

THE INFLUENCE OF ORGANIZATIONAL INCENTIVES ON
ABSENTEEISM: SICK LEAVE USE AMONG CORRECTIONAL WORKERS*

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Abstract

Absenteeism creates problems for organizations. The policies of the Civil Service Retirement System, available to federal workers hired before 1987, allow unused sick leave to be added to length of service when workers retire. The policies of the Federal Employees Retirement System, on the other hand, create a use or lose situation. Yearly data on sick leave, a measure of absenteeism, for employees at the Federal Bureau of Prisons were examined for 1994 through 2003. The results of multilevel analysis confirmed that different incentive structures of the two federal retirement systems produced differences in the use of sick leave. The analysis also demonstrated that the use of leave was impacted by differences in the “environment” at the respective prisons. Finally, some preliminary and rough cost figures are presented to give some idea of the financial costs associated with the greater leave associated with the newer federal retirement system.

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Unscheduled absences, often termed absenteeism, are associated with lower levels of organizational productivity (Dilts, Deitsch, & Paul, 1985; Harrison & Price, 2003; Huczynski & Fitzpatrick, 1989; Rhodes & Steers, 1990; Steers & Rhodes, 1978), and this is particularly true for correctional organizations which are labor-intensive. Approximately 80% of the costs of operating prisons over the life of a prison are for direct payments of wages and fringe benefits (Crants, 1991). In addition to the labor-intensive nature of prisons, correctional facilities have many mandatory posts, positions that must be filled regardless of whether the scheduled worker reports for duty or not. From prior discussions between the lead author and wardens at federal prisons, wardens report that most mandatory posts are custody positions that monitor inmate behavior. When unscheduled leave occurs, another worker must be scheduled to fill the post if it is mandatory. Not only are there managerial inefficiencies and costs associated with scheduling replacement workers, wardens noted that the posts are typically filled by workers who have already completed a normal shift (or work week) or by workers who would normally fill different functions in the prison, such as education or other prison programs. Under both replacement scenarios, the productivity of the agency is impacted as either overtime wages are paid to the replacement worker or a function of the prison is temporarily vacated. Neither is beneficial for the correctional organization in the long run.

Given the financial and organizational problems associated with absenteeism, management at correctional agencies would seem to have a continuing interest in monitoring and developing incentives to address the use of unscheduled leave, which usually takes the form of sick leave. Despite this interest, there are few published studies that empirically examined the antecedents of absenteeism in correctional agencies (Gross, Larson, Urban, & Zupan, 1994;

Lambert, 2001; Lombardo, 1981; Venne, 1997). A recent exception is a study of the antecedents of self-reports of absenteeism among workers at the Federal Bureau of Prisons (Lambert, Camp, Edwards, & Saylor, 2005). The study prepared by Lambert et al. built upon earlier work (Brooke, 1986; Brooke & Price, 1989; Nicholson, Brown, & Chadwick-Jones, 1976), and it indicated that self-reported absenteeism was related to individual factors, such as age and gender, as well as attitudinal measures, such as commitment to the organization and job satisfaction. The results suggested that the use of sick leave was influenced by factors not related to whether or not employees were ill. This suggests that sick leave could be influenced and perhaps manipulated by factors that may be under the control of correctional agencies. Nonetheless, the Lambert et al. study did not examine whether sick leave use, as an indicator of absenteeism, was influenced by different organizational incentives. This is an important practical concern as incentives are under the control of the organization and not a characteristic of the individuals employed by the organization.

The current analysis adds to the literature on the use of sick leave in particular, and absenteeism in general, by investigating whether the use of sick leave is influenced by different incentive structures. This analysis is unusual in that official records of sick leave were examined. The primary hypothesis tested was whether correctional workers employed under the Federal Employees Retirement System (FERS) use more sick leave than workers employed under the Civil Service Retirement System (CSRS). Although there are many differences between the two retirement systems, the difference that is most relevant for the present study pertains to the disposition of unused sick leave upon retirement.

Under the provisions of CSRS, unused sick leave days are counted toward time of service when an employee retires.¹ Beginning in 1987, all new employees were switched to the FERS system, and employees covered by CSRS were given the opportunity to switch to the new FERS system. Under FERS, unused sick leave simply vanishes when an employee retires. The two retirement systems apparently have quite different incentives built into them in terms of accumulating days of unused sick leave. A reasonable hypothesis is that CSRS workers are less likely to use sick leave than FERS workers because sick leave has additional value to CSRS workers. For CSRS workers, unused sick leave is an additional factor used in computing retirement benefits. This working hypothesis was tested with official personnel data for correctional workers at the Federal Bureau of Prisons (BOP).

Clearly, the present study has a very practical component to it for correctional administrators in general and administrators in the BOP in specific. Federal administrators have been known to question whether the FERS system creates an incentive to use sick leave in irresponsible ways. By irresponsible, the meaning is from the viewpoint of the organization and simply that the use of the sick leave could have been avoided. The BOP, for example, addressed this topic in a paper prepared for the executive staff of the BOP (Holt, 2003). Clearly, whether the existing organizational incentives influence the use of sick leave and the resulting productivity of the organization have clear management and policy implications.

Literature Review

¹ A good source of information that summarizes differences between the CSRS and FERS retirement systems can be found at http://www.easc.noaa.gov/hrd/hretgi_v2.htm. Readers are referred to this site in lieu of repeated references

Absenteeism is “nonattendance of employees for scheduled work when they are expected to attend” (Huczynski & Fitzpatrick, 1989). Because absenteeism involves nonattendance from scheduled work in terms of hours and days rather than minutes, it is distinguishable from being late or tardy to work (Rhodes & Steers, 1990). There are various reasons why a person may not attend work, such as an illness, family emergency, or just to have a day off from work. Thus, not all use of sick leave is for actual illnesses. It is estimated that between 36% and 50% of absences are because of sickness and other unavoidable circumstances, such as family illness or transportation problems (Careers, 2004; Rhodes & Steers, 1990). This means that other absences are due to avoidable reasons, such as to have a day off, to attend a social event, to sleep in, and so on. In a recent survey, 42% of wealthy households, 41% of college educated workers, and 43% of those less than 24 years of age admitted that they had pretended to be sick in order to avoid work (Lach, 1999). The major reason given in the survey was they just wanted a day off, followed closely by the need for a “mental health day.” This suggests that a sizable proportion of sick leave is because a person elects to be absent rather than must be absent from work.

The problem of getting employees to attend work is probably as old as work itself (Edwards & Whitson, 1993). Absenteeism is generally a problem for any organization that uses fixed work schedules (Williams & MacDermid, 1994). This is clearly the case for correctional organizations. Correctional staff absenteeism is costly. The direct costs include sick pay, fringe benefits, overtime to fill the position, and overstaffing (i.e., overstaffing is where an organization schedules additional workers to fill in for those employees who are absent). Indirect costs include disruptions, reduced productivity, loss of expertise and experience, management’s time to revise work assignments, administration costs to monitor and administer the absence program,

and morale of other employees (Lambert, 2001). Although absenteeism is detrimental to correctional organizations, it has not generated much research to date.

Only a handful of studies have examined the issue of correctional staff absenteeism. Although stress was the major focus of the study, Gross et al. (1994) found that Michigan female correctional officers had a higher use of sick leave as compared to their male counterparts. In a 2001 study, Lambert reviewed factors related to absenteeism among correctional staff. Among federal correctional workers, it was found that job satisfaction, organizational commitment, job stress, being overweight, gender, age, tenure, supervisory status, and education were associated with the use of sick leave (Lambert et al., 2005). Among correctional officers at the Auburn facility in New York, Lombardo (1981) indicated that job dissatisfaction was related to absenteeism, but he only briefly discussed the matter. Venne (1997) examined the impact of twelve hour shifts on Canadian prison guards and concluded that the shifts increased absenteeism. Although there has been little research on correctional staff absenteeism, there has been some research on employee absenteeism in other occupations.

Absenteeism is generally seen as the result of situational, contextual, and dispositional factors rather than an inherent trait (Martocchio & Jimeno, 2003). Organizations can push or pull employees to be absent. The work environment has been found to impact absenteeism, especially in terms of producing differing levels of job satisfaction and organizational commitment. “Absenteeism can be symbolic of deeper feelings of hostility or perceptions of inequitable treatment in the job situation. Absenteeism can be a way to ‘get back at’ the organization for a poor work environment, low pay, or other attributes of the job with which employees are dissatisfied” (Rhodes & Steers, 1990). Thus, absenteeism can, in a sense, be viewed as a pain-

avoidance response to a job that is causing dissatisfaction (Rhodes & Steers, 1990). There is empirical support for a negative association between job satisfaction and absenteeism in both non-correctional organizations (Farrell & Stamm, 1988; McShane, 1984; Popp & Belohlav, 1982; Sagie, 1998) and correctional organizations (Lambert et al., 2005). Organizational commitment has been theorized to be inversely related to absenteeism. “According to this view, an employee who is absent from work is consciously or unconsciously expressing negative attachment to the organization” (Sagie, 1998). Organizational commitment has been found to be associated with absenteeism in non-correctional organizations (Meyer, Stanley, Herscovitch, & Topolnysky, 2002; Mowday, Porter, & Steers, 1982; Sagie, 1998) and correctional organizations (Lambert et al., 2005).

Besides, trying to increase the job satisfaction and organizational commitment of staff, the literature suggests that organizations can try improve the ability of employees to attend work. Employees may not be able to attend work because of barriers, such as sickness, need to deal with family and personal matters, and transportation problems (Rhodes & Steers, 1990). Employee assistance and wellness programs have been linked to decreased rates of absenteeism (Johns, 2003; Schappi, 1988). In a meta-analysis, it was observed that voluntary employee health management programs were negatively associated with absenteeism (DeGroot & Kiker, 2003). Offering childcare has been linked to lower employee absences (Milkovich & Gomez, 1976). Likewise, flextime has been linked to lower rates of absenteeism (Dalton & Perry, 1981; Kim & Campagna, 1981; Narayanan & Nath, 1982). Conversely, increasing correctional officers’ shifts to 12 hours was linked to higher absenteeism (Venne, 1997). Finally, providing transportation for employees may lead to decreased use of sick leave (Rhodes & Steers, 1990).

In addition, organizations may turn to operant conditioning by providing punishments for being absent and rewards for attending work (Rhodes & Steers, 1990). Non-correctional research shows that interventions can be effective at reducing employee absenteeism (Johns, 2003). The issue of how to respond to employee absenteeism has a long history. In 1970, Nord argued that organizations had three choices, live with the problem, punish those who do wrong, or reward the desired behavior. Nord did not recommend punishment because it was not usually effective and was sometimes linked to undesirable side effects (Nord, 1970). Yet, punishment is a frequent response to employee absenteeism. In a survey of personnel managers, it was found that most believed punishment was the best approach to dealing with employee absenteeism, and most admitted that incentive programs were rarely used (Scott & Markham, 1982). “Discipline is the traditional way of using the stick, rather than the carrot, to improve attendance” (Schappi, 1988).

Incentives for not being absent are generally seen as reasons or pressures to attend work (Mowday et al., 1982). An employee may find the lack of incentives and reinforcers to attend work as a reason to be absent (Robins & Lloyd, 1983). There can be many different types of employee incentive programs to deal with worker absenteeism. Employers may use non-monetary rewards to encourage attendance. A recognition program in which quarterly citations were issued to employees at sewing plants was found to be associated with a significant decrease in job absences (Schappi, 1988). In another study, female employees at six sewing factories were sent a quarterly congratulatory card at the end of a work quarter if they had two or fewer absences. It was found that the recognition program significantly reduced absenteeism (Scott, Markham, & Robers, 1985). In a study of preschool employees, it was found that providing cash and other non-monetary rewards significantly reduced absenteeism (Robins & Lloyd, 1983).

More importantly, it was found that “employees preferred monetary to non-monetary incentives” (p. 175).

Organizations may also use many different types of monetary incentives to reduce absenteeism. There is generally a link between lottery reward systems and a reduction in absenteeism (Mowday et al., 1982). For example, it was found that a lottery incentive system was linked to decreased absenteeism among manufacturing employees (Pedalino & Gamboa, 1974). In a study of South African textile workers, it was found that providing a small cash award each week an employee who did not use sick leave resulted in a significant decline in employee absenteeism (Orpen, 1977). Similarly, nurses were informed that they would be entered into a cash lottery if they had not been absent during a three week period. It was found that the cash lottery incentive was associated with a significant decrease in absenteeism among the nurses (Stephens & Burroughs, 1978).

Dalton and Perry (1981) argued that there is extra encouragement for employees to be absent when there is no compensation for unused sick leave. Another incentive method would be to establish a “creditable service” plan in which unused sick leave is used to enhance the retirement pay of employees (Campbell, 1970). Under this approach, an employee who had 12 months of sick leave at the time of retirement would receive an additional year of service when calculating retirement pay. These types of plans are generally called buy-back plans. Unused sick leave is purchased by the employer back from the employee either at the end of the year or at retirement (Schappi, 1988). The employees are generally paid at a rate less than their normal pay for the unused sick leave (Schappi, 1988). By doing this, both the employer and employee wins. The employer wins because they obtained work from an employee at a rate generally less than they would have paid. The employee wins because they have received extra pay that they

would not have received if they had been absent from work. In a study of Kansas City workers, it was found that paying workers who quit or retired for unused sick leave resulted in a substantial decline in employee absenteeism (Educational Research Service, 1980). Although buy-back plans are often touted in the literature, their effect on employee absences has been rarely tested. Furthermore, a shortcoming of the “credible service” plan is that it may not discourage short-term employees (i.e., those who do not plan to retire from the correctional agency) from abusing sick leave.

Punishment for being absent, on the other hand, has not been frequently linked to increased attendance (Educational Research Service, 1980; Mowday et al., 1982; Nicholson et al., 1976), and often leads to less of an effect than do rewards (Arvey & Ivancevich, 1980; Landau, 1993). In a study of workers at a Southern clothing manufacturing plant, it was found that implementation of a stricter disciplinary system and a cash incentive program was associated with a decrease in employee absenteeism (Landau, 1993). Moreover, it was found that the cash reward system had a far greater impact on employee absenteeism than did the disciplinary system.

Finally, a pull for employees not to attend work can be the result of a culture of absence among worker groups which influences an individual's behavior. Conversely, a push for employees to attend work can also be the result of a culture of attendance. An absenteeism climate/culture is defined as "the set of shared understandings about absence legitimacy . . . and the established 'custom and practice' of employee absence behavior and its control" (Johns & Nicholson, 1982). This absenteeism climate/culture can range from one that stresses the use of sick leave regardless of the reason for being absent to one that discourages the use of sick leave except when necessary (Martocchio, 1994). Non-correctional research has found that organizations and units in organizations can have an absence culture which leads to increased absenteeism among the members (Rentsch & Steel, 2003; Sanders, 2004). Nevertheless, there has been little research on the effects of absenteeism culture/climates on employees.

Research Question

Correctional staff absenteeism is potentially costly and disruptive to correctional organizations. However, there has been very little research on correctional staff absenteeism. Absenteeism research in the organizational sciences has been largely conducted on private sector organizations, and the public sector research has excluded corrections, a critical omission. There is a need for more research on correctional staff absenteeism. Moreover, the correctional research to date has not examined the impact of incentives on correctional absenteeism. The few previous correctional studies looked at individual level antecedents of absenteeism, such as stress or job satisfaction (Gross et al., 1994; Lambert et al., 2005). Most of the research on the impact of incentives on employee absenteeism has been conducted on private, for profit, organizations. In public organizations, the issue of incentives for not using sick leave may be less important than they are for private businesses. In public organizations, there is far less

flexibility in adjusting salary for good or poor attendance. Therefore, there is a need to explore of the impact of incentives for attendance on public service employees.

In addition, there has been very little research on the impact of buy-back plans that allow unused sick leave to be counted in the calculation of retirement pay for any organizational type, much less correctional organizations. In addition, the limited research was generally done several decades ago. Therefore, there is a need to study whether buy-back plans have an impact on absenteeism.

In order to examine the impact of buy-back plans, the use of sick leave by federal correctional employees in two different retirement systems was studied. Specifically, FERS does not reward employees for unused sick leave. Under this system, sick leave becomes a “use it or lose it” benefit. Under CSRS, employees are rewarded for unused sick leave by counting the unused sick leave toward length of service when calculating retirement pay. The aim of the study was to see whether correctional staff in the two different retirement systems significantly differed in their level of being absent from work, Although controlling for other factors which could influence sick leave use. In addition, the study examined whether sick leave differed by prison, to see if an absenteeism culture/climate existed. Previous studies on absenteeism culture/climate only examined a few departments or organizations. This is a limitation in the literature. In this study, at least 77 prisons were examined every year for a ten-year period (there were 115 prisons by the final year) to see whether they differed in their level of sick leave used. In reality, some of the “prisons” were administrative office locations, but the overwhelming majority was actual facilities that incarcerated inmates. Finally, a rudimentary investigation into

the costs of sick leave by staff was calculated to help determine whether providing the incentive of a buy-back plan for unused sick leave under CSRS was worthwhile or not.

Data and Methods

The present study used an archive of official personnel data for all persons employed by the BOP during the calendar years 1994 through 2003. Archival data for earlier time periods were not available, and data for more current periods were not complete at the time of the analysis. The data were analyzed separately for each calendar year instead of treating the entire time period as one segment. This treatment of time allowed for an assessment of the stability of the effects for the independent variables. In particular, there was concern that the comparison between CSRS and FERS employees might become more disparate in the most current years as fewer CSRS employees remain in the system. Because no new employees have been able to enter the CSRS retirement system since 1987, those remaining employees covered by CSRS are increasingly older and more tenured than FERS employees. The concern was for the lack of overlap between the distributions for CSRS and FERS employees.

Multilevel models were used to separate the effects of individual characteristics and the practices of prisons in which employees work upon the use of sick leave (Goldstein, 1995; Raudenbush & Bryk, 2002). HLM Software version 5.05 was used to estimate the models (Raudenbush, Bryk, & Congdon, 2001). The nonlinear Poisson distribution with over-dispersion, which amounts to a negative binomial model, was used to deal with the nature of the dependent variable, a count of the number of sick days used. Prior analysis of self-report data at the BOP suggested that sick leave use was not dependent on the prison in which employees were employed (Lambert et al., 2005). Nonetheless, the nested nature of the working conditions at the BOP made an examination of the multilevel structure prudent.

The dependent variable, number of sick days of leave used, was transformed by taking the square root to mitigate the right skew of the observed data.² There were a small number of individuals with very large amounts of sick leave used. A host of independent variables were examined to determine how well they were associated with the use of sick leave. The variables that were of primary theoretical interest for the current analysis were related to the retirement system in which the study subjects were enrolled. Subjects were covered by either the CSRS or FERS retirement systems, and, as explained above, the different systems create different incentives for using sick leave. The first variable used to determine the effect of the incentive structures built into the different retirement systems was a dummy variable indicating which plan was active at the end of the year. This variable was used to assess the effect of the different incentive structures in any given year of analysis. In addition, a second variable was created to identify study participants who switched from the CSRS to the FERS retirement systems during the course of the study. This latter variable allowed for examination of whether behavior related to the use of sick leave changed after individuals changed from one system to another, at least as the data were analyzed here in cross-sections.

Other independent variables were included in the analysis. The importance of these variables for analyses of absenteeism has been discussed by others (Lambert et al., 2005). Because we do not focus upon these variables in the following discussion, they are included here mainly as controls. Including these variables lessens the likelihood of misspecifying the

² Technically, the transformation of the dependent variable was not necessary for this analysis because the negative binomial model corrected for the overdispersion in the count of sick days used. We thank one of the anonymous reviewers for this observation. The transformed variable was the legacy of prior univariate analyses not reported here. On the other hand, the substantive results obtained from negative binomial models are not sensitive to such transformations of the dependent variable.

statistical model. As described below, the control variables available for this study were numerous and contained some controls not used in prior studies. The control variables included gender of the respondent, whether the study participant was a supervisor, whether the participant was employed in Unicor (the trade name for the prison industry operated within the BOP) or correctional services (custody), the race of the respondent (Black, White, and other), whether the respondent was Hispanic,³ and whether the respondent retired, resigned, or was dismissed during the year under examination. Further controls were entered for education (at least a four-year college degree or not), age, tenure with the BOP, annual leave balance, and sick leave balance. Prior studies have not included controls for prior history of leave use. Finally, one interaction term was created to test whether CSRS employees in their final year of employment differed in the use of leave in ways not captured by the linear effects for CSRS and being in the final year of retirement. Employees in their final year of employment may use sick leave at rates not consistent with prior years as they disengage from the job. Particularly for CSRS employees, there is usually some amount of sick leave that does not convert to service time in retirement calculations.

A random-intercept mode of the following form was examined:

$\log(\lambda) = \gamma_{00} + \sum \beta X + r_{ij} + u_{0j}$ where λ is the rate of sick leave use. The difference between this equation and a fixed-effects Poisson model is that the intercept was expressed as a random coefficient. The intercept was set to be equal to a fixed portion (γ_{00}) plus the random term u_{0j} .

The random portion is the amount that each prison differs from the other prisons. For example, if

³ Hispanic ethnicity is coded separately from race for employees of the Federal Bureau of Prisons. Therefore, all employees have a value for both race and ethnicity that are exclusive of one another.

u_{0j} is positive, then that means that the prison in question pushed sick leave use to higher levels than expected after controlling for individual-level differences among the workers.

Data were missing even though the files analyzed are archives of personnel data. Especially in the earlier years, the data tended to be messy. By the end of the study period, though, missing data were around 1 to 2% of the total observations. Missing data were handled with listwise methods as there did not appear to be any systematic pattern to the missing data, at least as demonstrated by looking at descriptive statistics. For 1994 through 2003, the respective percentages of cases deleted in this manner were 14.9, 15.7, 12.9, 14.7, 8.4, 1.6, 3.3, 2.3, 1.4, and 1.5.

Findings

Univariate statistics for the primary variables are presented in Table 1. The Univariate results provide background information on the variables over the ten-year study period. Variables that pertain to operational concerns in the BOP, such as proportion of employees in correctional services, are not presented to retain the confidentiality of the information. On the other hand, data on sick leave use, retirement system, and social-demographic characteristics of the study subjects are presented. One factor to keep in mind is that the statistics presented do not pertain to characteristics of the BOP workforce at any given time or for the year-long period. These are totals for all workers who were employed during the respective years. For example, if a correctional officer retired from a position and the position was filled immediately, then that one position accounted for two study subjects for the year in question.

The data in Table 1 demonstrate that unadjusted sick leave use increased over the ten years of the study from 4 days on average in 1994 (2.02 squared is about 4) to around 8.4 days in 2003. Although many of the socio-demographic variables remained fairly constant across the study period, there were increases noted for average age and tenure. The proportion of the study subjects enrolled in the CSRS retirement system steadily declined over the ten-year period.

The results for the multilevel analyses are presented in Table 2. The table is long because the results of analyses for 10 separate years are reported. Only models with level-1 (individual-level) effects are presented to simplify reporting. Models using a host of potential variables that describe the prisons (level-2) in multilevel models were not consistently successful in identifying sources of variation across prisons. Although there were significant differences between prisons in the average amount of sick leave used, even after controlling for the types of workers employed there (see the significance of the u_{0j} term for each year in Table 2), it was not possible to unravel the sources for the differences. As such, the multilevel models analyzed were simple random-intercepts models, with only the random effect associated with each prison modifying the intercept of the model.

The reliability of ranking the prisons based upon prison-level effects upon sick leave use exceeded 0.70 in all years except for 1996. Even in 1996, the reliability value of 0.688 was very close to 0.70. A reliability value of 0.70 or larger is usually thought of as indicating a high degree of reliability in ranking prisons in terms of the average amount of sick leave used (or for other dependent measures), although the value of 0.70 or higher is a rule of thumb rather than a practice established by theorems or theory.

***** Insert Table 2 about here *****

Sick Leave Use by CSRS and FERS Employees Compared

Employees in the CSRS retirement system used less sick leave than FERS employees, all other things being equal (see Table 2). This result was consistent across all ten years examined. The size of the coefficients varied from one year to the next, with the smallest absolute value being -0.042 in 2003 and the largest absolute value being -0.281 in 1995. These coefficients are more meaningful when converted into the percentage reduction in sick leave used by CSRS employees. This was done with the simple transformation of taking the exponential of the coefficient, squaring this amount (sick leave was measured as the square root of the number of sick days used), subtracting one from this amount, and multiplying the result by 100. For 2003, the year when the difference between CSRS and FERS employees was least pronounced, CSRS employees used about 8% less sick leave than FERS employees. On the other hand, the most pronounced difference occurred in 1995 when CSRS employees used 43% less leave than FERS employees.

The analysis of sick leave was conducted for all BOP employees. However, the following discussion focuses upon correctional officers because correctional officers comprise about half of the workforce, and job category did influence sick leave use. In the models, correctional officers were identified as employees working in correctional services who were not supervisors. The overall amount of sick leave used by a correctional officer under the FERS system was 8.75 days in 2003, holding other independent variables at either the BOP average for 2003 or a value of 0.⁴ This means that an otherwise similar employee in the CSRS retirement system used 8.05

⁴This means that the correctional officer was male, was not a Unicolor employee, was of other race than black or White, was non-Hispanic, did not resign or retire during the year, was not a college graduate, was 38.5 years of age, had 8.7 years of tenure, had a sick leave balance of 36.26 days, and had an annual leave balance of 15.41 days. Any combination of characteristics could have been used, but the difference between CSRS and FERS employees would have still been 8.1% in 2003.

days. Although this amount was not necessarily impressive for comparing individual workers, the importance becomes more evident for the nearly 16,000 correctional officers employed by the BOP in 2003, the vast majority of whom were covered by the FERS retirement system (15,045 correctional officers covered by FERS as compared to 485 under CSRS).

The largest relative differential between CSRS and FERS correctional officers in the use of sick leave was noted in 1995. CSRS employees used about 43% less sick leave than otherwise similar FERS employees. Because the average amount of sick leave used in 1995 by a typical FERS employee was 6.68 days, this meant that otherwise similar CSRS workers used only 3.81 days. In short, the differences between CSRS and FERS employees which ranged between 8 and 43% were substantively as well as statistically significant (see Figure 1 for an illustration using correctional officers). In addition to suggesting that the differential between CSRS and FERS employees became smaller over the ten year period, the information in Figure 1 also demonstrates that sick leave use increased for both CSRS and FERS employees over this time period. The rate of change in sick leave use was greatest for the CSRS employees, especially in more recent years, thus demonstrating how the gap narrowed over the ten year period.

***** Insert Figure 1 about here *****

A variable was created to represent the interaction between the CSRS retirement system and the final year of employment (labeled “CSRS-retire interaction” in Table 2). The variable tested whether CSRS employees used an atypical amount of sick leave in the year before they retired. Despite having the incentive to save sick leave for service credit in retirement calculations, not every hour of unused sick leave converts directly toward service time. The CSRS-retire interaction variable indirectly tested whether CSRS employees “burn” the sick leave that does not count toward retirement calculations. From the results in Table 2, it does not appear

to be the case that CSRS employees use an inordinate amount of sick leave in their final year. The coefficient for the effect was only significant in two of the ten years, and the effect was positive in 2002 (used more sick leave than otherwise expected) and negative in 1995 (used less sick leave than otherwise expected). Because the effect was not consistent and only appeared in two of ten years, little weight should be given to the findings for this effect.

CSRS to FERS Converters

Examining whether individuals who changed retirement systems used more or less sick leave was only possible for the calendar years 1999 through 2003. Most of the changes from the CSRS to the FERS system occurred in late 1998 and early 1999 for the employees in this analysis. The individuals who later converted systems, though, were identified for the years 1998 and earlier. The coefficients from these earlier years provide insight into whether the individuals who later changed systems differed from employees who remained in CSRS in their sick leave patterns *before* making the change. It is important to keep in mind, though, that even though the same variable name was used for all years in Table 2, the coefficients have quite different meanings for the years 1999 through 2003 than for the years 1994 through 1998. For example, in the statistical models prior to 1999, the CSRS to FERS converters received a value of 1 on that dummy variable and a value of 1 on the dummy variable indicating whether or not they were in the CSRS retirement system. CSRS participants who did not convert only had a value of 1 for the CSRS dummy variable. The comparison between CSRS participants who later converted with CSRS participants who did not convert was simply the value of the dummy variable for the conversion. After 1999 and the conversion, however, it was a little more complicated to compare CSRS participants who converted from those who did not. For the latter time period, the

converters now had a value of 0 for the dummy variable indicating retirement system as they were now in FERS and a value of 1 for the conversion dummy variable. For the CSRS participants who did not convert, their values on the variables were unchanged and opposite those of the converters (0 for conversion and 1 for CSRS participant). To compare the groups now, the proper comparison is to take the values for the dummy variables for those who converted and subtract that amount from the values of the dummy variables for CSRS participants. This comparison reduces to the value for the converter dummy variable minus the value for the dummy variable indicating CSRS participation.

Because the values for the CSRS to FERS variable presented in Table 2 do not directly compare CSRS employees who switched retirement systems to those who remained in CSRS for the years 1999 through 2003, a direct comparison was calculated from the results in Table 2. These results are presented in Table 3. The results in Table 3 are directly comparable to the results in Table 2 for the “CSRS to FERS” dummy variable for the years 1994 through 1998. First, it is useful to look at the information presented in Table 2. The effect of comparing employees who switched from CSRS to FERS with those who remained in CSRS was fairly consistent between 1994 and 1998. As can be seen in the results, the CSRS to FERS switchers used less sick leave than employees who remained in CSRS (1996 and 1998) or they did not differ from them in a statistically significant manner (1994, 1995, and 1997). Even for the years when there was no statistically significant difference, the CSRS employees who converted used less leave, and the results were near statistical significance in 1994 and 1997.

***** Insert Table 3 about here *****

The results presented in Table 3, however, show that the CSRS switchers consistently used more sick leave than employees who remained in the CSRS system after they made the

change to the FERS system. The coefficients were all positive and statistically significant with the exception of 1999. In 1999, the result was not statistically significant, but the result was in the direction of the other years and near statistical significance. The results also suggest that the difference between individuals who left the CSRS system and those who remained grew larger over the five-year time period. In 1999, those who switched from the CSRS to FERS systems used a little less than 8% more sick leave than those who remained in the CSRS system. By 2003, this difference increased to 27.6%. Again, the percentage differences were calculated by taking the column representing the exponential of the coefficient, squaring this amount, subtracting 1, and multiplying by 100.

The result that individuals who switched retirement systems used more sick leave than those who remained in the CSRS system reinforces the perception that employees in the CSRS system have a stronger incentive to not use sick leave days than employees in the FERS system (see Table 3). This finding stands even though FERS converters initially used comparable or less leave than CSRS employees before they converted to FERS (see Table 2). By the end of the time period examined, CSRS to FERS converters actually used more sick leave than those employees who remained in the CSRS system for the entire time period.

Institution Differences

One of the least expected findings of the current study is that there were differences across prisons in the use of sick leave even after controlling for differences in the types of employees working in the institutions. In a different report on BOP employees that used self-report data taken from the Prison Social Climate Survey, prison differences were not found to affect how much sick leave employees reported on average (Lambert et al., 2005). The prison

effect found here suggests that some factor(s) of the work environment at the institution not captured in the current statistical model contributed to the decisions made by staff to use sick leave. These factors could include management practices, labor-management relations, and existence of an absence climate/culture. This finding is important as the institutional differences can be thought of as performance measures if competing explanations not related to performance can be ruled out. Clearly, this is an area that requires further investigation.

Effects of Other Variables

Most of the other variables included in the model of sick leave use were included more as controls rather than as explanatory variables. In other words, the controls were entered because there was reason to believe that they were associated with the use of sick leave, but the present analysis was not directly concerned with maximizing the ability to measure the effects of the control variables.

There were some interesting results noted for some of the control variables. Supervisors, for example, were less likely to use sick leave than non-supervisors for all years of the analysis. Although this result was expected, it provides some corroboration that the model was properly specified. For every year except for 2002 and 2003, workers in correctional services were less likely to use sick leave than other workers not part of correctional services or Unicolor. Unicolor workers, on the other hand, were more likely to use sick leave, at least in 1994-1995 and 2001-2003. Workers in the year before their retirement were more likely to use leave in seven of the ten years examined. The only years where this effect was not found to be statistically significant were 1996, 1997, and 2002. Other variables had effects that made sense. Older workers used more sick leave than younger workers, and workers with more tenure used more sick leave.

Race, on the other hand, did not have an effect in most years examined. Where effects for race were noted, the effects were not consistent from one year to the next.

Cost Implications

It is not the purpose of the present study to present a cost-benefit analysis of whether the incentives to minimize sick leave use were effective. Although such an analysis is interesting, it is moot as Congress already passed the legislation that enacted FERS. Instead, the present analysis provides approximations of the yearly costs associated with the different incentive structures. The numbers are presented only for correctional officers using the same definition of typical worker described above for Figure 1. Correctional officers are the largest group of employees in the BOP, accounting for approximately half of all workers. Presenting results for the typical worker greatly simplifies the presentation without giving a false impression of the cost issues.

Table 4 provides information for the yearly costs per correctional officer covered under the FERS system who were of the typical definition used above. Although more than 15,000 correctional officers in 2003 were covered by FERS, they were all obviously not of the same demographic characteristics as presented in this table. Nonetheless, the table presents numbers for a fairly typical combination of characteristics. Different scenarios are presented in Table 4 that are based upon how much of a loss in productivity is tolerable to the agency. A 100% loss in productivity implies that the agency made no effort to cover the work that would have been done by correctional officers on days that they used sick leave. On the other hand, the scenario representing 0% lost productivity meant that the agency used replacement workers for every correctional officer that was sick.

***** Insert Table 4 about here *****

Many posts vacated by sick correctional officers were covered by the agency through various techniques. The most common means was to use voluntary or mandatory overtime to cover the posts. Other means included shifting workers from other duties to cover correctional officer posts. Because empirical data were not available to provide an estimate of what proportion of positions are covered when correctional officers are on sick leave, several scenarios are presented, 100% lost productivity, 75% lost productivity (where 25% of the vacated posts were covered by a worker being paid overtime wages), 50% lost productivity (half of the vacant posts were covered by a worker being paid overtime wages), 25% lost productivity, and 0% lost productivity.⁵ Posts covered by workers who normally perform other duties were also factored into the table as this scenario represents lost productivity. Shifting a worker to other duties simply transfers the lost productivity from one function to another.

Given results derived from the findings reported in Table 2, it was possible to calculate how much the agency spent for each FERS worker in the calendar years 1994 through 2003 by taking the estimated leave multiplied by the hourly wage rate in 2003. The wage rate used was a weighted average between a grade 7 and grade 8 (step 6) as the average grade for correctional officers in 2003 was 7.59. This amounted to \$20.42 per hour. The same wage was applied to all years prior to 2003 to create an amount standardized on 2003 wages. As shown in Table 4, assuming 100% lost productivity, the BOP spent \$1,430.12 for each “typical” correctional officer in 2003 that was covered by the FERS retirement system. Again, this is not an average amount, instead it is the amount for a combination of characteristics that was fairly typical of

⁵It is recognized that 100% coverage of positions does not necessarily translate into percent lost productivity as there are inefficiencies generated by the use of replacement workers. However, this usage of terms is used in the current

correctional officers in 2003. Because there were more than 15,000 correctional officers covered by FERS, the total amount of money spent to cover the wages of workers on sick leave was quite large, probably at least \$15 million. The amount spent per correctional officer, standardized on 2003 wage rates, was somewhat less for most years as the amount of leave taken was somewhat less in those years, with the exceptions of the peak years of 1999 and 2000 (see Figure 1).

Table 4 presents a column indicating the savings that would have accrued to the BOP during the different years if the FERS employees had used sick leave at a rate comparable to CSRS employees in each year. As can be seen, the savings were most modest in 2003 when a typical FERS employee would have used 8% less leave. Assuming 100% lost productivity, the estimated savings for the agency were \$115.23 in salary coverage for the year 2003. For other years, the amounts were much higher, rising to over \$400 per typical correctional officer in (100% lost productivity). The amounts for 100% lost productivity, where there is no coverage of positions vacated by absent workers, arise solely from the additional payment of sick leave wages to absent FERS workers for the additional amount of sick leave used by them during the year in comparison to CSRS employees.

Table 4 also presents the other scenarios where some or all of the lost productivity was covered by paying workers overtime to cover the vacated posts. Obviously, the greater the coverage of posts with workers being paid overtime wages, the greater the costs to the agency as for these scenarios the agency pays the wages to the workers on sick leave as well as the overtime wages to the workers filling in for the sick correctional officers. Under the maximum

discussion for convenience.

scenario of 100% coverage (no lost productivity), the agency spent \$3,575 per correctional officer in 2003 for the use of sick leave by the typical correctional officer. This figure is too high, and it is likely that the true figure falls somewhere in the 50 to 25% lost productivity numbers, where the costs in 2003 per typical correctional officer ranged between \$2,502 and \$3,039. The corresponding savings for these scenarios per typical correctional officer ranged between \$201 and \$245 for 2003. Again, considering that there were 15,000 correctional officers covered by FERS in 2003, the total amount was somewhere in the vicinity of \$3,000,000 or more if FERS employees used sick leave in a manner comparable to CSRS employees. As the results in Table 4 suggest, the potential savings in 2003 per typical correctional officer were extremely modest compared to other years where the savings were often 4 times the savings noted for 2003.

In short, the numbers reported in Table 4 suggest that different incentive structures do indeed influence choices made about using sick leave. The actual dollar amounts involved in paying for sick leave under the different incentive schemes can be substantial when multiplied over the number of affected employees in any given year. One of the interesting questions unanswered by the data presented in Tables 1 and 3, though, was why the patterns of sick leave used by CSRS and FERS employees became more similar over the ten year period.

Discussion and Conclusion

This study provides evidence that structural incentives have an impact upon absenteeism. In other words, the results provide support for operant conditioning. For the correctional staff that were rewarded for unused sick leave, absenteeism was lower than for the group of staff that were not. This indicates that by providing a positive reinforcer by counting unused sick leave toward length of employment for the purpose for retirement encourages correctional staff to report to work more often. Clearly, some sick leave is scheduled, so the correlation between the

two is less than perfect. In the BOP, the CSRS retirement system provided an incentive for workers to use sick leave more sparingly than workers covered by FERS. This conclusion was demonstrated empirically in two ways. First, the effect of the dummy variable for CSRS participation was significant and negative for all years between 1994 and 2003, although the effect became substantively smaller in out years. Second, workers who converted from the CSRS system to the FERS system in late 1998 and early 1999 used more sick leave than employees who remained in the CSRS system. Prior to the conversion, these same workers used the same or less sick leave than workers who remained in the CSRS system after 1999. Although any scientific finding is tentative, these findings strongly suggest that the apparent difference between the incentive systems in the CSRS and FERS systems regarding the use of sick leave is translated into actual differences in behaviors of CSRS and FERS employees.

The possible financial ramifications of the differences in the use of sick leave were explored in a very preliminary fashion. There was no attempt to present a cost-benefit analysis to determine whether it was more cost effective to discourage sick leave by allowing unused sick leave to convert to service time upon retirement. It could very well be the case that the new retirement system, which certainly generates more upfront costs than the CSRS retirement system, actually pays off when compared to the long-term costs associated with higher retirement benefits. We leave that analysis to those more qualified.

The results have policy implications. The vast majority of correctional agencies probably offer employees sick leave, and like most other organizations, pay employees for sick leave at the employee's regular pay rate. Each correctional agency must develop a response to employee absenteeism. If nothing is done, than it is doubtful there will ever be a decrease in employee

absenteeism. Many correctional administrators may object to rewarding employees for showing up for work, something they were paid for in the first place. This may be a valid point, but it is not an effective way to reduce correctional staff use of sick leave. Before trying to curb worker absences through punishments, it is argued that correctional organizations should use reward systems to increase staff attendance. Rewards systems are often used to reward employees; why not for attendance? There is also the issue of whether or not incentives for reducing use of sick leave are cost effective. More importantly, “for rewards to be effective, they must be attainable, tied directly to attendance, and be valued by the employees under the system (Steers & Rhodes, 1978). Research suggests that incentive programs formed jointly with employees tend to be more effective than programs imposed by administrators (Mowday et al., 1982; Robins & Lloyd, 1983). If a reward system is used, it is critical that staff be made aware of the reward system and its purpose. Moreover, staff should have a say in the creation and implementation of the incentive system. Under the CSRS system, there was a significant delay in reinforcement for positive behavior of attending work. It is possible that there could have been even a greater reduction in use of sick leave if there was a more immediate reward, such as annually or even monthly. Thus, correctional policy makers should examine other incentive methods. Finally, policy makers must decide in the end if incentive programs are efficient ways to address the issue of absenteeism. Even though an incentive program may be effective does not mean it is the most efficient method to deal with a problem.

It is important to realize there will always be employee absenteeism, even with incentive programs. Not all employee absences are avoidable. In addition, sometimes it is in the organization’s benefit that an employee be absent (Williams & MacDermid, 1994). If the employee is sick with a contagious illness, it is not in the best interest of the organization for the

employee to come to work. If such occurs, there is a good likelihood that other employees will become ill, ultimately reducing the productivity of the organization. This is a real concern in correctional institutions, where there are many people in close proximity. Contagious illnesses can spread quickly, with the potential for an epidemic. Even if a worker is not sick, being absent may help with his/her mental health by allowing them to escape temporarily from a stressful situation (Mowday et al., 1982). Working in corrections has been presented in the literature as a stressful occupation (Gross et al., 1994; Triplett, Mullings, & Scarborough, 1996). Thus, Although incentive programs may reduce correctional staff absenteeism, it will not end it.

An interesting finding of the current analysis was that the prisons could be ranked reliably on the institutional contribution to the use of sick leave. The use of sick leave was dependent upon some feature or features of the prisons that were not uncovered here. This finding needs to be further investigated. It seems likely that management has some ability to create local climate, independent of the overall policies of the agency, such as the incentives built into CSRS and FERS, which encourage and discourage the use of sick leave. Analysis at this intermediary level between the characteristics of workers using sick leave and organizational policies such as the incentive structures analyzed here is largely nonexistent in the literature.

More work remains to be done to understand other aspects of sick leave use at the individual and organizational levels as well. For instance, the rise in the amount of sick leave used, by both workers covered under the FERS and CSRS systems, was not examined in this study. One possible explanation is that the Family and Medical Leave Act of 1993 opened the doors to increased leave use by federal workers. However, because the data examined here do not extend prior to enactment of the act, it was not possible to empirically evaluate this

explanation. Also, a longitudinal understanding of the use of sick leave over a period of years by individuals needs to be provided as well as an understanding of the frequency of sick leave. The current report only analyzed the duration of sick leave, but it did not look at others issues, such as the frequency of sick leave use. It is probably easier for managers to plan around an employee taking an extended period of sick leave (say 40 hours), especially if the leave use is known ahead of time, than it is for an employee using 40 hours of sick leave spread over five different and non-contingent days without prior notice. Hopefully, future analyses will address all of these issues in ways that permit for improved organizational performance while at the same time preserving the rights of employees to make legitimate use of unexpected sick leave.

Table 1. Univariate Statistics for Key Variables

		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Days absent†	Mean	2.02	2.24	2.46	2.52	2.60	2.75	2.76	2.71	2.80	2.89
	SD	1.47	1.48	1.46	1.45	1.45	1.45	1.50	1.46	1.42	1.41
Age	Mean	36.31	36.34	36.80	37.22	37.65	38.07	38.25	38.50	38.89	39.41
	SD	7.52	7.42	7.29	7.31	7.29	7.29	7.37	7.41	7.49	7.53
CSRS plan	Mean	0.22	0.19	0.18	0.16	0.14	0.12	0.10	0.09	0.06	0.06
	SD	0.42	0.40	0.38	0.37	0.34	0.32	0.30	0.28	0.25	0.24
Tenure	Mean	6.80	6.82	7.24	7.66	8.05	8.45	8.59	8.78	9.12	9.60
	SD	5.88	5.91	5.89	5.94	5.97	5.97	6.09	6.20	6.30	6.38
Female	Mean	0.27	0.27	0.27	0.27	0.27	0.28	0.28	0.28	0.28	0.28
	SD	0.44	0.44	0.44	0.44	0.45	0.45	0.45	0.45	0.45	0.45
Hispanic*	Mean	0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.11
	SD	0.29	0.30	0.30	0.30	0.30	0.30	0.31	0.31	0.31	0.31
Black*	Mean	0.19	0.19	0.19	0.19	0.20	0.20	0.21	0.21	0.21	0.21
	SD	0.39	0.39	0.39	0.40	0.40	0.40	0.41	0.41	0.41	0.41
White*	Mean	0.69	0.68	0.68	0.67	0.67	0.66	0.65	0.64	0.64	0.65
	SD	0.46	0.47	0.47	0.47	0.47	0.47	0.48	0.48	0.48	0.48
Other race*	Mean	0.12	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.14
	SD	0.33	0.33	0.34	0.34	0.34	0.34	0.35	0.35	0.35	0.35
College Grad*	Mean	0.32	0.31	0.31	0.31	0.30	0.30	0.30	0.29	0.29	0.29
	SD	0.47	0.46	0.46	0.46	0.46	0.46	0.46	0.45	0.45	0.45
N		28015	30477	31089	32075	32664	33046	34379	35482	36297	35843

Notes: SD stands for standard deviation.

N represents the number of cases in the study. It does **not** represent the number of employees working for the Bureau of Prisons at any one time point during the year or an average for the year. That number would be smaller.

†Days absent is skewed to the right and was transformed by taking the square root to give a better estimate of the mean.

*The mean represent the proportion of staff with this characteristic. Other variables used in the multivariate analysis are not reported in this table to protect the confidentiality of Bureau of Prisons' operations, such as the proportion of staff working in correctional services.

Table 2. Results for Days of Sick Leave Used (Square Root of) – Multilevel Model

Variable	2003			2002		
	Coeff.	% change	Prob.>z	Coeff.	% change	Prob.>z
Intercept	1.203		0.000	1.208		0.000
Female*	-0.014	-2.8	0.009	-0.008	-1.6	0.283
CSRS (FERS comparison)	-0.042	-8.1	0.000	-0.081	-15.0	0.000
Supervisor*	-0.058	-11.0	0.000	-0.082	-15.1	0.000
Correctional Services*	-0.003	-0.6	0.610	-0.014	-2.8	0.080
Unicor	0.023	4.7	0.050	0.038	7.9	0.015
Black*	-0.005	-1.0	0.683	0.025	5.1	0.203
Hispanic*	-0.006	-1.2	0.692	0.012	2.4	0.571
White*	-0.001	-0.2	0.951	0.025	5.1	0.186
Resign*	-0.276	-42.4	0.000	-0.362	-51.5	0.000
Retire*	0.134	30.7	0.000	-0.001	-0.2	0.976
Involuntary Removal (IR)*	-0.369	-52.2	0.000	-0.279	-42.8	0.001
IR during Probation Year*	-1.471	-94.7	0.000	-0.963	-85.4	0.000
CSRS to FERS*	0.081	17.6	0.000	0.010	2.0	0.736
College Graduate	-0.022	-4.5	0.000	-0.016	-3.3	0.032
Age (centered)	0.002	0.4	0.000	0.002	0.4	0.000
Tenure (centered)	0.036	7.5	0.000	0.042	8.8	0.000
CSRS-Retire Interaction	-0.044	-8.4	0.213	0.162	38.3	0.005
Annual Leave Balance	0.002	0.4	0.000	0.002	0.4	0.000
Sick Leave Balance	-0.004	-0.8	0.000	-0.005	-1.0	0.000
Reliability of u_{0j}	0.750			0.804		
χ^2 for u_{0j}	499.098			308.823		
Significance of u_{0j}	0.000			0.000		
N employees	35,305			36,028		
N prisons	115			114		

* 1=Yes

Abbreviations Used:

CSRS – Civil Service Retirement System

FERS – Federal Employees Retirement System

Notes: 1 An additional variable testing a BOP program was originally included in the models. The variable was not statistically significant in the models and was not reported at the request of the Federal Bureau of Prisons.

- 2 Even though the same variable name was used to identify CSRS to FERS converters in all years, the coefficients have different meanings for the years 1999 through 2003 than for the years 1994 through 1998. For the latter time period, the coefficients represent whether individuals who switched to FERS differed from individuals who were in FERS all along. For the earlier period, the coefficients indicate the differences between CSRS employees who later switched systems and CSRS employees who did not convert to FERS.

Table 2. Results for Days of Sick Leave Used (Square Root of) – Multilevel Model

Variable	2001			2000		
	Coeff.	% change	Prob.>z	Coeff.	% change	Prob.>z
Intercept	1.174		0.000	1.260		0.000
Female*	-0.008	-1.6	0.197	-0.016	-3.1	0.009
CSRS (FERS comparison)	-0.108	-19.4	0.000	-0.167	-28.4	0.000
Supervisor*	-0.098	-17.8	0.000	-0.094	-17.1	0.000
Correctional Services*	-0.024	-4.7	0.000	-0.035	-6.8	0.000
Unicor	0.034	7.0	0.005	0.002	0.4	0.886
Black*	0.032	6.6	0.032	-0.019	-3.7	0.221
Hispanic*	0.039	8.1	0.015	0.000	0.0	0.994
White*	0.035	7.3	0.012	0.005	1.0	0.703
Resign*	-0.251	-39.5	0.000	-0.196	-32.4	0.000
Retire*	0.171	40.8	0.000	0.144	33.4	0.000
Involuntary Removal (IR)*	-0.285	-43.4	0.000	-0.407	-55.7	0.000
IR during Probation Year*	-1.228	-91.4	0.000	-1.251	-91.8	0.000
CSRS to FERS*	-0.044	-8.4	0.039	-0.129	-22.7	0.000
College Graduate	-0.018	-3.7	0.003	-0.031	-6.4	0.000
Age (centered)	0.004	0.8	0.000	0.004	0.8	0.000
Tenure (centered)	0.047	9.9	0.000	0.052	11.0	0.000
CSRS-Retire Interaction	-0.038	-7.3	0.375	-0.074	-13.8	0.091
Annual Leave Balance	0.003	0.6	0.000	0.003	0.6	0.000
Sick Leave Balance	-0.005	-1.0	0.000	-0.005	-1.0	0.000
Reliability of u_{0j}	0.857			0.750		
χ^2 for u_{0j}	788.831			520.716		
Significance of u_{0j}	0.000			0.000		
N employees	34,657			33,233		
N prisons	111			108		

* 1=Yes

Abbreviations Used:

CSRS – Civil Service Retirement System

FERS – Federal Employees Retirement System

Notes: 1 An additional variable testing a BOP program was originally included in the models. The variable was not statistically significant in the models and was not reported at the request of the Federal Bureau of Prisons.

2 Even though the same variable name was used to identify CSRS to FERS converters in all years, the coefficients have different meanings for the years 1999 through 2003 than for the years 1994 through 1998. For the latter time period, the coefficients represent whether individuals who switched to FERS differed from individuals who were in FERS all along. For the earlier period, the coefficients indicate the differences between CSRS employees who later switched systems and CSRS employees who did not convert to FERS.

Table 2. Results for Days of Sick Leave Used (Square Root of) – Multilevel Model

Variable	1999			1998		
	Coeff.	% change	Prob.>z	Coeff.	% change	Prob.>z
Intercept	1.311		0.000	1.302		0.000
Female*	-0.014	-2.8	0.022	-0.007	-1.4	0.270
CSRS (FERS comparison)	-0.154	-26.5	0.000	-0.191	-31.8	0.000
Supervisor*	-0.085	-15.6	0.000	-0.088	-16.1	0.000
Correctional Services*	-0.036	-6.9	0.000	-0.043	-8.2	0.000
Unicor	-0.008	-1.6	0.531	0.016	3.3	0.240
Black*	-0.039	-7.5	0.009	-0.01	-2.0	0.564
Hispanic*	-0.028	-5.4	0.082	-0.016	-3.1	0.361
White*	-0.029	-5.6	0.039	-0.003	-0.6	0.869
Resign*	-0.183	-30.6	0.000	-0.207	-33.9	0.000
Retire*	0.082	17.8	0.046	0.12	27.1	0.016
Involuntary Removal (IR)*	-0.233	-37.2	0.001	-0.425	-57.3	0.000
IR during Probation Year*	-1.528	-95.3	0.000	-1.904	-97.8	0.000
CSRS to FERS*	-0.123	-21.8	0.000	-0.199	-32.8	0.000
College Graduate	-0.045	-9.4	0.000	-0.035	-7.3	0.000
Age (centered)	0.005	1.0	0.000	0.006	1.2	0.000
Tenure (centered)	0.051	10.7	0.000	0.052	11.0	0.000
CSRS-Retire Interaction	-0.072	-13.4	0.124	-0.055	-10.4	0.314
Annual Leave Balance	0.003	0.6	0.000	0.002	0.4	0.000
Sick Leave Balance	-0.006	-1.2	0.000	-0.006	-1.2	0.000
Reliability of u_{0j}	0.794			0.788		
χ^2 for u_{0j}	582.407			523.820		
Significance of u_{0j}	0.000			0.000		
N employees	32,516			29,920		
N prisons	106			98		

* 1=Yes

Abbreviations Used:

CSRS – Civil Service Retirement System

FERS – Federal Employees Retirement System

Notes: 1 An additional variable testing a BOP program was originally included in the models. The variable was not statistically significant in the models and was not reported at the request of the Federal Bureau of Prisons.

2 Even though the same variable name was used to identify CSRS to FERS converters in all years, the coefficients have different meanings for the years 1999 through 2003 than for the years 1994 through 1998. For the latter time period, the coefficients represent whether individuals who switched to FERS differed from individuals who were in FERS all along. For the earlier period, the coefficients indicate the differences between CSRS employees who later switched systems and CSRS employees who did not convert to FERS.

Table 2. Results for Days of Sick Leave Used (Square Root of) – Multilevel Model

Variable	1997			1996		
	Coeff.	% change	Prob.>z	Coeff.	% change	Prob.>z
Intercept	1.290		0.000	1.294		0.000
Female*	0.013	2.6	0.066	0.043	9.0	0.000
CSRS (FERS comparison)	-0.195	-32.3	0.000	-0.203	-33.4	0.000
Supervisor*	-0.092	-16.8	0.000	-0.107	-19.3	0.000
Correctional Services*	-0.057	-10.8	0.000	-0.08	-14.8	0.000
Unicor	0.017	3.5	0.239	0.021	4.3	0.167
Black*	-0.013	-2.6	0.481	0.002	0.4	0.913
Hispanic*	-0.001	-0.2	0.967	0.036	7.5	0.073
White*	0.001	0.2	0.932	0.02	4.1	0.261
Resign*	-0.152	-26.2	0.000	-0.327	-48.0	0.000
Retire*	0.077	16.6	0.172	-0.041	-7.9	0.529
Involuntary Removal (IR)*	-0.533	-65.6	0.000	-0.357	-51.0	0.000
IR during Probation Year*	-1.628	-96.1	0.000	-1.652	-96.3	0.000
CSRS to FERS*	-0.044	-8.4	0.058	-0.063	-11.8	0.009
College Graduate	-0.052	-11.0	0.000	-0.058	-12.3	0.000
Age (centered)	0.005	1.0	0.000	0.003	0.6	0.000
Tenure (centered)	0.054	11.4	0.000	0.06	12.7	0.000
CSRS-Retire Interaction	0.055	11.6	0.375	0.045	9.4	0.527
Annual Leave Balance	0.002	0.4	0.000	0.002	0.4	0.000
Sick Leave Balance	-0.006	-1.2	0.000	-0.006	-1.2	0.000
Reliability of u_{0j}	0.754			0.688		
χ^2 for u_{0j}	409.598			307.163		
Significance of u_{0j}	0.000			0.000		
N employees	27,351			27,083		
N prisons	89			86		

* 1=Yes

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Notes: 1 An additional variable testing a BOP program was originally included in the models. The variable was not statistically significant in the models and was not reported at the request of the Federal Bureau of Prisons.

2 Even though the same variable name was used to identify CSRS to FERS converters in all years, the coefficients have different meanings for the years 1999 through 2003 than for the years 1994 through 1998. For the latter time period, the coefficients represent whether individuals who switched to FERS differed from individuals who were in FERS all along. For the earlier period, the coefficients indicate the differences between CSRS employees who later switched systems and CSRS employees who did not convert to FERS.

Table 2. Results for Days of Sick Leave Used (Square Root of) – Multilevel Model

Variable	1995			1994		
	Coeff.	% change	Prob.>z	Coeff.	% change	Prob.>z
Intercept	1.204		0.000	1.148		0.000
Female*	0.06	12.7	0.000	0.067	14.3	0.000
CSRS (FERS comparison)	-0.281	-43.0	0.000	-0.162	-27.7	0.000
Supervisor*	-0.122	-21.7	0.000	-0.131	-23.0	0.000
Correctional Services*	-0.096	-17.5	0.000	-0.069	-12.9	0.000
Unicor	0.103	22.9	0.000	0.069	14.8	0.000
Black*	0.033	6.8	0.147	0.069	14.8	0.009
Hispanic*	0.05	10.5	0.039	0.05	10.5	0.074
White*	0.049	10.3	0.022	0.088	19.2	0.001
Resign*	-0.241	-38.2	0.000	-2.187	-98.7	0.000
Retire*	0.233	59.4	0.001	-1.731	-96.9	0.000
Involuntary Removal (IR)*	-0.244	-38.6	0.001	-2.036	-98.3	0.000
IR during Probation Year*	-2.179	-98.7	0.000	-3.759	-99.9	0.000
CSRS to FERS*	-0.023	-4.5	0.373	-0.049	-9.3	0.078
College Graduate	-0.062	-13.2	0.000	-0.062	-13.2	0.000
Age (centered)	0.005	1.0	0.000	0.005	1.0	0.000
Tenure (centered)	0.067	14.3	0.000	0.063	13.4	0.000
CSRS-Retire Interaction	-0.237	-37.7	0.001	0.137	31.5	0.577
Annual Leave Balance	0.003	0.6	0.000	0.001	0.2	0.006
Sick Leave Balance	-0.007	-1.4	0.000	-0.007	-1.4	0.000
Reliability of u_{0j}	0.770			0.817		
χ^2 for u_{0j}	446.372			640.458		
Significance of u_{0j}	0.000			0.000		
N employees	25,684			23,831		
N prisons	80			77		

* 1=Yes

Abbreviations Used:

CSRS – Civil Service Retirement System

FERS – Federal Employees Retirement System

Notes: 1 An additional variable testing a BOP program was originally included in the models. The variable was not statistically significant in the models and was not reported at the request of the Federal Bureau of Prisons.

2 Even though the same variable name was used to identify CSRS to FERS converters in all years, the coefficients have different meanings for the years 1999 through 2003 than for the years 1994 through 1998. For the latter time period, the coefficients represent whether individuals who switched to FERS differed from individuals who were in FERS all along. For the earlier period, the coefficients indicate the differences between CSRS employees who later switched systems and CSRS employees who did not convert to FERS.

Table 3. Comparing CSRS Converters to Employees Remaining in CSRS, 1999-2003

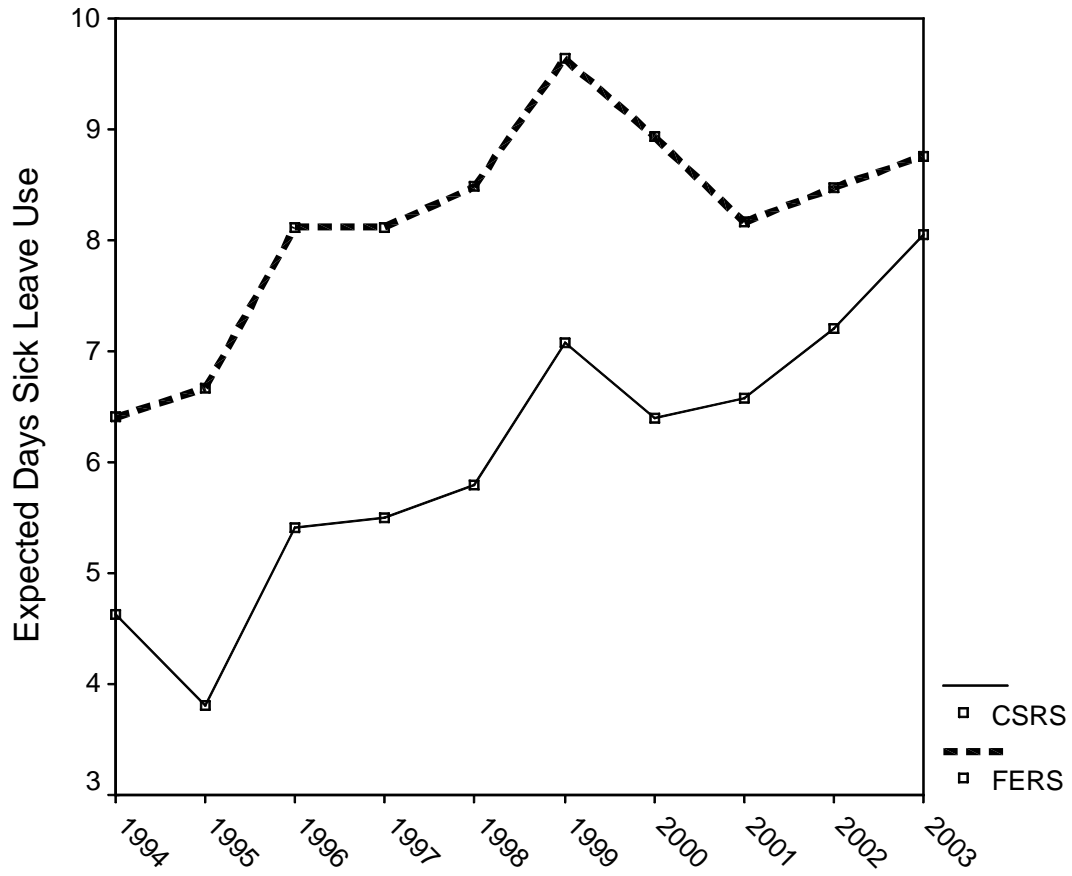
	1999	2000	2001	2002	2003
Converters*	0.030	0.038	0.064	0.091	0.122
% change	6.2	7.9	13.7	20.0	27.6
Probability > z	0.055	0.020	0.000	0.000	0.000

* Compared to employees who remained in CSRS

Table 4. Cost of Sick Leave Use for Typical Correctional Officer
Standardized to 2003 Wage Levels

	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994
100% Lost Productivity	\$1,430.12	\$1,384.36	\$1,333.84	\$1,459.45	\$1,573.88	\$1,386.41	\$1,326.74	\$1,326.74	\$1,090.92	\$1,046.43
Savings	\$115.22	\$207.04	\$259.12	\$414.41	\$417.21	\$440.19	\$428.46	\$442.72	\$469.02	\$289.60
75% Lost Productivity	\$1,966.51	\$1,903.59	\$1,834.11	\$2,006.84	\$2,164.18	\$1,906.41	\$1,824.34	\$1,824.34	\$1,500.08	\$1,438.90
Savings	\$158.44	\$284.70	\$356.30	\$569.83	\$573.69	\$605.29	\$589.16	\$608.76	\$644.93	\$398.22
50% Lost Productivity	\$2,502.89	\$2,422.81	\$2,334.38	\$2,554.22	\$2,754.47	\$2,426.40	\$2,321.95	\$2,321.95	\$1,909.24	\$1,831.37
Savings	\$201.65	\$362.35	\$453.49	\$725.26	\$730.17	\$770.39	\$749.86	\$774.81	\$820.85	\$506.83
25% Lost Productivity	\$3,039.28	\$2,942.03	\$2,834.65	\$3,101.60	\$3,344.77	\$2,946.39	\$2,819.56	\$2,819.56	\$2,318.40	\$2,223.85
Savings	\$244.87	\$440.01	\$550.67	\$880.69	\$886.65	\$935.49	\$910.56	\$940.86	\$996.76	\$615.45
0% Lost Productivity	\$3,575.66	\$3,461.25	\$3,334.92	\$3,648.99	\$3,935.07	\$3,466.38	\$3,317.16	\$3,317.16	\$2,727.57	\$2,616.32
Savings	\$288.09	\$517.66	\$647.86	\$1,036.12	\$1,043.13	\$1,100.59	\$1,071.25	\$1,106.90	\$1,172.67	\$724.07
% of Savings to Total	8%	15%	19%	28%	27%	32%	32%	33%	43%	28%

Figure 1. Days of Sick Leave Used by Typical Correctional Officers
By Retirement Plan



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