The Twitter/X-odus: Quantifying the forces behind the academic platform migration to Bluesky

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Abstract

Scientific knowledge does not exist in a vacuum—it is shaped by the networks through which it flows. One avenue of scholarly communication that has been playing an increased role in recent years is social media platforms on which scientists discuss, collaborate, and disseminate frontier research. Shifts in their adoption offer a unique lens into the structural dynamics of scientific exchange and how peers affect participation in discourse and shape political expressions. The recent emergence of Bluesky as a viable alternative to Twitter/X presents a natural experiment to study platform transition dynamics among academics. This study analyzes migration patterns within scholarly communities, leveraging a dataset of 16.7M Bluesky users and 300,000 academic Twitter/X profiles linked to publication records. We find substantial heterogeneity in the transition rates of different academic disciplines and significant peer effects through which social connections significantly influence transition decisions. Academics from top-100 universities and male academics exhibit higher transition probabilities. Lastly, we show that academics that transitioned platforms exhibit more progressive political opinions on a wide range of political debates indicating that the partial migration from X to Bluesky of the academic community may lead to a fracturing of academic discourse along partisan lines.

1 Introduction

The digital infrastructure supporting scientific communication has undergone rapid transformation, influencing how researchers engage with their peers and the broader public. Social media platforms have become central to scholarly discourse, enabling knowledge dissemination, professional networking, and real-time collaboration across disciplines. However, the governance and design of these platforms shape not only who participates but also the visibility and reach of scientific ideas. Given recent shifts in content moderation policies on platforms like Facebook and Twitter/X, the choice of platform can be particularly significant, especially as researchers who speak out publicly may face increasing harassment [8]. We offer a first comprehensive study the who, how and why of one the largest transition of Academics onto a new platform: Bluesky.

Social media adoption and migration present a unique opportunity to study how scientists navigate digital spaces and how network structures shape the diffusion of ideas. The persistence of social media monopolies is often attributed to strong network effects, which create substantial barriers to exit [2,3]. Even when users express dissatisfaction with a platform, they may be reluctant to leave if their professional or social networks remain [1]. This inertia extends beyond general users—public figures who initially pledged to leave Twitter/X due to policy disagreements have often returned to maintain influence (see for example: [6]). Given these dynamics, understanding what drives academics to transition platforms offers broader insights into digital migration, information diffusion, and scholarly network resilience.

Academics represent an ideal case for studying platform transitions. They rely on social media for professional visibility and intellectual exchange, forming structured, high-value connections that can influence migration behavior. Unlike general users, scholars often maintain stable and identifiable digital profiles, allowing for systematic tracking across platforms. Moreover, peer effects—where an individual's behavior is shaped by their social network—are particularly strong in academic communities, raising questions about how social influence interacts with institutional prestige, discipline, and individual characteristics. Prior research suggests that social media facilitates ideological sorting more than traditional media or face-to-face interactions [5]. Studying how academics respond to platform shocks can thus inform broader theories of knowledge diffusion and digital infrastructure shifts.

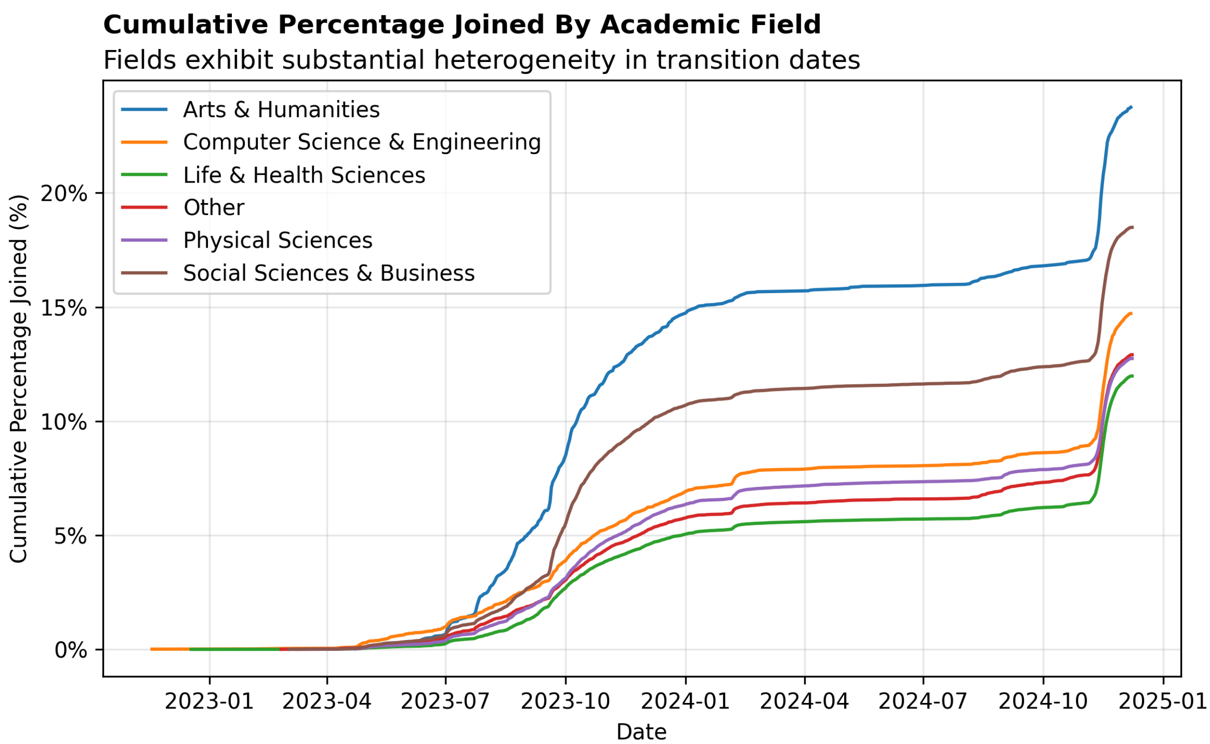

Figure 1: Academic discipline-specific transition rates to Bluesky over time. Lines show the cumulative percentage of academics within each field who have transitioned to Bluesky, revealing distinct patterns of adoption across disciplines.

Our analysis reveals substantial heterogeneity in platform adoption across academic disciplines. Despite this variation, all disciplines show a consistent upward trend in adoption rates with clearly visible exogenous shocks affecting the entire academic community simultaneously, suggesting a broad-based movement of academic communities toward Bluesky.

This study leverages a dataset of 16.7 million Bluesky users and 300,000 academic Twitter/X profiles linked to publication records to analyze platform transition dynamics in scholarly communities. We find substantial heterogeneity in migration rates across disciplines and strong peer effects, with social connections significantly influencing transition decisions. Academics from top-100 universities and male scholars exhibit higher transition probabilities. By incorporating new large language model (LLM) tools alongside Bluesky's open architecture, we demonstrate the viability of large-scale, high-accuracy social network analysis. This approach provides insights into how digital shifts affect the structure of scholarly communication and contribute to a broader understanding of the evolving information ecosystem in academia.

2 Data

We leverage the dataset of Twitter Academics previously examined in [4][1] which contains the profile and ten years of posts of around 300 thousand academics active on Twitter matched to their publication records through OpenAlex. We then match it to the universe of Bluesky users at the cutoff date for this study.

To establish a reliable ground truth dataset for cross-platform academic user identification, we randomly sampled 1,500 Twitter profiles and manually searched for corresponding matches on Bluesky. All data labeling was performed by graduate degree holders familiar with both platforms. To avoid sampling bias, we deliberately chose not to pre-filter accounts based on matching heuristics, which would have overrepresented "easy" matches in our dataset. We supplemented this with a true negative dataset by generating challenging potential matches for confirmed true positive cases, resulting in a data-set of 267 true positive matches and 801 true negatives.

The fundamental challenge in cross-platform account matching lies in its computational complexity — an $O(n^2)$ problem requiring 5.012 trillion comparisons between 300,000 Twitter accounts and 16.7M Bluesky accounts. This scale makes even simple string comparison measures computationally infeasible. To address this, we block users to dramatically reduce the search space while maintaining matching accuracy based on three similarity measures [9]. For each twitter user we retrieve a set of 30 potential matches on Bluesky. When evaluated on the test set, our algorithm retrieves the correct match in 93.3% of cases. For the final classification of potential matches, we fine-tuned a DistilBERT model on our labeled dataset. The dataset was split into training (60%), validation (20%), and test (20%) sets, with stratification by users to prevent data leakage between splits. This ensures that different profile pairs from the same user cannot appear in both training and evaluation sets, providing a more realistic assessment of model generalization. The model demonstrates robust performance across both matching and non-matching classes with a macro F1 score of 0.92.

3 Transition Probabilities

We examined whether network effects influenced users' platform transition probabilities by analyzing transition patterns among users' social connections. For each time period, we calculated the percentage of users' first-degree (direct) and second-degree (friends of friends) connections who had transitioned to Bluesky. As shown in Figure 1, first-degree connections consistently showed higher

[1]This in turn builds on v1 of the open data set of scholars on Twitter by [7]

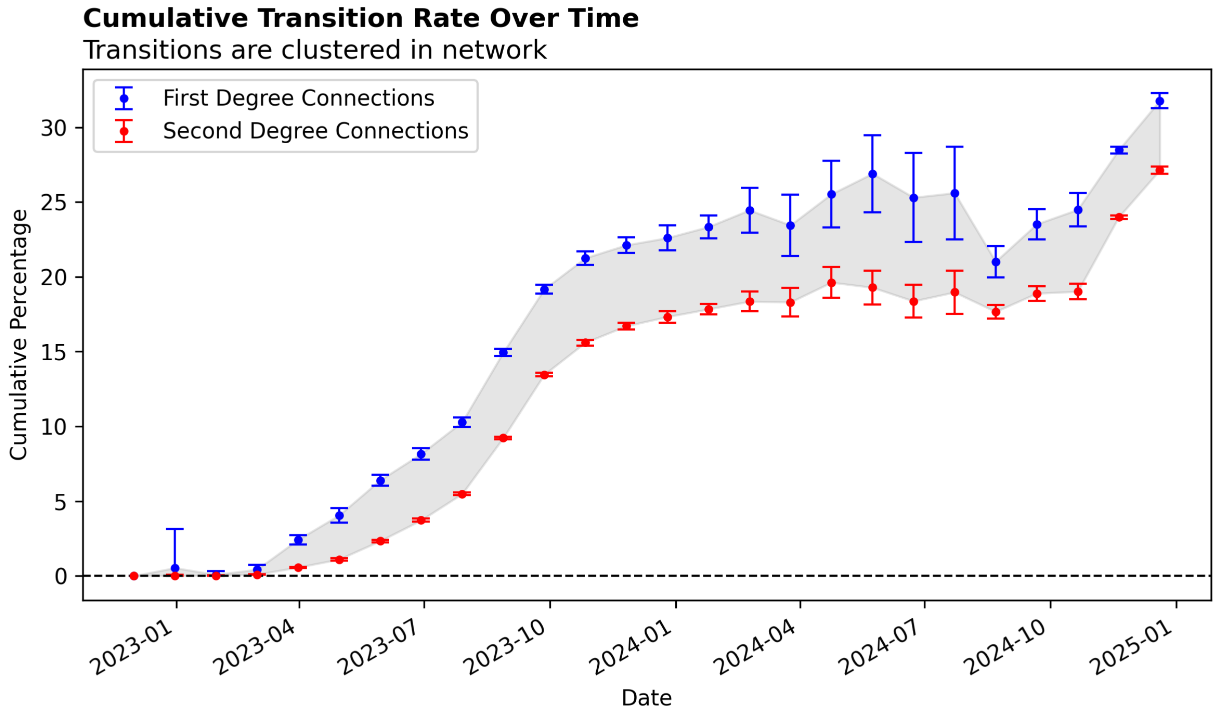

Figure 2: Cumulative transition probability for first and second-degree connections for new joiners in a given month. Errorbars indicate the 99^{th} percentile confidence interval for the standard deviation of the mean. Area in grey highlights the difference between the average transition probability by month.

transition probabilities compared to second-degree connections. These differences proved statistically significant ($\alpha = 0.01$) for all periods except the first two months. A Kolmogorov-Smirnov test on the cumulative percentages further confirmed that first-degree and second-degree connections exhibited significantly different transition patterns.

We aligned users' transition timelines by centering the data around each user's transition date, revealing a pronounced spike in transition activity on the day users switched platforms. Figure 2 presents three key metrics: transition probabilities for first-degree connections (blue line), second-degree connections (red line), and a null model (green line) where transitions occur randomly across weeks. This analysis yields two key insights: First, the marked difference between first and second-degree transition rates indicates network effects through assortative transitioning - users are more likely to switch platforms when their direct connections do. Second, while these network effects are evident, the substantial deviation of second-degree connections from the null model suggests that external factors (such as platform-wide events) also significantly influence transition decisions.

To formally analyze these transition patterns, we frame platform migration as a survival analysis problem, where "survival" represents a user remaining on Twitter/X rather than transitioning to Bluesky. This framework allows us to model both the time-varying nature of social influence and account for right-censoring in our data, as some users had not transitioned by the end of our observation period.

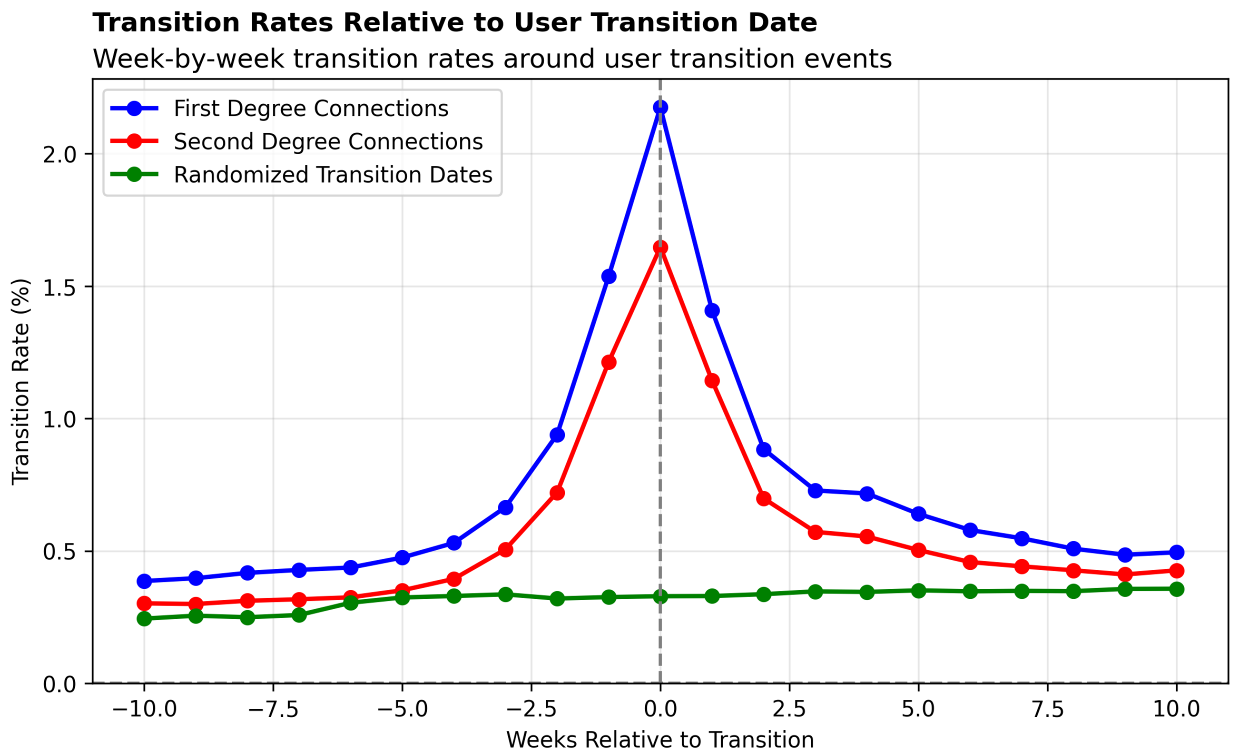

Figure 3: Weekly transition rates relative to individual transition dates. Blue line shows the percentage of first-degree connections transitioning, red line shows second-degree connections, and green line represents the null model of random transitions. Day 0 represents each user's transition date. The pronounced spike in first-degree transitions on day 0 indicates strong coordination effects in platform migration decisions.

Our Cox proportional hazards model incorporates both time-varying and static predictors. The dynamic variables capture evolving social influences: First Degree measures the percentage of a user's followed accounts (first-degree connections) that have transitioned to Bluesky at each time point, while its lagged version accounts for delayed effects of social influence. The follow variable tracks the percentage of a user's followers who have transitioned, capturing potential pressure from one's audience. These time-varying predictors are complemented by static academic controls, including publication metrics (impact factor, citation count, works count), Top 100 (whether the university that a researcher is affiliated with is ranked within the top 100 universities), and demographic factors (gender), allowing us to isolate network effects while controlling for individual characteristics.

The Cox proportional hazards model estimates how different factors affect the instantaneous probability (hazard) of transitioning to Bluesky, relative to a baseline hazard that varies over time. The dynamic network factors reveal that the transition behavior of followed accounts exerts substantially more influence than that of followers. A one percentage point increase in transitioned first-degree connections (those followed by the user) increases the transition hazard in the same time-period by 18.6%, with an additional lagged effect of 12.2%. In contrast, the percentage of transitioned followers shows a much smaller effect, with only a 2.7% increase in hazard per percentage point. We find that academics affiliated with institutions ranked among the top 100 universities

Table 1: Cox Proportional Hazards Model Results

	Coefficient	Hazard Rate	SE	95% CI
First Degree	0.171 ***	1.186	0.004	[0.163, 0.179]
Lagged First Degree	0.115 ***	1.122	0.005	[0.105, 0.126]
Following	0.027 ***	1.027	0.002	[0.023, 0.031]
Lagged Following	0.023 ***	1.023	0.003	[0.017, 0.029]
Top 100	0.117 ***	1.124	0.014	[0.088, 0.145]
Impact Factor	0.000	1.000	0.000	[-0.000, 0.001]
Citation Count	0.000	1.000	0.000	[-0.000, 0.000]
Works Count	0.000 ***	1.000	0.000	[0.000, 0.000]
Male	0.218 ***	1.244	0.018	[0.182, 0.254]
Female	0.037 †	1.038	0.020	[-0.001, 0.075]

Note: $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\dagger}p < 0.1$

have a transition hazard elevated by 12.4%, while publication metrics show minimal effects. Male academics show a substantially higher transition rate than female academics.

4 Political Opinions

We hypothesized that ideological factors may have influenced platform transition decisions. Previous work has shown that Bluesky's user base skews significantly left-leaning compared to other social media platforms [10]. This alignment likely stems from widespread perception of Twitter/X shifting rightward following Elon Musk's acquisition and subsequent policy changes. To examine potential ideological patterns among academic users, we conducted stance analysis on posts from transitioned academics across major political and social topics that received significant discussion on both platforms. We use a stable checkpoint of gpt-4o-mini to label posts based on manually validated prompts.

Examining stance differences between academics who transitioned to Bluesky versus those who remained on Twitter/X reveals significant ideological patterns. Table 2 presents the average stance (Net Stance $= \frac{P-A}{P+N+A}$) across various political and social issues. Transitioned academics consistently demonstrate more progressive positions: they are significantly more critical of Trump and Musk, show stronger support for tech regulation, and favor interventionist policies on economic inequality. They also express stronger backing for social issues including refugee protection, abortion rights, and affirmative action. Environmental positions show particularly stark differences, with transitioned academics displaying markedly higher support for climate initiatives. While the remaining stance differences are statistically significant, their effect sizes are relatively modest. These findings suggest that platform migration decisions were partly driven by ideological alignment, contributing to Bluesky's emergence as a predominantly progressive academic space and partitioning the academic community along political lines.

5 Conclusion

This study provides an analysis of academic platform transitions in response to changes in social media governance. Our findings reveal that scholarly migration to Bluesky is characterized by strong network effects, and clear ideological patterns. The significantly higher transition rates

Supports ...	Transitioned	Non-Transitioned	Difference	t-stat
Donald Trump†	-0.34	-0.19	-0.15	-75.81
Free Markets†	-0.18	-0.07	-0.11	-67.27
Regulation of Big Tech†	0.15	0.07	0.08	65.06
Wealth Redistribution†	0.16	0.07	0.09	62.46
Refugee Protection †	0.20	0.10	0.10	58.89
Abortion Rights†	0.14	0.06	0.08	55.79
Elon Musk†	-0.08	-0.01	-0.07	-56.54
Affirmative Action†	0.12	0.06	0.06	45.84
Climate Action†	0.29	0.21	0.08	42.22
Welcoming Immigration Policy†	0.15	0.09	0.06	40.11
Universal Healthcare †	0.18	0.12	0.06	38.63
Free Speech Protection†	-0.09	-0.04	-0.05	-36.77
Continued GDP Growth†	0.03	0.06	-0.03	-18.00
Kamala Harris†	0.03	0.02	0.01	15.51
Twitter/X†	0.02	0.04	-0.02	-10.47
Further AI Development†	0.12	0.11	0.01	4.46
Joe Biden	0.01	0.01	0.00	-3.00

†Significant at 1% level (based on p-value = 0.0).

Table 2: Mean Political Stances for Transitioned vs. Non-Transitioned Users.

among first-degree connections compared to second-degree ones suggest that direct peer influence plays a crucial role in platform adoption decisions. This effect persists even when controlling for institutional prestige, publication metrics, and demographic factors.

The pronounced ideological skew among transitioning academics—consistently more progressive across multiple dimensions—suggests that platform governance changes can trigger selective migration that reshapes the ideological composition of scholarly discourse spaces. This finding has important implications for the fragmentation of academic dialogue and the potential emergence of ideologically distinct scholarly communities across different platforms.

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