to holidays or school breaks (*Teacher Contract Database*, n.d.). Fewer working days mean less pay. Most teachers are paid ten instead of twelve months. Empirical studies indicate that teachers face financial pressures for having low salaries (Dizon-Ross et al., 2019; West, 2014). Thus, summer breaks do not mean a vacation for many teachers. In addition to curriculum and instruction, attending conferences, and participating in training, some

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<sup>2</sup> Some school districts offer teachers additional vacation (annual) leaves as their teaching experience increases. For example, in North Carolina, teachers earn between 11.7-21.7 annual vacation leave days a year, based on their years of service. (Less than 5 years: 11.7; 5-10 years: 14.2; 10-15 years: 16.7; 15-20 years: 19.2; 20+ years: 21.7.) The first 10 days of annual vacation leave are already built into the school calendar; the remaining days must be taken on non-instructional school days (Policy ID 3.1.3 of the 2020 NC Benefits and Employment Policy Manual)

<sup>3</sup> Most of teachers work on a five-day week as non-teaching workers. Some school districts adopted four-day week schedule by increasing the length of school day and have reported fewer teacher absences under the four-day school week (Thompson et al., 2021).

teachers hold jobs outside school hours and during summer breaks to alleviate their financial pressures. Around 16% of teachers have a second job, some of which include sports coach, business intern, and Uber driver (Schaeffer, 2019). This rate is three times that of non-teachers.

Finally, public sector employment status is linked with more generous leave policies. Over 80% of teachers work in public schools, which provide more job protections and generous absence policies than private school teachers. State and local policy and union bargaining make dismissing poorly performing public school teachers more difficult than private school teachers (Griffith & McDougald, 2016). On average, state and local governments spent \$3.89 on hourly paid leave compensation, while the private sector only spent \$2.58 in 2020 (Bureau Labor Statistics, 2020). In addition, all public sector employees are eligible to receive 12 weeks of unpaid leave under the Family and Medical Leave Act, while only some private sector employees are eligible.

While teachers differ from other workers in terms of personality, knowledge, level of education, etc., their absence rates may be comparable to other professionals who share similar attributes. We select these professions from the O\*NET database, which compares job and employee characteristics across occupations and is maintained by the Department of Labor. The professions most similar to teaching are nursing, accounting, social work, and education support. We also explore how the need for absences, paid and unpaid leave availability, and presence at work when absence is needed explain the absence gaps between teachers and non-teachers.

Our findings suggest a decreasing trend in teacher absences measured by the likelihood of being absent and the time lost index. The Current Population Survey suggests that 7% of teachers are absent at least once per week, and teachers spend four percent of their weekly working time on absences. We find teachers are less likely to be absent than other college-

educated workers and spend less working time on absences after considering individual, family, and work-related characteristics. No evidence indicates that teachers take more absences than observationally similar non-teaching professionals, including nurses, accountants, social workers, and education support workers. The findings from supplementary analyses suggest that teachers report fewer needs for absences and are more likely to attend work even if they need absences compared to non-teaching workers, which partly explains the gaps between teachers and other workers. Lastly, our results indicate that individuals who have ever been teachers consistently show a lower level of absences than others suggesting the importance of individual components in explaining teacher absence.

### **3. DATA AND EMPIRICAL STRATEGY**

#### **3.1. The Current Population Survey**

This study uses the Monthly Current Population Survey (CPS) from 1994 to 2019, obtained from the Integrated Public Use Microdata Series (IPUMS) (Flood et al., 2020). The CPS is a monthly survey of about 60,000 households that collects basic demographic and socioeconomic information using a multi-stage stratified probability sampling strategy. Respondents are surveyed for four consecutive months, followed by an eight-month break, and are then surveyed again for another four consecutive months before exiting the CPS. Our sample is the outgoing group of respondents in the 4<sup>th</sup> and 8<sup>th</sup> survey rotation months. The analytical sample is limited to college-educated, full-time employed individuals aged 22-65.<sup>4</sup>

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<sup>4</sup> Only respondents in the 4th and 8th rotation months (CPS outgoing groups) are retained because weekly earnings are not available in other rotation months. Keeping CPS outgoing groups only reduces the sample size and should not affect the representativeness of the sample because every CPS participant is supposed to participate in all eight waves. However, if respondents with certain characteristics systematically leave the survey, then the sample could be contaminated by selection bias. Summary statistics show no differences in observables between observations included and excluded from this research, which are available upon request.

*Employee absence during summer.* We also exclude observations from June, July, and August CPS because teachers either do not work or work on an atypical schedule during summer breaks, which is unique to teachers and other workers based in schools. Table A1 in the Appendix confirms that teachers spend a substantial amount of time not working during summer months (46% of working time). College-educated workers, including the selected professionals, also take time off during the summer with an absence rate of 11% and a time lost index of 7% but to a much lesser extent than teachers. While our study could not predict how teachers would use their absences had they worked on a regular schedule during the summer, it is reasonable to assume that the trends in teacher absences would be similar to those of other college-educated workers because the selected professionals consistently reported a higher level of absence during the summer.

*Measuring absence.* Every month during the data collection period, the CPS asks respondents to report the usual and actual working hours for the seven-day calendar week containing day 12 of the month.<sup>5</sup> The CPS also asks respondents who work less than 35 hours a week whether they have been absent from work and why they are absent. Drawing from these CPS questions, we measure teacher absences with a dummy variable equal to one if the absence is due to health, family, vacation (including personal days and holidays), and other miscellaneous reasons (including attending schools to pursue higher degrees, professional development, and civic and military duty), and zero otherwise. We use the usual and actual working hours to construct a time lost index, which refers to the proportion of weekly working time lost due to absence. This is calculated by dividing the number of hours missed by the usual weekly working hours. A time lost index of zero indicates no lost work hours. Detailed definitions of absence reasons are provided in Appendix B. Table A3 in the Appendix presents results by absence reason, including health, family, vacation/personal days

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<sup>5</sup> Occasionally, the November and December CPS may be moved one week earlier to avoid holidays.

(or voluntary reasons), and miscellaneous instances (such as civic obligation, attending training, or pursuing higher degrees). Absences related to health, family, and miscellaneous instances are also aggregated into an involuntary category because they might be related to one's motivation to attend work (Steel, 2003). Vacation and personal days constitute a voluntary absence category. It is important to note that our classification may not be perfect if some respondents fail to report the real reasons for their absences.

### 3.2. Empirical strategy

We compare the level of teacher absence with all college-educated workers and a selected group of college-educated professionals (nurses, accountants, social workers, and education support workers), adjusting for observable characteristics using the following pooled linear model:

$$Y_{ist} = \gamma_1 Teacher_{ist} + BX_{ist} + \theta_t + \alpha_s + \mu_{ist}$$

where  $i$ ,  $s$ , and  $t$  index for individual, state, and survey month.  $Y_{ist}$  is interchangeable for the likelihood of being absent and the time lost index outcome variables.  $Teacher_{ist}$  equals one if a respondent reports being a teacher, zero otherwise.  $\gamma_1$  captures the absence gaps between teachers and college-educated workers after adjusting for the observed characteristics.  $X_{ist}$  are a series of control variables which account for individual, family, and work-related characteristics, including public sector employment status. Individual and family characteristics include gender, race, age, age squared, level of education (master's degree or not), marital status, number of children under five, and family size. Work-related controls include an indicator for holding multiple jobs, hourly wage, hourly wage squared, weekly usual working hours, and living in a suburb or not.  $\theta_t$ ,  $\alpha_s$ , and  $\mu_{ist}$  are year-month, state-fixed effects, and the error term, respectively. Specifically, the pooled linear model is preferred over a nonlinear model because it is easier to compare the regression coefficients

between the likelihood of being absent and time lost index in linear models. In addition, using linear models could avoid the incidental parameter problem, which is common in nonlinear models with many fixed effects.

## 4. RESULTS

### 4.1. Absence gaps between teachers and other college-educated workers

Table 1 presents the average level of absence for teachers, all college-educated non-teaching workers, and selected professionals, including nurses, accountants, social workers, and educational support workers. Columns 1 and 5 display the aggregated absence rates and time lost index separately for all absence reasons and involuntary reasons. Columns 2, 3, 4, and 6 report the level of absence by individual reason. Column 1 of Panel A shows that 7% of teachers are absent for the whole or part of the week, accounting for 4% of weekly working time in Column 1 of Panel B. Although teachers' time lost index is slightly higher than other college-educated workers, they are less likely to be absent and miss a smaller proportion of working time (time lost index) than nurses, social workers, and education support (education support) workers. Health and vacation are two primary reasons for employee absences, which jointly explain more than 78% of the absence rates  $((0.022+0.033)/0.7 \approx 0.78)$  and 76% of working time lost  $((0.01+0.022)/0.7 \approx 0.76)$ . Family and miscellaneous issues are less frequently used as reasons for absence. Table A2 in the Appendix presents summary statistics on respondents' characteristics, showing that most teachers are White, female, hold advanced degrees, and are public sector employees. Additionally, teachers receive lower hourly wages compared to other college-educated workers.

<Insert Table 1 Here>

Figure 1-a displays changes in teachers' absence rates from the 1994-95 and 2018-19 school years. Over the twenty-four years, the teacher absence rate decreased from 9.4% in the 1994-95 school year to 5.2% in the 2015-16 school year and 6.4% in the 2018-19 school year. Teachers were slightly more likely to be absent for involuntary reasons than for voluntary reasons. Figure 1-b shows similar patterns for the time lost index with teacher absences taking up 5.1% of working time in the 1994-95 school year, decreasing to 2.8% in the 2015-16 school year, and increasing to 3.9 % in the 2018-19 school year. While the overall trends for absences were decreasing for non-teaching college-educated workers, teachers' absences decreased at a faster rate. Figure A1 in the Appendix presents seasonal patterns of teacher absences, suggesting that teachers are more likely to be absent and miss more working time in the spring semester than other college-educated workers.

<Insert Figure 1 Here>

Table 2 shows the adjusted gaps in absences between teachers and other college-educated workers. Each cell is a coefficient from separate models. From Columns 1 to 6, teacher absences are compared with all non-teaching college-educated workers, all selected professionals, and selected professionals by occupation. We gradually add controls from the first row to the last. We start with a naïve regression model only controlling for year-month and state fixed effects. We supplement the models by adding gender, basic demographic and job-related characteristics, and an indicator for public sector employment. This stepwise strategy allows us to identify which factors contribute most to absence gaps. Panel A shows that, without controlling for observed characteristics, teachers are no more likely to be absent than other college-educated workers and are less likely to be absent than nurses, social workers, and education support workers. However, Panel B shows that, without adjustment,

teachers miss 0.4% and 0.8% more working time than other college-educated workers and accountants. With the introduction of gender as a control variable, the absence gaps between teachers and other college-educated workers are close to zero. While demographics and job-related factors explain a small percentage of the absence gaps, the employment sector contributed significantly to the absence gaps. Teachers are two percentage points less likely to be absent than other college-educated workers and selected professionals once the employment sector is considered. Panel B also indicates that teachers miss 0.6% less working time than employees in other professions after controlling the employment sector. The negative gaps in absences between teachers and non-teachers could be directly explained by teachers using fewer absences for vacations and health issues (see Table A3 in the Appendix). In addition, subsample analysis in Table A4 shows that the absence gaps are more significant for male and public sector workers than for female and private sector workers.

<Insert Table 2 Here>

#### **4.2 Explaining why: Individual selection**

Studies indicate that teachers tend to be intrinsically motivated to teach, which could explain why there are no significant differences in absence rates and time lost between teachers and non-teachers (Goldhaber et al., 2022; Watt & Richardson, 2008). We examine whether teacher absences are individual-specific by conducting within-subject comparisons of absence for individuals who enter into and exit from the teaching profession (teacher leavers and entrants), as well as cross-subject comparisons with individuals who had never or always been a teacher (always teacher and never teacher). The sample is drawn from the CPS outgoing group consisting of 235,456 college-educated workers, 3,912 of whom have either switched into or out of the teaching profession (see Appendix C for the coding of teacher

types). Individuals who are older, male, minority, and with an advanced degree are more likely to be ever teachers. Teacher switchers tend to have fewer children, smaller families and are less likely to be married. Regardless of teaching status, teacher leavers and entrants exhibit no significant differences in characteristics. Summary statistics are provided in Tables A5 and A6 in the Appendix.

Figure 2 summarizes the results from within- and between-subject comparisons of teacher absences (see Table A7 in the Appendix for details). Teacher entrants and leavers have a similar likelihood of being absent and time lost index to always teachers and are significantly less likely to be absent and miss less working time than never teachers. We find no differences in absence rates and time lost index between teacher entrants and leavers, regardless of whether they are teaching, suggesting teachers are a homogenous group of individuals with low tendencies to be absent during the regular semester. However, this approach may underestimate the absence gaps if individuals who work as teachers during unobserved periods are classified as never teachers. Using a fixed-effects approach, Table A8 in the Appendix reports no evidence of changes in absences when teachers switch to other occupations.

<Insert Figure 2 Here>

#### **4.3. Explaining why: Demand and leave availability**

Individuals' needs and external constraints also shape absence behaviour. The American Time Use Survey (ATUS) Leave Module, a follow-up survey of a randomly selected group of CPS respondents, contains information on whether a respondent reports needing an absence, whether a respondent takes time off when they need absences, and the availability of paid and unpaid leave. The survey was implemented in 2011, 2017, and 2018, and the

analytical sample was constructed using the same restrictions as the CPS. Table A9 in the Appendix provides details on variable construction. Descriptive statistics in Table A10 indicate that ATUS respondents are very similar to the CPS respondents. A closer examination of ATUS data reveals that the absence gaps between teachers and other college-educated workers could be explained by the demand for absences and the availability of leaves.

Table 3 displays means and regression-adjusted differences in the individuals' need for absences, ability to take leaves, and the decision to present to work when needing absences. Panel A presents the means revealing that, on average, 24% of teachers report needing an absence compared to 25% of other college-educated workers and 26% of selected professionals. Teachers have better access to unpaid leave than other college-educated workers and selected professionals, but their access to paid leave is similar to that of the other groups. 23% of teachers report showing up for work when needing to take days off, which is 14 and 6 percentage points higher than other college-educated workers and selected professionals.

Regression-adjusted differences in Panel B report that teachers are 11 percentage points less likely to demand an absence than other college-educated workers but similar to the selected professionals after controlling for basic demographic characteristics, job characteristics, paid leave availability, and employment sector. Additionally, teachers have less access to paid leaves but more access to unpaid leaves compared to other college-educated workers and selected professionals. Notably, column (4) shows that teachers are 24 percentage points more likely to attend work when needing an absence than other college-educated workers, and the selected professionals are just as likely as teachers to show up. In the last two rows, we find no significant differences in the demand for and ability to be absent

by sector. Overall, limited access to paid leave may explain why teachers are less likely to need absences and are more likely to show up to work despite needing them.

<Insert Table 3 Here>

## 5. DISCUSSION AND CONCLUSION

We examine the prevalence of teacher absence and the gaps in absence between teachers and other college-educated workers. Between 1994-95 and 2018-19 school years, the teacher absence rate decreased by around 32% (3 percentage points), and the time lost index (proportion of working time lost) fell by 24% (1.2 percent). Despite being small in absolute size, a back-of-the-envelope calculation indicates these decreases equal to about one additional day of attendance per teacher, resulting in annual savings of around \$1.3 million in 2021 dollars.<sup>6</sup> The decline in teacher absences could substantively improve student outcomes, given that ten days of teacher absences could lead to 0.8 additional student absences (Ehrenberg et al., 1991) and 1 to 3.3% of a standard deviation reduction in student achievement (Clotfelter et al., 2009; Miller et al., 2008a, 2008b).

Our findings show that teachers' time lost index is not higher than other college-educated workers during the school year after controlling for individual and work-related characteristics. Compared to observationally similar college-educated workers, teachers demand fewer absences and are less likely to take absences when needed to leave work during the semester. This may be explained by recent studies on teachers' well-being and motivation. For example, several studies on teachers' mental health have found that teachers

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<sup>6</sup> If a teacher works 8 hours a day, a 1.2% decrease in absences equals to around 17.62 ( $17.62 = 0.012 * 8 * 180$ ) hours (around two working day) decrease in absence durations in 180 days working schedule. Previous research suggests that teacher absences cost around \$4 billion annually in 2004 dollars (Marguerite Roza, 2007). If we do not consider inflation and other changes, a 24% decrease in proportion of working time lost due to absence equals to around \$960 million savings in costs in 2004 dollars

have relatively better mental health than other workers in both the U.S. and the U.K. (Holt et al., 2020; Jerrim et al., 2020). Teachers may also refuse to take absences because they are intrinsically motivated to teach and help others (Tran & Smith, 2020; Watt & Richardson, 2008).

While studies find that teachers come from a specific range of distribution of academic ability (Bacolod, 2007; Lankford et al., 2014), we reveal that teachers' attendance is similar, if not better, than observationally similar college-educated workers. The absences of individuals who have ever been teachers are similar to those of individuals who were always teachers during the data collection period. Our findings suggest that teachers' absence behaviour is mainly affected by personal ability and motivation to attend work (Eskildsen et al., 2021). However, these results are tentative because recent studies and the present study (See Figure A3 in the Appendix) suggest that many teachers hold an occupation within the education industry when they are not teaching (Goldhaber et al., 2022). Therefore, teachers who switched their occupations may still work in the same organization affected by the same human resource rules and regulations.

While this study shows that teachers took fewer absences than previously thought, teachers' absence rates remain a concern for school administrators and the public. First, the absence of teachers could negatively impact students' human capital accumulation process. The loss of teacher absences cannot be easily mitigated by hiring more substitute teachers and the increase of other inputs. Therefore, given the negative impacts of teacher absence on students, teacher absences could be more costly than the absence of other professionals, even at the same absence rates. Second, at the occupation level, teachers' absence rates are still higher than other professionals, particularly those in male-dominated private sector professions. Consequently, efforts should still be made to increase teacher attendance.

Our findings also have important implications for the use of some absence reduction policies. Traditional absence reduction policies such as absence monitoring and attendance incentivizing programs (e.g., bonus for full attendance or wage penalties for absences) assume that teachers have low intrinsic motivation and prefer being absent. However, these policies might induce teachers to work when they should not (i.e., during illness or burnout) and reduce teachers' work-life balance. In fact, many studies show that teachers are already experiencing a poor work-life balance (Gibney et al., n.d.; Krantz-Kent, 2008). Consequently, these policies may create additional pressure, lead to deteriorated health, contribute to future absences, and induce potential and existing teachers to choose other professions (De Paola, 2010; Goldhaber et al., 2022; Stearns & White, 2018). Schools that seek to maintain or reduce the existing level of teacher absence should also consider more supportive measures that could lower teachers' burdens and fulfil teachers' needs. These practices include offering wellness programs, establishing teaching mentorships for junior teachers, providing onsite daycare, offering more autonomy to teachers over the classroom, and, importantly, reducing teachers' workload, especially given that some teachers also take on the role of social worker (McCarthy, 2019). Schools may also be able to mitigate the negative consequences of teacher absences by recruiting more substitute teachers or calling in retired teachers.

This study has several limitations. First, the CPS does not collect organizational-level characteristics such as school characteristics and student outcomes. While Table A11 in the Appendix shows that state-level teacher absences are negatively associated with students' NEAP test scores, future research with students' individual-level data could continue to explore the impacts of teacher absences on students' academic performance and behaviour, such as attendance, disciplinary outcomes, and attitudes toward schools. Secondly, we only focus on absences that result in fewer than 35 hours of week working hours, suggesting our estimates on the prevalence of teacher absence might be biased downwards. Additionally, if

compared to other college-educated workers, teachers are systematically more or less likely to work more than 35 hours per week despite being absent, our estimated absence gaps between teachers and workers could be biased. While we are unable to test the direction of the bias due to data limitations, we estimate the main model using the ATUS data, which covers a much smaller sample but reports all absences, even for those who work more than 35 hours. Table A12 in the Appendix presents the results and suggests that they are similar to our main estimates despite being less precise. Third, although we attempt to estimate the relationship between teaching and absences, the endogeneity of sector switching prevents us from interpreting the findings causally. Our findings on the relationships between teaching and absences could be biased downward because individuals tend to work in education-related occupations when not teaching (Goldhaber et al., 2022). Lastly, some CPS respondents might withdraw from CPS due to changes in address or other reasons. If these respondents who attrited from the sample differ from others systematically, the external validity of our findings could be compromised.

Despite these limitations, this study provides novel evidence on the levels and patterns of teacher absences. The findings are consistent with previous evidence from international sources that teachers are absent less frequently than other employees (Bowers, 2001; Chaudhury et al., 2006). Future research with more comprehensive data could investigate the causes and the consequences of teacher absences, to what extent teacher well-being is affected by teaching and results in teacher absences, and whether more supportive policies could improve teacher well-being and reduce teacher absences.

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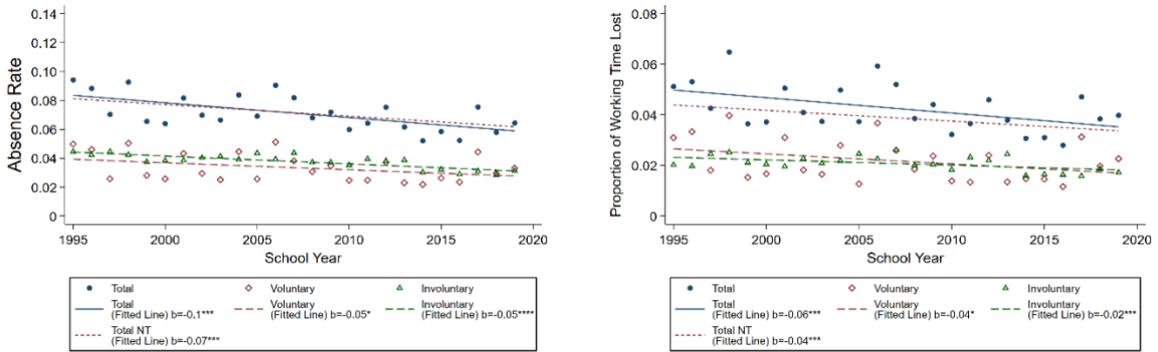
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# Figures

## Figure 1 Teacher Absences by Year

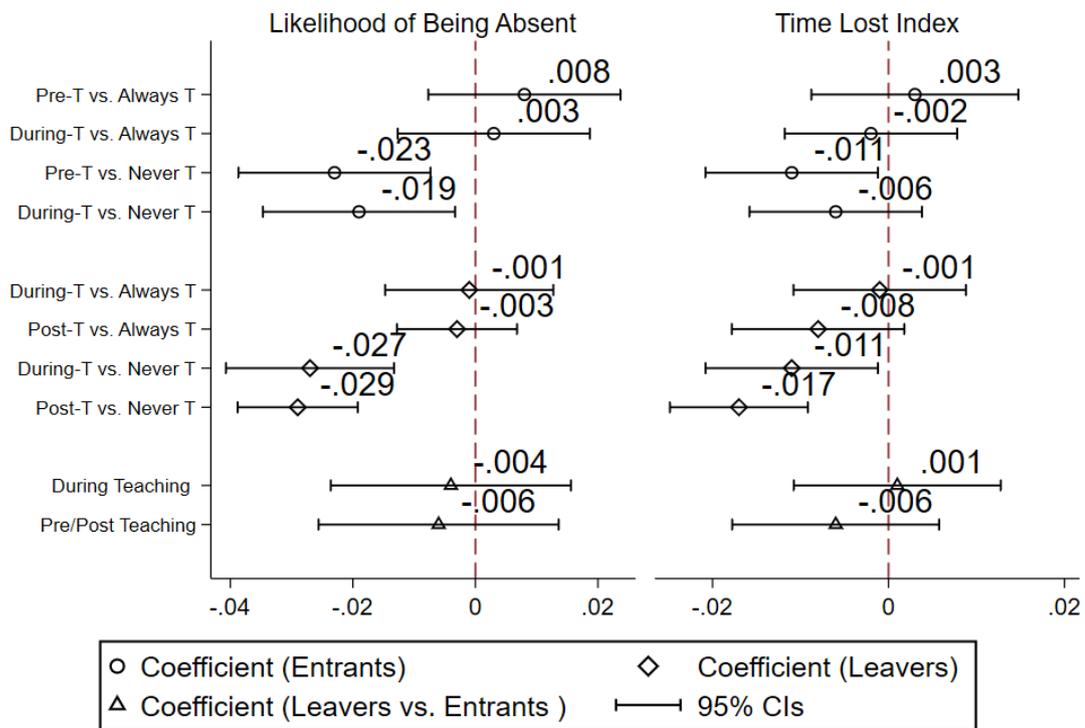


A. Likelihood of Being Absent (CPS)

B. Time Lost Index (CPS)

Notes: Time lost index is calculated by dividing the time lost due to absences by one's weekly work hours. Data are weighted by CPS Weights separately.

Figure 2 Absences Gaps Among Teachers Entrants, Teacher Leavers, Always Teachers, and Never Teachers



Notes: The differences are produced based on coefficients from dummy indicators on always teachers (Always T), never teachers (Never T), teacher entrants (Entrants), and teacher leavers (Leavers), an interaction term between teacher entrants and before they switched occupations, and an interaction term between teacher leavers after they leave teaching. Table A7 presents regression estimates that are used to construct the table. The models also include time, rotation month, and state fixed effects, as well as controls for individual, family, and job-related characteristics (including a dummy on the public sectors). All models are weighted by CPS-provided weights, and standard errors are clustered at the state level. Time Lost Index=Proportion of Working Time Lost.

**TABLES**

Table 1 Descriptive Statistics

	All	Involuntary			Involuntary	Voluntary
	(1)	Health (2)	Family (3)	Miscellaneous (4)	Combined (5)	Vacation (6)
Panel A: CPS (Likelihood of Being Absent)						
Teachers	0.070	0.022	0.014	0.001	0.037	0.033
College-Ed Workers	0.070	0.018	0.009	0.001	0.028	0.043
Nurses	0.089	0.027	0.014	0.001	0.043	0.046
Accountants	0.072	0.017	0.010	0.001	0.028	0.044
Social Workers	0.093	0.032	0.014	0.001	0.046	0.046
Edu-support	0.107	0.036	0.016	0.001	0.053	0.054
Panel B: CPS (Time Lost Index)						
Teachers	0.042	0.010	0.010	0.001	0.021	0.022
College-Ed Workers	0.038	0.008	0.006	0.000	0.014	0.024
Nurses	0.056	0.016	0.011	0.001	0.028	0.029
Accountants	0.035	0.007	0.006	0.001	0.014	0.021
Social Workers	0.046	0.014	0.009	0.000	0.023	0.023
Edu-support	0.052	0.015	0.009	0.001	0.024	0.028

*Note:* All means are weighted by CPS provided weights. CPS Sample Size: Teacher=89918, Nurse=27731, Accountants=22988, Social Workers=21378, Edu-Support workers=8093. Time Lost Index=Proportion of Working Time Lost

Table 2 Absence Gaps between Teachers and Other Workers

	All	Sel.	Nurses	Acco.	Soc.	Ed.
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Likelihood of Being Absent						
No controls	-0.000 (0.002)	-0.017* (0.003)	-0.021* (0.003)	-0.001 (0.004)	-0.023* (0.003)	-0.038* (0.005)
Gender	-0.009* (0.002)	-0.018* (0.003)	-0.018* (0.003)	-0.007 (0.004)	-0.023* (0.003)	-0.037* (0.005)
Demo and Job	-0.008* (0.002)	-0.015* (0.002)	-0.012* (0.003)	-0.006 (0.004)	-0.021* (0.003)	-0.034* (0.004)
Public Sector	-0.020* (0.002)	-0.021* (0.002)	-0.018* (0.002)	-0.013* (0.004)	-0.022* (0.003)	-0.034* (0.004)
Panel B: Time Lost Index						
No controls	0.004 (0.002)	-0.005* (0.002)	-0.016* (0.002)	0.008* (0.003)	-0.005+ (0.002)	-0.011* (0.003)
Gender	-0.001 (0.002)	-0.006* (0.002)	-0.013* (0.002)	0.004 (0.003)	-0.005+ (0.002)	-0.010* (0.003)
Demo and Job	-0.001 (0.002)	-0.005+ (0.002)	-0.012* (0.002)	0.004 (0.003)	-0.005+ (0.002)	-0.011* (0.003)
Public Sector	-0.006* (0.002)	-0.007* (0.001)	-0.014* (0.002)	0.001 (0.002)	-0.006+ (0.002)	-0.011* (0.003)

*Note:* All=All College-Educated Workers including teachers, Sel.=Selected Professionals including Nurses, Accountants (Acco.), Social Workers (Soc.), Education Support Workers (Ed.). Time lost index= Proportion of Working Time Lost. Each coefficient is estimated using a separate regression. Estimates from models with no controls only include time, rotation month, and state-fixed effects and are served as the basic model. Gender, demographic and job characteristics, and public sector employment are added gradually, and each estimate is reported in the table. For analyses using CPS, demographic controls include dummy indicators on race (Black, Hispanic, Other), age, age squared, level of education (with a master's degree or not), married, number of children under five years old, and family size. Job-related controls include having multiple jobs, hourly wage, hourly wage squared, weekly usual working hours, living in a suburb, and missing living locations. Models are estimated using weighted least square weighted by CPS provided weights. Robust standard errors and p-values are shown in parentheses and as stars \* p < 0.01, + p < 0.05.

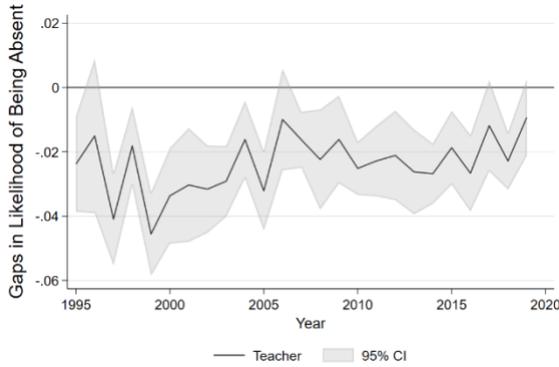
Table 3 Demand for Absences and the Availability of Leaves

	Need Absences (1)	Paid Leaves Availability (2)	Unpaid Leaves Availability (3)	Need Absences but Attended Work (4)
Panel A: Means				
Means (Teachers)	0.236	0.895	0.931	0.225
N (Teachers)	403	403	367	99
Means (Other College-Ed)	0.252	0.888	0.882	0.091
N (Other College-Ed Workers)	3528	3528	3135	894
Mean (Selected Professionals)	0.264	0.919	0.890	0.171
N (Selected Professionals)	841	841	753	226
Panel B: Teachers vs. College-Educated Workers				
No Controls	-0.011 (0.032)	0.013 (0.021)	0.050* (0.017)	0.212* (0.081)
Demo	-0.029 (0.034)	0.008 (0.022)	0.048+ (0.019)	0.219* (0.082)
Demo and Job	-0.109* (0.039)	-0.024 (0.024)	0.060* (0.023)	0.236* (0.081)
Demo, Job, and Leave	-0.107* (0.039)			0.237* (0.081)
Public Sector Workers Only	-0.094+ (0.044)	-0.016 (0.028)	0.059+ (0.026)	0.248* (0.076)
Private Sector Workers Only	-0.029 (0.073)	-0.035 (0.054)	0.033 (0.056)	0.024 (0.201)
Panel C: Teachers vs. Selected Professionals				
No Controls	-0.051 (0.041)	-0.040 (0.025)	0.073+ (0.031)	0.092 (0.092)
Demo	-0.031 (0.041)	-0.046* (0.027)	0.069+ (0.031)	0.092 (0.089)
Demo and Job	-0.003 (0.047)	-0.093* (0.027)	0.060* (0.033)	-0.011 (0.106)
Demo, Job, and Leave	0.008 (0.048)			-0.007 (0.106)
Public Sector Workers Only	0.016 (0.057)	-0.080 (0.026)	0.055 (0.039)	0.014 (0.120)
Private Sector Workers Only	-0.069 (0.075)	-0.111* (0.057)	0.081 (0.063)	-0.260 (0.172)

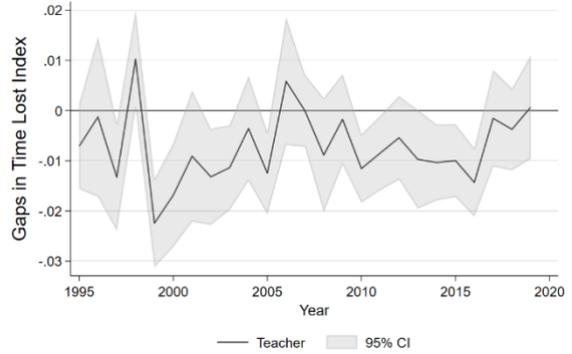
*Note:* Each coefficient is estimated using a separate regression. Estimates from models with no controls only include region and time (measured by half a year) due to the small sample size. Demographic controls include age, race (White or not), married, level of education (with a master's degree or not), and the number of children under five years old. Job-related controls for models with ATUS include having multiple jobs or not, hourly wage, weekly usual working hours, and dummy indicators indicating weekly working hours and hourly wages being missing. Robust standard errors and p-values are shown in parentheses and as stars \*  $p < 0.01$ , +  $p < 0.05$ .

## Appendix A

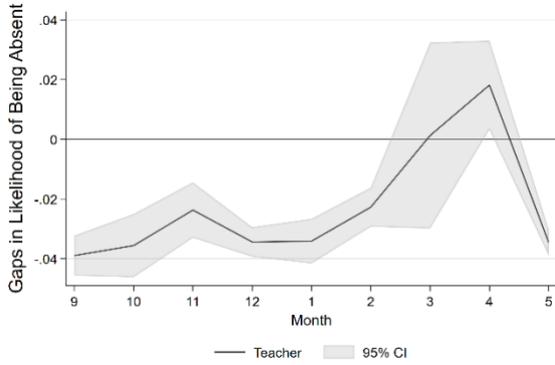
Figure A1 Gaps in absence between teachers and college-educated workers by year and month



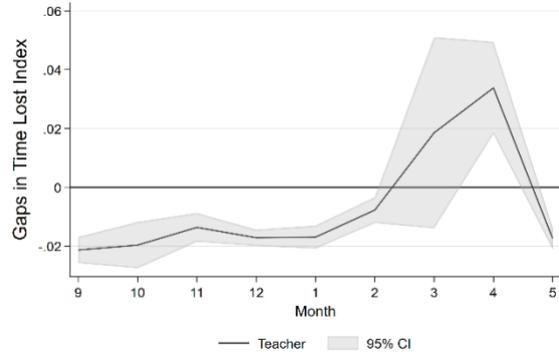
a. Annual Trend for Likelihood of Being Absent



b. Annual Trend for Time Lost Index



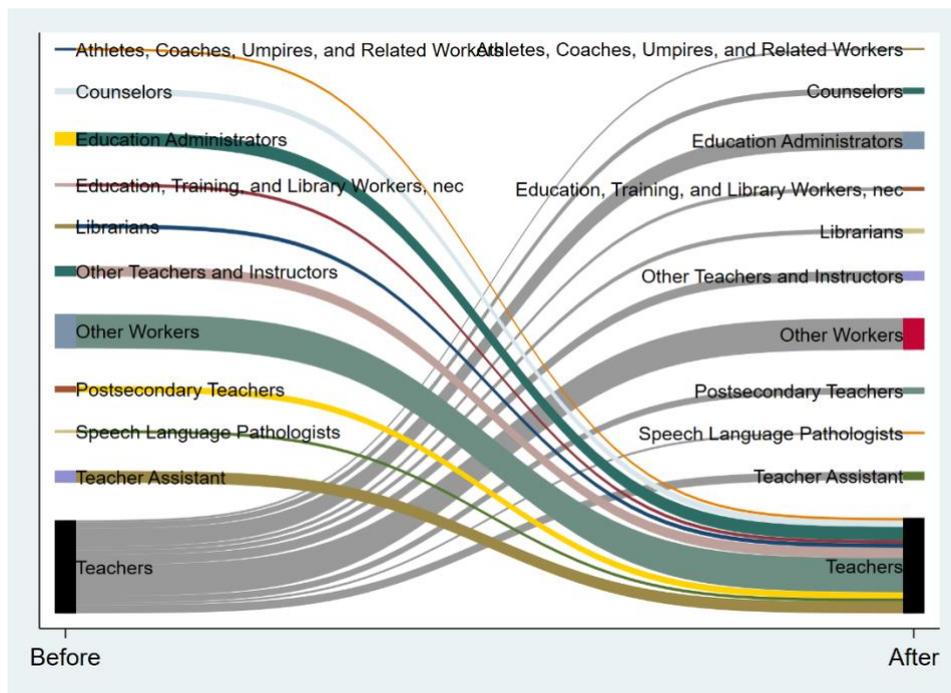
b. Monthly Variation for Likelihood of Being Absent



d. Monthly Variation in Time Lost Index

*Note:* Coefficients for Figures (a) and (b) are estimated using a regression controlling for individual, family, and other work-related characteristics, month fixed effects, and rotation month fixed effects. Individual and family level controls include gender, dummy indicators on race (Black, Hispanic, Other), age, age squared, a dummy indicator on education (with a master's degree), married, number of children under five years old, family size. Work-related controls include having multiple jobs, hourly wage, hourly wage squared, weekly usual working hours, living in a suburb, and living location missing. All estimates are weighted by CPS-provided weights. The 95% confidence intervals are constructed using robust-cluster standard errors. Time Lost Index=Proportion of Working Time Lost due to Absences

Figure A2 Occupations before and after occupation switching



Note: Results are based on the Authors' calculation of CPS data.

Table A1 Absence During Summer and Non-summer Period

		Teacher	College-Ed Workers	Nurses	Accountants	Social Workers	Ed- Support
		(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Likelihood of Being Absent							
All	Non-summer	0.070	0.070	0.089	0.072	0.093	0.107
	Summer	0.478	0.109	0.118	0.103	0.175	0.266
Health	Non-summer	0.022	0.018	0.027	0.017	0.032	0.036
	Summer	0.006	0.012	0.019	0.012	0.020	0.020
Family	Non-summer	0.014	0.009	0.014	0.010	0.014	0.016
	Summer	0.008	0.008	0.012	0.008	0.013	0.007
Miscellaneous	Non-summer	0.001	0.001	0.001	0.001	0.001	0.001
	Summer	0.009	0.001	0.001	0.001	0.001	0.005
Vacation	Non-summer	0.033	0.043	0.046	0.044	0.046	0.054
	Summer	0.455	0.087	0.086	0.082	0.141	0.233
Panel B: Time Lost Index							
All	Non-summer	0.042	0.038	0.056	0.035	0.046	0.052
	Summer	0.455	0.071	0.083	0.057	0.126	0.222
Health	Non-summer	0.010	0.008	0.016	0.007	0.014	0.015
	Summer	0.003	0.006	0.011	0.005	0.009	0.011
Family	Non-summer	0.010	0.006	0.011	0.006	0.009	0.009
	Summer	0.006	0.005	0.008	0.005	0.010	0.004
Miscellaneous	Non-summer	0.001	0.000	0.001	0.001	0.000	0.001
	Summer	0.008	0.001	0.000	0.000	0.001	0.004
Vacation	Non-summer	0.022	0.024	0.029	0.021	0.023	0.028
	Summer	0.438	0.059	0.063	0.046	0.107	0.203
N	Non-summer	89918	665649	27731	22988	21378	8093
	Summer	29479	213870	10122	7964	7631	2589

Note: All means are weighted by CPS provided weights.

Table A2 Descriptive statistics on respondents' characteristics by occupations

	Teachers	Other	Selected College-Ed Workers			
		College-Ed workers	Nurses	Account ants	Social Workers	Education Support
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.757	0.437	0.891	0.522	0.742	0.808
White	0.821	0.747	0.703	0.725	0.667	0.780
Black	0.084	0.084	0.118	0.087	0.196	0.099
Hispanic	0.065	0.066	0.051	0.058	0.093	0.069
Other	0.029	0.103	0.128	0.130	0.044	0.052
Age	41.856 (11.011)	41.206 (11.070)	42.271 (11.138)	39.282 (11.121)	41.170 (11.314)	44.599 (11.523)
Advanced Degree	0.491	0.320	0.198	0.237	0.497	0.487
Married	0.696	0.645	0.633	0.612	0.555	0.618
# of Child under 5	0.195	0.199	0.173	0.207	0.172	0.102
Family Size	2.917 (1.350)	2.768 (1.401)	2.886 (1.428)	2.740 (1.405)	2.676 (1.379)	2.689 (1.310)
More than One Job	0.076	0.051	0.063	0.042	0.083	0.078
Public Sector	0.815	0.191	0.153	0.141	0.550	0.678
Hourly Wage	23.310 (11.693)	28.557 (15.480)	28.950 (12.956)	28.071 (14.205)	22.916 (11.369)	21.723 (12.553)
# of Usual Weekly Working Hours	42.920 (6.512)	43.531 (7.286)	40.377 (4.927)	42.662 (5.847)	40.762 (4.144)	40.167 (4.374)
# of Actually Weekly Working Hours	40.506 (11.141)	41.947 (11.139)	38.394 (10.482)	41.606 (10.192)	38.626 (9.237)	37.344 (9.579)
In Metropolitan Area	0.796	0.893	0.851	0.913	0.821	0.829
N	89918	665649	27731	22988	21378	8093

Note: All means are weighted by CPS-provided weights

Table A3 Gaps in absences between teachers and other workers by reason

	Combined (2), (3), (4)	Health (2)	Family (3)	Miscellaneous (4)	Vacation (5)
Panel: Likelihood of Being Absent (CPS)					
Teachers vs. College-Ed Workers	-0.004* (0.001)	-0.004* (0.001)	0.000 (0.001)	-0.000 (0.000)	-0.016* (0.002)
Teachers vs. Selected Professionals	-0.007* (0.001)	-0.006* (0.001)	-0.001 (0.001)	-0.000 (0.000)	-0.014* (0.002)
Panel B: Time Lost Index (CPS)					
Teachers vs. College-Ed Workers	-0.001 (0.001)	-0.002* (0.000)	0.001 (0.001)	-0.000 (0.000)	-0.005+ (0.002)
Teachers vs. Selected Professionals	-0.003* (0.001)	-0.003* (0.001)	-0.000 (0.001)	-0.000 (0.000)	-0.004+ (0.002)

*Note:* Each coefficient is estimated using a separate regression. Estimates from models with no controls only include time, rotation month, and state-fixed effects and are served as the basic model. Gender, demographic and job characteristics, and public sector employment are added gradually, and each estimate is reported in the table. For analyses using CPS, individual level controls include dummy indicators on race (Black, Hispanic, Other), age, age squared, level of education (with a master's degree or not), married, number of children under five years old, and family size. Job-related controls include having multiple jobs, hourly wage, hourly wage squared, weekly usual working hours, living in a suburb, and missing living locations. Models are estimated using weighted least square weighted by CPS provided weights. Robust standard errors and p-values are shown in parentheses and as stars \*  $p < 0.01$ , +  $p < 0.05$ .

Table A4 Absence gaps by sector of employment and gender

	Public (1)	Private (2)	Female (3)	Male (4)
Likelihood of Being Absent				
Teachers vs. College-Educated Workers	-0.023* (0.002)	-0.008*a (0.003)	-0.018* (0.002)	-0.023* (0.003)
Teachers vs. Selected Professionals	-0.027* (0.003)	-0.014*a (0.003)	-0.019* (0.002)	-0.027*b (0.004)
Time Lost Index				
Teachers vs. College-Educated Workers	-0.007* (0.002)	-0.002a (0.002)	-0.004+ (0.002)	-0.010*b (0.002)
Teachers vs. Selected Professionals	-0.009* (0.002)	-0.005* (0.002)	-0.006* (0.002)	-0.010* (0.002)

*Note:* Each coefficient is estimated using a separate regression. Estimates from models with no controls only include time, rotation month, and state-fixed effects and are served as the basic model. Gender, demographic and job characteristics, and public sector employment are added gradually, and each estimate is reported in the table. For analyses using CPS, individual level controls include dummy indicators on race (Black, Hispanic, Other), age, age squared, level of education (with a master's degree or not), married, number of children under five years old, and family size. Job-related controls include having multiple jobs, hourly wage, hourly wage squared, weekly usual working hours, living in a suburb, and missing living locations. Models are estimated using weighted least square weighted by CPS provided weights. Robust standard errors and p-values are shown in parentheses and as stars \*  $p < 0.01$ , +  $p < 0.05$ .

Table A5 Summary statistics between never teacher and individuals who has ever being a teacher (CPS)

	All	Never Teachers	Always Teachers, Teacher Entrants, and Teacher Leavers	Diff	Always Teachers	Teacher Entrants & Teacher Leavers	Diff
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Likelihood of Being Absent	0.073	0.073	0.067	0.006***	0.068	0.062	0.005
Time Lost Index	0.039 (0.166)	0.039 (0.165)	0.039 (0.173)	0.001	0.039 (0.174)	0.033 (0.156)	0.006**
Female	0.467	0.424	0.754	-0.330***	0.758	0.718	0.040***
White	0.775	0.766	0.831	-0.065***	0.84	0.747	0.093***
Black	0.076	0.076	0.079	-0.002*	0.071	0.144	-0.073***
Hispanic	0.058	0.058	0.063	-0.005***	0.062	0.074	-0.012***
Other	0.091	0.1	0.028	0.072***	0.027	0.035	-0.008***
Age	42.957 (10.484)	42.91 (10.493)	43.27 (10.416)	-0.360***	43.288 (10.354)	43.106 (10.965)	0.182
Advanced Degree	0.361	0.337	0.525	-0.189***	0.527	0.51	0.017**
Married	0.708	0.703	0.741	-0.038***	0.745	0.703	0.043***
# of Children under 5	0.21 (0.516)	0.211 (0.518)	0.202 (0.504)	0.009***	0.206 (0.509)	0.165 (0.448)	0.042***
Family Size	2.906 (1.379)	2.891 (1.386)	3.007 (1.327)	-0.116***	3.01 (1.323)	2.984 (1.369)	0.026
More than One Job	0.053	0.05	0.072	-0.022***	0.071	0.081	-0.009**
Hourly Wage	29.537 (15.215)	30.347 (15.516)	24.094 (11.632)	6.254***	24.123 (11.487)	23.829 (12.866)	0.294
# of Usual Weekly Working Hours	43.537 (7.015)	43.608 (7.08)	43.061 (6.543)	0.547***	43.183 (6.567)	41.958 (6.218)	1.225***
# of Actual Weekly Working Hours	41.861 (10.955)	42.022 (10.958)	40.776 (10.877)	1.246***	40.855 (10.973)	40.067 (9.948)	0.788***
In Metropolitan Area	0.881 441324	0.894 382158	0.796 59166	0.098***	0.792 53386	0.83 5780	-0.038***

Note: All means are weighted by CPS-provided weights. Time Lost Index=Proportion of Working Time Lost due to Absences. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A6 Summary statistics for teacher entrants and teacher leavers by status of teaching (CPS)

	Teaching	Not Teaching	Diff	Teacher Entrants	Teacher Leavers	Diff
	(1)	(2)	(3)	(4)	(5)	(6)
Likelihood of Being Absent	0.064	0.061	0.003	0.065	0.059	0.006
Time Lost Index	0.034 (0.158)	0.032 (0.153)	0.002	0.035 (0.16)	0.031 (0.151)	0.004
Female	0.717	0.719	-0.002	0.722	0.713	0.009
White	0.746	0.748	-0.002	0.751	0.743	0.008
Black	0.145	0.143	0.002	0.139	0.149	-0.010
Hispanic	0.073	0.075	-0.001	0.073	0.074	-0.001
Other	0.035	0.034	0.001	0.036	0.033	0.003
Age	43.113 (10.954)	43.098 (10.976)	0.015	43.041 (11.135)	43.171 (10.791)	-0.129
Advanced Degree	0.507	0.513	-0.006	0.496	0.524	-0.028*
Married	0.703	0.702	0.00	0.690	0.715	-0.025*
# of Children under 5	0.161 (0.441)	0.168 (0.455)	-0.007	0.150 (0.43)	0.179 (0.465)	-0.029**
Family Size	2.981 (1.369)	2.988 (1.37)	-0.007	2.991 (1.355)	2.977 (1.383)	0.014
More than One Job	0.082	0.079	0.004	0.074	0.087	-0.014*
Hourly Wage	24.183 (12.847)	23.476 (12.876)	0.707*	24.173 (13.299)	23.483 (12.404)	0.690*
# of Usual Weekly Working Hours	41.891 (6.056)	42.025 (6.376)	-0.134	41.737 (6.118)	42.181 (6.31)	-0.444**
# of Actual Weekly Working Hours	39.891 (9.853)	40.242 (10.039)	-0.351	40.372 (9.960)	39.765 (9.927)	0.608**
In Metropolitan Area	0.83 2890	0.83 2890	0	0.829 2926	0.831 2854	-0.001

Note: All means are weighted by CPS-provided weights. Time Lost Index=Proportion of Working Time Lost due to Absences. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A7 Gaps in absences among new teachers, teacher leavers, always teachers, and never teachers

	Likelihood of Being Absent			Working Time Lost		
	All	All but Vacation	Vacation	All	All but Vacation	Vacation
<b>Panel A: Estimates from WLS</b>						
Teacher Entrants	-0.019** (0.008)	-0.001 (0.006)	-0.018*** (0.004)	-0.006 (0.005)	0.001 (0.004)	-0.007* (0.003)
Teacher Entrants X Teaching	-0.004 (0.007)	-0.011 (0.007)	0.006 (0.005)	-0.005 (0.004)	-0.008** (0.004)	0.003 (0.004)
Teacher Leavers	-0.029*** (0.005)	-0.007* (0.004)	-0.022*** (0.005)	-0.017*** (0.004)	-0.007** (0.003)	-0.011*** (0.004)
Teacher Leavers X Teaching	0.002 (0.008)	0.009 (0.007)	-0.007 (0.007)	0.007 (0.007)	0.011* (0.006)	-0.004 (0.004)
Always Teachers	-0.026*** (0.002)	-0.006*** (0.001)	-0.020*** (0.003)	-0.010*** (0.002)	-0.003*** (0.001)	-0.007*** (0.002)
<b>Panel B: Differences by Group Based on Panel A Estimates</b>						
<b>Teacher Entrants</b>						
Pre-teaching vs. Always Teachers	0.008 (0.008)	0.006 (0.006)	0.002 (0.004)	0.003 (0.006)	0.003 (0.004)	0.000 (0.003)
During-teaching vs. Always Teachers	0.003 (0.008)	-0.005 (0.005)	0.008 (0.007)	-0.002 (0.005)	-0.005* (0.003)	0.003 (0.004)
Pre-teaching vs. Never Teachers	-0.023*** (0.008)	-0.011* (0.006)	-0.012* (0.007)	-0.011** (0.005)	-0.008** (0.003)	-0.004 (0.005)
During-teaching vs. Never Teachers	-0.019** (0.008)	-0.001 (0.006)	-0.018*** (0.004)	-0.006 (0.005)	0.001 (0.004)	-0.007* (0.003)
<b>Teacher Leavers</b>						
During-teaching vs. Always Teachers	-0.001 (0.007)	0.008 (0.007)	-0.009 (0.006)	-0.001 (0.005)	0.007 (0.005)	-0.008** (0.004)
Post-teaching vs. Always Teachers	-0.003 (0.005)	-0.001 (0.004)	-0.002 (0.005)	-0.008* (0.005)	-0.004 (0.002)	-0.004 (0.004)
During-teaching vs. Never Teachers	-0.027*** (0.007)	0.002 (0.006)	-0.029*** (0.005)	-0.011** (0.005)	0.004 (0.005)	-0.015*** (0.003)
Post-teaching vs. Never Teachers	-0.029*** (0.005)	-0.007* (0.004)	-0.022*** (0.005)	-0.017*** (0.004)	-0.007** (0.003)	-0.011*** (0.004)
During Teaching: Teacher Leavers vs. New Teachers	-0.004 (0.010)	0.013 (0.009)	-0.017** (0.007)	0.001 (0.006)	0.012* (0.006)	-0.011*** (0.004)
No-teaching: Teacher Leavers vs. New Teachers	-0.006 (0.010)	0.004 (0.006)	-0.010 (0.007)	-0.006 (0.006)	0.001 (0.003)	-0.007 (0.005)
Observations	441,324	441,324	441,324	441,324	441,324	441,324
R-squared	0.015	0.013	0.009	0.010	0.011	0.006

*Note:* Results in each Column of Panel A are estimated using a separate regression controlling for individual, family, and other work-related characteristics with never teachers in the reference group. Panel B is calculated based on the coefficients reported in Panel A. All models include time, rotation month, and state fixed effects. Individual and family level controls include gender, dummy indicators on race (Black, Hispanic, Other), age, age squared, a dummy indicator on education (with a master's degree), married, number of children under five years old, family size. Work-related controls include having multiple jobs, hourly wage, hourly wage squared, weekly

usual working hours, living in a suburb, and living location missing. Models are estimated using weighted least square weighted by CPS provided weights. Robust standard errors and p-values clustered at the state level are shown in parentheses and as stars \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A8 Gaps in absence with individual fixed effects

	All	Combined Health	Family	Other	Voluntary	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Likelihood of Being Absent						
Teachers	-0.002 (0.005)	-0.002 (0.004)	-0.005 (0.003)	0.002 (0.002)	0.001 (0.001)	-0.000 (0.003)
R-square	0.547	0.527	0.525	0.520	0.506	0.548
Panel B: Time Lost Index						
Teacher	-0.001 (0.004)	0.000 (0.003)	-0.002 (0.002)	0.002 (0.002)	0.000 (0.001)	-0.001 (0.003)
R-square	0.547	0.524	0.524	0.520	0.501	0.554

*Note:* Time Lost Index= Proportion of Working Time Lost. The sample size is 468,798. Results in each Column are estimated using a separate regression. Controls include age, age squared, a dummy indicator on education (with a master's degree), marital status, number of children under five years old, and family size. All models include time and state fixed effects. All coefficients are estimated using weighted least square weighted by CPS provided weights. Robust standard errors and p-values clustered at the state level are shown in parentheses and as stars \*  $p < 0.01$ , +  $p < 0.05$ .

Table A9 Questions used to construct absences measures from the American Time Use Survey

2011, 2017, 2018	
Reason for needing absences in the past seven days	Thinking about your longest period of leave in the last seven days, what was the main reason you had to take off from work? 1. Own illness or medical care 2. Illness or medical care of another family member 3. Childcare, other than for illness 4. Eldercare, other than for illness 5. Vacation 6. Errands or personal reasons 7. Birth or adoption of a child 8. Other Don't Know/Refusal
Need absent but did not, in the past seven days (in 2017 and 2018, it becomes during the past month)	During the past seven days (in 2017 and 2018, it becomes during the past month), that is from last [fill = CURRENT DAY] through yesterday, were there situations in which you needed to take off from work but did not? 1. Yes 2. No Don't Know/Refusal
Why need absent in the past seven days.	Why did you need to take off work? *Mark all that apply. 1. Own illness or medical care 2. Illness or medical care of another family member 3. Childcare, other than for illness 4. Eldercare, other than for illness 5. Vacation 6. Errands or personal reasons 7. Birth or adoption of a child 8. Other Don't Know/Refused
Reasons for not taking absences when you need absences in the past seven days (in 2017 and 2018, it becomes during the past month)	Why did you decide not to take leave? *Mark all that apply. 1. Too much work 2. Wanted to save leave 3. Leave was denied 4. Did not have enough leave 5. Fear of job loss or other negative employment-related consequences 6. Could not afford the loss in income 7. Other Don't Know/Refusal
Availability of paid leave	[Fill: Thinking about the job where you worked the most hours last week] Do you receive paid leave on your job? 1. Yes 2. No Don't Know/ Refused

Availability of unpaid leave	[In addition to your paid leave/In your main job] are you allowed to take time off from work without pay? 1. Yes 2. No Don't know/Refused
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Table A10 Differences in ATUS respondents' characteristics between their answers in the CPS

	CPS			ATUS respondents in CPS		
	(1) All	(2) College- educated workers	(3) Teachers	(4) All	(5) College- educate d workers	(6) Teachers
Likelihood of Being Absent	0.05	0.05	0.04	0.06	0.07	0.04
Time Lost Index	0.03 (0.11)	0.03 (0.11)	0.04 (0.11)	0.04 (0.11)	0.04 (0.11)	0.04 (0.09)
Percentage of Teachers	0.11	-	-	0.10	-	-
Female	0.47	0.43	0.76	0.49	0.46	0.78
White	0.76	0.75	0.82	0.72	0.71	0.80
Black	0.08	0.08	0.08	0.11	0.11	0.07
Hispanic	0.07	0.07	0.07	0.08	0.08	0.09
Other	0.09	0.10	0.03	0.09	0.10	0.04
Age	41.26 (11.06)	41.18 (11.06)	41.81 (11.00)	41.80 (10.36)	41.83 (10.39)	41.52 (10.05)
Advanced Degree	0.34	0.32	0.49	0.39	0.38	0.53
Married	0.65	0.64	0.70	0.65	0.64	0.70
# of Child under 5	0.20 (0.50)	0.20 (0.50)	0.19 (0.49)	0.28 (0.58)	0.28 (0.57)	0.33 (0.62)
Family Size	2.79 (1.40)	2.77 (1.40)	2.92 (1.35)	2.80 (1.40)	2.78 (1.40)	3.03 (1.33)
More than One Job	0.05	0.05	0.08	0.04	0.04	0.07
Public Sector	0.26	0.19	0.81	0.27	0.21	0.81
Hourly Wage	21.84 (12.66)	21.78 (12.63)	23.23 (13.23)	27.20 (14.10)	27.29 (14.12)	24.60 (13.26)
# of Usual Weekly Working Hours	43.49 (7.22)	43.54 (7.29)	43.06 (6.65)	43.20 (6.79)	43.16 (6.73)	43.51 (7.28)
# of Actually Weekly Working Hours	42.73 (9.29)	42.85 (9.36)	41.82 (8.72)	42.18 (8.99)	42.22 (8.89)	41.85 (9.81)
In Metropolitan Area	0.09	0.08	0.17	0.92	0.93	0.85
N	492916	434033	58883	4110	3667	443

*Note:* All means are weighted by CPS-provided weights. Time Lost Index=Proportion of Working Time Lost due to Absences. Because ATUS is implemented 1 or 3 month after the end of CPS, the samples in this table exclude March, April, and May observations to make ATUS and CPS' respondents comparable. In addition, the number of observations for ATUS is more than those reported in Table 3 because some individuals in the ATUS participated into multiple CPS waves.

Table A11 The relationships between teacher absences and NEAP scores

	Math		Reading	
	(1)	(2)	(3)	(4)
Panel A: Grade 4 NEAP Scores				
Means	236.45 (8.91)		219.31 (7.21)	
Likelihood of Being Absent*100	0.011 (0.026)		-0.042 (0.029)	
Time Lost Index*100		-0.029 (0.038)		-0.108*** (0.038)
Observations	544	544	543	543
Adjusted-R <sup>2</sup>	0.940	0.940	0.904	0.905
Panel A: Grade 8 NEAP Scores				
Means	279.51 (9.24)		263.34 (6.55)	
Likelihood of Being Absent*100	0.024 (0.036)		-0.010 (0.024)	
Time Lost Index*100		-0.017 (0.051)		-0.012 (0.035)
Observations	540	540	538	538
Adjusted-R <sup>2</sup>	0.936	0.936	0.922	0.922

*Note:* The table reports the relationships between teacher absences and NEAP scores at the state level. The results indicate that teachers' likelihood of being absent has little impact on students' test scores. However, the time lost index or the proportion of teachers' weekly working time lost due to absences is negatively associated with student performance, especially on grade 4 reading scores. For each one percentage point of weekly working time spent on absences, the reading score will be reduced by 0.11 points. The correlations between teacher absence and student achievements in grade 4 are smaller than those in grade 8. Overall, the table suggests moderate evidence of the negative relationships between teacher absences and NEAP scores. All models include time and state fixed effects. Control variables include the percentage of students aged above and below average, the percentage of White, Black, and Hispanic students, and the percentage of female students. Robust standard errors are clustered at the state-level \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A12 Absence Gaps between Teachers and Other Workers Using ATUS Data

	All	Sel.	Nurses	Acco.	Soc.	Ed.
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Likelihood of Being Absent						
No controls	-0.037 (0.026)	-0.028 (0.033)	-0.034 (0.046)	-0.046 (0.055)	-0.044 (0.052)	0.027 (0.048)
Gender	-0.046 (0.027)	-0.028 (0.033)	-0.040 (0.046)	-0.037 (0.058)	-0.046 (0.052)	0.025 (0.048)
Demo and Job	-0.045 (0.027)	-0.008 (0.033)	-0.044 (0.050)	-0.009 (0.056)	-0.028 (0.052)	0.019 (0.049)
Public Sector	-0.105* (0.032)	0.005 (0.038)	-0.044 (0.063)	-0.031 (0.070)	-0.030 (0.055)	0.018 (0.049)
Panel B: Time Lost Index						
No controls	-0.011 (0.012)	-0.002 (0.015)	-0.017 (0.022)	-0.006 (0.023)	0.018 (0.016)	-0.002 (0.022)
Gender	-0.015 (0.012)	-0.002 (0.015)	-0.015 (0.023)	-0.013 (0.023)	0.019 (0.016)	-0.001 (0.022)
Demo and Job	-0.014 (0.012)	0.003 (0.014)	-0.019 (0.023)	-0.012 (0.024)	0.029 (0.019)	-0.005 (0.021)
Public Sector	-0.027 (0.015)	0.018 (0.019)	0.000 (0.033)	0.007 (0.037)	0.037 (0.024)	-0.001 (0.023)

*Note:* All=All College-Educated Workers including teachers, Sel.=Selected Professionals including Nurses, Accountants (Acco.), Social Workers (Soc.), Education Support Workers (Ed.). Time lost index= Proportion of Working Time Lost. Each coefficient is estimated using a separate regression. Estimates from models with no controls only include time, rotation month, and state-fixed effects and are served as the basic model. The basic models with no controls include region and time (measured by half year) due to the small sample size. Gender, demographic and job characteristics, and public sector employment are added gradually, and each estimate is reported in the table. Individual level controls include age, race (White or not), married, level of education (with a master's degree or not), and the number of children under five years old. Job-related controls for models with ATUS include having multiple jobs or not, hourly wage, weekly usual working hours, and dummy indicators indicating weekly working hours and hourly wages being missing. Robust standard errors and p-values are shown in parentheses and as stars \*  $p < 0.01$ , +  $p < 0.05$ .

## Appendix B Absence Reasons

The main reported reasons for being absent include temporary layoff (under 30 days), indefinite layoff (30+ days), slack work/business conditions, waiting for a new job to begin, vacation/personal days, own illness/injury/medical problems, childcare problems, other family/personal obligation, maternity/paternity leave, labor dispute, weather affected job, school/training, civic/military duty, does not work in the business, and other unlisted reasons.

The main reported reasons for not working full-time include slack work, business conditions, material shortage, plant or machine repairs, seasonal work, weather affected job, labor dispute, job started/ended during the week, new job started, job terminated, could only find part-time, not want full-time work, retired/SS limit on earnings, full-time work week under 35 hours, full-time peak season only, holiday, own illness, health/medical limitation, on vacation, vacation/personal day, too busy with the house, school, etc, child care problems, other family/personal obligations, school/training, civic/military duty, and other unlisted reasons.

In constructing dummy variables on absence, individuals are coded as being absent if they report the following reasons for being absent: vacation/personal days, own illness/injury/medical problems, child care problems, other family/personal obligation, maternity/paternity leave, school/training, and civic/military duty, or report the following reasons for not working fulltime: holiday, own illness, health/medical limitation, on vacation, vacation/personal day, too busy with house, school, etc, child care problems, other family/personal obligations, school/training, and civic/military duty.

In addition, for individuals who are coded as being absent in this study, their absences are categorized into five separate groups:

- Health-related absence (own illness/injury/medical problems, own illness, and health/medical limitation);
- Family-related absences (child care problems, other family/personal obligations, maternity/paternity leave, child care problems, other family/personal obligations);
- Absences due to vacation and personal days (vacation/personal days and on vacation);
- Other absences (school/training, civic/military duty, too busy with the house, school, etc).

## Appendix C The Construction of Always Teachers, Never Teachers, Teacher Leavers, and Teacher Entrants

Although we only rely on absence data in the 4th and 8th rotation months, the classification of individuals is based on the full working history to exclude individuals who might be teachers entrants or teacher leavers. We, thus, avoid measurement errors that might arise by classifying individuals using occupation information from two rotation months.

The following table shows how always teachers, never teachers, teacher leavers, and teacher entrants are classified.

1-3 Month	4 Month	5-7 Month	8 Month	Groups
Being a teacher for at least two months	Teaching	Being a teacher for at least two months	Teacher	Always teachers
Being a non-teacher for at least two months	Not teaching	Being a non-teacher for at least two months	Not Teacher	Never teachers
Being a teacher for at least two months	Teaching	Being a non-teacher for at least two months	Not Teacher	Teachers leavers
Being a non-teacher for at least two months	Not Teacher	Being a teacher for at least two months	Teaching	Teachers entrants

Our results are also robust to categorize always teachers, never teachers, teacher leavers, and teacher entrants based on the working history in the 4<sup>th</sup> and 8<sup>th</sup> rotation months shown below.

4 Month	8 Month	Groups
Teaching	Teacher	Always teachers
Not teaching	Not Teacher	Never teachers
Teaching	Not Teacher	Teacher leavers
Not Teacher	Teaching	Teacher entrants