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投稿题目		Home is peace, not a place: How does urban storytelling impact talent's "vote with their feet"?		
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Home is peace, not a place:

How does urban storytelling impact talent's "vote with their feet"?

This paper examines the impact of urban storytelling on talents' voting with their feet decisions and the underlying mechanisms by analyzing cross-regional talent flow from 2018 to 2022. The study extracted the names of academic paper authors and patent inventors from the OpenAlex database and the China National Intellectual Property Administration (CNIPA), respectively, and employed a two-stage disambiguation algorithm to match the data. Based on this, dummy variables were generated to measure cross-regional talent flow. At the same time, we synthesized a city Storytelling index using the SnowNLP algorithm based on 2,102,241 Weibo comments and 59,506 Zhihu answers, and ultimately constructed a Logit model for regression analysis. The results indicate that positive city storytelling, as a form of informal institutional signal, can significantly enhance the talent magnet effect. Lower living costs and residency thresholds further reinforce this effect. Furthermore, talent affiliated with schools and government agencies has been more affected by positive urban storytelling, and talent is more inclined to migrate to provincial capitals, transportation hubs, and cities prioritized for environmental protection. At the same time, positive urban storytelling can effectively stimulate urban innovation vitality by attracting talent inflows. This paper not only enriches research on talent flow from both a micro-individual perspective and by examining its underlying causes, but also provides theoretical support and practical recommendations for local governments, social media, and the general public to collaborate in attracting talent and stimulating urban innovation.

I. Introduction

As we enter the first year of *the 15th Five-Year Plan*, building a nation strong in innovation and talent has become a core strategic goal driving China's high-quality economic development. Against this backdrop, talent has been identified as a core strategic resource for achieving national rejuvenation and gaining the upper hand in international competition. As the primary spatial carriers of innovation activities, the competitiveness of cities increasingly depends on their ability to attract and efficiently allocate highly skilled talent. At the same time, China's new urbanization process has shifted from a phase of scale expansion to one of high-quality development. How to achieve a leap in urban competitiveness by activating innovation momentum has become a central issue of concern for governments at all levels and the academic community (Hao et al.,2026; Qin et al.,2026). Consequently, various regions are competing to introduce talent recruitment policies, sparking a "talent war" centered on cities. This not only highlights the central role of talent in reshaping the regional innovation landscape but also makes the systematic exploration of the driving mechanisms behind talent flow and its impact on urban innovation a crucial proposition for addressing national strategic needs and regional development practices.

The essence of innovative vitality lies in talent-driven development. As bearers of knowledge and skills, highly skilled professionals are not only the creators of new technologies, ideas, and products, but also the key agents driving knowledge spillovers and the diffusion of technological innovations (Gu & Jie, 2024; Wang et al.,2023). The spatial concentration of talent can generate significant scale effects in innovation externalities through face-to-face knowledge exchange and the collision of ideas, thereby profoundly shaping regional innovation capacity (Hao et al.,2026; Lao et al.,2021). Existing research has confirmed that, among the many determinants of

innovation, the scale effect of human capital is the most significant; cities with higher concentrations of talent often possess a competitive advantage in innovation output (Yang & Pan, 2020). Therefore, understanding the patterns of talent flow and the underlying driving mechanisms holds important theoretical and practical significance for enhancing urban innovation capacity.

Regarding the factors influencing talent migration, traditional research has largely focused on material incentives such as economic opportunities and income levels, viewing talent as rational actors seeking to maximize utility, whose migration decisions depend primarily on wage differentials and employment prospects across regions (Carlsen & Leknes, 2021). However, as basic survival needs are met, individuals' utility functions in migration decisions are gradually shifting toward non-economic factors such as quality of living environment, accessibility of public services, and cultural inclusivity (Zhang et al.,2024; Zhao et al.,2025).

The theory of urban amenities is a theoretical product of this shift, emphasizing the attractiveness of immovable local endowments, such as the quality of the natural environment, the level of public services, and the social atmosphere, to highly skilled talent (Zhao et al.,2025; Wang & Guo, 2023; Kourtit & Nijkamp, 2022). However, most existing studies tend to view comfort as an objectively existing physical or social attribute, without yet addressing the subjective differences in perception among different groups or how such subjective perceptions are shaped by the media environment (Gao et al.,2022; Sepehr & Felt, 2025). In other words, whether a city can be “seen” and “identified with” by talent depends not only on its objective endowments but also on how these endowments are communicated and interpreted. Furthermore, existing analytical frameworks often treat talent as rational decision-makers with perfect information, while paying less attention to the information acquisition costs and uncertainties they face during the migration

decision-making process (Morrison, 2023). In fact, when evaluating a target city, external talent generally finds it difficult to comprehensively and accurately obtain authentic information regarding the city's development potential, living atmosphere, and social inclusivity. Unlike traditional economic incentives or objective amenities, the mechanism of urban storytelling does not lie in providing new material benefits, but rather in reducing information asymmetry by integrating scattered objective information into content that evokes emotional resonance and conveys meaning. This helps potential migrants form an initial sense of imagination and identity regarding the city, thereby enhancing the city's pull effect on innovative talent. However, this theory has not yet been fully empirically tested or explored in terms of its underlying mechanisms.

The rise of social media has provided a robust and distinctive data foundation and research opportunities for capturing urban storytelling. As two of China's most representative social media platforms, Weibo and Zhihu exhibit significant complementarity in terms of user demographics and content characteristics: Weibo, with its broad user base, high immediacy, and fragmented topics, is effective at capturing the public's fleeting emotions and collective perceptions regarding urban events; Zhihu, on the other hand, excels in in-depth Q&A, with users predominantly consisting of highly educated, knowledge-oriented individuals. Its content is often the result of careful deliberation, enabling a more systematic presentation of detailed evaluations of the urban environment, cultural atmosphere, and lived experiences (Senadheera et al.,2025). The combination of these two platforms helps form a dataset of urban storytelling that possesses both breadth and depth, thereby providing a more comprehensive portrayal of the diverse perceptions of the city held by various groups. In terms of analytical methods, the development of Chinese sentiment analysis tools such as SnowNLP provides the technical foundation for extracting sentiment trends

from large-scale unstructured text. This makes it possible to transform vast amounts of scattered social media comments into quantifiable sentiment metrics, helping researchers understand the emotional structure and spatial distribution characteristics of urban storytelling. This lays a solid methodological foundation for this study to examine, from a Storytelling perspective, the impact of urban social media evaluations on talent flow through empirical testing.

In light of the above, this paper examines the impact of urban storytelling on talents' voting with their feet decisions and the underlying mechanisms by analyzing cross-regional talent flow from 2018 to 2022. The study extracted the names of academic paper authors and patent inventors from the OpenAlex database and the China National Intellectual Property Administration (CNIPA), respectively, and employed a two-stage disambiguation algorithm to match the data. Based on this, dummy variables were generated to measure cross-regional talent flow. At the same time, we synthesized a city Storytelling index using the SnowNLP algorithm based on 2,102,241 Weibo comments and 59,506 Zhihu answers, and ultimately constructed a Logit model for regression analysis. The results indicate that positive city storytelling, as a form of informal institutional signal, can significantly enhance the talent magnet effect. Lower living costs and residency thresholds further reinforce this effect. Furthermore, talent affiliated with schools and government agencies has been more affected by positive urban storytelling, and talent is more inclined to migrate to provincial capitals, transportation hubs, and cities prioritized for environmental protection. At the same time, positive urban storytelling can effectively stimulate urban innovation vitality by attracting talent inflows, and this effect exhibits significant heterogeneity across innovation dimensions.

This paper aims to make the following contributions: (1) Previous academia research on the determinants of innovation vitality in prefecture-level cities has

largely focused on the industrial or enterprise level. By examining the interregional migration of micro-level individuals, this study broadens the analytical perspective; (2) Existing research on interregional talent flow has typically limited its sample to patent inventors. By including both paper authors and patent inventors in the original dataset, this study expands the scope of talent flow research, facilitating a more comprehensive observation of the migration of knowledge-based talent; (3) It incorporates non-institutional factors, specifically urban storytelling, into the study of the antecedents of cross-regional talent flow. Furthermore, unlike traditional word frequency statistics, this study employs natural language processing techniques to conduct sentiment analysis on massive volumes of comments, thereby quantifying the spatial distribution of social media storytelling that subtly influence talent perceptions.

The remainder of this paper is organized as follows: **Part 2** presents the theoretical analysis and research hypotheses; **Part 3** outlines the research design; **Part 4** analyzes the empirical results; **Part 5** addresses heterogeneity analysis and extension analysis; and **Part 6** presents the conclusions and implications.

II. Theoretical analysis and hypotheses development

A. Urban Storytelling and Talent Flow

In the knowledge economy era, regional factors have become a key dimension influencing the accumulation of human capital and the allocation of innovation resources. As global economic growth becomes increasingly reliant on innovation activities, the spatial concentration of innovative talent has increasingly become a central issue in urban development (Hao et al.,2026; Qin et al.,2026). However, the realization of knowledge spillover effects is often constrained by geographical space, causing the positive externalities of talent concentration to exhibit localized

characteristics. At the same time, external talent generally faces constraints due to information asymmetry in migration decisions, making it difficult to comprehensively and accurately assess the development potential and living environment of target cities. Research on migration decisions further indicates that once basic livelihood and employment needs are met, individuals' preferences for cities shift more toward non-economic factors such as the quality of public services and environmental comfort (Zhao et al.,2025; Carlsen & Leknes, 2021). In this process, positive urban storytelling, as a form of informal institutional signaling, plays an increasingly important mediating role. It not only conveys information about local socioeconomic vitality and development potential but also helps reshape external talent's cognitive frameworks regarding geographic opportunities and their imaginations of ideal lifestyles. This, in turn, stimulates their willingness to relocate, reduces information search costs, and ultimately enhances the city's siphon effect on innovative talent (Wang et al.,2023; Guo et al.,2024).

Furthermore, the significance of urban storytelling extends beyond the one-way transmission of information; it lies in fostering emotional connections and a foundation of identity between talent and the city. Urban emotions create a sense of place by imbuing spaces with meaning, thereby shaping the city's unique local identity (Gao et al.,2022). From the perspective of communication sociology, the media environment constitutes the core arena for individuals to construct meaning. Within this context, comment interactions on digital platforms provide the emotional public with a conducive space for discourse, where the public collectively negotiates and ascribes specific values and meanings to the city (Senadheera et al.,2025). Urban storytelling, disseminated through channels such as social media, subtly guides potential migrants' imaginations of the city and fosters the early emergence of their identity (Sephehr & Felt, 2025). When storytelling present positive public evaluations,

they not only highlight the city's socioeconomic vitality but also, at a deeper level, facilitate the construction of identity after talent migration. At the community level, this process manifests as a sense of belonging fostered by social interaction, ultimately internalizing social vitality as a stable emotional resource (Zhang et al.,2026). Based on this, Hypothesis 1 is proposed:

H1. Positive urban storytelling, as an informal institutional signal, can significantly enhance the magnet effect on talent.

B. The Moderating Effect of the Cost of Living

The cost of living serves as an immediate economic constraint on talent flow. An individual's movement between different regions is essentially an optimization of actual quality of life, and housing costs, as a key compensatory factor affecting quality of life, directly influence the efficiency of human capital allocation. When positive urban storytelling coexist with excessive housing expenditures, inelastic housing supply weakens the conversion of potential migrants' identification with that storytelling (Chang-Tai Hsieh & Enrico Moretti, 2019; Zhou Huikang et al.,2023; Hengyu Gu & Yangyang, 2024), and by reinforcing talent's aversion to potential losses, it inhibits labor Flow toward regions with high marginal returns (Xizan Jin et al.,2023). According to prospect theory, individuals are significantly more sensitive to losses than to equivalent gains under conditions of uncertainty. This implies that high housing costs not only constitute an immediate economic burden but also trigger an aversion to potential losses, thereby reinforcing the tendency to maintain the status quo. Based on micro-survey data of young mobile talent in Zhejiang Province, Jin et al. (2023) found that housing expenditure pressures significantly weaken this group's willingness to settle long-term and exhibit a clear threshold effect: when the price-to-income ratio (PIR) exceeds a certain level, young talent's willingness to settle

declines significantly, even if the city offers high-quality employment opportunities and public services. Based on this, Hypothesis 2 is proposed:

H2. The cost of living plays a negative moderating role in the impact of urban storytelling on talent flow.

C. The Regulatory Role of Residency Thresholds

The inherent characteristic of the household registration system is the discriminatory allocation of public services tied to urban household registration, while the incremental reform of this system serves as the institutional foundation for reshaping the order of population Flow. Based on the phased reforms of household registration admission systems implemented in 283 Chinese cities in 2002 and 2015, Jin and Zhang (2023) found that lowering the residency threshold can enhance migrant populations' expectations regarding access to public services and their sense of social integration and identity, thereby strengthening young people's willingness to settle. The reduction or removal of household registration barriers essentially grants migrant populations the expected right to access urban public services and fosters a sense of social integration and identity (Jin Zhangfeng & Zhang Junsen, 2023). Based on an analysis of residency threshold indices and dynamic monitoring data on the migrant population across 120 cities, Xie and Han (2023) found that there is a significant negative correlation between comprehensive urban residency thresholds and the long-term willingness of the migrant population to settle, with the impact of employment-based residency thresholds being particularly pronounced. Zhang et al. (2020) found that higher urban residency thresholds significantly intensified the tendency of labor to return to their places of origin and weakened the willingness of the migrant population to put down roots locally. Highly skilled workers exhibited greater sensitivity to changes in residency thresholds. Relaxed residency policies

imply lower institutional migration costs; this institutional empowerment can strengthen the stickiness of talent in transforming short-term Flow intentions into long-term settlement behavior. Particularly for high-quality labor, lower residency thresholds are significantly and positively associated with their preferences for urban hierarchy. Based on the above perspectives, Hypothesis 3 is proposed.

H3. The lowered residency threshold plays a positive moderating role in the impact of urban storytelling on talent flow.

D. Urban Storytelling and Innovative Vitality

The process of talent aggregation is inherently a process of human capital aggregation, and since human capital is the driving force behind innovation, this study analyzes the impact of urban storytelling on urban innovation vitality, building upon its earlier analysis of the effects of urban storytelling on talent flow. Based on longitudinal data from the United Kingdom covering the period 2009–2021, Fotopoulos (2025) found that while the role of knowledge spillovers in regional innovation ecosystems was milder than expected, the synergistic agglomeration of human capital and creative industries can significantly enhance regional innovation vitality. Through urban storytelling, which guides the flow and optimal allocation of talent and capital, key elements of innovation, it drives the optimization of human capital structures and the upgrading of industrial forms, enabling the sustained release of regional innovation vitality.

At the level of talent structure, positive urban storytelling constructs symbolic representations of the city's quality, thereby gaining recognition from potential migrants in terms of public service standards and the socio-cultural atmosphere. As high-caliber talent accumulates within the city, its human capital structure can evolve toward a higher level. Talent from diverse cultural backgrounds introduces varied

knowledge structures and ways of thinking to their new regions. The knowledge diffusion effect drives both quantitative expansion and qualitative improvement in the city's talent structure, thereby boosting the city's innovative vitality. Chen et al. (2025), based on a quasi-experimental study of college entrance examination enrollment expansion policies in 288 prefecture-level cities in China from 2000 to 2016, found that human capital expansion can significantly enhance a city's innovative vitality by stimulating corporate R&D activities and attracting migrants, with human capital expansion in science and engineering fields having the most pronounced effect on urban innovation.

At the industrial structure level, the concentration of talent attracted by regional brands generates economies of scale, which can reduce the costs of technological exchange among firms within the industry and, in turn, facilitate the transformation of new knowledge into new products (Scarborough, William J.— & Crabbe, Rowena, 2021). A case study by Grimbert et al. (2024) on European cluster organizations reveals that cluster organizations can shape a unique cluster identity through strategic local brand building, thereby attracting the attention and resource investment of external investors and strategic partners. While introducing new technological ideas, incoming talent also brings in matching external capital or financing channels. Faced with intensified competition for investment and financing triggered by the influx of talent, local capital will reassess risk preferences and investment directions, shifting funds from inefficient, conservative sectors to high-growth innovation sectors. This enhances the efficiency of innovation capital allocation in the region, further accelerating the incubation of new business models and the process of industrial upgrading, thereby sustaining the release of the city's innovative vitality. Based on the above perspectives, Hypothesis 4 is proposed.

H4. Positive urban storytelling can stimulate a city's innovative vitality.

The theoretical framework of this paper is shown in **Figure 1**.

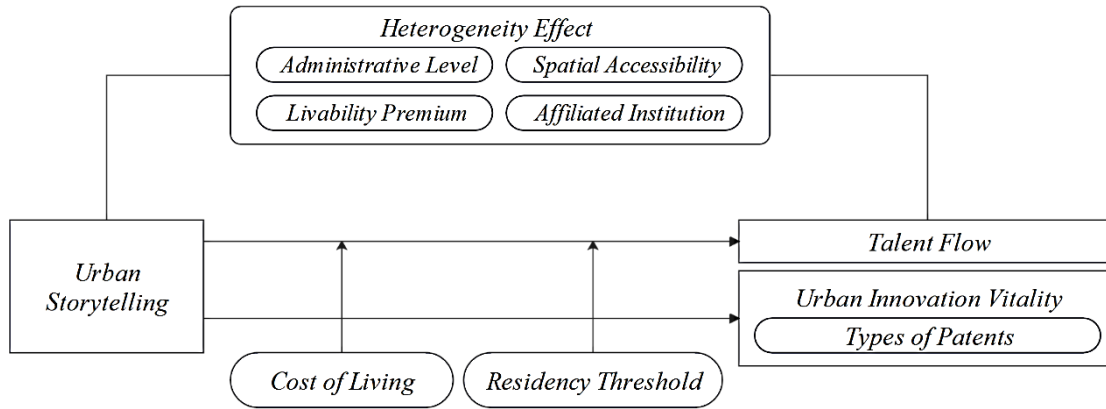


FIGURE 1. THEORETICAL FRAMEWORK

III. Methodology and data sources

A. Data sources and Sample selection

This study collected the names of academic paper authors and patent inventors from the OpenAlex database and the China National Intellectual Property Administration (CNIPA), respectively. Based on the collected data, the dependent variable “flow” was generated to measure the cross-regional mobility of talent. Given that there is an interval of approximately 18 months between the filing of a patent application and the publication of the preliminary examination report, the data collection cutoff date was set to March 2025 to ensure data completeness, and the study period was ultimately defined as 2018–2022. The final panel data set comprises 1,342,201 individuals, 535,047 institutions, and a total of 4,205,604 observations.

The composite ‘Urban Storytelling Index’, the core explanatory variable, is derived from sentiment analysis of social media comments about cities. Specifically, China’s municipalities directly under the central government and prefecture-level cities were selected as the subjects of the study. Using each city’s name as a keyword, the Python programming language and the Octopus web crawler were employed to crawl relevant

posts on the Sina Weibo platform and relevant answers on the Zhihu platform from 2018 to 2022, ultimately yielding a total of 2,102,241 Weibo comments and 59,506 Zhihu answers.

Data on controlled variables at the prefecture-level city level are sourced from the *China Urban Statistical Yearbook*. Urban housing prices are calculated using data from the *China Regional Economic Statistical Yearbook*. Policies regarding household registration and social security reforms in cities are based on policy documents relating to household registration system reforms in cities at or above the prefecture-level city level up to 2022, as found in the ‘Beida Fabao’ legal database, as well as notices, announcements and news reports published on local government websites, public security department websites and in official media.

B. Variable definition

Dependent variable.—Talent flow data is a dummy variable generated based on information about academic paper authors and patent inventors that has been crawled and matched, and is used to observe the cross-regional movement of talent. Specifically, this study extracts the names of academic paper authors and patent inventors from the OpenAlex database and the China National Intellectual Property Administration (CNIPA). However, since the CNIPA’s database—which now contains over 40 million patent records—provides only the inventors’ names, the extremely high rate of name duplication has long been a bottleneck constraining micro-level research. To address this, this study designed a two-stage disambiguation algorithm comprising “intra-year identification” and “cross-year merging.” The core approach involves first clustering inventors within the same year using high-precision multidimensional features, then merging inventor identities from that year into a globally unique profile through a rolling annual process. The following procedures were implemented during the

information matching process: First, addressing the absence and filling of address information; Second, to accurately identify institutional entities, a dual-dimension encoding rule combining latitude/longitude and institutional type is adopted; third, for latitude/longitude resolution, a geographic hierarchy elevation method is employed to prioritize obtaining the most precise latitude/longitude information for the institution; if precise identification is not possible, the information is supplemented by progressively elevating the hierarchy from “street, district/county, city.”

Generate a dummy variable *flow* based on the dataset after the above cleaning process. Since a single inventor may file applications in multiple locations within the same year, a unique city must be identified for each ID and year. The specific processing logic is as follows: First, deduplicate all cities associated with each ID by year. Then, filter based on temporal continuity, prioritizing records where the city matches that of the following year, treating this as a completed migration. If no information is available for the following year, retain records where the city matches that of the previous year, treating this as no migration having occurred. If neither the preceding nor the following year matches, retain the city of the last occurrence in that year based on the record sequence to ensure that each ID corresponds to only one city per year. Based on this, the data is sorted by ID and year. If the city for the current year differs from that of the previous year, *flow* is set to 1, indicating that the individual has migrated across regions; otherwise, it is set to 0. The final panel dataset covers 1,342,201 individuals, 535,047 institutions, and a total of 4,205,604 observations.

Core explanatory variables.—The City Storytelling Index (*cn*) is a composite indicator that measures the prevailing public sentiment towards various cities as reflected on social media platforms. This paper systematically cleansed and denoised the collected text data comprising 2,102,241 Weibo comments and 59,506 Zhihu answers: firstly, invalid information such as duplicate posts, empty content or irrelevant advertisements

was removed; secondly, emoticons, special characters and non-Chinese text were filtered out, retaining standard natural sentences; finally, the text underwent JieBa word segmentation, and function words lacking emotional bias were removed. On this basis, the SnowNLP algorithm was applied for sentiment analysis. A sentiment score greater than 0.1 was classified as positive Storytelling, less than -0.1 as negative Storytelling, and between -0.1 and 0.1 as neutral Storytelling. The scores were then standardised, such that the closer the score is to 1, the more positive the Storytelling regarding that city. The sentiment scores for each city's text are aggregated annually and averaged to derive the annual City Storytelling Index for each prefecture-level city; a higher value indicates more positive public sentiment towards that city on social media.

Control variables.—Drawing on existing research on inter-regional talent flow, this study selected seven control variables that may influence the willingness and behaviour of talent flow: population density (*popd*) is represented by the ratio of the registered population in a region to the land area of the administrative region. The level of economic development (*eco*) is represented by per capita regional gross domestic product. The level of openness to the outside world (*open*) is represented by the ratio of actual utilised foreign direct investment to regional gross domestic product. The degree of government intervention (*gov*) is represented by the ratio of local general budget expenditure to regional GDP. The level of education expenditure (*edu*) is represented by the ratio of education expenditure to regional GDP. The level of human capital (*hmc*) is represented by the ratio of the number of students enrolled in regular higher education institutions to the total population at year-end. The level of healthcare (*hlc*) is represented by the number of hospital and health centre beds per 100 people.

Regulated variable.—As the largest fixed expenditure in household budgets, urban

housing prices exert a leverage effect on residents' consumption patterns; high urban housing prices significantly increase talent's anticipated cost of living in the destination city. Furthermore, average house prices are linked to the overall price level and serve as a standardised, high-frequency, and cross-regional comparable market indicator; therefore, average urban housing prices are used to represent the cost of living (Lc). DID data on urban household registration and social security reform policies are standardised, comparable across cities and vary over time. The implementation or adjustment of social security reform policies implies a substantial lowering of the threshold for obtaining household registration. By utilising DID data constructed before and after policy implementation, it is possible to capture the institutional impact of changes in the household registration threshold and its moderating effect on talent flow; therefore, DID data on urban household registration and social security reform policies are selected to represent the reduction in the urban household registration threshold ($hkrb$).

Urban Innovation Vitality. — We use a city's total number of patents for the year as a proxy for urban innovation vitality (uiv). We then conduct separate regression analyses on four sub-dimensions—the total number of utility model patents (uiv_UM), the total number of design patents (uiv_AD), the total number of granted patents (uiv_PG), and the total number of patent applications (uiv_PA)—to examine the heterogeneity across patent categories.

C. Model construction

Baseline model. —In this study, the dependent variable talent flow($flow$) is treated as a binary variable; its distribution characteristics result in linear regression model estimates exceeding the $[0,1]$ interval and lead to heteroscedasticity in the disturbance term. The binary Logit model, based on the logistic distribution function, strictly

constrains the probability of flow between 0 and 1, and yields consistent and asymptotically efficient parameter estimates via maximum likelihood estimation. In real-world talent flow decision-making scenarios, when the propensity to move is extremely low or high, the marginal impact of changes in external factors tends to level off. The binary Logit model can effectively capture the diminishing marginal returns of the independent variable at the extremes of the probability distribution, thereby accurately depicting the non-linear characteristics of the impact of urban storytelling on talent flow. Based on the above considerations, this study constructs the binary Logit model shown in Equation (1) as the baseline regression model. In Equation (1), $flow_{it}$ represents talent flow, Lcn_{it} represents the city Storytelling lagged by one period, $Controls_{it}$ represents the set of control variables, μ_i represents the fixed effect for the year, λ_t represents the fixed effect for the city, and ε_{it} represents the random error term.

$$(1) \quad \log\left(\frac{P(flow_{i,t}=1)}{1-P(flow_{i,t}=1)}\right) = \beta_0 + \beta_1 Lcn_{i,t} + \beta_2 Controls_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

Moderation effect model.— In this study, interaction terms were constructed after centering the continuous explanatory and moderating variables, and heteroscedasticity was addressed using robust standard errors. Specifically, building upon the baseline model, Equation (2) introduces interaction terms between the cost of living (lc) and the core explanatory variables, while Equation (3) introduces interaction terms between the reduction in urban residency thresholds ($hkrb$) and the core explanatory variables. The definitions of all other variables remain consistent with those in the baseline regression.

$$(2) \quad \log\left(\frac{P(flow_{i,t}=1)}{1-P(flow_{i,t}=1)}\right) = \beta_0 + \beta_1 Lcn_{i,t} + \beta_2 lc_{i,t} + \beta_3 Lcn \times lc_{i,t} + \beta_4 Controls_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

$$(3) \quad \log\left(\frac{P(flow_{i,t}=1)}{1-P(flow_{i,t}=1)}\right) = \beta_0 + \beta_1 Lcn_{i,t} + \beta_2 hkrb_{i,t} + \beta_3 Lcn \times hkrb_{i,t} + \beta_4 Controls_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

A model for analysing urban storytelling and urban innovation vitality. — To examine the impact of urban storytelling on urban innovation vitality, this study constructs a two-way fixed-effects panel data model as shown in Equation (4). In Equation (4), uiv_{it} represents urban innovation vitality, Lcn_{it} represents the city Storytelling lagged by one period, $Controls_{it}$ represents the set of control variables, μ_i represents the fixed effect for the year, λ_t represents the fixed effect for the city, and ε_{it} represents the random error term.

$$(4) \quad uiv_{i,t} = \beta_0 + \beta_1 Lcn_{i,t} + \beta_2 Controls_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

D. Descriptive statistic

The annual distribution of the dependent variable, talent flow(*flow*), is shown in **Table 1**. In terms of the occurrence of talent flow, the number of observations increased year on year between 2018 and 2022. This distribution trend indicates that, during the study period, the intensity of cross-regional talent flow among knowledge workers in China continued to grow, whilst competition for talent between cities became increasingly fierce. This provides a sound data foundation for examining the influence of urban storytelling on talent flow decisions.

TABLE 1, THE DISTRIBUTION OF TALENT FLOW

Year	All sample distribution			Distribution of $flow=1$		
	Freq.	Percent	Cum.	Freq.	Percent	Cum.
2018	722,815	17.19	17.19	-	-	-
2019	805,352	19.15	36.34	315,490	14.69	14.69
2020	875,822	20.83	57.16	494,281	23.01	37.7
2021	908,663	21.61	78.77	633,587	29.5	67.2
2022	892,952	21.23	100	704,440	32.8	100

The descriptive statistics for the main variables are shown in **Table 2**. The coefficient of variation for the core explanatory variable, the City Storytelling Index (*cn*), is approximately 2.83%, indicating that differences in Storytelling sentiment

between cities are primarily reflected in relative variations in mean values rather than in the dispersion of outliers. This characteristic is consistent with the overall convergence of city image dissemination in the social media environment. The mean value of the dependent variable, talent flow (*flow*), is 0.511, indicating that approximately 51.1% of observations in the sample involved cross-regional Flow; the probability of talent flow occurring is, on the whole, at a relatively high level. With regard to the control variables, the standard deviations and extreme values of each control variable indicate that the sample cities exhibit significant differences in terms of economic development, human capital stock and the provision of public services. This heterogeneity provides a necessary source of variation for subsequent analysis of the moderating mechanisms through which urban storytelling influence talent flow.

TABLE 2, DESCRIPTIVE STATISTIC

Var	Mean	SD	Min	Max	Obs
<i>cn</i>	0.600	0.017	0.530	0.730	4205604
<i>flow</i>	0.511	0.500	0.000	1.000	4205604
<i>popd</i>	6.536	0.765	0.427	8.100	4205604
<i>eco</i>	11.767	0.717	9.369	20.657	4205604
<i>open</i>	0.003	0.002	0.000	0.016	4205604
<i>gov</i>	0.157	0.057	0.059	1.554	4205604
<i>edu</i>	0.168	0.031	0.046	0.293	4205604
<i>hmc</i>	0.052	0.644	0.000	202.607	4205604
<i>hlc</i>	0.714	0.223	0.178	7.500	4205604

IV. Empirical results

A. Baseline results

In order to study the influence of social media city Storytelling (*cn*) on talent flow (*flow*), this paper conducts benchmark regression based on Equation(1). Because the Logit model mainly relies on the time series changes of the dependent variables within the sample to identify the parameters. If the dependent variable values of a city

in all years are exactly the same, or there is no variation in the values of all cities in a certain year, these samples will not be included in the conditional maximum likelihood estimation, resulting in a decrease in the number of samples participating in the regression compared to the original panel. The results are shown in **Table 3**.

TABLE 3, BASELINE RESULTS

	(1)	(2)	(3)	(4)
	Fixed only by year	Fixed by year and city	Add individual	Introducing control
<i>Lcn</i>	0.810*** (8.72)	1.466*** (15.16)	1.466*** (17.23)	1.446*** (17.00)
<i>popd</i>				-0.444*** (-4.40)
<i>eco</i>				-0.09 (-1.56)
<i>open</i>				-0.544 (-0.16)
<i>gov</i>				-1.069*** (-6.12)
<i>edu</i>				-1.163*** (-5.36)
<i>hmc</i>				-0.174 (-1.59)
<i>hlc</i>				-0.012 (-0.18)
<i>cons</i>	0.110* -1.94	-0.654*** (-11.06)	-0.654*** (-12.65)	3.872*** -3.22
Year fixed effects	Yes	Yes	Yes	Yes
City fixed effects	No	Yes	Yes	Yes
Observations	2271775	2271775	2271775	2271775

Notes: *, **and***denote significance levels of 10%, 5% and 1% respectively. The following tables are the same.

In column (1) and column (2), the fixed effect of year and the fixed effect of city are controlled in turn. In column (3), the standard error of individual clustering(individual CSE) is added on this basis. Finally, a series of control variables are introduced in column (4). It can be seen that the coefficient of the one-period

lagged variable Lcn for cn remains consistently positive and significant at the 1% level. Since the coefficients in a Logit model reflect the effect of the independent variable on the logarithm of the odds, rather than the probability itself, it is necessary to calculate the average marginal effect to interpret its actual significance. The results of the marginal effects indicate that for every one-unit increase in the explanatory variable Lcn , the probability of talent flow increases by an average of approximately 30.2%. This suggests that a positive urban Storytelling can effectively signal attractiveness to external talent, thereby reducing information asymmetry in their migration decisions and significantly enhancing the ‘talent magnet effect’. Consequently, H1 is supported.

B. Endogenous tests

Propensity Score Matching (PSM). — Given that disparities in endowments such as economic levels and industrial structures across prefecture-level cities may confound the identification of causal relationships between urban storytelling and talent inflows, propensity score matching is employed to mitigate endogeneity issues. Specifically, cities were divided into a treatment group (high Storytelling index cities) and a non-treatment group (low Storytelling index cities) based on the median of the city Storytelling index (cn). A 1:1 nearest neighbour matching was performed using prefecture-level control variables from the baseline regression as covariates, thereby simulating a randomised experimental environment. Balance tests indicate that standardised deviations across variables substantially decreased post-matching. Re-regression analysis on the matched sample (as shown in **Table 4**, Column (1)) confirms that the coefficient for urban storytelling on talent flow remains significantly positive, consistent with baseline regression results, thereby validating the reliability of our conclusions.

Instrumental Variables Method (IV-Probit). — Given the binary discrete nature of the dependent variable *flow*, this study employs an IV-Probit model to further address potential endogeneity issues. This study selects the lagged one-period term (*pro_Lcn*) of the mean urban Storytelling score for each province across years as the instrumental variable. On the one hand, cities within the same province share similar socio-economic environments, establishing spatial correlation between provincial storytelling and local storytelling, thus satisfying the correlation requirement. On the other hand, storytelling from other cities do not directly influence a given city's talent flow decisions, thereby meeting the exogeneity requirement. As shown in **Table 4**, column (2), the Wald test significantly rejects the null hypothesis of exogeneity, confirming the necessity of using an instrumental variable. In the second-stage regression, the coefficient for the city Storytelling index remains significantly positive, indicating that after correcting for endogeneity bias, the positive effect of city storytelling on talent flow remains robust.

C. Robustness tests

Excluding exceptional years. — Given that the COVID-19 lockdowns in 2020 would have hindered talent flow to some extent, we excluded this exceptional year and performed the regression again. As shown in column (3) of **Table 4**, the core explanatory variable *Lcn* remains significantly positive at the 1% level, indicating that the baseline results are not attributable to random factors specific to a particular year.

Excluding municipalities directly under central government. — Given the significant differences between municipalities directly under central government and other prefecture-level cities in terms of administrative hierarchy, resource concentration, and policy preferences, which may amplify or obscure the true effects of storytelling on talent flow, this study re-estimates the results after excluding the four municipal

samples. As shown in Column (4) of **Table 4**, the core explanatory variable *Lcn* is significantly positive at the 1% level, indicating that the benchmark results are not attributable to the characteristics of municipalities directly under central government.

TABLE 4, ENDOGENEITY AND ROBUSTNESS TEST

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	PSM	IV Probit	Exclude special years	Exclude special cities	Replace the CSE	Probit	Supply control variables
<i>Lcn</i>	1.446*** (17.00)	1.964*** (3.72)	1.355*** (14.20)	5.003*** (52.38)	1.446** (2.07)	1.022*** (16.74)	1.446*** (17.00)
<i>popd</i>	-0.444*** (-4.40)	-0.252*** (-4.23)	-0.563*** (-5.23)	-0.503*** (-4.91)	-0.444*** (-2.65)	-0.033*** (-20.12)	-0.444*** (-4.40)
<i>eco</i>	-0.090 (-1.56)	-0.061 (-1.80)	-0.152** (-2.29)	-0.136** (-2.27)	-0.090 (-0.96)	-0.153*** (-63.46)	-0.090 (-1.56)
<i>open</i>	-0.544 (-0.16)	-0.764 (-0.37)	6.206* (1.65)	-1.502 (-0.41)	-0.544 (-0.11)	-3.812*** (-9.08)	-0.560 (-0.16)
<i>gov</i>	-1.069*** (-6.12)	-0.584*** (-5.62)	-1.567*** (-7.73)	-1.136*** (-5.99)	-1.069*** (-3.84)	-0.252*** (-12.18)	-1.069*** (-6.12)
<i>edu</i>	-1.163*** (-5.36)	-0.658*** (-4.98)	-0.983*** (-4.01)	-1.442*** (-6.39)	-1.163*** (-3.08)	-0.059 (-1.62)	-1.164*** (-5.37)
<i>hmc</i>	-0.174 (-1.59)	-0.100 (-1.16)	-0.048 (-0.15)	-0.212 (-1.47)	-0.174 (-0.84)	0.006*** (5.06)	-0.174 (-1.59)
<i>hlc</i>	-0.012 (-0.18)	-0.013 (-0.32)	0.062 (0.76)	-0.005 (-0.06)	-0.012 (-0.12)	0.0664752*** (9.97)	-0.012 (-0.17)
<i>top1pct_self_cite</i>							-0.005 (-0.31)
<i>top1pct_other_cite</i>							0.011 (0.89)
<i>annual_collaborate</i>							0.000*** (0.76)
<i>inst_collaborate</i>							-0.000*** (-0.33)
<i>cons</i>	3.872*** (3.22)	1.964 (3.72)	5.489*** (4.07)	2.997*** (2.64)	3.872* (1.87)	1.816474*** (42.90)	3.877*** (3.23)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2271775	2,271,775	1717788	1905359	2271775	2271775	2271775

Adjusting the clustering standard error. — To ensure the accuracy of the standard error estimates, this study conducts robustness tests by varying the clustering level. In the baseline regression, the standard error is clustered at the individual level (*inventor_id*); however, researchers within the same institution may face shared innovation environments or policy shocks, leading to correlation in the disturbance terms at the institutional level. To address this, we precisely locate the institutions to which talents belong using the latitude and longitude data obtained during patent data scraping, and adjust the clustering standard error to the institutional level (*institution_id*). As shown in column (5) of **Table 4**, the core explanatory variable *Lcn* is significantly positive at the 1% level, and the standard error shows only a minor change. This indicates that the conclusions remain robust even when accounting for inter-group correlations within institutions, further ruling out the potential interference of serial correlation on the estimation results.

Re-estimation using the Probit model. — To avoid bias arising from differences in model specification, this paper re-estimates the baseline regression using the Probit model. As shown in column (6) of **Table 4**, the coefficient of the key explanatory variable *Lcn* remains significantly positive at the 1% level, consistent with the baseline findings, indicating that the conclusions are robust.

Supplementing individual-level control variables. — The baseline regression controlled only for prefecture-level city characteristics, yet individual heterogeneity may simultaneously influence migration decisions and sensitivity to urban storytelling. Therefore, this study further incorporates the following individual-level variables: the individual's self-citation rate within the top 1% percentile of their field for that year (*top1pct_self_cite*), the individual's citation rate within the top 1% percentile of their field for that year (*top1pct_other_cite*), the total number of collaborators for that

talent in the current year (*annual_collaborate*), and the number of collaborators from the same institution (*inst_collaborate*). As shown in column (7) of **Table 4**, the coefficient of the core explanatory variable *Lcn* remains significantly positive and of similar magnitude, confirming the robustness of the results.

D. Mechanism analysis

This study examines the moderating effects of living costs and household registration constraints on the relationship between urban storytelling and talent flow; the results are shown in **Table 5**. Column (1) presents the regression results for the main effect of urban storytelling on talent flow.

Column (2) presents the regression results with living costs as the moderator variable. The regression coefficient for the interaction term is -8.791 and is significant at the 1% level, indicating that the interaction between urban storytelling and living costs has a negative impact on talent flow; that is, living costs negatively moderate the effect of urban storytelling on talent flow, thereby confirming Hypothesis H2. When urban housing prices rise, the marginal incentive effect of the signals regarding development opportunities and quality of life conveyed by the city Storytelling on talent migration intentions diminishes. The budget constraint mechanism created by high living costs inhibits the effective conversion of Storytelling appeal, thereby making talent more inclined to maintain their current locational choices.

Column (3) presents the regression results with the lowering of residency registration thresholds as the moderator variable. The regression coefficient for the interaction term is 23.586 and is significant at the 1% level, indicating that the interaction between the two variables has a positive impact on talent flow; that is, lowering the residency registration thresholds significantly and positively moderates the effect of urban storytelling on talent flow, thereby validating Hypothesis H3. The

relaxation of the household registration system reduces institutional transaction costs, thereby reinforcing the credible promises of accessible public services and social integration within the city Storytelling. This enhances talent' s perceived value of the Storytelling signals, thereby encouraging them to transform their willingness to move into a stable decision to settle.

TABLE 5, MECHANISM ANALYSIS

	(1) main effects	(2) Adjusting with the cost of living	(3) Adjusting by lower the threshold of settlement threshold
<i>Lcn</i>	1.446*** (17.00)		
<i>c_Lcn</i>		4.855*** (49.01)	-9.184*** (-74.92)
<i>c_lc</i>		-0.070*** (-3.75)	
<i>lc×Lcn</i>		-8.791*** (-95.28)	
<i>hkrb</i>			-0.035*** (-4.07)
<i>hkrb×Lcn</i>			23.586*** (128.50)
<i>popd</i>	-0.444*** (-4.40)	-2.221*** (-20.46)	-0.366*** (-3.59)
<i>eco</i>	-0.09 (-1.56)	-0.180*** (-2.94)	0.08 -1.39
<i>open</i>	-0.544 (-0.16)	5.459 -1.48	16.183*** -4.51
<i>gov</i>	-1.069*** (-6.12)	-2.006*** (-10.10)	-0.145 (-0.82)
<i>edu</i>	-1.163*** (-5.36)	-1.712*** (-7.54)	-0.724*** (-3.29)
<i>hmc</i>	-0.174 (-1.59)	1.131*** -3.32	-0.548** (-2.03)
<i>hlc</i>	-0.012 (-0.18)	-0.140* (-1.93)	0.059 (0.87)
<i>cons</i>	3.872***	17.752***	1.774

	(3.22)	(14.89)	(1.47)
Year fixed effects	Yes	Yes	Yes
City fixed effects	Yes	Yes	Yes
Observations	2271775	1903417	2271775

V. Further discussion

A. Heterogeneity Analysis

Administrative Level.—Within China’s urban system, provincial capitals (including municipalities directly under the central government) serve as the political and economic centers of their respective provinces and typically possess more concentrated policy resources. From a spatial economics perspective, this structure further reinforces the competitive advantage of provincial capitals in attracting talent. As a form of soft attractiveness, the effectiveness of urban storytelling may vary depending on a city’s administrative level and the concentration of policy resources. Therefore, this study conducted a regression analysis grouping cities based on whether they are provincial capitals, with the results shown in **Table 6**. The regression coefficient for urban storytelling in provincial capitals was significantly positive, indicating that in central cities with higher administrative levels and abundant policy resources, urban storytelling can significantly enhance its appeal to talent. In contrast, while positive urban storytelling in non-provincial capital cities can convey their local advantages, their structural shortcomings in terms of resource concentration and policy support may prompt potential migrants to recognize and compare the superior opportunities available in administrative centers, thereby treating non-provincial capital cities as transitional or alternative destinations for migration.

TABLE 6, ADMINISTRATIVE LEVEL, SPATIAL ACCESSIBILITY, LIVABILITY PREMIUM
HETEROGENEITY

	Administrative Level		Spatial Accessibility		Livability Premium	
	Administrative center cities	Non-administrative center cities	traffic terminal cities	Non-traffic terminal cities	Key environmental cities	Non-Key environmental cities
<i>lcn</i>	19.215*** (141.83)	-17.188*** (-122.58)	4.963*** (37.21)	-1.371*** (-11.40)	2.001*** (21.03)	-1.045*** (-4.85)
<i>popd</i>	-1.280*** (-5.94)	-0.498*** (-4.29)	-0.189 (-0.83)	-0.386*** (-2.89)	-0.684*** (-5.81)	0.29 (1.15)
<i>eco</i>	0.036 (0.33)	-0.247*** (-3.31)	0.243 (1.58)	-0.152** (-2.29)	-0.065 (-0.94)	0.022 (0.20)
<i>open</i>	27.248*** (3.69)	-0.006 (-0.00)	21.100*** (2.78)	-5.961 (-1.48)	2.362 (0.60)	-7.988 (-1.05)
<i>gov</i>	-0.32 (-0.98)	-1.647*** (-7.14)	-1.273*** (-3.24)	-1.197*** (-5.65)	-1.280*** (-5.81)	-0.986*** (-3.09)
<i>edu</i>	1.784*** (4.80)	-2.273*** (-7.97)	-0.242 (-0.53)	-1.420*** (-5.40)	-1.197*** (-4.92)	-1.029* (-1.79)
<i>hmc</i>	2.061*** (5.61)	-2.230*** (-5.06)	1.340*** (3.30)	-1.449*** (-4.13)	0.898*** (2.64)	-4.024*** (-2.73)
<i>hlc</i>	-0.323*** (-2.63)	0.053 (0.61)	-0.298*** (-2.58)	0.238*** (2.68)	-0.061 (-0.79)	0.264* (1.72)
<i>cons</i>	-3.377 (-1.54)	17.752*** (12.7)	-4.104 (-1.32)	6.217*** (4.79)	4.879*** (3.38)	-0.207 (-0.09)
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes
City fixed	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1115328	1149965	1011561	1253732	1858609	406684

Spatial Accessibility.—According to new economic geography theory, transportation infrastructure influences the spatial distribution of economic activities by reducing the costs associated with the movement of factors of production. Modern transportation such as high-speed rail can significantly enhance the accessibility of transportation hub cities, reducing the time costs and psychological barriers associated with talent flow, thereby improving the efficiency with which these cities adopt and transform urban storytelling. Therefore, based on the Medium- and Long-Term Railway

Network Plan jointly issued by China's National Development and Reform Commission and other departments in 2016, this study classifies the sample cities into hub cities and non-hub cities. As shown in Table 6, the regression coefficients for urban storytelling in transportation hub cities are significantly positive. This indicates that in cities with superior transportation conditions, the networked development of transportation infrastructure in hub cities enhances the reach and credibility of urban storytelling. Consequently, talent is more likely to interpret these storytelling as signals of development opportunities and improvements in quality of life, thereby strengthening their willingness to relocate. In non-transportation hub cities, the locational disadvantages resulting from inconvenient urban transportation lead talent to view the positive signals conveyed by urban storytelling with skepticism, or to regard them as exaggerated propaganda stemming from information asymmetry, thereby reducing the probability of talent flow.

Livability Premium.—Environmental regulations are a key institutional arrangement through which governments address environmental pollution and enhance residents' well-being. Cities with stricter environmental regulations typically feature higher investments in environmental governance and more stringent corporate emissions standards. While such regulatory constraints may increase industrial operating costs in the short term, they can effectively improve livability indicators, such as air quality and green space coverage, in the long run, thereby creating an environmental premium. Based on the list of key atmospheric control zones outlined in the Three-Year Action Plan to Win the Battle for Blue Skies published by the Ministry of Ecology and Environment in 2018 and the Action Plan for Continuous Improvement of Air Quality published in 2023, this study categorizes the research subjects into key environmental protection cities and non-key environmental protection cities. Regression results in Table 6 indicate that in cities with higher environmental

regulatory intensity, the policy label of “key environmental protection city” itself constitutes an institutional signal, conveying implicit information to potential migrant talent that the city’s environment is suitable for long-term residence. In non-key environmental protection cities, the relative lack of environmental regulation may cause potential migrant talent to question the credibility of the city’s urban storytelling and subject it to negative screening.

Affiliated Institutions.—Given that different types of institutions exhibit significant differences in institutional logic, resource allocation, and talent incentive structures, the impact of urban storytelling on talent flow decisions may vary. In this study, the sample is categorized into six institutional types based on the institutions to which the talent belongs, and group regressions are conducted accordingly. Regarding cases where some talent belongs to multiple institutional categories simultaneously, this study posits that such individuals possess multifaceted capabilities and have access to resources from multiple institutions. Therefore, they are treated as independent observations and included in the corresponding grouped regression to avoid information loss. As shown in Table 7, the impact of urban storytelling on talent flow varies by institutional type. The effect is strongest in public sectors such as schools and government agencies, followed by individuals and research institutions, while it is weakest in enterprises; the effect is not significant in other categories. This indicates that talent in the public sector is more sensitive to the city’s soft environment, likely due to their stronger sense of local identity and motivation for public service. Notably, population density has a significantly negative effect in enterprises, schools, and research institutions, reflecting that the crowding effect inhibits Flow.

TABLE 7, HETEROGENEITY OF SUBORDINATE INSTITUTIONS

	(1)	(2)	(3)	(4)	(5)	(6)
	Individual	Enterprise	Others	School	Authority	Research Institution
Lcn	2.197*** (7.25)	0.659*** (6.34)	5.682 (1.14)	3.345*** (16.27)	4.721*** (10.37)	1.601*** (3.41)
popd	-0.373 (-0.93)	-0.453*** (-3.79)	1.910 (0.27)	-0.631** (-2.34)	-0.156 (-0.21)	-2.257*** (-3.69)
ecodev	0.265 (1.31)	-0.178** (-2.54)	-0.674 (-0.19)	0.331** (2.38)	-0.049 (-0.13)	0.223 (0.69)
open	4.381 (0.24)	-3.120 (-0.81)	164.995 (0.47)	19.525* (1.86)	11.751 (0.44)	40.362 (1.59)
govin	-0.490 (-0.89)	-1.029*** (-4.84)	3.634 (0.36)	-0.961** (-2.17)	-0.875 (-0.82)	-0.027 (-0.03)
edulev	-2.354*** (-2.88)	-1.105*** (-4.34)	3.643 (0.30)	-0.304 (-0.53)	1.787 (1.25)	1.590 (1.29)
humancap	-2.036 (-1.22)	-0.260 (-1.20)	-32.989 (-1.34)	1.332** (1.97)	-2.468 (-1.26)	0.200 (0.12)
healthcare	0.803*** (3.08)	-0.053 (-0.67)	-21.603*** (-3.55)	-0.493*** (-2.75)	0.266 (0.69)	-0.435 (-1.07)
Constant	-1.131 (-0.27)	5.523*** (3.78)	10.239 (0.14)	-1.009 (-0.35)	-1.185 (-0.14)	11.336* (1.67)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
City fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	211,641	1,611,200	955	367,501	67,997	68,321

B. Urban Storytelling and Innovative Vitality

The number of patent applications stems from the expansion of innovation entities and increased innovation activity, directly reflecting the quantity of innovation outcomes; the number of granted patents reflects the ultimate quality and market recognition of these outcomes. Therefore, this study uses the number of patent applications and its sub-dimensions to characterize urban innovation vitality; the regression results are shown in **Table 8**. Urban storytelling has a significant positive effect on urban innovation vitality and exhibits dimensional heterogeneity. The

regression coefficient for *Lcn* is 0.113 and is significant at the 1% level, indicating that urban storytelling can effectively stimulate the overall innovation vitality.

TABLE 8, URBAN STORYTELLING AND INNOVATIVE VITALITY

	(1)	(2)	(3)	(4)	(5)
	<i>uiv</i>	<i>uiv_PG</i>	<i>uiv_PA</i>	<i>uiv_AD</i>	<i>uiv_UM</i>
<i>Lcn</i>	0.113*** (17.86)	-0.087*** (-40.01)	0.079*** (21.67)	0.016*** (12.48)	0.105*** (22.11)
<i>popd</i>	-1.673*** (-157.27)	-0.762*** (-225.46)	-0.372*** (-64.50)	-0.073*** (-47.63)	-0.466*** (-63.72)
<i>eco</i>	0.032*** (5.36)	0.329*** (205.73)	-0.156*** (-60.64)	-0.035*** (-38.90)	-0.107*** (-22.83)
<i>open</i>	13.013*** (57.14)	10.221*** (124.37)	-3.464*** (-23.00)	-5.103*** (-108.82)	11.358*** (57.25)
<i>gov</i>	-1.551*** (-81.27)	-0.076*** (-15.64)	-1.059*** (-116.72)	0.154*** (43.33)	-0.569*** (-38.99)
<i>edu</i>	1.116*** (57.26)	0.776*** (122.47)	0.328*** (30.07)	0.137*** (42.78)	-0.125*** (-9.96)
<i>hmc</i>	0.330*** (4.09)	0.126** (2.53)	0.198*** (6.29)	-0.011* (-1.95)	0.016*** (3.21)
<i>hlc</i>	-0.019*** (-3.12)	-0.285*** (-75.96)	0.222*** (29.29)	-0.001 (-0.62)	0.045*** (7.64)
<i>cons</i>	13.609*** (115.74)	1.585*** (45.03)	5.287*** (100.75)	1.035*** (56.81)	5.703*** (61.79)
Year fixed effects	YES	YES	YES	YES	YES
City fixed effects	YES	YES	YES	YES	YES
Observations	2271775	2271775	2271775	2271775	2271775
R-squared	0.927	0.896	0.927	0.969	0.923

Next, we examine the data from the perspective of urban innovation vitality. First, regarding the scale of innovation output, urban storytelling significantly increased the total number of patent applications (*uiv_PA*), indicating that a positive Storytelling environment can effectively stimulate a city's innovation activity and drive the exploration and accumulation of cutting-edge technologies. Second, at the level of innovation application and commercialization, both utility model patents (*uiv_UM*) and design patents (*uiv_AD*) exhibit significant positive effects. The former reflects

how positive urban storytelling drives the optimization of existing technologies and the evolution of business models, while the latter demonstrates how positive urban storytelling facilitates innovation by attracting diverse talent and enhancing product market fit. Finally, it is worth noting that the volume of patent grants (uiv_PG) is significantly negative. This may be due to structural time lags in innovation output, as current grants correspond to the stock from previous application cycles, while new innovations have not yet entered the grant release phase.

VI. Conclusions and policy implications

This paper examines the impact of urban storytelling on talents' *voting with their feet* decisions and the underlying mechanisms by analyzing cross-regional talent flow from 2018 to 2022. The study extracted the names of academic paper authors and patent inventors from the OpenAlex database and the China National Intellectual Property Administration (CNIPA), respectively, and employed a two-stage disambiguation algorithm to match the data. Based on this, dummy variables were generated to measure cross-regional talent flow. At the same time, we synthesized a city Storytelling index using the SnowNLP algorithm based on 2,102,241 Weibo comments and 59,506 Zhihu answers, and ultimately constructed a Logit model for regression analysis. The results indicate that positive city storytelling, as a form of informal institutional signal, can significantly enhance the talent magnet effect. Lower living costs and residency thresholds further reinforce this effect. Furthermore, talent affiliated with schools and government agencies has been more affected by positive urban storytelling, and talent is more inclined to migrate to provincial capitals, transportation hubs, and cities prioritized for environmental protection. At the same time, positive urban storytelling can effectively stimulate urban innovation vitality by

attracting talent inflows, and this effect exhibits significant heterogeneity across innovation dimensions.

Based on the findings of the above research, this paper offers the following practical recommendations: Firstly, the government should promote a shift in urban storytelling from ‘hard propaganda’ to ‘soft communication’, utilising new media to shape an authentic and positive image, thereby subtly correcting the public’s past prejudices. At the same time, favourable measures such as lowering residency thresholds and controlling the cost of living must be implemented to work in tandem with talent recruitment policies; Second, social media platforms must assume responsibility for building a healthy content ecosystem. Through algorithmic recommendations and topic management, they should proactively amplify positive storytelling and the authentic vibrancy of urban life. They could develop data products such as a ‘city sentiment index’ and ‘talent interest heatmap’ to inform government decision-making, whilst refining public opinion early-warning and regulatory mechanisms to prevent issues from escalating excessively or false information from damaging the city’s image; Thirdly, the general public should cultivate a sense of ownership in shaping the city’s Storytelling, actively documenting and sharing authentic, positive aspects of urban life in their daily social media posts. By contributing diverse perspectives to topic discussions, they can help reduce information friction for external audiences, whilst collectively building a city image that fosters emotional resonance, thereby creating a more attractive public discourse environment to encourage talent inflow.

Admittedly, this paper still has numerous limitations, and we hope that future research will focus on the following areas: firstly, attempts could be made to link micro-level data on paper authors or patent inventors, thereby enabling more refined control of individual-level variables or a deeper examination of talent flow

mechanisms. We look forward to methodological innovations that will allow for more precise observation of talent migration trajectories; secondly, cutting-edge methods could be introduced to explore the multidimensional semantics of urban storytelling. For example, by training large language models (LLMs) to utilise their long-text analysis capabilities, it would be possible to capture complex sentiments within texts, rather than limiting the analysis to a simple three-way classification of positive, neutral and negative sentiments; thirdly, the factors influencing talent migration decisions in reality are often more complex; future research could delve deeper into individuals' trade-off processes and decision-making mechanisms to reveal dynamic game-theoretic processes or threshold effects.

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