DEPARTMENT OF MANAGEMENT

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A Panel Study on Turnover Dynamics in the US Federal Government During COVID-19:

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Abstract: This paper investigates turnover trends within the U.S. federal government during the COVID-19 pandemic. Using Fedscope data from 2014 to 2022, our study highlights two critical aspects of turnover trends: voluntary quits and inter-agency transfers. In 2020, at the onset of the pandemic, voluntary quits dropped to a historic low, while internal transfers within the federal government surged. Understanding these patterns is vital for governments, as it reveals how personnel respond during crises. This insight helps in creating strategies to maintain workforce stability and retention

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Keywords: The Great Resignation, Public Sector, COVID-19, quits, transfer out

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Introduction

The determinants of turnover in the public sector have been extensively studied, particularly concerning the role of individual demographic variables (e.g., Jin et al., 2018; Wang et al., 2017), work environment characteristics (e.g., Ennis et al., 2018; Sun & Wang, 2017), job characteristics (e.g., Jung et al., 2017; Shim et al., 2017), and HR practices (e.g., Kalgin et al., 2018; Cesario & Magalhães, 2017). However, there is a notable gap in the literature when it comes to the impact of broader, external environmental pressures, such as economic conditions, political changes, and societal expectations, on public sector turnover (Wynen et al., 2014).

However, these environmental factors are growing more unpredictable, creating a highly turbulent setting for many public sector organizations (Verlinden et al., 2023). Understanding how these external pressures influence public sector turnover is therefore crucial for governments, as such knowledge can help develop effective strategies for enhancing employee retention and ensuring the continuity of public services amidst environmental turbulence.

This paper aims to contribute to this goal by exploring the impact of the COVID-19 pandemic on turnover rates in the public sector. The COVID-19 pandemic serves as an exemplary case of external pressure due to its unprecedented global impact, causing widespread economic instability, shifts in societal expectations, and significant changes in workplace dynamics. We leverage data from the Office of Personnel Management (OPM) to analyze turnover rates before, during, and after the COVID-19 period. This analysis helps to understand how such an external pressure can influence public sector turnover rates.

In the private sector, the COVID-19 pandemic has led to a drastic increase in voluntary job resignations, a phenomenon labeled the Great Resignation (Horowitz, 2022). Literature points to a few reasons for this trend: economic conditions, work-life balance challenges, mental health concerns, job insecurity, and levels of work engagement (Kuzior, Kettler, & Rąb, 2022). Additionally, generational shifts in work values have also influenced this trend, with more focus on self-fulfillment and intrinsic motivation rather than just financial rewards (Kuzior, Kettler, & Rąb, 2022).

These findings might not apply directly to government workers, who often have a strong public service motivation (PSM). PSM includes a commitment to public values, civic duty, and self-sacrifice, giving them an intrinsic drive to serve the public (Perry & Hondeghem, 2008). This motivation can help reduce turnover even in tough conditions (Shim, Park, & Eom, 2017). So, dynamics in the public sector—especially in the U.S. Federal Government—may differ from the private sector, making it important to investigate if the Great Resignation impacted public sector employees.

In the next section of this article, we will explore the drivers behind the Great Resignation in the private sector and consider how these factors might differ within the public sector context. The methods section details our data collection and analysis processes, while the results section presents our key findings. Finally, the article concludes with a discussion and suggestions for future research avenues.

Literature review

This section explores key factors that recent research points to as major drivers of the Great Resignation in the private sector. We look at both broad economic influences and personal psychological factors. While we analyze these factors separately, we also recognize they may interact and impact turnover together.

In the latter part of our literature review, we draw from insights in the field of public management to postulate the potential contributions of the aforementioned factors to the Great Resignation among employees of the United States federal government. The mechanisms we explore in this section establish a crucial theoretical foundation underpinning our subsequent analyses; they merely serve as an explanatory backdrop, shedding light on why we might observe different turnover patterns in the public sector.

Determinants of the Great Resignation in the private sector

Economic factors

Ample evidence shows that the COVID-19 pandemic had a significant impact on the US labour market. After the pandemic caused a historically sharp disruption of the labor market in the first half of 2020, the economy started to recover, leading to a record numbers of new job openings and increased nominal wages in 2021 (Furman & Powell III, 2022). These tight labor market conditions in turn induced large-scale job switching behavior among employees (Parker & Horowitz, 2022), resulting in a high number of quits in the private sector. When there are many open positions in the job market, people can leave their current positions confident that they will obtain a better offer in terms of pay, promotion and benefits (Kundu, Das, & Nag, 2022). As such, the tight labor market and the ensuing (better) opportunities lowered the cost of resignation. Consequently, those employees that are highly motivated by pay rise and promotion likely made use of the recovering economy and favourable labour market conditions to leave their old positions and move on to better job opportunities. In line with the above Great Resignation, earlier studies demonstrate that turnover is likely to be driven by job market conditions (Griffeth, 2000). Employees make a conscious evaluation of their present satisfaction with their job and assess alternative opportunities elsewhere, based on labour market dynamics. Extant research indeed confirm that people usually quit their jobs when they can pursue new and better job opportunities (Lee, Gerhart, Weller, & Trevor, 2008). Accordingly, it has been established that quits usually peak in times of economic expansion, when job openings are plentiful and of higher quality, and plummet in economic recessions, when job openings are scarce (Davis & Haltiwanger, 2014).

While a shift in labour market conditions seems to form part of the story behind the Great Resignation, it is unlikely to explain the full extent of this phenomenon (del Rio-Chanona, et al., 2022).The increase in labor market tightness (i.e., higher job openings to unemployed workers ratio) suggests a significant decline in matching efficiency between job-seekers and job openings (Rodgers & Kassens, 2022). Furthermore, the pandemic affected people's work experience and may have incentivized them to quit their jobs through a number of factors which are not present in a typical recession (and associated rise in quits) (del Rio-Chanona, et al., 2022). Workers were confronted, for instance, with the immediate consequences of their personal exposure to COVID-19, and also had to cope with school closures and online schooling, as well as caring after sick family and friends (del Rio-Chanona, et al., 2022). Hence, in the aftermath of the pandemic, working people experienced psychological pressures both at the workplace, and at home (Sull, Sull, & Zweig, 2022), which likely impacted their decision to quit their job. In the next section, we therefore turn our attention to these individual-level, psychological factors, and explore how they may have contributed to the Great Resignation.

Psychological factors

Intrinsic work motivation

Some reasons for quitting during the Great Resignation were remarkably different from those during the pre-COVID era. (Malmendier, 2021) concludes this is because working during COVID-19 has dramatically altered peoples' affective, cognitive and behavioral processes. Intrinsic motivation appears to be one of those 'novel' factors that has gained increasing importance in people's decision to quit their jobs. Employees that are intrinsically motivated experience their work activities as an end in itself, resulting in increased interest and enjoyment of the work (Fishbach & Woolley, 2022). Hence, intrinsic work motivation implies that the work itself provides meaning and fulfilment to the individual, rather than any external factors (such as pay rises, promotions, etc.) (Richer, Blanchard, & Vallerand, 2002). As noted before, lockdowns and furlough periods gave employees more time to re-evaluate their careers, and assess how their work fits into their overall lives. For some, the extra time for reflection during the pandemic highlighted a lack of meaningful work—work that brings intrinsic fulfillment and aligns with personal values. Particularly in generations Y and Z, employee retention appears to be based largely on an alignment of values and opportunities for self-fulfilment, far more so than financial aspects such as pay (Kuzior, Kettler, & Rąb, 2022). Moreover, intrinsic motivation has been found to have a negative impact on turnover intentions, by acting as a buffer against work stress while increasing employee jobs satisfaction and organizational commitment (Keaveney & Nelson, 1993).While generations Y and Z appear to be the most sensitive to a lack of intrinsic work motivation, we can assume increased opportunities for introspection lead to similar effects on turnover in the larger working population as peoples' needs, preferences and perceptions shifted (Kundu, Das, & Nag, 2022).

Uncertainty, stress, and mental health

Other psychological factors include job insecurity, stress and work overload. Extant research indicates these psychological factors can have a significant impact on employee turnover (Ogony & Majola, 2018). During the pandemic, many employees experienced increased psychological pressures at their workplace (Sull, Sull, & Zweig, 2022). Fear of contamination and the often far-reaching consequences in case of infection likely added to the stress at work. In addition, the pandemic regularly caused staff shortages in many organizations, increasing the risk of work overload for remaining colleagues (Liu-Lastres, Wen, & Huang, 2023). Furthermore, most employees found themselves in an unprecedented state of uncertainty related to the continuation of their job, their pay protection, job location, etc. These uncertainties also contribute to feelings of anxiety, worry, and stress, factors which have been extensively linked to increased turnover intentions (Kurniawaty et al., 2019). Several studies indeed noted a significant rise in employee stress, as well as symptoms of depression, anxiety and burnout, since the onset of the pandemic (Kundu et al., 2022; del Rio-Chanona, et al., 2022). This indicates the pandemic also posed a severe threat to workers' mental health, a factor that has proven to play a key role in employee engagement and job satisfaction (Goetzel et al., 2000). When the mental well-being of employees is hampered, their chances of leaving their organization increase as they look for a new job or venture where they can find mental peace (Shukla et al., 2022). In line with this, (del Rio-Chanona, et al., 2022) found a strong link between work distress and mental health concerns and people's intention to quit their job during the pandemic. Given the recent research findings, psychological factors such as stress, job insecurity and mental health seemingly contributed to the Great Resignation to a considerable extent.

Work-life balance

Work-life balance refers to the extent to which individuals are equally engaged and satisfied with work and non-work roles (Greenhaus et al., 2011). Flexible work arrangements, such as remote working and flexible work schedules, are generally considered to contribute to a good work-life balance (Sirgy & Lee, 2018).While work-life balance is generally classified as a job characteristic, we mention it here because of its close relation with employee wellbeing (and psychological factors described above), as well as employees' behavioral attitudes towards their work. Extant research confirms that a poor work-life balance contributes to mental health issues and job dissatisfaction, and is a push factor that causes employees to resign (Sirgy & Lee, 2018). Similarly, employers offering the right balance between work and life have been found to face less turnover and achieve better retention (Wood & Menezes, 2010). A good work-life balance also entails that an individual's effectiveness and satisfaction in both work and family roles are consistent with their life values at a given point in time (Greenhaus & Allen, 2011). The pandemic seemingly presented a tipping point for many people to reevaluate their life values vis-à-vis their job, with many coming to the realization that they want to spend more time with friends and family (Fioretti, 2020). As such, work-life balance increasingly emerged as a key value that strongly influences the career choices people make (Kuzior et al., 2022). After the pandemic presented many workers with an opportunity to experience more flexible work conditions (such as remote working), many no longer wanted to revert to mandatory office presence and exhausting commutes (Serenko, 2022). Other workers abandoned jobs that required them to work during weekends and late shifts. At the same time, workers that were not able to benefit from flexible work arrangements (such as those in critical industries), might have become more aware of their job limitations. This could explain why a large number of employees moved to companies that allowed them (to continue) to benefit from flexible work arrangements.

A Great Resignation in the Public sector?

As noted earlier, most research that analyzed the great resignation phenomenon focused on the private sector. As a consequence, there is no evidence whether or not – and to what extent – the Great Resignation took place among government employees. In the next section, we therefore revisit the previously identified factors that may explain the Great Resignation in the private sector, and discuss their relevance in a government work setting. We draw from insights of public management literature to examine if these factors maintain their relevance, and explore specific features of government workers that may have caused civil servants' turnover behavior to be different from that of private sector employees.

<u>Economic factors</u>

We previously discussed increasing labor market tightness (i.e. higher job openings to unemployed workers ratio) as a factor that may have spurred large-scale job switching behavior in private sector employees, looking for better pay and benefits (Rodgers & Kassens, 2022). This phenomenon is typically associated with times of economic recovery or expansion, as was witnessed after the initial hit of the pandemic (Furman & Powell III, 2022). While these labor market dynamics can explain (to some extent) turnover behaviors in private sector settings, it seems less appropriate to explain turnover behaviors of (federal) government employees. While private sector employees may well have benefitted from advantageous labor market conditions to secure a better paying job, wages in public organizations generally remain stable (Eurofound, 2012). Government spending is tightly controlled, and agencies must operate within firm limits as they make choices among spending on different operating inputs, including personnel (Schick, 2001). Besides strictly governed performance bonuses and step increases, pay increases in US federal government consist of across-the-board pay rises determined by the President (IRS, 2022) (such as the latest pay rise of 4.6% for all federal employees, issued by President Biden (Friedman, 2022). Therefore, moving from one agency to another (without a change in grade) is unlikely to lead to a substantial pay rise as agencies cannot really compete in terms of pay offering the same way private firms do. In addition, the disparity between US federal government and private sector wages has spiked in 2022, with federal workers earning 24.09%. less on average than private sector workers in similar jobs (Wagner, 2022).

Since public sector research has found that lower pay is associated with higher turnover rates (Pitts et al., 2011), we could assume government employees might be tempted to leave the federal civil service for a job in the private sector. However, prior studies have also shown that government employees are generally less motivated by external rewards such as pay rises compared to private sector employees (Buelens & Van den Broeck, 2007). Given that most government workers are primarily motivated by intrinsic reasons (such as civic duty, job satisfaction) it seems unlikely many would be tempted to leave the federal civil service solely in pursuit of a better-paying job (Buelens & Van den Broeck, 2007). This is supported by findings from (Pitts et al., 2011) who found that satisfaction with pay had only a small substantive impact on turnover intentions of US federal employees, indicating their turnover behavior is determined by more than just satisfaction with pay. At the same time, we should consider the possibility that pay might have had a more significant impact on turnover during the pandemic, since (Wynen & Op de Beeck, 2014) previously found that satisfaction with pay only became a significant predictor of US federal employee turnover in times of crisis.

Additionally, satisfaction with benefits is crucial in government, where benefits have traditionally offered a recruitment edge over other sectors (Pitts et al., 2011). Generous retirement and health care benefits can reduce turnover (Shaw, 1998), and the threat of losing pension benefits because of early departure can discourage employees from leaving government jobs (Lewis, 1991). Hence, based on the above-mentioned insights from public administration literature, it seems economic conditions (e.g. labour market, remuneration) would have been less likely to spur turnover in government employees, as they are less incentivized by pay and can already count on generous benefits not easily matched by the private sector.

Psychological factors

Public Service Motivation (PSM)

We previously identified (lack of) intrinsic work motivation as an important factor that may have impacted private sector employees' decision to quit their jobs. In the public sector context, however, many employees share a specific type of work motivation, labelled 'public service motivation' (PSM). PSM is defined as "an individual's orientation to delivering services to people with a purpose to do good for others and society" (Perry & Hondeghem, 2008). It centers on the four key dimensions of 'attraction to public service', 'commitment to public values', 'compassion' and 'self-sacrifice' (Perry, 2000). Accordingly, working in the public sector has been portrayed as a calling, a sense of duty, rather than a job (Perry, 2000). Though generally seen as separate ideas, PSM shares clear similarities with intrinsic work motivation. Both mean that workers find meaning and fulfillment in the work itself, not in external rewards like pay or prestige (Breaugh et al., 2018). Studies support this, showing a strong link between PSM and intrinsic motivation (Breaugh et al., 2018).

Research also suggests that PSM positively shapes public sector employees' attitudes, increasing their commitment to the organization and reducing their intent to leave (Steijn, 2008). Scholars have reasoned that individuals with a strong internalized desire to contribute to the welfare of others are more likely to stay committed to public service organizations that allow them to do good for others and to be useful to society (Crewson, 1997), even if they are confronted with significant stressors and obstacles at work (Shim et al., 2017). Moreover, since employees that score high on PSM are strongly driven by values such as compassion and self-sacrifice (Schott et al., 2017), they might be less likely to 'give up' and resign in times of crisis as this could feel like a betrayal of these values and their commitment to serve the public.

Interestingly, while private sector research suggests that a stronger emphasis on intrinsic work motivation and personal values contributed to the Great Resignation, insights from extant PSM literature indicate that government employees already had a strong value-based, intrinsic work motivation prior to the pandemic. Additionally, studies show that public service motivation (PSM) reduces turnover among government employees, as their intrinsic motivation helps them better tolerate challenging working conditions (Shim et al., 2017). PSM creates a bond between federal government employees and their public organization and probably minimizes the upsurge of the resignation trend among working professionals in normal times as well as in crisis. Accordingly, we should consider that the presence of PSM in government employees may mean they were not -or to a much lesser extent- triggered by the pandemic to resign.

Uncertainty, stress, and mental health

Researchers have looked at the Great Resignation from many angles, with a growing focus on the role of psychological factors (Kuzior et al., 2022). As discussed earlier, several private sector studies found that the pandemic resulted in a significant rise in stress-related problems among employees, ranging from increased anxiety, burnout, to depression (Kundu et al., 2022; Sheather & Slattery, 2021). Both stress and mental health issues have been linked to increased turnover (Kurniawaty et al., 2019). However, studies in public sector organizations indicate that employees with high levels of PSM can better handle an increase in work stress, and that their mental well-being is less affected (Shim et al., 2017). At the same time, other authors have found evidence suggesting that PSM might also have a dark side to it, making public sector employees more susceptible to stress and mental health concerns (Van Loon et al., 2015). They argue that a strong drive towards helping society might induce feelings of guilt or shame in public sector employees if they are not able to attain their work goals (Scott & Ritz., 2017).While the evidence is inconclusive, it seems PSM might have caused government employees to be affected differently by the stressful work conditions posed by the pandemic, potentially leading to differences in turnover behavior.

Furthermore, we previously noted that employee stress was likely exacerbated by uncertainty on how the pandemic would impact key aspects of one's job. Many may have even feared for the future existence of their jobs, since economic downturn (as witnessed at the start of the pandemic) often results in job loss, and affects people's perceptions on the stability of their employer (Greenhalgh & Rosenblatt, 1984). In such conditions, job security gains importance and becomes highly valued among employees. While heightened job insecurity might explain the increased turnover among private sector employees looking for a more stable employer, it seems less applicable to government employees. This is mainly due to the fact that government generally offers more employment stability and job security than the private sector (Willem et al., 2010). As noted by Lewis & Frank (2002, p. 396) "civil service protections make dismissals more difficult in government than in non-unionized private firms, and layoffs are uncommon, since government agencies downsize less frequently than private firms and almost never die".

Accordingly, several studies have found that the public sector attracts people that prefer a high degree of job security (Lewis & Frank, 2002). Based on these insights, it seems less likely government employees would be tempted to leave their stable, secure government job in the aftermath of the pandemic.

Work–life balance

As mentioned earlier, extant research indicate that a good work-life balance leads to reduced turnover among employees (Hill, et al., 2008). Having a healthy work-life balance became even more important with the advent of the COVID-19 pandemic, with more people becoming aware of the benefits of remote working and other flexible work arrangements (Serenko, 2022). We previously noted that a lack (or revocation) of flexible work arrangements in the wake of the pandemic may have convinced private sector employees to look for other job opportunities that offer better work-life balance. Looking at the work-life balance in public organizations, earlier research has shown that public sector employees generally have a greater likelihood of obtaining flexible work arrangements and, hence, should be less inclined to leave their position due to work-life balance issues (Moynihan & Landuyt, 2008). Narrowing down on US federal government, (Choi, 2020) examined the link between flexible work arrangements and employee retention. Results from her longitudinal analyses revealed that federal agencies with more teleworkers, and those that are more supportive of employees' teleworking, experienced less voluntary turnover (i.e. quits). These findings indicate that work-life balance does impact employees' decision to resign from their federal government jobs. While Caillier (2018) found a similar impact of teleworking on quits in US federal government (i.e. employees leaving federal civil service), he found no impact of teleworking on transfers (i.e. employees switching to another federal agency) nor of other work arrangements such as flexible work schedules.

Based on our review of the literature, it is evident that when translating the drivers behind the Great Resignation in the private sector to the public sector, a complex picture emerges. Certain elements suggest that a similar phenomenon could have occurred within the public sector.

Factors like economic uncertainty, the search for better work-life balance, and burnout likely affected public sector employees too, as they did in the private sector. However, certain aspects unique to the public sector—such as job security, extensive benefits, and a strong sense of public duty—may have reduced turnover. These factors suggest that the impact of the Great Resignation on public sector jobs could vary in both directions. In the next part, we will analyze Fedscope data to examine whether turnover, in terms of quits and transfers, differed during the pandemic in the federal government.

Data, method & results

Our analysis uses longitudinal data from the U.S. Office of Personnel Management (OPM), focusing on FedScope's detailed turnover data, including employee quits and transfers in the federal government. Available at www.fedscope.opm.gov, FedScope offers a broad dataset covering many federal agencies. This includes insights into employment trends, salary structures, and separation statistics across agencies (Alteri, 2020).

Our study focuses on a carefully selected sample of 75 federal agencies, for which data has been consistently available spanning the years 2014 through 2022, resulting in a balanced panel dataset. By examining this extensive nine-wave dataset, we gain the ability to discern any sudden and significant differences between the periods preceding and following the onset of the COVID-19 pandemic. The complete list of organizations included in our sample can be found in the appendix (Table 5).

Measuring quits and transfer outs

In our analysis, "quits" refer to employees who voluntarily leave federal civil service, while "transfer outs" are employees moving from one federal agency to another. Calculating quits and transfers as a percentage of each agency's workforce lets us compare turnover patterns accurately, without agency size affecting the results.

Table 1 Descriptive statistics

Year	Mean	SD	Min.	Max.
% quits per organization				
2014-2022 (N=675)	0.052	0.066	0	0.833
2014 (N=75)	0.048	0.049	0	0.267
2015 (N=75)	0.049	0.056	0	0.433
2016 (N=75)	0.053	0.060	0	0.433
2017 (N=75)	0.065	0.108	0	0.833
2018 (N=75)	0.051	0.049	0	0.240
2019 (N=75)	0.056	0.067	0	0.480
2020 (N=75)	0.040	0.052	0	0.294
2021 (N=75)	0.060	0.076	0	0.538
2022 (N=75)	0.047	0.060	0	0.400
% transfer outs per organization				
2014-2022 (N=675)	0.029	0.027	0	0.200
2014 (N=75)	0.020	0.022	0	0.103
2015 (N=75)	0.028	0.022	0	0.125
2016 (N=75)	0.029	0.024	0	0.105
2017 (N=75)	0.024	0.022	0	0.083
2018 (N=75)	0.026	0.027	0	0.137
2019 (N=75)	0.036	0.037	0	0.200
2020 (N=75)	0.034	0.031	0	0.144
2021 (N=75)	0.030	0.029	0	0.133
2022 (N=75)	0.029	0.027	0	0.135

Figure 1 Overall variation: % quits versus year

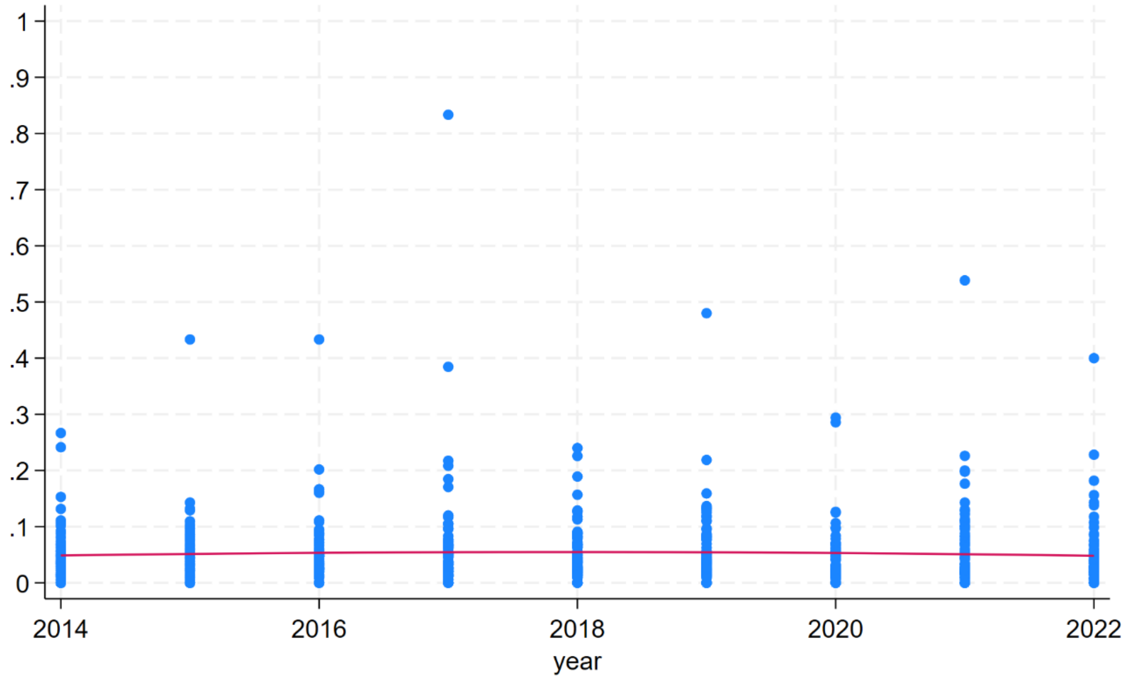
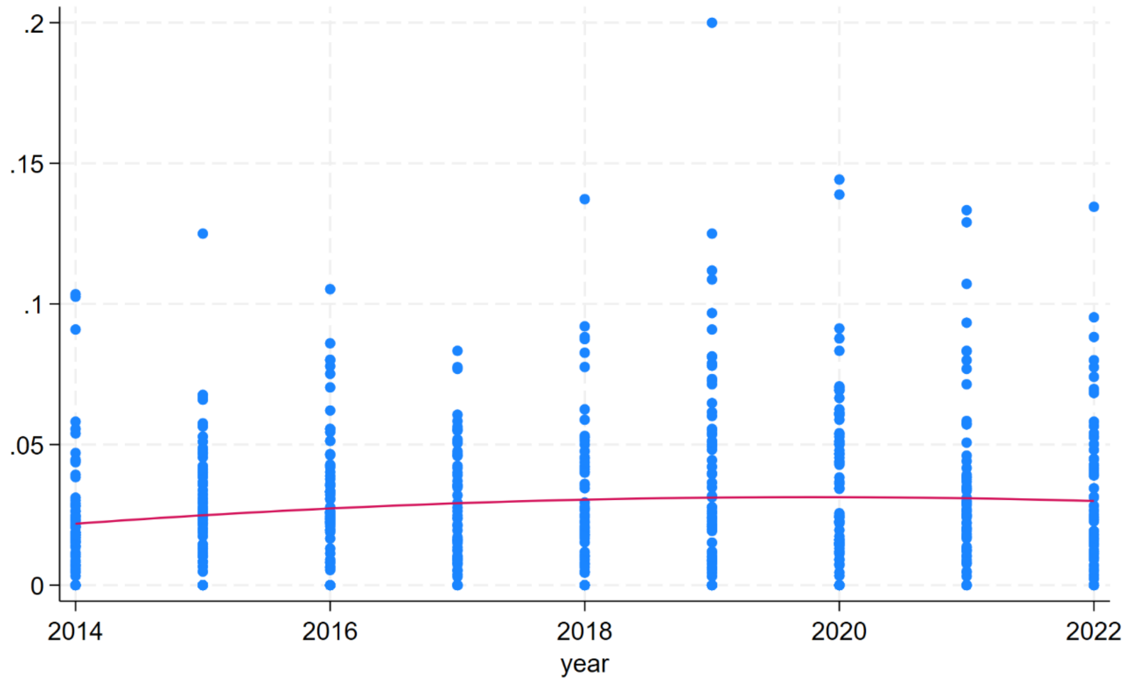


Figure 2 Overall variation: % transfer outs versus year



In our sample, organizations had an average quit rate of 5.2% and a transfer-out rate of 2.9%. To show how these rates change over time, we created scatter plots for both quits and transfers across the years, with each point representing an organization-year pair. We added a smooth curve using quadratic regression (OLS) to model quits in Figure 1 and transfers in Figure 2.

In looking at quits, we noticed two key points. First, quit rates in 2020 were slightly lower than in other years, though this difference is small. However, we also detect the presence of a potential outlier, with a quit rate of 83.3% recorded in 2017 (CE-Council of Economic Advisers). To assess this outlier and ensure its non-interference with our subsequent analysis, we conducted a diagnostic evaluation, including a leverage-versus-residual-squared plot (see Figure 4 in Appendix).

This plot displays the average values of leverage and the (normalized) residuals squared, with points above the horizontal line indicating higher-than-average leverage, and those to the right of the vertical line reflecting larger-than-average residuals. Our analysis shows that while one data point in the quit plot stands out with a large residual (indicating a gap between predicted and actual values), it has minimal impact on the overall analysis.

For transfer outs, there are no clear outliers, and rates remain steady in 2020 and beyond. Overall, while quit rates may have ticked up slightly in 2020, there's no obvious effect of the pandemic on transfer rates. In the next section, we'll dive deeper with regression analysis to see if these trends are statistically significant and clarify how the pandemic may relate to turnover.

Results

Our primary objective in this analysis is to examine the impact of the COVID-19 pandemic on turnover within the Federal government at the organizational level. Our focus is not on identifying mechanisms driving turnover but rather on assessing whether there has been, or still is, a discernible impact of the pandemic on turnover rates, encompassing both quits and transfer outs.

To observe and analyze trends within our dataset and, in particular, to evaluate the influence of the COVID-19 pandemic, we've chosen to use fixed Ordinary Least Squares (OLS) regression with robust standard errors clustered by organization. Clustering standard errors by organization is crucial because it takes into account the potential correlation of observations within the same agency. Agency-level fixed effects capture each federal agency's unique characteristics that don't change over time, like culture, policies, or mission. These factors can influence turnover on their own, separate from the pandemic's impact. By including fixed effects, we control for these agency-specific traits, letting us focus on how the pandemic affected turnover while keeping inherent agency differences constant.

Our regression model is based on year dummies to explain aggregate quits and transfer rates. With year dummies in place, we can compare turnover rates in 2020 to the baseline established by the other years, effectively isolating the COVID-19 effect. This allows us to quantify how much the pandemic influenced turnover rates within federal agencies, providing a clearer understanding of its impact on the workforce during this critical period of global upheaval.

Table 2 OLS fixed effect regression results

	(1)	(2)
Variabes	% quits per organization	% transfer outs
2014=ref. cat.		
2015	0.000	0.008***
	(0.005)	(0.003)
2016	0.005	0.009***
	(0.005)	(0.003)
2017	0.016*	0.003
	(0.010)	(0.003)
2018	0.002	0.006*
	(0.006)	(0.003)
2019	0.008	0.015***
	(0.006)	(0.004)

2020	-0.009**	0.014***
	(0.004)	(0.003)
2021	0.012	0.010***
	(0.008)	(0.003)
2022	-0.001	0.008***
	(0.006)	(0.003)
Constant	0.048***	0.020***
	(0.004)	(0.002)
Observations	675	675
R-squared	0.037	0.054
Number of organizations	75	75

Robust standard errors, clustered by organization, in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Our fixed effects regression results in Table 2 show clear yearly variations in quit and transfer-out rates. Table 2 makes it clear that the year variable has a strong and noticeable effect on both rates.Particularly noteworthy is the fact that the inclusion of year dummies alone accounts for approximately 3.7% and 5.4% of the variability observed in these rates, as indicated by the R-squared values in our regression outcomes. This finding underscores the pivotal role played by different years, especially within the context of the COVID-19 pandemic, in shaping these rates.

Looking closely at each year, 2020 stands out, aligning with the start of the COVID-19 pandemic and showing notable trends. The regression results indicate a negative beta coefficient for quits, suggesting a drop in quit rates that year. In contrast, the coefficient for transfer outs is positive and statistically significant, indicating an increase in transfer out rates during the same period. These findings align with the patterns observed in Figure 1, providing robust support for the impact of the pandemic on quit dynamics.

However, it's paramount to underscore that our analysis employs the year 2014 as the reference category for comparison, a time significantly predating the onset of the COVID-19 pandemic. In the next phase of our analysis, we dive deeper by calculating differences from the average of previous years using reversed Helmert contrasts (see Table 3). This technique helps pinpoint yearly changes in turnover rates compared to a baseline, which is the average of all prior years.

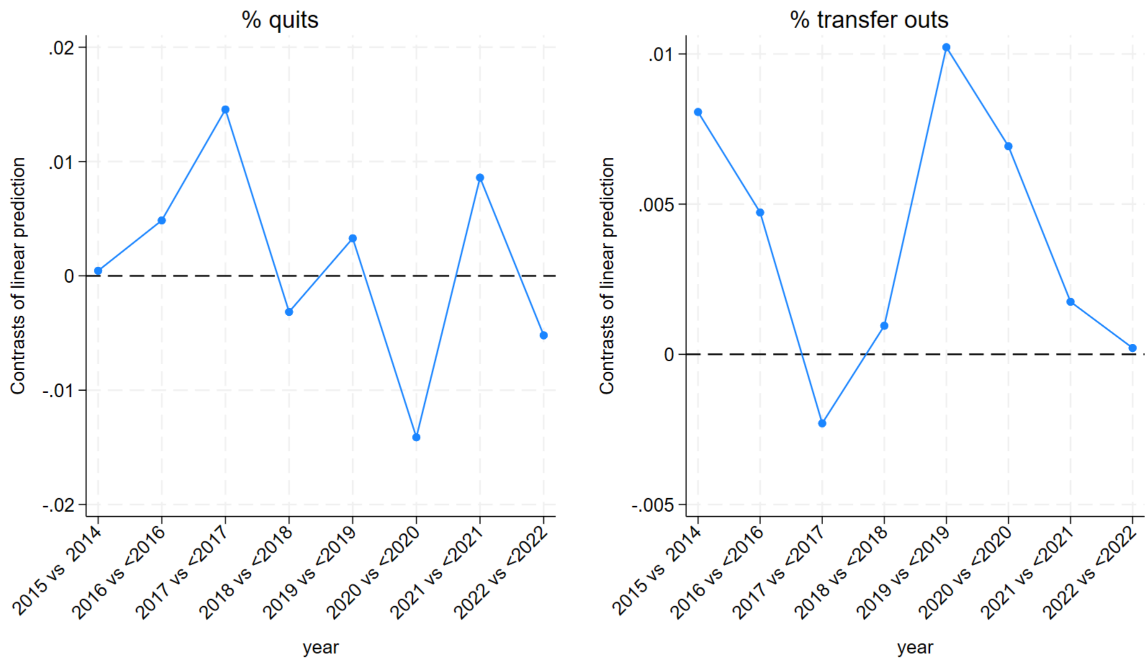
Table 3 shows a clear pattern: 2020 stands out in quits and transfer outs, highlighting the COVID-19 pandemic's impact on federal turnover. Figure 3 visually emphasizes these unique patterns, clearly showing how 2020 deviated from previous trends, making the differences easy to interpret.

Table 3 Reverse Helmert contrasts

Year	% quits per organization	% transfer outs
2015 vs 2014	0.000	0.008***
	(0.005)	(0.003)
2016 vs <2016	0.005	0.005*
	(0.004)	(0.003)
2017 vs <2017	0.015*	-0.002
	(0.008)	(0.002)
2018 vs <2018	-0.003	0.001
	(0.006)	(0.002)
2019 vs <2019	0.003	0.010***
	(0.004)	(0.004)
2020 vs <2020	-0.014***	0.007***
	(0.004)	(0.002)
2021 vs <2021	0.009	0.002
	(0.005)	(0.003)
2022 vs <2022	-0.005	0.000
	(0.004)	(0.002)

*** p<0.01, ** p<0.05, * p<0.1

Figure 3 Visualization contrasts of adjusted predictions of year



Our analysis shows an interesting spike in quits in 2017, which aligns with the transition from the Obama to Trump administration. The spike in quits in 2017, during the Obama-to-Trump transition, raises the overall quit average. The elevated baseline from higher 2017 rates may partly explain the drop in turnover seen in 2020, as it influences the overall trend. This is particularly noteworthy because when the turnover rate is exceptionally high in one year, as it was in 2017, it becomes more apparent when contrasted with a year marked by a notably low turnover rate, such as 2020.

To address this nuanced aspect, we have also conducted an analysis (Table 4) using contrasts that compare each year with the reference year 2020. The contrasts show that quit rates were significantly lower in 2020 compared to every other year. This highlights how unique 2020 was in terms of reduced quits, providing further evidence of the pandemic's impact on turnover trends as it diverged notably from previous patterns.

Table 4 reference group contrasts using 2020 as the baseline (reference) group

Year	% quits per organization	% transfer outs
2014 vs 2020	0.009**	-0.014***

	(0.004)	(0.003)
2015 vs 2020	0.009*	-0.006*
	(0.005)	(0.003)
2016 vs 2020	0.014***	-0.005
	(0.005)	(0.003)
2017 vs 2020	0.025***	-0.011***
	(0.008)	(0.004)
2018 vs 2020	0.011*	-0.008***
	(0.006)	(0.003)
2019 vs 2020	0.017***	0.002
	(0.005)	(0.003)
2021 vs 2020	0.021***	-0.004
	(0.006)	(0.003)
2022 vs 2020	0.008*	-0.006*
	(0.005)	(0.003)

*** p<0.01, ** p<0.05, * p<0.1

Discussion and conclusion

Research on turnover in the public sector has extensively covered various internal factors, such as individual demographic variables, work environment characteristics, job characteristics, and HR practices. However, there is a significant gap in the literature regarding the impact of external environmental pressures, such as economic conditions, political changes, and shifting societal expectations, on public sector turnover.

Given the increasing volatility of these external factors, the environment in which public sector organizations operate has become more unpredictable and challenging. As such, understanding how these external pressures influence turnover in the public sector is becoming ever more crucial.

Our study aimed to fill this gap by examining the impact of the COVID-19 pandemic on turnover rates in the public sector. The pandemic is a prime example of external pressure, with its global impact leading to economic instability, shifts in social expectations, and major changes in workplace dynamics. We used longitudinal data from the Office of Personnel

Management (OPM) to analyze turnover rates, specifically looking at resignations and transfers in the federal government before, during, and after COVID-19.

We used fixed effects regression to analyze our longitudinal data, which helped control for unchanging factors that could affect quit and transfer-out rates. This allowed us to focus on the effects of other variables. Our findings showed clear patterns during the pandemic: quit rates dropped to their lowest, while transfers within the federal government rose. This suggests that, instead of leaving, federal employees sought new roles within the government, likely driven by their strong public service motivation (PSM) and commitment to public values. As the pandemic progressed, however, the patterns shifted; employees who had postponed quitting during the initial period eventually left, returning quit rates to pre-pandemic levels, while transfer out rates normalized.

This study is the first to offer empirical evidence for turnover behaviors of federal employees before, during, and after the pandemic. Our findings allow us to develop specific and targeted recommendations for practitioners and policymakers in the public sector.

First, the noticeable drop in quits during the initial period of the pandemic suggests that employees were less likely to leave their organizations amid the uncertainty brought about by COVID-19. This finding highlights the importance of implementing effective employee retention strategies and shifting priorities during times of crisis (Chu, et al., 2021). Practitioners should focus on measures like better communication, support for remote work, flexible schedules, and prioritizing employee well-being to build stability and loyalty within the workforce (Caillier, 2018).

The high rate of transfer outs during COVID-19 shows that employees preferred moving within the organization over leaving entirely. Policymakers should take employee mobility seriously and address what drives these transfer decisions. Offering career growth, competitive pay, and a positive work environment—especially during crises—can help keep talent in the public sector and limit the loss of skilled employees to other organizations (Moon, 2017).

Finally, the study suggests that the patterns of quits and transfer outs during the COVID-19 period differed from the usual pre-pandemic patterns. As the pandemic continued, quit rates rose, and transfer-out rates returned to normal. This underscores the need to adapt policies and strategies in response to changing conditions. Practitioners and policymakers should continuously monitor employee behavior and adapt their approaches to address changing needs and expectations in times of crisis and recovery (Madero et al., 2020).

As with all studies, ours is also confronted with limitations. While the fixed effects regression model is suitable for controlling for time-invariant unobserved heterogeneity and helps to isolate the effects of the other variables of interest, it cannot shed light on the mechanisms and processes that connect our independent variable to turnover and transfer outs. Future research should use complementary methods like experiments, process tracing, interviews, and other qualitative approaches. These methods can help clarify how COVID-19 influenced turnover and give a deeper understanding of the factors driving it.

While our study focuses solely on the US public sector, we are convinced that the findings may still be generalizable to other countries or sectors. Despite country differences, we believe the effect of the onset of the COVID-19 pandemic on employees' behaviors is applicable to broader settings than those examined in this study. Our findings and theoretical frameworks offer valuable insights for practitioners and policymakers across various settings. This study gives a thorough look at turnover and transfer-out trends during the pandemic, adding to prior research that focused mainly on the Great Resignation in the private sector.

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Appendix

Table 5 Included agencies

AB-American battle monuments commission
AH-National Foundation on the arts and the humanities
AM-U.S. International Development Cooperation Agency (AM00)
AN-African development foundation
AU-Federal labor relations authority
BD-Merit systems protection board
BG-Pension benefit guarantee corportation
BO-Office management and budget
BT-Architectural and transportation barriers compliance board
BW-Nuclear waste technical review board
CC-Commision on civil rights
CE-Council of economic advisers
CF-Comission of fine arts
CT-Commodity futures trading commission
CU-NATIONAL CREDIT UNION ADMINISTRATION (CU00)
EB-Export Import Bank of the United States
EC-Office of administration
EE-EQUAL EMPLOYMENT OPPORTUNITY COMMISION (EE00)
EO-Morris K Udall and Stewart L Udall foundation
EP-ENVIRONMENTAL PROTECTION AGENCY (EP00)
EW-Trade and development agency
FC-FEDERAL COMMUNICATIONS COMISSION (FC00)
FD-FEDERAL DEPOSIT INSURANCE CORPORATION (FD00)
FJ-Chemicah safey and hazard investigation board
FL-Farm credit administration
FM-Federal mediation and conciliation service
FQ-COURT SERVICES AND OFFENDER SUPERVISION AGENCY… (FQ01 &FQ02)
FR- FEDERAL RESERVE SYSTEM (FRFT)
FT-FEDERAL TRADE COMISSION (FT00)
FW-Office of special counsel
GB-Overseas private investment corporation
GJ-Presidio trust
GS-GENERAL SERVICES ADMINISTRATION (GS01 -GS33)
GW-International Boundary and water commission: the United States
HB-Committee for purchase for people who are blind
HD-US holocaust memorial museum
HF-Federal financing agency
HP-Advisory council on historic conservation
HW-US interagency council on homelessness
IB-BROADCASTING BOARD OF GOVERNORS (IB00)
IF-Interamerican foundation
JL-Judicial branch
KS-Corporation for national and community service
LP-GOVERNMENT PRINTING OFFICE (LP00)
MA-marine mammal foundation

MC-Federal maritime commission
MI-Millenium challenge corporation
NF-NATIONAL SCIENCE FOUNDATION (NF00)
NK-National council on disability
NL-NATIONAL LABOR RELATIONS BOARD (NL00)
NM-National mediation board
NN-NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NN10-NN76)
NP-National capital planning commission
NQ-NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NQ00)
NU-NUCLEAR REGULATORY COMMISION (NU00)
OM_OFFICE OF PERSONNEL MANAGEMENT (OM00)
OS-Occupational safety and health review commission
QQ-Office of national drug control policy
RE-Office of Navajo and Hopi Indian relocation
RF-Federal retirement thrift investment board
RH-Armed force retirement home
RO-Medic aid and chip payment
RR-Railroad retirement board
RS-Federal mine safety and health review commission
SB-SMALL BUSINESS ADMINISTRATION (SB00)
SE_SECURITIES AND EXCHANGE COMMISION (SE00)
SK-consumer product safety commission
SM-SMITHSONIAN INSTITUTION (SM01-SM04)
SS-Selective service system
SZ-SOCIAL SECURITY ADMINISTRATION (SZ00)
TB-National transportation safety board
TC-US international trade commission
TN-Office of the US trade representative
UT-Utah reclamation and mitigation commission
ZS-US-China economic review commission

Figure 4 leverage-versus-residual-squared plot for % quits