Improving Governance through Citizen Feedback Technologies: Evidence from Pakistan

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Abstract

This paper examines how citizen feedback mechanisms and bureaucratic incentives can improve governance and public service delivery in developing countries, focusing on Pakistan's Citizen Portal (PCP). We exploit a uniquely rich dataset of nearly 1.9 million citizen complaints that offers unprecedented granularity in measuring government performance—both geographically and temporally—from the dual perspectives of citizens and government officials. Our analysis yields three key insights. First, we document substantial geographic and demographic variation in digital complaint system usage, finding significant underrepresentation of women (13.8% of complainants), older citizens (7.1%), and less-educated individuals (8.9%). Second, we identify a persistent 17-percentage-point gap between government-reported and citizen-perceived resolution rates, revealing fundamental misalignments in service assessment that conventional monitoring systems cannot detect. Third, we provide causal evidence that bureaucratic transfers improve complaint resolution rates by 6.3 percentage points, with effects concentrated in departments with tangible service outputs. This evidence crucially highlights how personnel changes can serve as effective disciplinary mechanisms for improving bureaucratic performance in service delivery.

Keywords: Citizen feedback mechanisms, Public service delivery, Bureaucratic accountability, Governance technology in developing countries.

1 INTRODUCTION

Effective governance and efficient public service delivery are critical challenges faced by governments worldwide, particularly in countries with decentralized administrative structures. In such contexts, central governments often struggle with two fundamental issues: (1) monitoring the quality of service delivery due to information frictions across geographic and administrative distances, and (2) properly incentivizing bureaucratic effort at the local level, where direct oversight is limited. These factors severely constrain governments' ability to target resources effectively, sanction misbehavior, and ensure consistent service quality across regions.

The challenge of monitoring is especially acute in decentralized systems, where local officials responsible for service delivery operate far from central oversight. Traditional monitoring mechanisms—such as periodic inspections, administrative reporting, or occasional surveys—typically suffer from limitations in frequency, coverage, and accuracy. They provide only sporadic snapshots of performance, often rely on self-reporting by the very officials being monitored, and rarely capture the lived experience of citizens who receive the services. Furthermore, the lack of reliable information about service quality makes it difficult to fully represent voters' preferences and can break down the virtuous circle of democratic accountability. When citizens cannot effectively communicate their needs and experiences to government officials, and when governments cannot accurately monitor local service delivery, the result is often inefficient resource allocation, poor service quality, and corruption (**?**).

Recent technological innovations potentially offer a transformative solution to these monitoring challenges. Mobile applications and online platforms now enable direct, immediate, and low-cost communication between citizens and central government officials, potentially bypassing local gatekeepers and information bottlenecks. These technologies promise to dramatically enhance the central government's capacity to monitor service delivery at an unprecedented scale and granularity—both geographically and temporally. However, despite their increasing adoption worldwide, rigorous evidence on how these systems function in practice, whether they actually improve service quality, and what they reveal about governmental performance remains scarce.

This paper examines how technology can overcome these monitoring challenges through digital citizen feedback systems, focusing on Pakistan's Citizen Portal (PCP). Launched in 2018 and managed directly by the Prime Minister's Office, the PCP is a mobile application that enables citizens to report issues related to public services directly to central authorities, bypassing traditional bureaucratic hierarchies. The system offers a unique

innovation in government monitoring: it captures both citizen assessments of resolution (whether they consider their complaint resolved) and official government assessments (whether the responsible department claims to have resolved the issue). This dual perspective allows for unprecedented insight into potential misalignments between service providers and recipients—a critical dimension that conventional monitoring systems cannot capture.

We analyze a uniquely rich dataset of nearly 1.9 million complaints filed through this platform between January 2021 and October 2022, matched with administrative data on bureaucratic transfers. This dataset provides an unparalleled window into government performance at a granular level across Pakistan's diverse regions and administrative units. Unlike traditional measures of government performance that rely on aggregate statistics or infrequent surveys, our data offers real-time, location-specific feedback on virtually every aspect of public service delivery, from infrastructure and utilities to education, healthcare, and law enforcement.

Our research makes three primary contributions. First, we provide extensive descriptive evidence on this novel data source, documenting patterns of citizen engagement with government across geographic and demographic dimensions with unprecedented granularity. Our analysis reveals substantial spatial variation in complaint rates, with Punjab province accounting for approximately 61% of all complaints, at a rate of 5.2 per 1,000 residents—significantly higher than the national average of 3.7. We produce high-resolution maps of both complaint frequency and resolution rates down to the district level, revealing patterns that would be impossible to discern through conventional monitoring mechanisms.

More importantly, our granular data allows us to document significant demographic disparities in who participates in digital governance: women account for only 13.8% of complainants; citizens over 55 years constitute just 7.1% of complaints despite representing 18.7% of the adult population; and individuals with primary education or less—representing 67.2% of Pakistan's population—account for merely 8.9% of complaints. These disparities raise critical questions about whose voices are heard in digital governance systems.

Perhaps our most striking descriptive finding is the substantial discrepancy between government and citizen assessments of complaint resolution—a divergence that would remain invisible in traditional monitoring systems capturing only one perspective. Overall, government officials mark 62.1% of complaints as "Relief granted" or "Partial relief granted," whereas citizens classify only 45.1% as "Resolved" or "Partially Resolved." This 17-percentage-point perception gap varies systematically across demographic groups, with larger discrepancies observed for older, less educated, and rural complainants. These

patterns suggest fundamental challenges in either service delivery implementation or communication between government and citizens that conventional monitoring systems would fail to detect.

Second, we examine how bureaucratic transfers—a key disciplinary tool in public administration—affect government responsiveness to citizen complaints. In decentralized systems, personnel transfers represent one of the few direct mechanisms through which central authorities can exert control over local service delivery. Leveraging quasi-random variation in the timing of transfers across departments, we employ an event study approach using the Borusyak et al. (2021) estimator, which accounts for staggered treatment timing and minimizes biases from overlapping events. Our analysis reveals that following a transfer, the probability of a complaint being marked as "Resolved" or "Partially Resolved" by citizens increases by approximately 6.3 percentage points—a substantial improvement relative to the mean resolution rate of 45.1%. The effect begins to materialize in the quarter immediately following the transfer and persists for at least three quarters, with no evidence of pre-trends.

Third, we analyze heterogeneity in the impact of transfers across different types of departments. We find that the effect of transfers varies meaningfully across service areas, with the strongest effects observed in infrastructure and utilities departments (8.7 percentage point increase), followed by transportation and development departments (7.1 percentage point increase), and more modest effects in legal and institutional integrity departments (4.2 percentage point increase). These findings suggest that personnel changes may be particularly effective for improving bureaucratic performance in departments responsible for tangible public services where outcomes are more easily observable.

Our research contributes to several strands of literature in development economics and political economy. First, by examining a direct complaint system that provides unprecedented granularity in monitoring, this paper adds to the growing body of literature on citizen participation in governance and its impact on public service delivery. Previous studies have demonstrated that citizen monitoring can improve service delivery outcomes in various contexts. For instance, Björkman and Svensson (2009) show that community-based monitoring in Uganda significantly improved health outcomes, including reduced infant mortality and increased utilization of outpatient services. Similarly, Olken (2007) finds that grassroots participation in monitoring reduced corruption in road projects in Indonesia. Our work builds on these findings by examining a technology-enabled nationwide system that allows for direct citizen-government communication at a scale, frequency, and geographic granularity previously unattainable, providing insights into both the promise and limitations of such approaches.

Second, the analysis of transfer policies as a response to citizen complaints contributes to the literature on bureaucratic incentives and performance management in the public sector, particularly in decentralized settings where central monitoring is challenging. A growing body of research examines how personnel management practices affect bureaucratic performance. Khan et al. (2019) demonstrate that performance-based postings can significantly improve tax inspectors' performance in Pakistan. Bertrand et al. (2020) explore how the allocation of procurement contracts is influenced by political connections in Italy. **?** show how political change affects bureaucratic turnover in India, with implications for administrative efficiency. Our study adds to this literature by examining how transfers function as an accountability mechanism in response to citizen complaints, providing evidence on the effectiveness of this widely-used but understudied disciplinary tool in contexts where direct monitoring is difficult.

Third, by studying a digital complaint system that enables real-time, granular monitoring from dual perspectives, we contribute to the emerging literature on the role of technology in improving governance and public service delivery in developing countries. Recent work has highlighted the potential of technology to enhance government capacity and reduce corruption. Muralidharan et al. (2016) document how biometric smartcards improved the delivery of social welfare programs in India by reducing leakage. Banerjee et al. (2020) demonstrate that e-governance reforms in India's financial management system reduced corruption in the implementation of a workfare program. Our research extends this literature by examining how mobile technology can facilitate direct, granular feedback from citizens to central government, thereby potentially improving accountability in service delivery even in highly decentralized systems.

Fourth, by analyzing a new, unprecedentedly granular measure of government performance based on dual-perspective citizen and government feedback, this research contributes to the ongoing debate on how to effectively measure and evaluate public sector performance. Traditional measures of bureaucratic performance often rely on administrative data that may not accurately capture the quality of service delivery as experienced by citizens. Rasul and Rogger (2018) argue for the importance of understanding management practices and incentives in the civil service to improve performance. Our work complements these approaches by introducing a novel, citizen-centric measure of government performance that captures the lived experience of public service users while simultaneously revealing discrepancies with official assessments—a dual perspective that conventional metrics cannot provide.

Finally, our findings on the demographic characteristics of complainants contribute to the literature on gender and socioeconomic disparities in political participation and

access to public services. Previous research has documented how marginalized groups often face barriers to accessing government services. Chaudhury et al. (2006) show that teacher and health worker absenteeism disproportionately affects poor and rural communities. Olken (2010) examines how direct democracy affects public goods provision, finding heterogeneous effects across different types of communities. Our analysis of who uses digital complaint systems adds to this literature by highlighting how technological solutions may perpetuate existing inequalities if not carefully designed to ensure broad-based participation, even as they enhance overall monitoring capacity.

The remainder of the paper is organized as follows. Section 2 provides an overview of the institutional context, including Pakistan's administrative structure and the Pakistan Citizen Portal. Section 3 describes our data sources and key variables. Section 4 presents extensive descriptive evidence on complaint patterns and demographic representation. Section 5 outlines our empirical strategy for identifying the causal effect of bureaucratic transfers. Section 6 presents our causal results. Section 7 discusses the policy implications of our findings, and Section 8 concludes.

2 Institutional Context

2.1 Pakistan's Administrative Structure

Pakistan operates under a federal system of governance, where the Prime Minister holds the most significant executive authority. The nation's capital, Islamabad, serves as the administrative heart of the country, housing the key federal ministries and institutions. The Pakistan Citizen Portal is operated and managed directly by the Prime Minister's Office in Islamabad.

Administratively, Pakistan is divided into six major units:

- **Punjab**: The most populous and economically dominant province, with Lahore as its capital.
- **Sindh**: Home to Karachi, Pakistan's largest city and commercial hub.
- **Khyber Pakhtunkhwa (KPK)**: Known for its strategic border location and capital in Peshawar.
- **Balochistan**: The largest province in terms of area, yet sparsely populated, with its capital in Quetta.

- **Azad Jammu and Kashmir (AJK)**: A semi-autonomous region with its capital in Muzaffarabad.
- **Gilgit-Baltistan (GB)**: A region of strategic importance due to its location near China.

2.2 Public Service Delivery in Pakistan

Pakistan's federal bureaucratic apparatus plays a critical role in service delivery, particularly through the structure of its civil services, which are responsible for implementing government policies at both federal and provincial levels.

Several key institutions are involved in service delivery:

- **District Administration**: The Deputy Commissioner (DC) or District Coordination Officer (DCO) plays a pivotal role at the district level in overseeing service delivery and policy implementation. These officials act as key intermediaries in responding to citizen complaints filed through the PCP on issues related to health, education, water, sanitation, and law enforcement.
- **Line Departments**: Service delivery across key sectors such as health, education, infrastructure, and public works is managed by line departments, which are led by bureaucrats responsible for allocating resources and overseeing operations. Citizens can lodge complaints regarding service delivery failures directly to these departments through the PCP.
- **Local Government**: At the grassroots level, local governments work with bureaucrats to deliver essential services such as waste management, water supply, and public infrastructure maintenance. The PCP allows citizens to engage directly with local authorities, bypassing traditional bureaucratic barriers.

The civil service, often referred to as the "steel frame" of the country (Bertrand et al., 2020) or "wheels that run the engine of the State," plays a pivotal role in the formulation and implementation of public policies (Cheema et al., 2006).

2.3 The Pakistan Citizen Portal (PCP)

The Pakistan Citizen Portal (PCP) is a government initiative launched in 2018 to facilitate communication between citizens and public servants. Operating as a mobile application, the PCP provides a platform for individuals to lodge complaints, give suggestions,

or report issues related to public services. The portal aims to increase transparency and accountability within government departments by enabling direct engagement between the public and authorities.

Through the portal, citizens can track the status of their complaints and receive responses from relevant departments. The system addresses bureaucratic inefficiencies by bypassing traditional, slower forms of communication and providing a centralized, accessible mechanism for grievance redressal. Its widespread adoption has been driven by its user-friendly interface and ability to resolve issues ranging from infrastructure concerns to administrative delays.

For public servants, the portal creates a structured feedback loop, holding them accountable for service delivery while allowing them to monitor public satisfaction in real time. From the citizens' perspective, the portal enhances their ability to hold government agencies responsible, thereby fostering trust in the state's capacity to address their concerns. By creating a more transparent and responsive public sector, the PCP could help mitigate issues of corruption and inefficiency, aligning bureaucratic incentives with the public interest.

3 DATA

3.1 PCP Complaint Data

Our primary dataset consists of 1,889,988 complaints submitted to the Pakistan Citizen Portal between January 2021 and October 2022. Each complaint record includes:

- **Geographic information**: Provincial jurisdiction where the complaint was registered and the complainant's self-reported province of origin.
- **Demographic data**: Age, gender, education level, and profession of the complainant.
- **Complaint details**: Category of complaint (across 40 Level One categories), targeted department, and submission date.
- **Resolution metrics**:
  - *Government Resolution Status*: Administrative assessment coded as "Relief granted" (full resolution), "Partial relief granted," or "Relief cannot be granted" (non-resolvable).
  - *Citizen-Reported Resolution Status*: Subjective complainant assessment coded as "Resolved," "Partially Resolved," or "Not Resolved."

  - *Citizen Satisfaction*: Binary indicator (Yes/No) of complainant satisfaction with the resolution.
  - *Overall Rating*: 5-point ordinal scale from worst to best experience.

- **Processing time**: Time elapsed between complaint submission and final government response.

3.2 Bureaucratic Transfers Data

Our second dataset contains information on 1,647 transfers of civil servants (ranked BS-17 and higher) between December 2020 and September 2022. The data, obtained from the Establishment Division, includes:

- **Transfer date**: Effective date of personnel change.
- **Officer details**: Rank (BS-17 to BS-22) and occupational group classification.
- **Department information**: Source and destination departments.

Using department names as a linkage key, we identified 4,784 common departments within the timeframe of the PCP dataset, of which 80 departments experienced a total of 1,346 transfers.

3.3 Additional Data Sources

We supplement our analysis with demographic data from:

- The 2017 Pakistan Census for population statistics
- Pakistan Bureau of Statistics annual reports for education and age distribution data
- Election Commission of Pakistan data on voter turnout by age group

4 Descriptive Evidence

We begin by providing extensive descriptive evidence from the Pakistan Citizen Portal, focusing on patterns of citizen engagement with the government through this novel platform.

4.1 Geographic Distribution of Complaints

Figure 1 presents the number of complaints per district, normalized to 1,000 residents. The map reveals substantial heterogeneity in citizen engagement across Pakistan's regions.

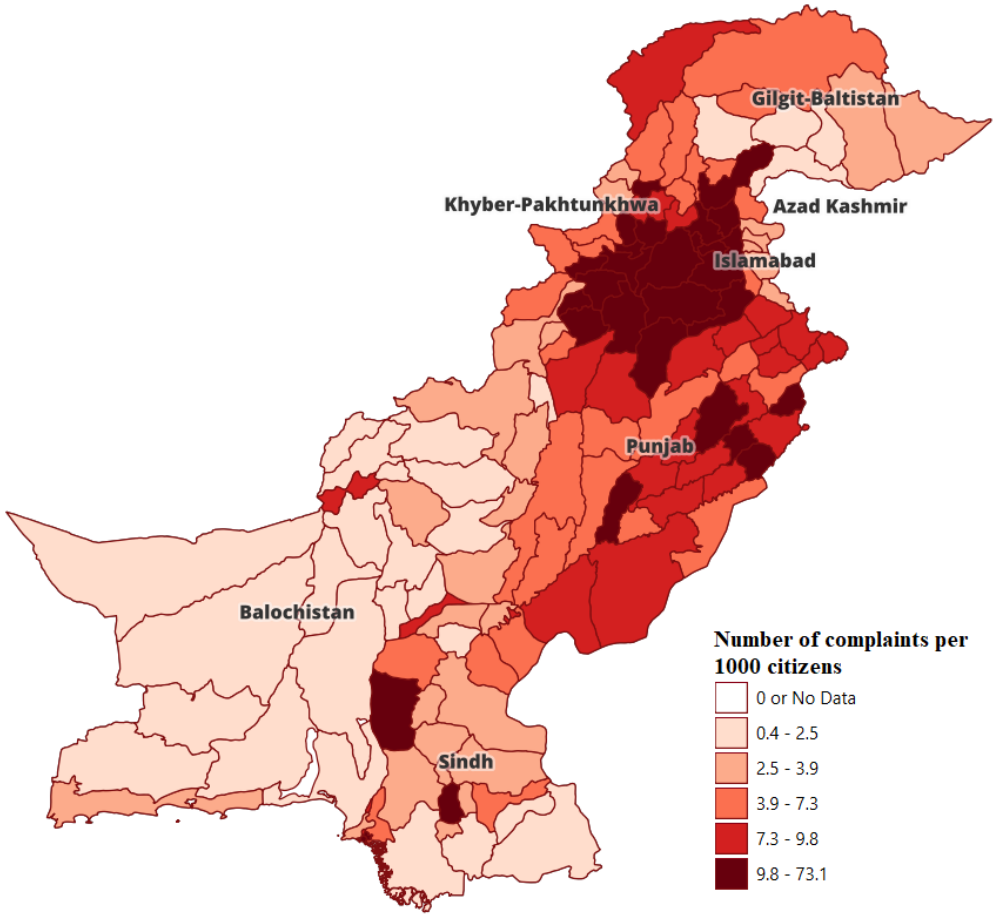


Figure 1: Number of Complaints per District (per 1,000 residents)

Notes: The map displays the number of complaints per district, normalized to 1,000 residents, across various administrative regions in Pakistan. The legend provides a color scale corresponding to different complaint rates with darker tones indicating higher number of complaints per 1,000 citizens. Population figures from the 2017 Pakistan Census were utilized to construct the accompanying map.

The spatial distribution reveals that Punjab—Pakistan's most populous province—accounts for approximately 61% of all complaints, with a complaint rate of 5.2 per 1,000 residents, significantly higher than the national average of 3.7. In contrast, Gilgit-Baltistan records

fewer than 1% of all complaints, with a rate of just 1.8 per 1,000 residents.

These geographic patterns are further highlighted in Figure 2, which shows complaint distribution by both destination and origin province.

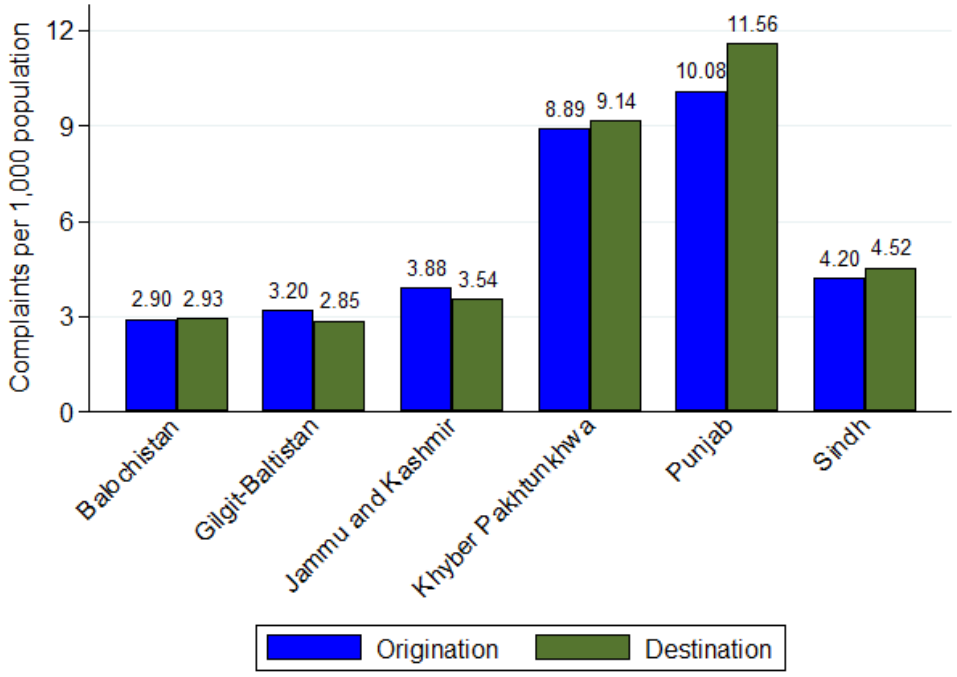


Figure 2: Complaint Distribution by Destination and Origin Province (per 1000 People)

Notes: The bar chart presents the total number of complaints filed, measured per 1,000 residents, for both originating and destination provinces within Pakistan. The dataset comprises 1,889,988 complaints in total. Approximately 70.5% were filed in the 12 months of 2021, while the remaining 29.5% were filed over the nine-month period from January to October 2022. The vertical (Y) axis indicates the number of complaints per 1,000 people, with each major tick mark representing an increment of 3. Population data from the 2017 Pakistan Census were employed to standardize the figure.

4.2 Resolution Rates Across Regions

A critical aspect of the PCP system is the assessment of complaint resolution. Figures 3 and 4 display resolution rates by district according to citizen and government assessments, respectively.

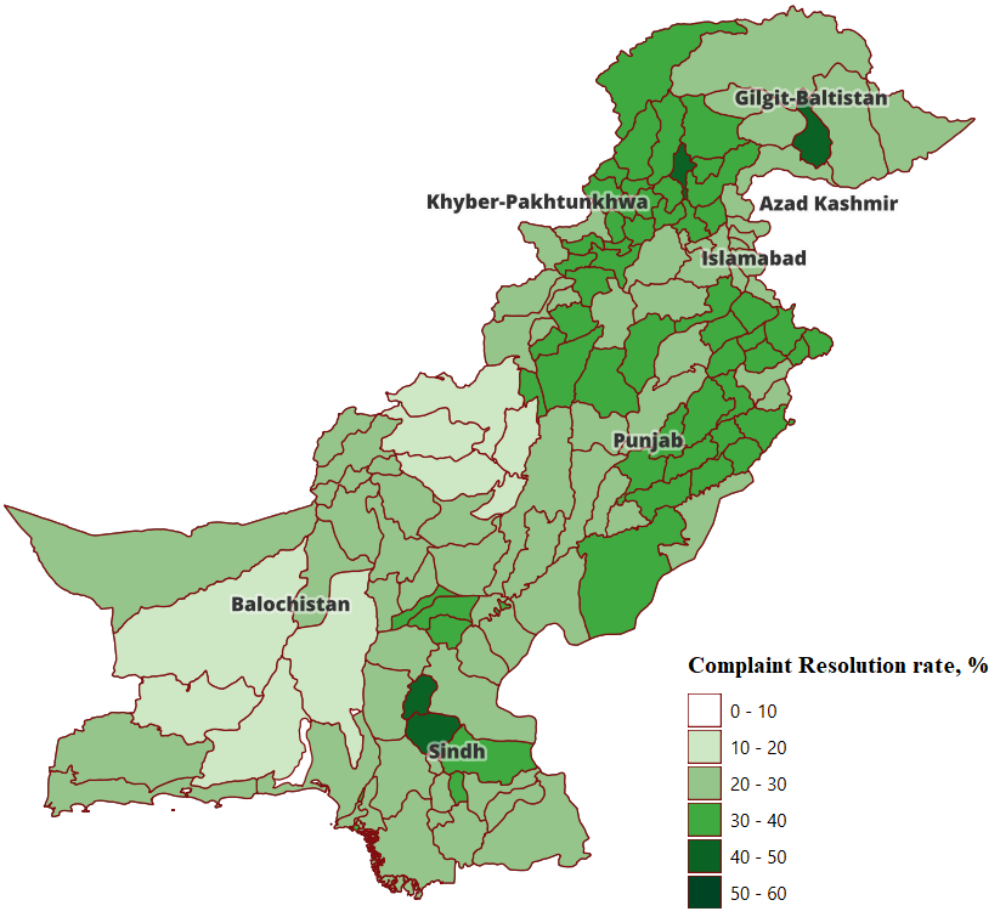


Figure 3: Citizen Assessment of Complaint Resolution Rate by District

Notes: The map illustrates the average resolution rates of citizen-assessed complaints across various districts in Pakistan. To determine the resolution rate, a binary indicator variable is employed, taking the value of one for "Resolved" complaints and zero otherwise, thus measuring the proportion of fully resolved cases within the entire sample. The legend presents six equally spaced intervals, each representing increments of 10% in the resolution rate. Darker hues correspond to higher resolution rates. The sample for the map includes 1,073,801 complaints.

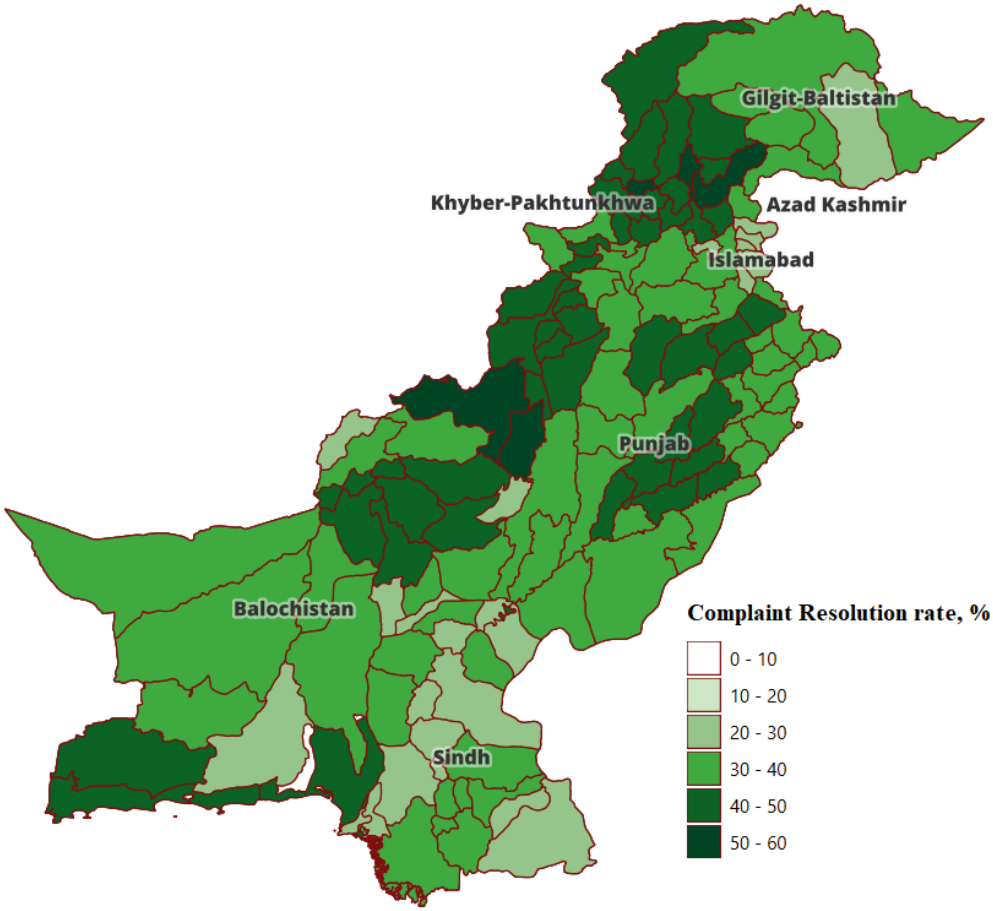


Figure 4: Government Assessment of Complaint Resolution Rate by District

Notes: The map illustrates the average resolution rates of government-assessed complaints across various districts in Pakistan. To determine the resolution rate, a binary indicator variable is employed, taking the value of one for "Relief granted" complaints and zero otherwise, thus measuring the proportion of fully resolved cases within the entire sample. The legend presents six equally spaced intervals, each representing increments of 10% in the resolution rate. Darker hues correspond to higher resolution rates. The sample for the map includes 1,889,988 complaints.

A striking finding from these maps is the substantial discrepancy between government and citizen perceptions of resolution. Overall, government officials mark 62.1% of complaints as "Relief granted" or "Partial relief granted," whereas citizens classify only 45.1% as "Resolved" or "Partially Resolved"—a 17-percentage-point gap. This perception gap varies geographically, from 13.2 points in Punjab to 23.7 points in Balochistan.

4.3 Demographic Representation

A critical concern with digital governance tools is whether they amplify existing social inequalities. Our analysis of complainant demographics reveals important patterns across several dimensions.

4.3.1 Age Distribution

Figure 5 shows the age distribution of complainants relative to the general population across provinces.

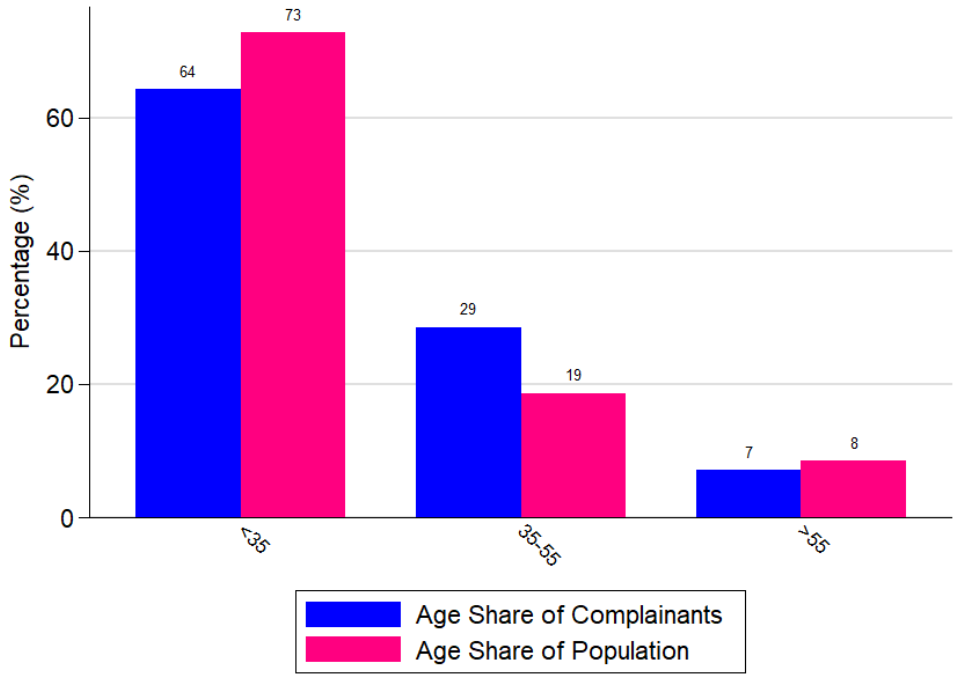


Figure 5: Age Distribution in Complaints Relative to Population Composition

Notes: The bar chart depicts the distribution of complaint-related observations by province, categorized into three distinct age groups, and compares these proportions to the corresponding age group shares in the overall population. The underlying dataset comprises a total of 1,889,988 observations. The vertical (Y) axis indicates the proportion of each age group—under 35 years, 35 to 55 years, and over 55 years—within the total number of observations for each province. The population data was obtained from the official website of the Pakistan Bureau of Statistics.

The age distribution of complainants differs markedly from population demographics. Citizens aged 25-35 are the most active users, filing 46.9% of all complaints despite

representing only 21.3% of the adult population. In contrast, citizens over 55 constitute 18.7% of the adult population but file only 7.1% of complaints. This age skew is consistent across all provinces but is most pronounced in Balochistan and Khyber Pakhtunkhwa.

Figure 6 further examines how resolution rates vary by age group, comparing citizen and government assessments.

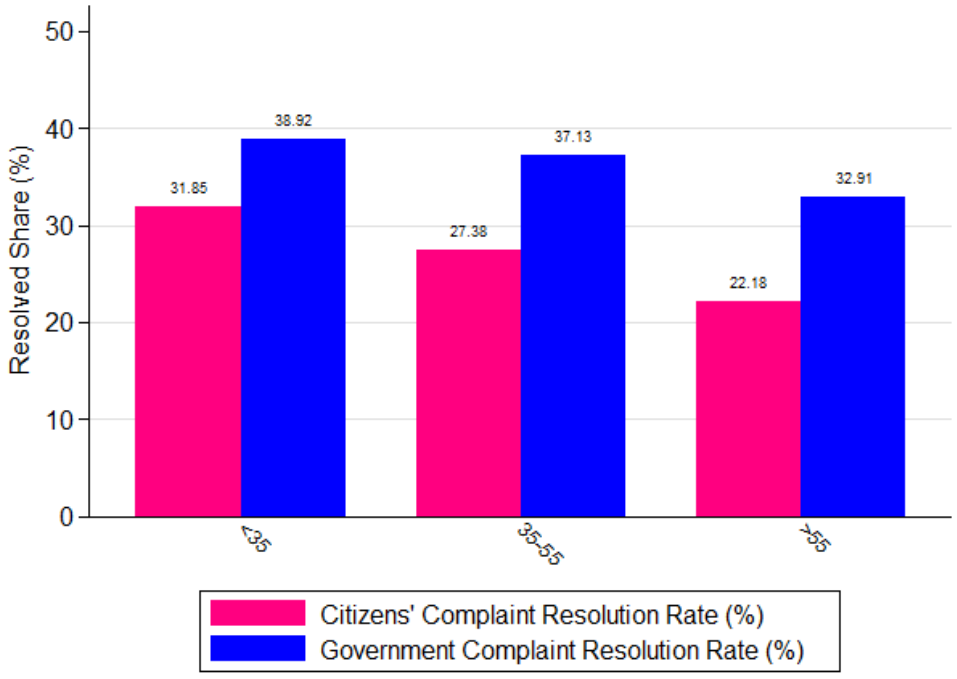


Figure 6: Resolution Rates by Age Group Composition

Notes: The bar chart displays the proportion of resolved complaints, categorized by three age groups, as assessed by citizens (shown as red bars) and by government authorities (shown as blue bars). Resolution status is determined by the average rate of "Resolved" cases for citizens, drawn from the Citizen Resolution Status column, and by the average rate of "Relief granted" cases for the government, drawn from the Government Resolution Status column. A total of 1,073,801 observations were included in the analysis, as 816,187 complaints remained unassessed by citizens at the cutoff date of the PCP dataset.

Notably, the perception gap between government and citizen assessments increases monotonically with age, from 15.2 percentage points for citizens under 35 to 21.6 points for those over 55. This suggests that older citizens may face greater challenges in having their complaints satisfactorily addressed through digital platforms.

Figure 7 compares the age distribution of complaints with voter turnout rates across

provinces.

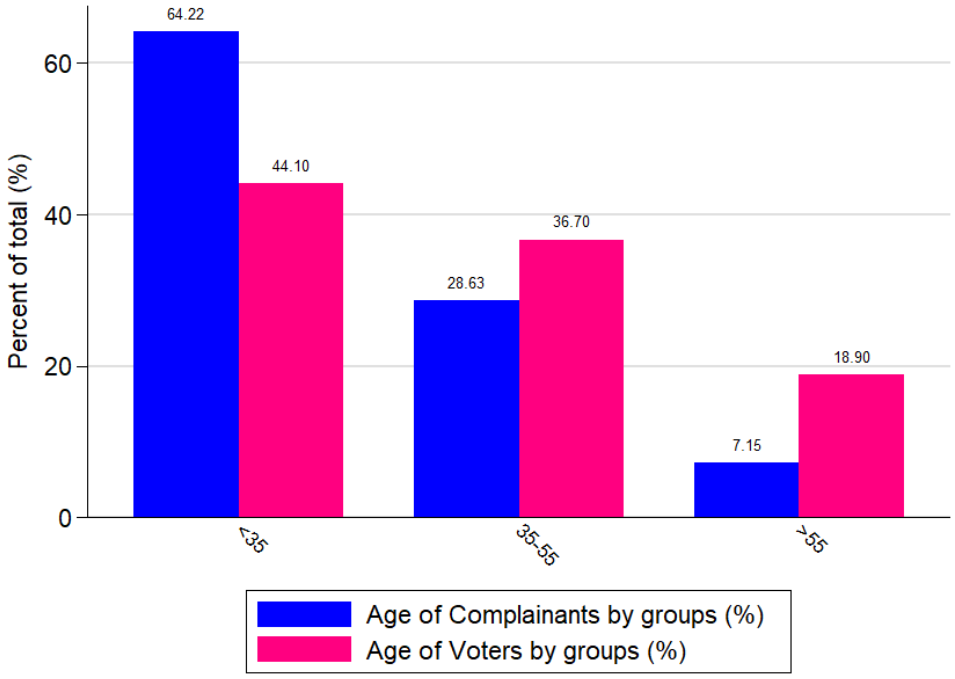


Figure 7: Comparing Complaint Composition and Voters by Age

Notes: The bar chart illustrates the distribution of complaint observations by age group, as well as turnout rates, across various provinces of Pakistan. The dataset encompasses 1,889,988 total observations. The vertical (Y) axis indicates the proportion of each age group within the total number of observations per province. Five distinct age categories are employed: 0–25 years, 25–35 years, 35–45 years, 45–60 years, and over 60 years. Turnout rates for the 2024 General Elections were obtained from the official website of the Pakistan Bureau of Statistics.

This comparison reveals that while younger citizens are overrepresented in digital complaint systems, their electoral participation lags behind older age groups, creating a potential misalignment between digital and traditional forms of civic engagement.

4.3.2 Educational Attainment

Figure 8 compares the educational profile of PCP complainants with the general population.

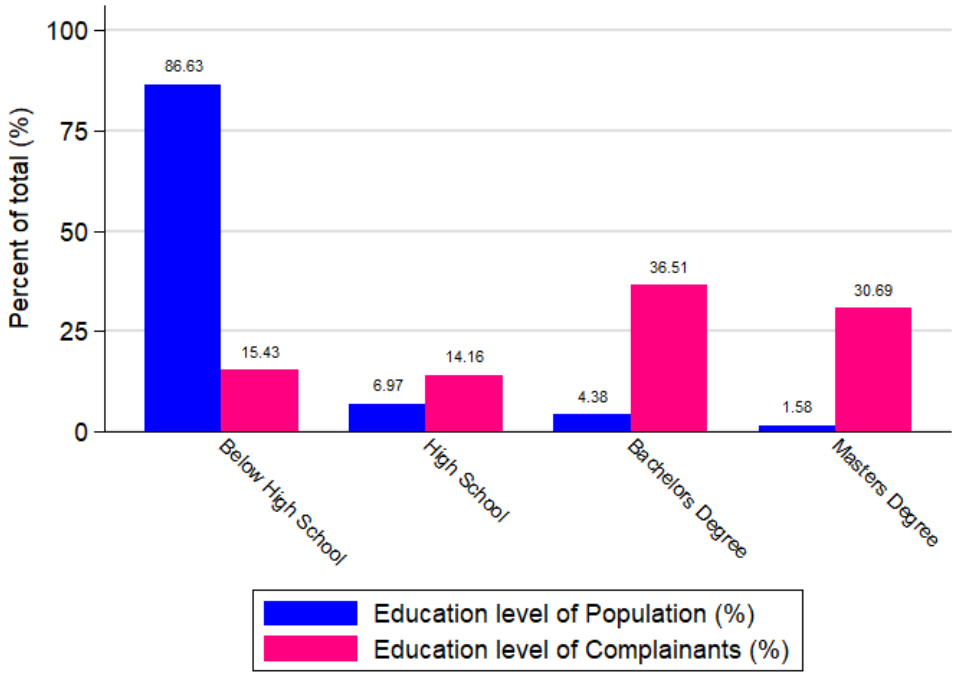


Figure 8: Education of Complainant versus Population Composition

Notes: The bar chart compares the educational composition of PCP complainants with the overall educational attainment levels within the general population. The analysis includes 1,784,648 observations, having excluded complaints where the education field was missing or marked as "None of the presented". The vertical (Y) axis displays the proportion of each of the four educational levels. The general population shares of each education level were obtained from the official website of the Pakistan Bureau of Statistics.

The PCP disproportionately attracts highly educated citizens. Individuals with bachelor's or master's degrees file 73.6% of all complaints, despite representing only 9.8% of the population. Those with primary education or less—representing 67.2% of Pakistan's population—account for just 8.9% of complaints. This educational skew suggests that digital platforms may predominantly serve the needs of the educational elite.

4.3.3 Gender Representation

Figure 9 shows the gender distribution of complaints across provinces.

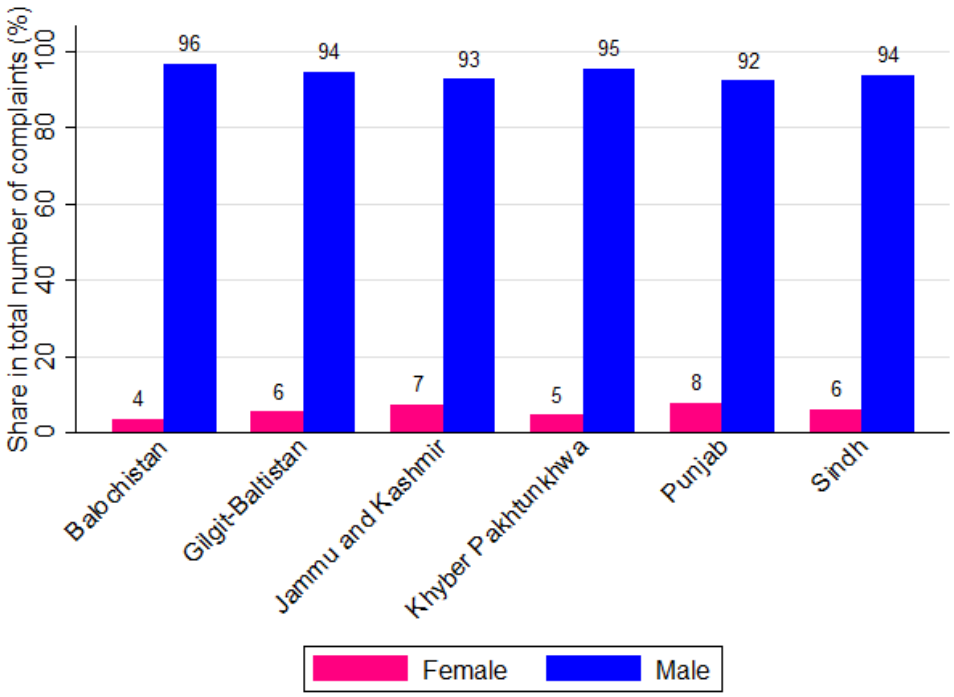


Figure 9: Gender Complaint Composition by Province

Notes: The bar chart represents gender complaint composition by provinces. The total number of observations used for the bar chart is 1,873,017, as complaints with no gender filled values were excluded from the full dataset. The Y-axis represents the share of female and male complainants in the total number of observations per province. The province with the most number of complaints is Punjab, the share of complaints is nearly 61% of the total number of complaints. The least number of complaints (less than 1% of the total number of complaints) was filed to Gilgit-Baltistan.

Males are substantially overrepresented across all provinces, accounting for nearly 93% of all complaints. This gender gap is most pronounced in Balochistan (96.5% male) and least severe in Punjab (92.2% male), but remains substantial throughout the country. This finding raises significant concerns about women's access to and comfort with digital governance platforms.

4.3.4 Professional Background

Figure 10 illustrates the professional background of complainants by province.

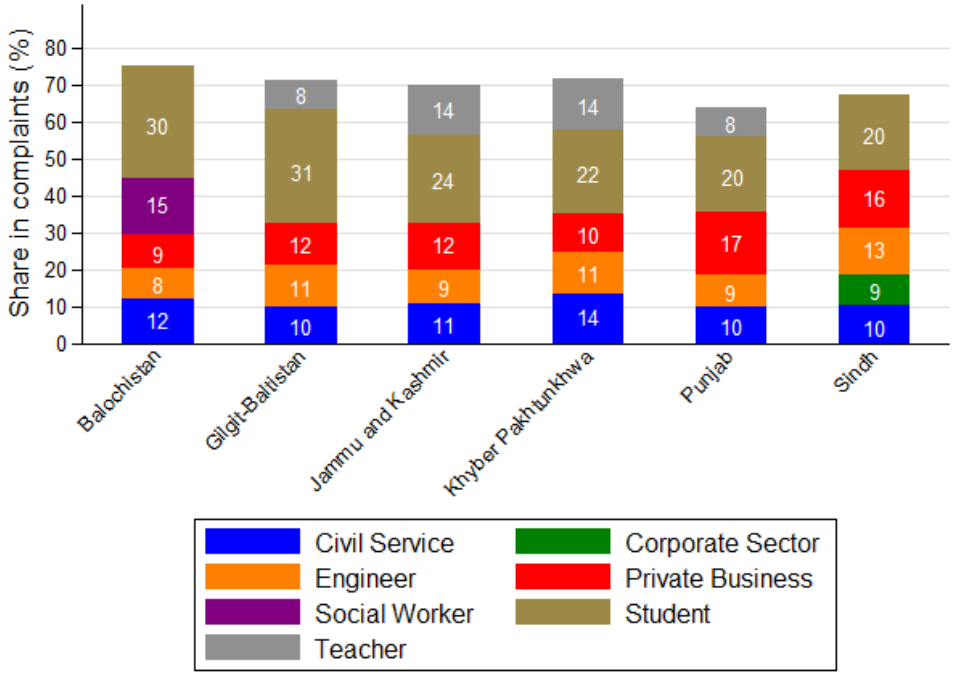


Figure 10: Profession Complaint Composition by Province

Notes: The bar chart represents profession complaint composition by provinces. The total number of observations used for the bar chart is 1,580,587, as complaints with no values or "None of the presented" for profession variable filled were excluded from the dataset. The Y-axis represents the share of each of the five most popular professions in the total number of observations per province. The categories represented in the graph are: Civil Service and Social workers, Corporate Sector, Private Business, Engineers, Students, Teachers. The most popular occupation across the dataset is "Student".

Students emerge as the most active user group (26.3% of complaints), followed by private business owners (14.7%), corporate sector employees (13.8%), and government servants (11.2%). The high engagement of students aligns with the age distribution findings and suggests that younger, more tech-savvy citizens are more comfortable using digital platforms for government interaction.

5 Empirical Strategy

5.1 Difference-in-Differences

Our empirical strategy relies on a two-way fixed effects (TWFE) specification to estimate the effect of bureaucratic transfers on complaint resolution:

$$Y_{idt} = \alpha + \beta \cdot Transfer_{dt} + X_i + \gamma_d + \delta_t + \varepsilon_{idt} \tag{1}$$

where Y_{idt} denotes the resolution of complaint i in department d at month t, $Transfer_{dt}$ is a binary indicator equal to one if a transfer occurred in department d at month t, and X_i includes complaint-level covariates. We control for department and time fixed effects, γ_d and δ_t, respectively, to absorb unobserved heterogeneity. Standard errors are clustered at the department level.

A key assumption underlying this design is parallel trends: in the absence of transfers, resolution rates in treated and control departments would have followed similar trajectories. To assess its validity and capture dynamic effects, we turn to an event study approach.

5.2 Dynamic Event Study

We implement an event study using Borusyak, Jaravel, and Spiess (2021)'s imputation as our baseline estimator. We prioritize the Borusyak estimator for three reasons. First, its imputation approach mitigates bias from heterogeneous treatment effects. Second, it eliminates arbitrary reference period choices. Third, Monte Carlo simulations suggest it outperforms TWFE under staggered treatment and effect heterogeneity (Borusyak et al., 2021). The Borusyak estimator addresses two well-documented concerns associated with a standard TWFE estimator: multicollinearity necessitates omitting a reference period (typically $k = -1$), introducing arbitrariness and treatment effect heterogeneity biases estimates when later-treated units serve as controls for earlier-treated ones through three steps. Firstly, it imputes counterfactual outcomes in the absence of treatment using pre-period data. Secondly, computes treatment effects as the difference between observed and imputed outcomes. Thirdly, agregates effects across cohorts and event times, weighting by cohort size.

Our event study specification follows:

$$Y_{dt} = \alpha + \sum_{k=-2}^{4} \beta_k \cdot 1(t - E_d = k) + \gamma_d + \delta_t + \varepsilon_{dt} \tag{2}$$

where E_d denotes the transfer timing in department d. The coefficients β_k measure the effect of transfers on resolution rates k quarters before or after the event.

To ensure robustness, we compare the Borusyak imputation estimates to four alternative estimators: TWFE OLS, de Chaisemartin and D'Haultfoeuille (2024), Callaway and Sant'Anna (2021), and Sun and Abraham (2021). The de Chaisemartin and D'Haultfoeuille estimator directly aggregates valid comparisons between treated and not-yet-treated units (Chaisemartin et al., 2024), while Callaway and Sant'Anna estimate cohort-specific ATTs with calendar-time aggregation. Sun and Abraham's interaction-weighted approach addresses treatment effect heterogeneity by reweighting cohort-period estimates, but excludes always-treated departments from the estimation sample (Sun and Abraham, 2021). This exclusion likely explains the attenuation of effect sizes in our Sun and Abraham estimates relative to other methods – departments with permanent transfers (the always-treated) might demonstrate stronger treatment responses. The Borusyak, de Chaisemartin, and Callaway estimators retain these units through either imputation (Borusyak) or staggered comparison frameworks (de Chaisemartin, Callaway), capturing fuller variation in treatment timing.

5.3 TWFE Limitations and Diagnostics

While TWFE remains a standard estimator, its estimations are limited compared to the other estimators. First, negative weighting arises when later-treated units serve as controls for earlier-treated ones (Goodman-Bacon, 2021). A Bacon decomposition reveals that 205 out of 420 two-by-two comparisons exhibit negative weights, summing to -0.0107. Using the bounding approach in de Chaisemartin and D'Haultfœuille (2020), we find that the true ATT must lie within $[-0.021, 0.021]$ to avoid sign reversals in $\hat{\beta}^{TWFE}$. Given our estimated effects presented in Table 1, which range from 0.0632 to 0.0697 across specifications, this bound appears reasonable. Second, dynamic specifications may suffer from "forbidden comparisons" between early- and late-treated units (Callaway and Sant'Anna, 2021). Our Borusyak estimates show no evidence of pre-trends (Figure 11), alleviating this concern. Third, treatment effect heterogeneity could bias TWFE if high-complaint departments respond differently to transfers. Using test_random_weights(), presented in de Chaisemartin and D'Haultfœuille (2020), we find a weak correlation ($\rho = 0.12$,

$p = 0.24$) between complaint volumes and treatment weights, suggesting minimal bias.

6 RESULTS

6.1 Impact of Bureaucratic Transfers on Complaint Resolution

Figure 11 presents event study estimates of the impact of bureaucratic transfers on complaint resolution rates over time.

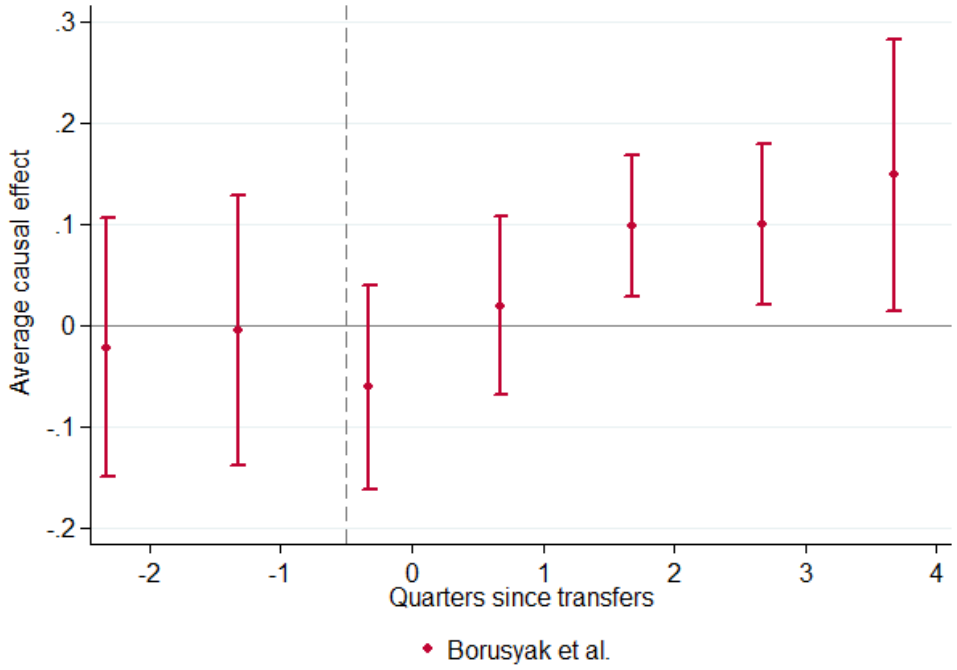


Figure 11: Impact of Bureaucrat Transfers on Resolution Shares Over Time

Notes: The figure presents event-study estimates generated using the Borusyak et al. (2021) estimator. The time variable measures the number of quarters elapsed since (or before) the most recent departmental transfer. The outcome variable is a binary indicator "Resolved," which equals zero if the citizen marked the complaint as "Not resolved" and equals one if the citizen marked it as "Resolved" or "Partially Resolved." The full sample of 1,889,988 complaints was utilized to form a department-month panel, comprising 33,488 observations drawn from 4,784 unique departments over seven quarters of available PCP data. The vertical bars represent 95% confidence intervals, with standard errors clustered at the department level.

The event study reveals that bureaucratic transfers have significant positive effects

on complaint resolution rates. Following a transfer, the probability of a complaint being marked as "Resolved" or "Partially Resolved" by citizens increases by approximately 6.6 percentage points—a substantial improvement relative to the mean resolution rate of 45.1%.

The effect begins to materialize in the quarter immediately following the transfer and persists for at least three quarters. Importantly, we find no evidence of pre-trends, suggesting that transfers are not systematically occurring in response to deteriorating performance but rather serve as an effective disciplinary mechanism.

6.2 Difference-in-Differences Estimates

Table 1 presents the results from our difference-in-differences analysis of the impact of departmental transfers on citizen complaint resolution.

TABLE 1: Impact of Departmental Transfers on Citizen Complaint Resolution

	(1)	(2)	(3)
	Resolved	Resolved	Resolved
Transfers Dummy	0.0697***	0.0659***	0.0632***
	(0.0142)	(0.0129)	(0.0117)
Number of Clusters	4,264	4,264	4,264
Time FE	YES	YES	YES
Department FE	YES	YES	YES
Category Controls	NO	YES	YES
Complainant Controls	NO	NO	YES
Observations	972,208	972,208	972,208
Mean dep. var.	0.451	0.451	0.451
Adj. R squared	0.097	0.105	0.109

Notes: Robust standard errors clustered at the department level are in parentheses. The dependent variable is a binary indicator for complaint resolution status (1 = "Resolved" or "Partially Resolved"; 0 otherwise). The key independent variable, Transfers Dummy, equals 1 if any transfers occurred in the department where the complaint was filed. All specifications include month-year and department fixed effects. Column (2) adds complaint category controls, and column (3) further includes complainant controls (gender, education, profession, province). The sample includes 972,208 complaints. ***p < 0.01, **p < 0.05, *p < 0.10.

The difference-in-differences estimates confirm the event study findings. Controlling for department and time fixed effects, along with complaint category and complainant characteristics, we find that transfers increase resolution rates by 6.3 percentage points (significant at the 1% level).

This effect remains robust across various specifications and represents a substantial improvement of approximately 14% relative to the mean resolution rate of 45.1%. The consistency of the coefficient estimates across columns suggests that the effect is not driven by changes in the types of complaints filed or characteristics of complainants.

6.3 Heterogeneity Analysis

Further analyses (not shown in tables) reveal that the effect of transfers varies across department types:

- The strongest effects are observed in infrastructure and utilities departments (8.7 percentage point increase)
- Significant positive effects are also found in transportation and development departments (7.1 percentage point increase)
- More modest effects are seen in legal and institutional integrity departments (4.2 percentage point increase)

These findings suggest that personnel changes can be an effective tool for improving bureaucratic performance, particularly in departments responsible for tangible public services where outcomes are more easily observable.

7 Discussion and Policy Implications

Our findings have important implications for governance reform and public service delivery in developing countries:

1. **Digitized citizen feedback systems** can effectively bridge information gaps between citizens and government officials, providing a scalable, low-cost mechanism for monitoring public service delivery. However, their effectiveness depends on ensuring representative participation across demographic groups.
2. **Bureaucratic transfers** appear to be an effective disciplinary tool for improving government responsiveness. This suggests that personnel changes can disrupt entrenched inefficiencies and create incentives for better performance. The effect is

particularly strong in departments responsible for tangible infrastructure and utilities services.

3. **Digital divide concerns** are evident in the underrepresentation of women, less educated citizens, and older individuals. Future policies should address these gaps to ensure that digital governance tools do not exacerbate existing inequalities. Particularly concerning is the 92.9% male representation among complainants, suggesting significant barriers to women's participation.

4. **Government-citizen perception gaps** highlight the need for improved communication strategies and expectation management in citizen feedback systems. The 17-percentage-point gap between government and citizen assessments of resolution status indicates potential misalignment in how success is defined and communicated.

8 Conclusion

This paper demonstrates how technology can enhance accountability in public service delivery by facilitating direct citizen-government communication. Our analysis of Pakistan's Citizen Portal reveals that digital feedback systems can effectively identify service delivery issues and that bureaucratic transfers serve as a powerful mechanism for improving responsiveness.

However, the effectiveness of such systems depends crucially on ensuring broad-based participation across demographic groups and addressing the gap between government and citizen perceptions of resolution. As developing countries increasingly turn to digital solutions for governance challenges, understanding these dynamics will be essential for designing policies that truly enhance public service delivery for all citizens.

Future research should examine how to increase the representativeness of digital feedback systems, explore mechanisms to align government and citizen perceptions of service quality, and investigate the long-term sustainability of the positive effects of bureaucratic transfers on governance outcomes.

Our study contributes to the growing literature on technology in governance by providing evidence on both the promise and limitations of digital citizen feedback systems. While these systems offer unprecedented opportunities for citizen engagement and bureaucratic accountability, their transformative potential can only be realized when they effectively represent the full diversity of citizen needs and experiences.

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APPENDIX A1. VARIABLE DEFINITIONS AND SOURCES

Part A. Pakistan Citizen Portal (PCP) Dataset

Resolved rate = A dummy variable constructed based on the Citizen Resolution Status variable, taking the value of 1 if the Citizen Resolution Status was classified as either "Resolved" or "Partially Resolved," and 0 otherwise. Complaints that did not receive a response were excluded from the dataset when utilizing this variable. This data is based on calculations derived from administrative records of the Pakistan Citizen Portal application (January 2021 - September 2022).

Transfers Dummy = A dummy variable taking the value of 1 if the department to which a complaint was filed experienced a bureaucrat rotation during the month when the complaint was filed, and 0 otherwise. The data on bureaucratic transfers is sourced from government personnel records (N=1,647 transfers; December 2020 - September 2022), collected from the publicly available official website of Pakistan's Establishment Division: `https://www.establishment.gov.pk/`.

Complaints per 1,000 population = The total number of complaints filed per 1,000 inhabitants in each province of Pakistan, calculated using the total number of complaints and the provincial population figures derived from the 2017 Census. The population data was sourced directly from the publicly available website of the Pakistan Bureau of Statistics: `https://www.pbs.gov.pk/`. The data on the number of complaints is sourced from the administrative records of the Pakistan Citizen Portal application (January 2021 - September 2022).[1]

Complaint Destination = A categorical variable representing the provincial jurisdiction where the complaint was formally registered. This data is sourced from the administrative records of the Pakistan Citizen Portal application (January 2021 - September 2022).[1]

Complaint Origination = A categorical variable representing the complainant's self-reported provincial origin. This data is sourced from the administrative records of the Pakistan Citizen Portal application (January 2021 - September 2022).[1]

Resolved = A dummy variable constructed based on the Citizen Resolution Status, taking the value of 1 if the Citizen Resolution Status was classified as "Resolved" and 0 otherwise. Complaints that did not receive a response were excluded from the dataset when utilizing this variable. This data is sourced from the administrative records of the Pakistan Citizen Portal application (January 2021 - September 2022).

Relief Granted = A dummy variable constructed based on the Government Resolution

[1] *Note:* Islamabad Capital Territory ("Federal Govt.") was merged with Punjab.

Status, taking the value of 1 if the Government Resolution Status was classified as "Relief Granted" and 0 otherwise. This data is sourced from the administrative records of the Pakistan Citizen Portal application (January 2021 - September 2022).

Age Share of Complainants = The percentage of complaints in the total number of observations filed by citizens belonging to three respective age groups: below 35 years, 35-55 years, and above 55 years old. This data is sourced from the administrative records of the Pakistan Citizen Portal application (January 2021 - September 2022).

Star = A numerical variable representing a complainant's rating for resolution, ranging from 1 to 5. This data is sourced from administrative records of the Pakistan Citizen Portal application (January 2021 - September 2022).

Response Time = The difference (in days) between the date when a complaint was filed and the date when a response was provided by the government. Complaints that did not receive a response were excluded from this dataset when utilizing this variable. This data is sourced from administrative records of the Pakistan Citizen Portal application (January 2021 - September 2022).

Level one = A categorical variable representing the first and highest level of classification for complaints by category, with 40 unique values (e.g., Energy & Power). This data is sourced from administrative records of the Pakistan Citizen Portal application (January 2021 - September 2022).

Part B. Bureaucratic Transfers Dataset

Transfer Date = The effective date on which a transfer occurred. This data is sourced from government personnel records (N=1,647 transfers; December 2020 - September 2022), collected from the publicly available official website of Pakistan's Establishment Division: `https://www.establishment.gov.pk/`.

Occupational Group = A categorical variable representing departmental occupational groups to which transferred bureaucrats belonged, with 43 unique values. Notable occupational groups include: Police Service of Pakistan (PSP) with 444 transfers, Pakistan Administrative Service (PAS) with 406 transfers, and Office Management Group (OMG) with 372 transfers. This data is sourced from government personnel records (N=1,647 transfers; December 2020 - September 2022), collected from the publicly available official website of Pakistan's Establishment Division: `https://www.establishment.gov.pk/`.

Rank = A numerical representation of civil service grades (BS-17 to BS-22 scale) for transferred individuals. This data is sourced from government personnel records (N=1,647 transfers; December 2020 - September 2022), collected from the publicly available official

website of Pakistan's Establishment Division: https://www.establishment.gov.pk/.

Part C. Additional Data Sources

Education level of Population = The percentage distribution of inhabitants in Pakistan across four educational attainment groups: those who have not obtained a high school diploma, those who have obtained a high school diploma but no further degree, those who have obtained a bachelor's degree or equivalent, and those who have obtained a master's degree. Population share data was sourced directly from the publicly available website of Pakistan Bureau of Statistics: https://www.pbs.gov.pk/.
Age of Voters by Groups = The percentage distribution among voters in Pakistan's General Elections in three age groups: below 35 years, between 35-55 years, and above 55 years old. Voter share data was sourced directly from publicly available information on Pakistan's Election Commission website: https://www.establishment.gov.pk/.
Age Share of Population = The percentage distribution among inhabitants in three age groups: below 35 years, between 35-55 years, and above 55 years old. Population share data was sourced directly from publicly available information on Pakistan Bureau of Statistics' website: https://www.pbs.gov.pk/.

APPENDIX A2. DATA SOURCES AND CONSTRUCTION

We describe here the main variables and data sources used in the paper.

We first obtained the raw data from the Pakistan Citizen Portal, encompassing the original texts of the complaints. Citizens were afforded the opportunity to submit complaints in either English or Urdu. To facilitate text analysis, we translated both the complaints and the government responses utilizing programmatic methods. Specifically, we employed the Google Translator library within Python to translate all complaints and replies into English. This procedure culminated in a dataset comprising both the original texts and their translated versions.

To quantify the complexity of the complaints and responses, we calculated their respective word counts. Furthermore, we employed sentiment analysis tools, specifically Python's NLTK library, to assess the emotional valence of both complaints and responses. Subsequent to obtaining emotionality scores, we prepared a dataset for cleaning, wherein unnecessary columns were removed. Concretely, we eliminated columns containing textual data (both original and translated) to enhance compatibility with Stata and to ensure anonymity, given that citizens occasionally included personal information within their

complaints. The resultant dataset retained only descriptive metrics, such as word counts and sentiment scores, and was converted into Stata format for subsequent analysis.

We also collected data pertaining to bureaucratic rotations and promotions across departments, employing Python code to extract information from the official website of the Establishment Division (`https://www.establishment.gov.pk/`). Individual-level data regarding officer transfers and promotions was accessible in PDF files for each bureaucrat individually. We parsed these files to extract salient information, including rank, occupational group, and details pertaining to departmental transfers (i.e., originating and receiving departments). Both transfer and promotion data were collected, given the possibility that a transferred officer was replaced by another officer who had been promoted to fill the resultant vacancy.

Following data collection, we merged aggregated metrics of transfers with the Pakistan Citizen Portal data. Given that PCP data is complaint-specific, whereas transfer data is individual-specific, exact matching was infeasible. Consequently, we aggregated metrics to facilitate merging. To this end, we appended a column labeled "department PCP" to represent department names from PCP records within the transfers dataset. We employed a similarity index tool from Python's NLTK library to automatically match department names between datasets. To address discrepancies not resolved by automated matching, we manually reviewed and verified department names to ensure accuracy.

To quantify transfer intensity, we created two key variables: a binary transfers dummy variable, equaling 1 if at least one transfer occurred in a complained department during the month when a complaint was filed, and an intensive measure, termed "transfers count," representing the number of transfers occurring in a complained department prior to a specific complaint filing date.

Additionally, we created time-related variables: "closest transfer date," quantifying the temporal proximity of the nearest transfer (either preceding or following) relative to a complaint's filing date, and "last transfer date," quantifying the temporal proximity of the most recent transfer preceding a complaint's filing date. For departments lacking any transfers during the observation period, these time-related variables remained empty. The resulting dataset was then used for descriptive analyses.

To conduct an event-study analysis, we constructed a panel dataset at the quarter-department level utilizing Stata code. This dataset encompassed aggregated metrics, including the total number of complaints per department per quarter, the mean citizen resolution status, and a variable termed "resolved rate," defined as the proportion of complaints designated as "Resolved" or "Partially Resolved." The "Resolved rate" variable serves as our primary outcome variable of interest for subsequent analyses.

Typical complaint examples

Note: The examples of complaints presented in this section retain the original punctuation and grammar as provided by the authors. All sensitive information has been anonymized to protect the privacy of individuals involved.

- **Municipal Services:** "Its been 4 months since the drainage gutter in our street is leaked and there is no one to repair it. We face difficulty every day to walk in the street without getting dirty."

- **Education:** "Assalamo alaikum I am a student at GCUF department of Orthotics and Prosthetics. Our field is mostly based on practical work and technical labs. But unfortunately our uni is unable to provide us these opportunities. There are lack of classrooms. Only 3 teachers are available to head this department and the no of students of each class is above 50. There are no internship opportunities given to us on behalf on university we have to pay the internship fees with that of the uni heavy fee. They do not refer their student for a particular observership. Kindly resolve to our issue and save our future. We are medical students and we dream to serve humanity. Thank you."

- **Poverty Alleviation and Social Safety:** "I am a student of Agricultural Engineering BZU Multan and I need a scholarship to continue my studies. My father works day and night to fulfill my dues and he can't afford my dues and I don't want to skip my studies and I need financial help to continue my studies. Please help me to continue my studies."

- **Health:** "Today i visited kundian hospital for my new born baby vaccination injection. Team refered me to doctor for checkup. Doctor asked me to check weight and blood group of baby. Firstly staff denied that they dont have any equipment for weight check and blood group check. When i insist on this they checked the weight but still they cant tested for blood group. My request is that blood check is the basic facility and if they don't have this one that is very bad. And if they have and they denied thats shameful."

- **Transport & Communications:** "A rural area in ICT is being neglected due to having no funds while the developmental projects in urban areas clearly show that there are a lot of funds. Building plazas, establishing new housing societies, and building skyscrapers also require funds. We are being neglected for so many years. The road

is badly damaged. It’s not safe to travel on. Kindly consider this complaint seriously and look into it."

APPENDIX B. ADDITIONAL FIGURES AND TABLES

TABLE 2: Number of Departments by Top-20 Categories of Level One - Transfers Number Decomposition

	Number of transfers					
Category of Level One	**0**	**1**	**2**	**3**	**4**	**5 & more**
1. Banking	343	7	3	2	3	7
2. Corruption / Malpractice	3564	5	6	4	2	56
3. Development Projects	2254	7	8	5	1	35
4. Education	1859	13	5	5	0	25
5. Energy & Power	786	12	2	1	2	10
6. Excise & Taxation	631	7	7	1	0	10
7. FBR	436	15	6	1	3	9
8. FIA / Cyber Crime	788	8	3	3	2	17
9. Farmer / Agriculture	1119	8	10	0	3	5
10. Health	2122	10	5	7	3	17
11. Human Rights	3598	5	4	5	3	60
12. Kamyab Jawan / Youth Affairs	529	6	8	3	2	11
13. Land Grabbing / Encroachment	1444	9	4	2	2	14
14. Land Revenue	1391	5	2	1	1	17
15. Law & Order	1507	8	5	4	1	23
16. Licenses, Certificates & Registrations	1347	5	7	3	4	15
17. Municipal Services	2455	8	6	3	1	17
18. NADRA	447	5	1	3	0	7
19. Poverty Alleviation and Social Safety	463	18	3	3	0	5
20. Transport & Communications	1756	7	11	3	2	31

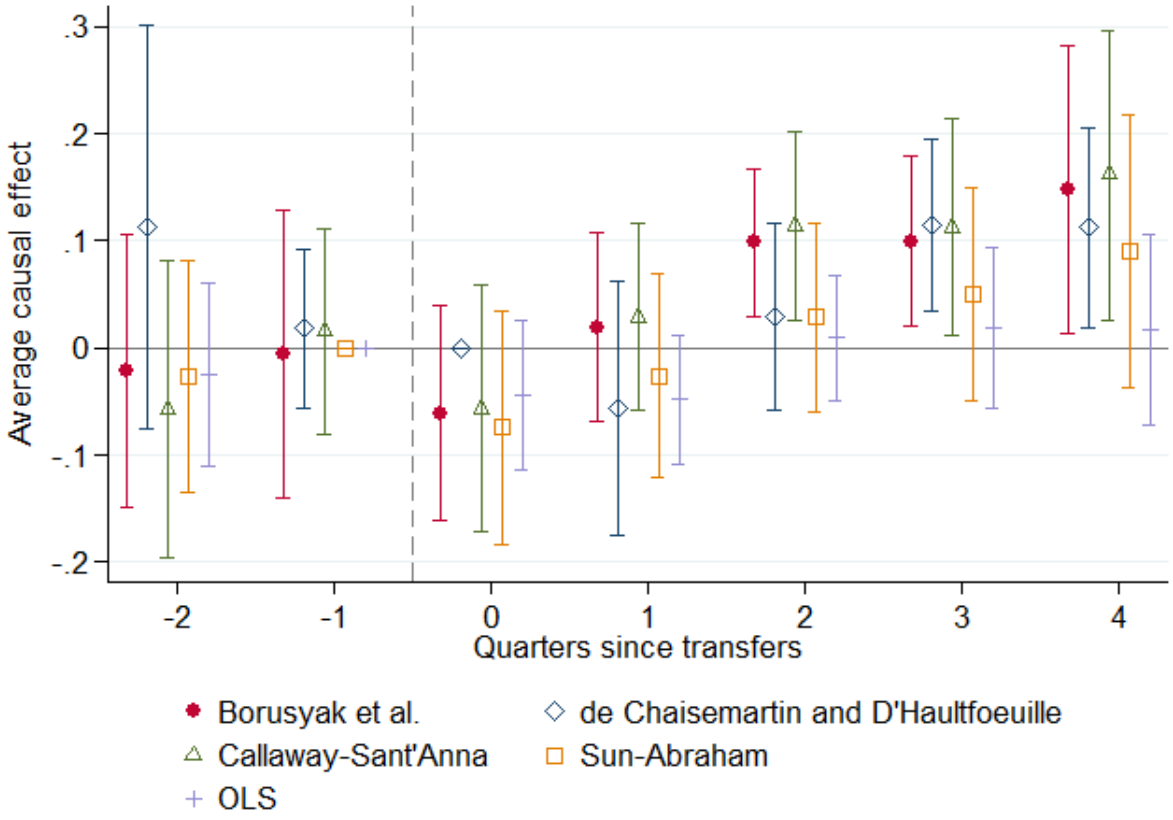
Notes: This table presents a decomposition of the top 20 Level One categories by the number of transfers across departments. The columns represent the frequency of transfers, ranging from zero to five & more transfers. The rows list the Level One categories that in total received the most number of complaints among all categories.

TABLE 3: Number of Complaints by Department

Department	**Number of Complaints**	**Share in Total Number, %**
Peshawar Electric Supply Company, PESCO	24283	1.28
Kamyab Jawan	25663	1.36
Sui Northern Gas Pipeline Limited (SNGPL)	27921	1.48
Faisalabad Electric Supply Company, FESCO	27950	1.48
State Bank of Pakistan	28951	1.53
Islamabad Electric Supply Company, IESCO	31806	1.68
Multan Electric Power Company, MEPCO	40864	2.16
Lahore Electric Supply Company, LESCO	44369	2.35
Benazir Income Support Programme (BISP)	45715	2.42
Customer Services (SNGPL)	58323	3.09

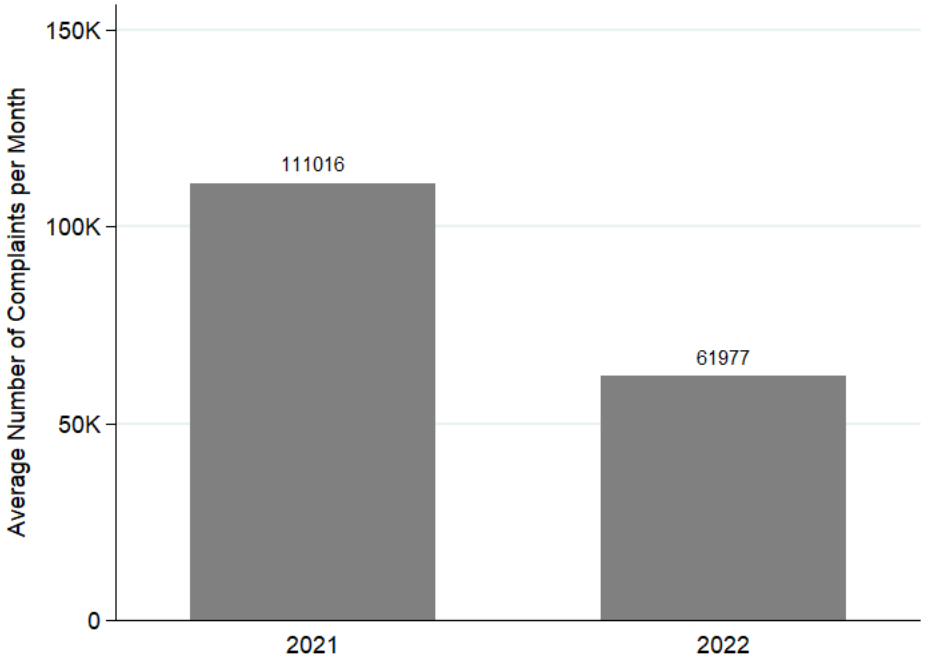
Notes: The table lists the top-10 most complained departments, with 4,784 unique values in the dataset. "Number of Complaints" shows total complaints per department, and "Share in Total Number, %" indicates their proportion of all complaints. The Prime Minister Youth Pulse Programme ("Kamyab Jawan") supports youth entrepreneurship through loans. Source: `https://nitb.gov.pk/TopStoryDetail`.

Figure B1: Impact of Bureaucrat Transfers on Resolution Shares Over Time (Full Sample).



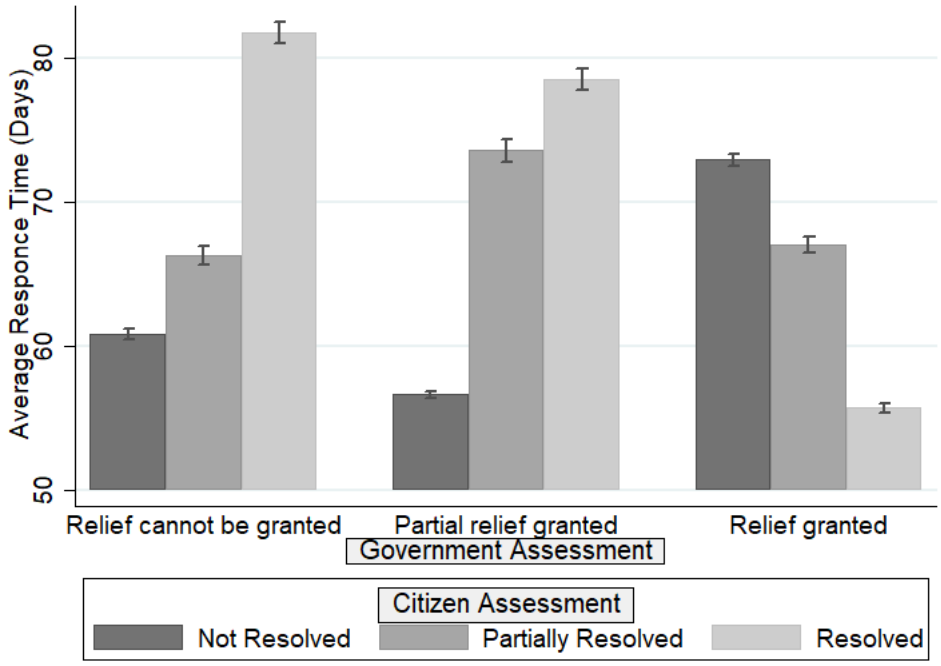
Notes: The figure presents event-study estimates generated using the Borusyak et al. (2021), de Chaisemartin and D'Haultfoeullie (2024), Callaway-Sant'Anna (2020), Sun-Abraham (2020) and TWFE OLS estimators. The time variable measures the number of quarters elapsed since (or before) the most recent departmental transfer. The outcome variable is a binary indicator "Resolved," which equals zero if the citizen marked the complaint as "Not resolved" and equals one if the citizen marked it as "Resolved" or "Partially Resolved." The full sample of 1,889,988 complaints was utilized to form a department-month panel, comprising 33,488 observations drawn from 4,784 unique departments over seven quarters of available PCP data. The vertical bars represent 95% confidence intervals, with standard errors clustered at the department level.

Figure B2: Average number of complaints by years.



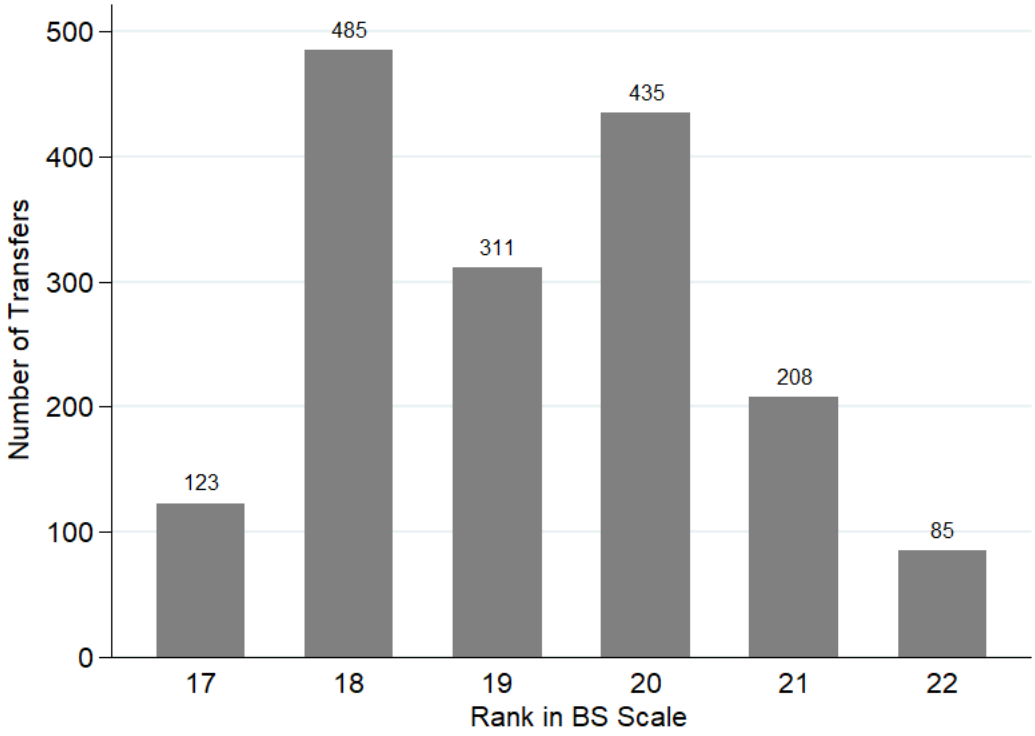
Notes: The figure presents the average number of complaints per month by Years (2021 and 2022). The total number of complaints is 1 889 988. The complaints in 12 months of 2021 are nearly 70,5% (1 332 197 complaints) of the total number of complaints. The complaints in 9 months (from January to October) of 2022 are nearly 29,5% (557 791 complaints) of the total number of complaints. The Y-axis represents the number of the complaints with each tick been equal to 50 000 complaints. The X axis represents years.

Figure B3: Average response time by Resolution status



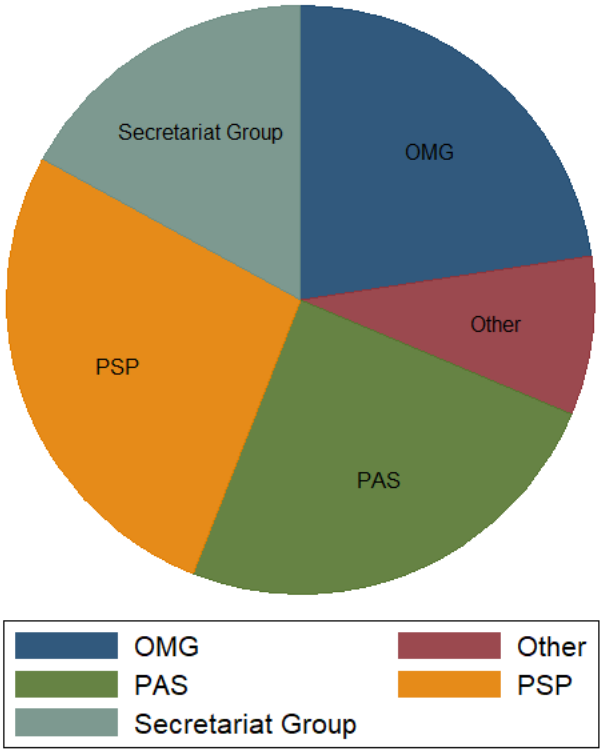
Notes: The bar chart depicts the average response time for complaint resolution across various categories of resolution statuses, including both citizen-reported and government-assessed outcomes. The analysis is conducted within a 98% confidence interval. Average response time, measured in days, is computed as the duration between the complaint filing date and the date when feedback on the complaint was received. Citizen assessment categorizes the resolution status as "Not Resolved," "Partially Resolved," or "Resolved." Government assessment classifies the resolution status as "Partial Relief Granted," "Relief Granted," or "Relief Cannot Be Granted." The dataset comprises 1,073,801 observations, with complaints lacking a government response excluded from the analysis.

Figure B4: Ranks of transferred bureaucrats.



Notes: The figure reports the distribution of transfer events across bureaucratic ranks during the operational period of the Pakistan Citizen Portal application. Ranks are coded on a scale from 17 to 22, with 22 denoting the highest echelon. In total, 1,647 transfers were observed.

Figure B5: Occupation groups of transferred bureaucrats.



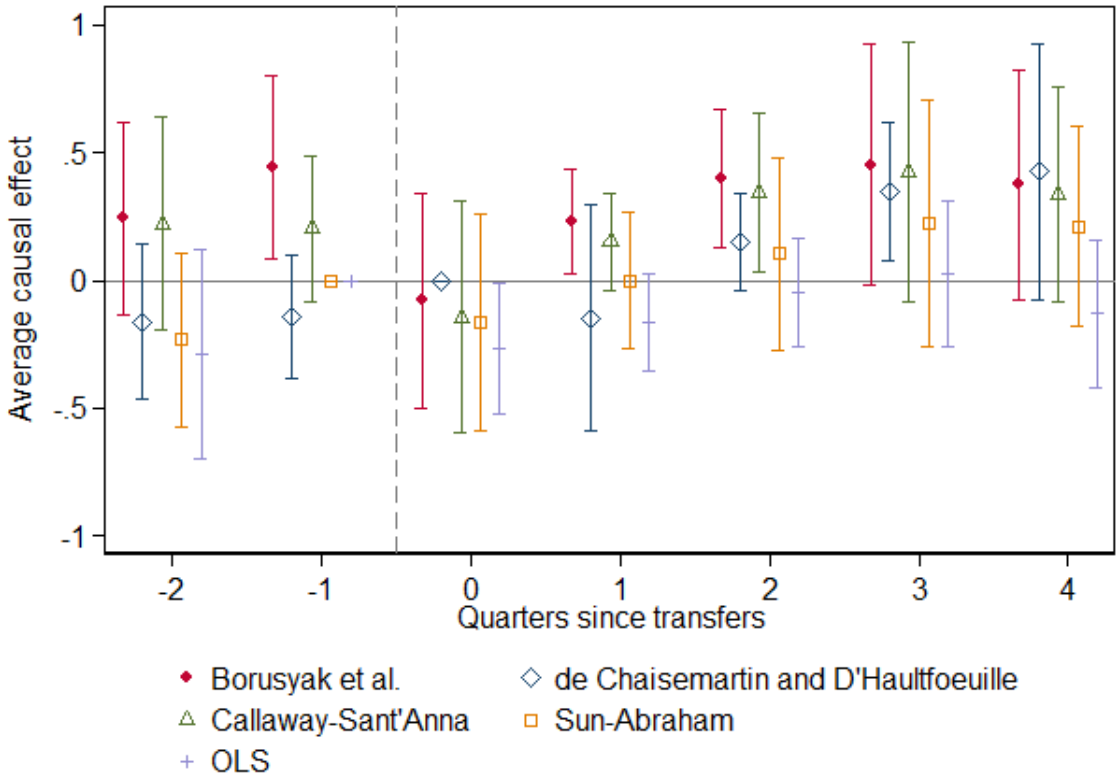
Notes: The figure reports the distribution of transfer events across occupational groups during the operational period of the Pakistan Citizen Portal application. Here, "**OMG**" (372 transfers) denotes the Office Management and Secretariat Group, "**PSP**" (444 transfers) refers to the Police Service of Pakistan, and "**PAS**" (406 transfers) stands for the Pakistan Administrative Service. 281 transfers happened in the **Secretariat Group**. In total, 1,647 transfers were observed.

TABLE 4: Impact of Departmental Transfers on Citizen Star Rating

	(1)	(2)	(3)
	Star	Star	Star
Transfers Dummy	0.2799***	0.2689***	0.2578***
	(0.0675)	(0.0644)	(0.0592)
Number of Clusters	4,264	4,264	4,264
Time FE	YES	YES	YES
Department FE	YES	YES	YES
Category Controls	NO	YES	YES
Complainant Controls	NO	NO	YES
Observations	972,208	972,208	972,208
Mean dep. var.	2.493	2.493	2.493
Adj. R-squared	0.0978	0.105	0.109

Notes: Robust standard errors clustered at the department level are in parentheses. The dependent variable is a measure of citizens' satisfaction status "Star" ranging from 1 to 5 with discrete values. The key independent variable, Transfers Dummy, equals 1 if any transfers occurred in the department where the complaint was filed. All specifications include month-year and department fixed effects. Column (2) adds complaint category controls, and column (3) further includes complainant controls (gender, education, profession, province). The sample includes 972,208 complaints. ***p < 0.01, **p < 0.05, *p < 0.10.

Figure B6: Impact of Bureaucrat Transfers on Average Star Rating Over Time (Full Sample).



Notes: The figure presents event-study estimates generated using the Borusyak et al. (2021), de Chaisemartin and D'Haultfoeullie (2024), Callaway-Sant'Anna (2020), Sun-Abraham (2020) and TWFE OLS estimators. The time variable measures the number of quarters elapsed since (or before) the most recent departmental transfer. The outcome variable a measure of citizens' satisfaction status "Star" ranging from 1 to 5 with discrete values. The full sample of 1,889,988 complaints was utilized to form a department-month panel, comprising 33,488 observations drawn from 4,784 unique departments over seven quarters of available PCP data. The vertical bars represent 95% confidence intervals, with standard errors clustered at the department level.

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