

Transformation of Consumption Space in Urban Regeneration: Spatial Characteristics and Influencing Factors of Youth Subcultural Consumption Space

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Abstract:

Multicultural demands and spatial transformations have fostered emerging consumption spaces, particularly youth subcultural venues in Chinese cities. Focusing on Nanjing's historic urban core, this study utilizes Dianping POI data to examine the spatial distribution patterns of youth subcultural spaces and their influencing factors within a multicultural context. GIS analysis reveals a "single-core with three subcentres" spatial configuration and point-axis development structure. SLM spatial lag models identify key agglomeration determinants: commercial density, catering density, cultural facility density, landmark density, and residential density. These spaces facilitate autonomous renewal of traditional commercial areas while creating inclusive social environments for youth, representing a transformative trend in urban consumption space evolution.

Keywords: multiculturalism; youth subculture; consumption space; inclusiveness; Nanjing

0. Introduction

Driven by the rapid development of the cultural economy, China is transitioning from the industrial era to the information era, from the mechanical age to the creative age, and from growth-oriented development to sustainable development. Urban development is gradually shifting from functional cities to cultural cities^[1]. However, certain urban challenges have emerged, including the disconnection between cultural consumption spaces and consumption values, an emphasis on construction over operation, and the separation of production, living, and consumption—collectively termed as new urban maladies. In historical districts, the encroachment of commercialised spaces has triggered a cultural crisis in urban spaces^[2]. Excessive commercialisation has eroded the original cultural identity, historical memory, authentic architecture, and folk customs, replacing them with homogenised dining streets, Yiwu commodity markets, tourist souvenirs, and globalised fast-consumption symbols. Cultural consumption plays an increasingly vital role in urban economic life. Cities, functioning as entertainment machines, continuously create diverse spaces to meet the growing demand for cultural consumption. A key challenge for many cities is how to cultivate vibrant cultural consumption spaces.

The evolution of urban spatial demands and qualitative upgrading of consumption patterns have expanded cultural consumption beyond material acquisitions (e.g., purchasing audiovisual products and printed materials) to encompass experiential dimensions (e.g., exhibition visits and cinema attendance), while subcultural groups increasingly engage in identity-driven consumption (e.g., live music venues, Pop Mart collectibles, and tattoo culture) for emotional value and social recognition. This diversification further stimulates the upgrading of cultural consumption and revitalises underutilised spaces. Nanjing, a renowned historical and cultural city in China, has witnessed a surge in youth-oriented subcultural consumption spaces amid the new consumption wave^[3]. Against this backdrop, examining the spatial distribution patterns and influencing factors of youth subcultural consumption spaces holds significant implications for systematic research on consumption spaces and their transformation in urban renewal.

1. Research Context

The acceleration of globalization has intensified the flow and collision of cultural elements within urban spaces, transforming cities into dynamic carriers of multicultural coexistence, stratification, and evolution. Existing studies have adopted interdisciplinary approaches to analyze the plurality of urban cultural landscapes, systematically deconstructing their spatial characteristics through layered frameworks. For instance, research on South-east Asian cities has employed macro-, meso-, and micro-scale analysis to examine the temporal evolution of urban morphology, street networks, and iconic architectural features^[4], establishing an analytical model for understanding multicultural urban landscapes in coastal cities^[5]. Scholars have also applied the Historic Urban Landscape (HUL) approach to investigate how cultural diversity influences the development of urban historical spaces and heritage^[6]. A notable example includes studies on the port city of Qingdao, where the organic integration of

maritime culture, foreign influences, and indigenous traditions has played a sustainable role in shaping the city's unique identity. During the urban regeneration phase focused on enhancing quality and efficiency, the inclusive capacity of public open spaces to accommodate multicultural interactions has emerged as a critical factor in improving spatial vitality. Empirical research in Macao—a multicultural hub—has examined the congregation patterns of migrant domestic workers in public spaces, analyzing their spatial distribution, underlying factors, and formation mechanisms^[7]. Preserving the authenticity and continuity of multicultural expressions not only fosters social well-being but also unlocks economic potential. Multicultural neighborhoods, with their inherent complexity and diversity, contribute significantly to urban vitality and economic resilience^[8]. This body of research underscores the need for integrated approaches that balance cultural preservation with sustainable urban development^[4].

The rise of youth subcultural consumption spaces has occurred within the broader context of experiential consumption and the transformation of consumption spaces. Within Chinese academic discourse, the concept of 'youth subculture' is generally understood to represent cultural paradigms and typologies that diverge from dominant social culture while gaining popularity among youth demographics. The post-Birmingham School interpretation of subcultural circles has effectively deconstructed the traditional binary opposition between subculture and mainstream culture^[9].

Core characteristics manifest in three dimensions:

(1) Identity Attributes: Exclusivity and Social Enclaving

Centred on youth cohorts, these spaces coalesce around distinct subcultural interests and identity formations. Through curated symbols, behaviors, vernaculars, sartorial codes, and musical practices, subcultural groups demarcate collective identities, forging insulated social enclaves that consciously diverge from mainstream culture. This interactive boundary-making enhances spatial stickiness, transforming locales into physically demarcated territories with high identifiability.

(2) Functional Attributes: Placemaking and Symbolic Consumption

These spaces manifest a cyberspace-to-physical transition—exemplified by offline venues like trendy collectible stores—where “cool” and “edgy” elements materialize digital tribal cultures into tangible environments saturated with subcultural ethos. Functioning as urban cultural strongholds, they typically anchor commercial hubs, creative districts, or neighborhood nuclei, evolving into symbolic urban landmarks. For instance, subcultural malls in metropolitan trend zones form distinctive cultural circuits that become integral to city identity. Beyond commercial venues, they serve as epicentres for cultural praxis and collective identification.

(3) Cultural Attributes: Commodification-Culture Hybridity

Defined narrowly, these spaces inherently possess dual characteristics: commercial viability through sales of subcultural merchandise/services/experiences, and cultural authenticity as vessels of youth expression. Crucially, subcultural meaning remains contingent on relational frameworks—absent referential systems, subculture defies definition.

Based on these attributes, youth subcultural consumption spaces are identified through a tripartite lens: ① Youth-dominant participation; ② Cultural consumption orientation; ③ Provision of goods/experiences bearing subcultural symbolic value. Here, consumption extends beyond products/services to encompass spatial embodiment itself—patrons engage with tangible/intangible subcultural commodities while inhabiting meaning-charged environments. Through spatial praxis, participants experience multilayered subcultural immersion, forge social networks, and enact identity construction. This transcends mere transactional fulfillment, constituting instead deep cultural performance, social ritual, and identity-forming agency.

Accordingly, this study defines youth subcultural consumption spaces as purpose-built physical venues in urban environments that cater specifically to distinct youth subcultural groups. These spaces fulfill consumers' demands for identity affirmation, cultural experience, and community engagement through the commercialisation of subculture-specific merchandise and the creation of immersive spatial experiences.

International scholarship addressing youth subcultural consumption spaces remains fragmented, with most research confined to theoretical examinations of youth subculture from an urban sociological perspective, focusing primarily on associated social phenomena and issues^[10-12]. Chinese academic inquiries into subculture have predominantly engaged with concepts including micro-media youth, cultural capital, ACG (animation, comics, and games) culture, and stereotype formation, with particular emphasis on the social impacts of subculture on youth development and detailed analyses of specific subcultural groups' behavioral characteristics across both online and offline platforms^[13-16].

The current academic landscape reveals significant gaps in research from urban planning and human geographical perspectives, particularly regarding the interaction mechanisms between youth subcultural groups and physical environments, as well as detailed case studies focusing on specific demographic groups. Existing studies, such as those investigating urban and community influences on youth culture formation^[16], comparative analyses of international youth fashion districts from cultural perspectives^[17], and examinations of the 'Smarti' phenomenon's spatial distribution patterns within urbanisation processes^[18], generally lack comprehensive analytical frameworks. While subsequent empirical research has explored the evolutionary processes of culturally hybrid consumption spaces exhibiting transnational subcultural characteristics^[19], substantial research opportunities remain concerning the comparative spatial distribution relationships between youth subculture and mainstream culture in urban consumption landscapes, the spatial translation mechanisms of youth subculture within urban consumption space transformations, and the spatial distribution patterns and influencing factors of youth subcultural spaces.

2. Research Data and Methodology

2.1 Data Sources and Processing

2.1.1 Youth Subcultural Consumption Spaces

As one of China's first cohort of National Famous Historical and Cultural Cities and a UNESCO Creative City of Literature, Nanjing possesses profound historical heritage and abundant cultural resources. In recent years, the city has facilitated the unleashing of cultural consumption momentum through advancements in culture, tourism, and MICE sectors. Consequently, the typology of youth subcultural consumption spaces within Nanjing's Old City has been continually enriched.^[20]

This study focuses on youth subcultural consumption spaces within Nanjing's Old City as its primary research object. The foundational research data comprise Point of Interest (POI) data and spatial vector datasets sourced from the Amap (Gaode) and Dianping platforms. Specifically, POI data pertaining to youth subcultural consumption spaces were extracted from the Dianping platform during April 2024. Following comprehensive data cleaning and filtering procedures, a refined dataset of 1,333 valid entries was obtained. Through rigorous random sampling validation, the processed data achieved an accuracy rate of 95%.

Currently, the academic community lacks a consensus regarding the precise definition of youth subcultural consumption spaces. Fundamentally, these spaces do not constitute a specific category of space per se, but rather represent consumption venues intentionally designed for specific youth subcultural groups and their associated cultural practices. Consequently, this research adopts a systematic classification framework grounded in the "National Economic Industry Classification (GB/T 4754-2017)" standard and the POI categorization coding system of the Dianping platform. Youth subcultural consumption spaces are thereby defined and classified into three mutually exclusive categories: 1) Artistic Creation Spaces, 2) Creative Retail Spaces, and 3) Leisure & Socialization Spaces (Table 1).

Table 1 Typology and Specific Formats of Youth Subcultural Consumption Spaces

Category	Content Description	Sub-category	Quantity (count)
Artistic Production	Renting studios or compact venues for subcultural art production	Street Dance Studios, DIY Workshops, Tattoo Parlors, Independent Recording Studios	226
Creative Retail	Providing commodities associated with specific sub-cultures	Designer toy boutiques, anime derivative merchandise stores, alternative fashion boutiques, vintage clothing shops, import goods specialty stores, record and music merchandise retailers, and skateboard specialty shops	227
Leisure Socialisation	Preferred Social Venues of Subcultural Groups	Punk bars, live music venues, comedy clubs, internet cafés, arcades, VR experience centres, escape rooms, murder mystery parlors, and alternative markets	880

2.1.2 Influencing Factors

The spatial distribution pattern of youth subcultural consumption spaces emerges as a complex outcome shaped by multiple interacting factors. A comprehensive review of literature examining determinants of consumption space distribution reveals that transportation factors, commercial factors, and socioeconomic factors consistently constitute common quantitative variables in empirical research^[21-24]. Given the distinctive cultural attributes characterizing youth subcultural consumption spaces central to this investigation, cultural factors were deliberately integrated into the analytical framework. Guided by data availability constraints, this study operationalized variable selection by employing bus stop density, metro station accessibility, and road network density to represent transportation factors; shopping mall density and catering facility density to characterize commercial factors; school accessibility, cultural facility density, and scenic spot density to quantify cultural factors; and residential density alongside housing price levels to capture socioeconomic dimensions. This multi-factorial approach facilitated systematic analysis of influences governing the spatial distribution of youth subcultural consumption spaces within Nanjing's Old City, ultimately yielding four overarching influence categories—Transportation, Commercial, Cultural, and Socioeconomic—comprising ten explanatory variables (Table 2). To model spatial heterogeneity, a grid-based analytical approach was implemented wherein comparative model fitting analyses evaluated grid sizes standardized at 100-meter, 500-meter, and 1000-meter resolutions, accounting for both the physical extent of the Old City and the characteristic service radius of consumption spaces. Model performance metrics substantiated the optimality of the 500 × 500 meter grid resolution, consequently delineating 238 standardized analytical units across the study area. Prior to spatial econometric analysis, comprehensive data preprocessing was conducted, including multicollinearity diagnostics performed through multiple linear regression analysis using IBM SPSS Statistics 27 software. The computed Variance Inflation Factor (VIF) values for all independent variables remained consistently below the critical threshold of 3, confirming the absence of significant multicollinearity and thereby validating the mutual independence of explanatory variables for subsequent integration into spatial regression equations.

Table 2 Determinants of Youth Subcultural Consumption Space Distribution

Category	Factor	Variable Description	Data Source
Transportation	Bus stops	Number of bus stops per research unit (count)	Amap POI data
	Metro stations	Distance to nearest metro station (m)	Amap POI data
	Road network	Road length per unit area (km/km ²)	Nanjing road vector data
Commercial	Shopping malls	Number of shopping malls per unit (count)	Amap POI data
	Restaurants	Number of catering establishments per unit (count)	Amap POI data
Cultural	Schools	Distance to nearest school (m)	Amap POI data
	Cultural facilities	Number of cultural venues per unit (count)	Amap POI data
	Tourist attractions	Number of scenic spots per unit (count)	Amap POI data
Socioeconomic	Residential areas	Number of residential communities per unit (count)	Amap POI data
	Housing prices	Average housing price per unit (¥/m ²)	Beike second-hand housing data

2.2 Research Methods

This study employs a systematic suite of spatial correlation analysis models to comprehensively investigate the determinants and operational mechanisms governing the distribution of youth subcultural consumption spaces. The analytical framework progresses from global patterns to local variations, capturing both overarching trends and spatial heterogeneity, thereby providing an empirical grounding for evidence-informed urban spatial planning and youth cultural policy formulation. Prior to regression modelling, spatial autocorrelation diagnostics were conducted using Global Moran's *I* and Local Moran's *I* indices applied to youth subcultural consumption space distribution data. The Global Moran's *I* ascertains whether the data exhibit clustering or dispersion tendencies across the entire spatial domain, whilst the Local Moran's *I* identifies specific regional agglomeration characteristics. This dual-index approach determines the presence of spatial autocorrelation and informs subsequent model selection. Should significant spatial autocorrelation be observed, spatial econometric models become methodologically requisite.

Predominant methodologies for spatial correlation analysis encompass Ordinary Least Squares regression (OLS), spatial regression models (Spatial Lag Model/Spatial Error Model, SLM/SEM), and Geographically Weighted Regression (GWR). The OLS approach proves suitable under idealised scenarios devoid of significant spatial autocorrelation, whilst SLM/SEM models—contingent upon spatial weight matrices—are routinely employed in investigations of complex spatial mechanisms. GWR is particularly apt for examining localised spatial variations in influencing factors. An initial OLS model was constructed to provisionally estimate determinants of youth subcultural consumption space distribution. Rigorous diagnostic testing for multicollinearity, heteroscedasticity, and residual normality was undertaken to evaluate model suitability and robustness. Where substantial multicollinearity, heteroscedasticity, or non-normal residual distributions were detected, variable transformations or corrective methodologies were applied to ensure estimative validity. Subsequent to confirming spatial autocorrelation presence, both SLM and SEM specifications were implemented to discern whether spatial dependence operated predominantly through lagged-dependent or error-correction mechanisms. These three modelling frameworks—OLS, SLM, and SEM—were systematically deployed to analyse influencing factors, with comparative evaluation identifying the optimally fitted specification. Within this analytical architecture, youth subcultural consumption space density served as the dependent variable, whilst ten independent variables representing transportation, commercial, and cultural dimensions were operationalised^[25]. Model selection adhered to established econometric criteria: higher *R*² and Log-Likelihood (Log *L*) values denote superior statistical significance,

whilst diminished Akaike Information Criterion (AIC) and Schwarz Criterion (SC) values indicate enhanced explanatory power. Following comprehensive assessment, the Spatial Lag Model (SLM) was retained for primary inference due to its demonstrable explanatory coherence and empirical verifiability.

Following the identification of the optimal global spatial econometric specification, the Geographically Weighted Regression (GWR) model was employed to interrogate the locally varying effects of individual determinants on the morphological configurations of youth subcultural consumption spaces. Through calibrated bandwidth parameterisation and kernel function selection, locally adaptive regression equations were formulated, facilitating the derivation of spatially distributed coefficient estimates for each influencing factor. Subsequent analysis examined inter-regional disparities in coefficient magnitude, directional effects, and statistical significance—thereby elucidating spatially heterogeneous patterns governing the distributional dynamics of youth subcultural consumption spaces.

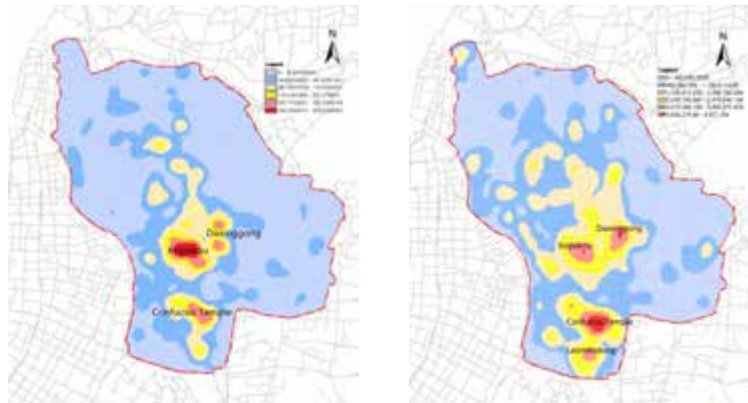
3. Macroscopic Distribution Characteristics of Youth Subcultural Consumption Spaces

Initially, the spatial autocorrelation analysis tool (Global Moran's I) within ArcGIS was employed to examine whether statistically significant spatial clustering exists in the distribution of youth subcultural consumption spaces within Nanjing's Old City. The results yielded a Moran's I index of 0.57, with a p-value < 0.001 and a Z-score of 15.51, strongly indicating the presence of significant positive spatial autocorrelation—demonstrating pronounced clustering effects among youth subcultural consumption spaces across the Old City.

Youth subcultural consumption spaces within Nanjing's Old City manifest a distinct polycentric agglomeration pattern, characterised by a primary central nucleus and three secondary clusters radiating through the urban fabric (Figure 1-a). This spatial configuration demonstrates pronounced concentration within both the historic commercial core and southern cultural districts, where high-density commercial-cultural hybrids have coalesced into identifiable subcultural quarters through complex socio-spatial processes. The central nucleus, anchored by the Xinjiekou-Daxinggong corridor, constitutes the traditional commercial heart of Nanjing. Here, premium retail complexes such as Deji Plaza and Central Mall have transcended conventional consumption functions through strategic cultural programming, including avant-garde art exhibitions and limited-edition brand activations specifically designed to attract fashion-conscious youth demographics. Adjacent to this, the 1912 precinct exemplifies successful heritage commodification, where Republican-era architecture has been adaptively reused to house concentrated subcultural venues - from craft cocktail bars to designer pop-up stores - creating a distinctive nocturnal economy. This area's exceptional accessibility, deriving from its pivotal position at the intersection of Metro Lines 1 and 2 supplemented by extensive bus networks, ensures sustained pedestrian flows that underpin the commercial viability of these specialised retail ecosystems. Among the secondary clusters, the Confucius Temple (Fuzimiao) district has leveraged its deep historical capital to cultivate immersive traditional cultural experiences. Specialist operators offer hanfu costume rentals for photogenic heritage exploration along the Qinhuai riverscape, complemented by hands-on workshops demonstrating Nanjing brocade weaving and other intangible cultural heritage techniques. This synthesis of tradition and youth culture has been further enhanced through deliberate urban interventions, particularly the Mendong Historic Quarter redevelopment, where carefully curated independent retailers - ranging from avant-garde bookshops to micro-roasteries - have established a culturally-anchored consumption node. These spaces simultaneously preserve architectural heritage while fostering contemporary creative expression, creating a palimpsest of historical and modern cultural layers.

Nanjing's Old City exhibits a pronounced polarisation in its cultural consumption landscape, with Xinjiekou emerging as a dominant central 'polar core' while peripheral areas demonstrate negligible agglomeration effects. This spatial configuration indicates an advanced stage of centralisation that warrants caution regarding potential regional development imbalances stemming from excessive resource concentration (Figure 1-b). Xinjiekou's longstanding status as Nanjing's civic centre has afforded it unparalleled advantages in cultural infrastructure development. The district boasts an integrated cultural ecosystem encompassing premium cinemas within major retail complexes such as Nanjing New Century and Central Mall, complemented by specialised venues including the People's Assembly Hall and Cultural Arts Centre. Together these facilities create a comprehensive cultural consumption spectrum ranging from popular entertainment to highbrow artistic experiences.

This concentration has been systematically reinforced through targeted policy interventions, including preferential funding for cultural infrastructure and the strategic allocation of major cultural events, thereby cementing Xinjiekou's position as the city's undisputed cultural nucleus. Conversely, peripheral zones within the Old City manifest significantly underdeveloped cultural consumption provision. The western districts exemplify this disparity, where historical planning priorities emphasised residential functions while neglecting cultural infrastructure. Limited commercial development has further compounded this imbalance, creating an environment inhospitable to major cultural enterprises and resulting in sparse, monotonous cultural offerings that fail to generate meaningful agglomeration effects. This polarised spatial structure presents dual challenges: Xinjiekou contends with the negative externalities of over-concentration, including chronic traffic congestion and market saturation, while peripheral residents face constrained access to diverse cultural consumption opportunities. Such asymmetrical development threatens the balanced growth of Nanjing's cultural economy and may engender self-reinforcing cycles of central accumulation and peripheral deprivation.



1-a Youth Subcultural Consumption Spaces

1-b Cultural Consumption Spaces

Figure 1 Typology of Cultural Consumption Spaces



2-a Artistic Production

2-b Creative Retail

2-c Leisure Socialisation

Figure 2 Typology of Youth Subcultural Consumption Spaces

The kernel density analysis reveals that all three types of youth subcultural consumption spaces exhibit clustered distribution patterns, forming preliminary complementary spatial development clusters in both the central and southern parts of the historic urban core. Leisure and social spaces account for the largest proportion (approximately 66%), primarily comprising bars, live music venues, comedy clubs, internet cafés, and gaming arcades, with main concentrations in central areas including Xinjiekou, 1912 Pedestrian Street, and D9 Block (Figure 2-a). Creative retail and artistic production spaces constitute 16% and 17% respectively, where creative retail spaces (dominated by designer toy stores and anime derivative shops) mainly cluster around the Fuzimiao historic cultural district (Figure 2-b), while artistic production spaces (primarily street dance studios, DIY workshops, and tattoo parlors) predominantly concentrate in the Xinjiekou central area (Figure 2-c).

The leisure-socialisation youth subcultural consumption spaces (Figure 2-a) exhibit pronounced clustering within Nanjing's historic city centre, a spatial pattern fundamentally shaped by the area's vibrant commercial ecosystem, exceptional transport connectivity, and concentrated youth demographics. Xinjiekou, as the city's premier commercial district, accommodates upscale retail complexes including Deji Plaza and Central Mall, which have strategically diversified their offerings by incorporating bars, live music venues, and comedy clubs alongside conventional retail establishments. Deji Plaza exemplifies this trend through its sophisticated cocktail bars and regular musical performances that consistently attract fashion-conscious young patrons. Adjacent to this, the 1912 pedestrian precinct capitalises on its distinctive Republican-era architectural heritage to cultivate a thriving nocturnal economy, where atmospheric bars and cafés create compelling social destinations after dusk. Meanwhile, the D9 Block has emerged as a creative entertainment hub, integrating gaming arcades and internet cafés within its mixed-use development. This agglomeration is further facilitated by Xinjiekou's unparalleled accessibility as the interchange station for Metro Lines 1 and 2, supported by an extensive bus network that ensures sustained visitor flows essential for these leisure-socialisation businesses.

Creative retail subcultural spaces (Figure 2-b) demonstrate a distinct spatial logic, with approximately 16% concentration around the Confucius Temple historic district. These specialist retailers, including designer toy stores and anime merchandise shops, leverage the area's cultural capital and substantial tourist footfall to develop niche product lines that incorporate local heritage motifs. Innovative examples include collectible items featuring artistic interpretations of Qinhuai River scenery and Nanjing landmarks, which simultaneously cater to youth preferences for distinctive goods while promoting regional cultural narratives.

The precinct's mature tourism infrastructure, characterised by pedestrianised streets and public squares that regularly host creative markets, provides an ideal ecosystem for these ventures to flourish. Artistic-production spaces (Figure 2-c) display a 17% concentration in Xinjiekou, benefiting from the district's unique confluence of educational institutions and commercial vitality. Street dance studios, tattoo parlours, and DIY workshops thrive in this environment by drawing upon the abundant student populations from nearby Nanjing University and Southeast University, who serve as both primary consumers and potential practitioners. The district's robust commercial ecosystem enables innovative hybrid business models, exemplified by craft workshops that collaborate with consumer brands to produce customised merchandise. Furthermore, Xinjiekou's status as an information hub facilitates continuous exposure to emerging trends, fostering an environment of constant innovation that reinforces its agglomeration advantages.

This tripartite spatial configuration emerges from several interconnected urban processes: the strategic co-location of complementary subcultural businesses that create critical mass; high-capacity transport infrastructure enabling metropolitan-scale accessibility; synergistic relationships between cultural heritage and contemporary youth practices; and concentrated demographics with disposable income and cultural capital. The case offers valuable insights for urban planners seeking to cultivate vibrant youth cultural ecosystems while preserving historic urban character, demonstrating how careful spatial policy can mediate between commercial development and cultural sustainability in post-industrial cities. The organic formation of these specialised clusters illustrates the potential for creating dynamic interfaces between traditional urban forms and emergent youth cultures, suggesting pathways for other historic cities undergoing cultural-economic transitions.

4. Influencing Factors of Youth Subcultural Consumption Space Distribution

4.1 Analysis of Influencing Factors

The results of the three spatial econometric models are presented (Table 3). Regarding goodness-of-fit, the spatial lag model (SLM) ($R^2=0.79601$; Log L=-757.445706; AIC=1536.89; SC=1575.09) and the spatial error model (SEM) ($R^2=0.794118$; Log L=-756.318; AIC=1536.64; SC=1578.3) demonstrate comparable explanatory power for the distribution mechanisms of youth subcultural consumption spaces, with both outperforming the ordinary least squares (OLS) regression model. However, the SLM exhibits superior significance levels in its independent variables and, while having identical AIC values, shows slightly higher SC values than SEM, making it more suitable for subsequent mechanistic analysis of influencing factors. In conclusion, the SLM results prove more verifiable and interpretable, and thus this model is selected for the regression analysis of influencing factors.

Table 3 Comparative Results of Global Regression Models with Youth Subcultural Consumption Space Density as the Dependent Variable

Variable	OLS			SLM			SEM		
	Coefficient	t-value	t-value	Coefficient	z-value	t-value	Coefficient	z-value	t-value
Constant	-0.18221		0.89525	-0.12263	-0.08027	0.93602	-0.45693	-0.35109	0.72552
	-0.13181								
Bus stops	-0.55094	-1.38162	0.16845	-0.52891	-1.44267	0.14911	-0.76156	-2.00801	0.04464*
Metro stations	0.000479	0.310414	0.75652	0.000126	0.067855	0.9459	0.000915	0.628948	0.52938
Road network	-0.00265	-0.27124	0.78645	0.000009	0.001082	0.99914	-0.00167	-0.18091	0.85644
Shopping malls	2.10432	3.67549	0.0003***	2.1093	3.91852	0.00009***	2.02415	3.75241	0.00018***
Restaurants	0.132175	16.1686	0.000000***	0.125407	15.3723	0.000000***	0.11776	13.9925	0.000000***
Schools	-0.00015	-0.06236	0.95037	-0.0002	-0.06838	0.94548	-0.00072	-0.30629	0.75938
Cultural facilities	0.277169	3.33065	0.00101**	0.243271	3.00119	0.00269**	0.20114	2.50354	0.0123*
Tourist attractions	0.078244	2.40455	0.01699*	0.103218	3.16611	0.00155**	0.069942	2.25862	0.02391*
Residential areas	-0.28196	-3.41533	0.00075***	-0.24863	-3.14729	0.00165**	-0.28551	-3.67059	0.00024***
Housing prices	-0.20753	-0.81471	0.4161	-0.20402	-0.8213	0.41148	-0.1735	-0.72293	0.46972
R^2	0.778366			0.79601			0.794118		
Adjusted R^2	0.768603								
LogL	-763.896			-757.445706			-756.318		
AIC	1549.79			1536.89			1536.64		
SC	1587.99			1575.09			1578.3		

Note: * $p<0.1$, ** $p<0.01$, *** $p<0.001$

Table 4 Influence Levels of Determinants on Youth Subcultural Consumption Spaces

Category	Factors	Directionality	Significance Level
Commercial	Shopping malls	Positive effect	***
	Restaurants	Positive effect	***
Cultural	Cultural facilities	Positive effect	**
	Tourist attractions	Positive effect	**
Socioeconomic	Residential areas	Negative effect	**

Note: *, ** and *** indicate significance at the 5%, 1%, and 0.1% levels, respectively.

The SLM model results indicate that the primary factors influencing the agglomeration of youth subcultural consumption spaces are shopping mall density, restaurant density, cultural facility density, tourist attraction density, and residential area density. Among these, shopping malls, restaurants, cultural facilities, and tourist attractions exert positive effects, whereas residential areas demonstrate negative effects (Table 4).

First, commercial service facilities such as shopping mall density and restaurant density exert positive effects on the spatial distribution patterns of youth subcultural consumption spaces. The supply of commercial facilities like shopping malls and restaurants attracts consumers, expands consumer scale, and consequently promotes the agglomeration of consumption spaces to a certain extent, broadening customer acquisition channels for youth subcultural consumption spaces. The high-density human flow in these commercial spaces creates public spatial fields that provide low-cost venues for youth-dominated subcultural consumer groups, thereby facilitating rational spatial planning that maintains an elastic balance between commerce and diverse cultural formats.

Second, cultural facility density and tourist attraction density also demonstrate significantly positive effects on the distribution of youth subcultural consumption spaces. As spatial anchors for urban cultural tourism development, these facilities attract large numbers of non-local visitors and traveling youth, whose diverse demands present new spatial requirements and challenges to mainstream cultural facilities. On one hand, cultural facilities utilise media like books and exhibitions to serve as spatial platforms for disseminating youth subcultures within diverse cultural systems. On the other hand, through spatial translation of culture, independent artists are commissioned to create wall paintings and graffiti at tourist sites, creating inclusive spaces that facilitate equal dialogue between mainstream culture and subcultures. This collision and exchange of diverse cultures generates positive feedback effects for the composite development of cultural spaces.

Finally, residential density exhibits a significantly negative effect on the distribution of youth subcultural consumption spaces. Residential clusters are typically located in urban land price peak zones, where priority is given to mainstream cultural facilities such as libraries and sports stadiums. According to Alonso's bid rent theory, the payment capacity of youth subcultural businesses cannot compete with high-value-added industries like finance, upscale retail, and mainstream cultural media, leading to spatial squeeze effects on youth subcultural venues. Additionally, residential areas impose specific safety requirements for living environments, and some residents exhibit resistant attitudes due to stereotypical perceptions of youth subcultures. This negative influence reveals inherent conflicts between residential efficiency priorities and cultural diversity values in urban renewal processes.

4.2 Spatial Distribution Characteristics of Influencing Factors

A Geographically Weighted Regression (GWR) analysis was applied to the factors influencing youth subcultural consumption spaces previously identified through the Spatial Lag Model (SLM), enabling further exploration of how these five categories of factors shape such spaces. Visualization of the GWR regression coefficients effectively captures the spatial heterogeneity of each factor's influence (Figure 3). The results reveal that, overall, the five influencing factors exhibit highly differentiated spatial clustering patterns. Their magnitude and direction

of influence display varying degrees of dispersion and equilibrium across different spatial extents within Nanjing's Old City, forming distinct clustered zones. This reflects significant spatial variations in the intensity of each factor's impact across urban districts. The influence of shopping mall density and catering density on youth sub-cultural consumption space distribution progressively diminishes from the central Old City toward its periphery. This pattern correlates with the Ming Palace area and its surroundings, where high concentrations of cultural heritage protection units and military zones result in lower commercial density and consequently reduced vitality of commercial services. Furthermore, large shopping malls and distinctive commercial streets are primarily distributed along Zhongshan South Road, Zhongshan North Road, and within the Confucius Temple (Fuzimiao) and Laomendong (Old East Gate) districts. In contrast, peripheral areas of the Old City feature fewer shopping malls and generally underdeveloped commercial and catering sectors. The influence of cultural facility density and scenic spot density decreases gradually from the southern Old City toward the north. The spatial extent of scenic spot influence corresponds directly to their distribution within the Old City. The southern districts possess abundant cultural facilities and densely concentrated scenic spots; this high saturation of historical and cultural resources contributes positively to increased density of youth subcultural consumption spaces. The influence of residential density diminishes from the northeastern periphery toward the northern Old City. Residential population density is lower in the northeastern periphery compared to the southern Old City. Areas with lower population density exhibit a stronger influence of this factor on youth subcultural consumption space distribution, consistent with the identified negative correlation associated with residential density.

Development priorities and trajectories diverge significantly across different regions of Nanjing's Old City. Historically dominated by factories and dense urban villages, the northern Old City has undergone large-scale regeneration in recent years, aiming to establish a model zone for industry-city integration within a megacity context. Conversely, the southern district of Qinhuai focuses on historical preservation and cultural-tourism integration. These differing historical paths and functional orientations have fostered pronounced north-south disparities in cultural diversity. The southern Old City exhibits vibrant cultural consumption, with cultural tourism driving district development. Over the past two years, youth subcultural consumption spaces have integrated with numerous traditional commercial spaces in the south, undergoing spatial renewal and business diversification, thereby infusing new vitality into the area's cultural consumption landscape. Meanwhile, regeneration efforts in the north prioritize the revitalization of traditional cultural corridors along the Yangtze River waterfront. The variation in regeneration priorities and levels of cultural inclusivity across these districts inevitably influences the locational attractiveness for youth subcultural consumption spaces. Effectively integrating urban multiculturalism with cultural consumption spaces thus constitutes a critical focus for contemporary urban regeneration strategies.

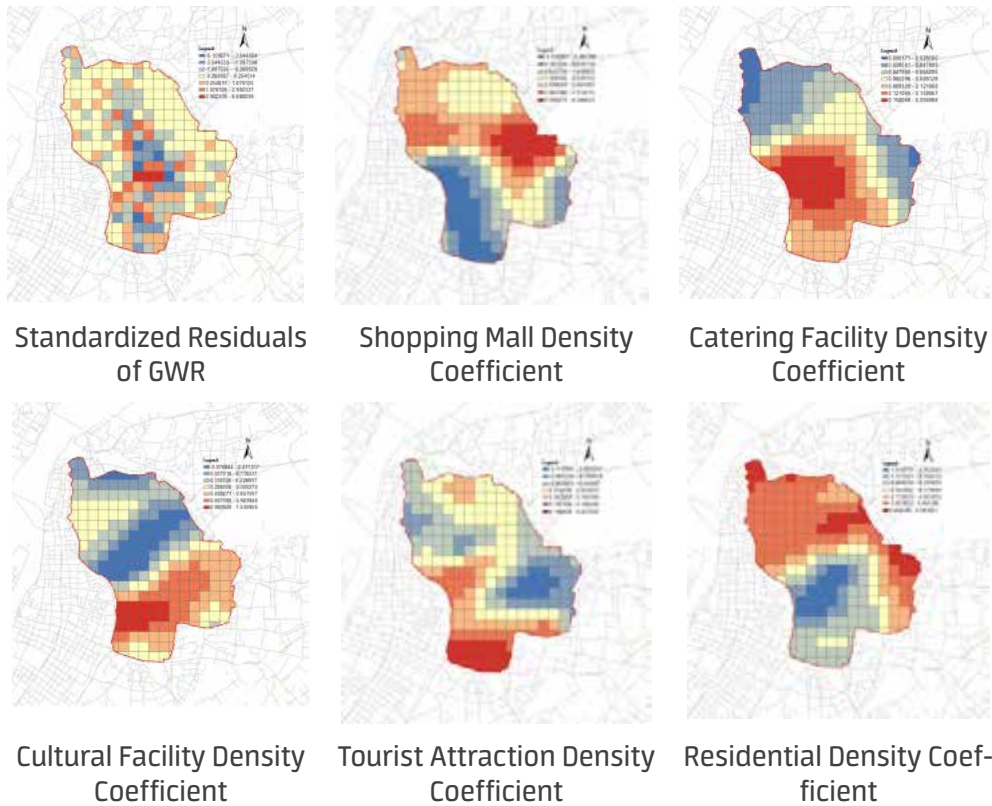


Figure 3 Spatial Heterogeneity of Influencing Factors for Youth Subcultural Consumption Spaces: A Geographically Weighted Regression (GWR) Analysis

5 Conclusions and Prospects

5.1 Key Findings

This study focuses on the macroscopic distribution characteristics and influencing factors of youth subcultural consumption spaces within Nanjing's historic urban core, with key findings as follows:

(1) At the interdisciplinary level of multiculturalism and urban consumption space research, this study constructs a youth subcultural consumption space framework at the macroscopic scale. Differing from previous studies that categorised these spaces into artistic creation spaces, creative retail spaces, and leisure-social spaces, youth subcultural consumption spaces represent an emerging typology within the urban cultural consumption system, constituting a critical subject for investigating consumption space transformation during urban renewal.

(2) Building upon the systematic framework of youth subcultural consumption spaces, this study focuses on analyzing their distribution patterns and influencing factors at the macroscopic scale, establishing an indicator system across four dimensions: transportation, commercial, cultural, and socioeconomic factors. The results demonstrate that youth subcultural activities in Nanjing's historic urban core exhibit vibrant spatial concentration, primarily clustering in the central and southern districts with high-density distributions centred around modern commercial and cultural hubs. Specifically, shopping malls, restaurants, cultural facilities, and tourist attractions exert positive effects, while residential density shows negative impacts.

(3) The agglomeration of youth subcultural consumption spaces exhibits pronounced spatial heterogeneity in its driving factors across Nanjing's Old City. The clustering dynamics manifest distinct spatial dependencies wherein cultural facilities and tourist attractions exert stronger agglomerative forces in the southern districts, residential density emerges as the dominant driver in northern sectors, and commercial determinants—particularly concentrations of shopping malls and catering establishments—predominate in the central core area. This

centre-periphery differentiation further reveals that proximity to Xinjiekou, the metropolitan commercial nucleus, renders spatial aggregation predominantly responsive to commercial variables, whereas peripheral zones demonstrate heightened sensitivity to non-commercial influences including cultural facilities, scenic sites, and residential density. Such documented spatial divergence in formative mechanisms fundamentally illuminates the disparate logics governing cultural consumption space distribution, thereby providing an empirical foundation for designing spatially-targeted interventions to rectify developmental imbalances while simultaneously addressing a critical theoretical gap in consumption geography research through its context-sensitive explanatory framework.

5.2 Discussion and Prospects

This study systematically examines the role of youth subcultural consumption spaces in Nanjing's urban regeneration process, revealing their multifaceted value and operational mechanisms. Through empirical investigation and theoretical analysis, the research identifies four key functions these spaces perform in facilitating urban transformation, collectively constituting an integrated urban renewal promotion system.

(1) Cultural Agency as Spatial Catalyst: Activating Transformations in Existing Urban Fabric

Youth subcultural consumption spaces provide sustained cultural momentum for urban regeneration through unique cultural translation and spatial reconfiguration mechanisms. The study identifies two predominant transformation models: complete spatial renewal (e.g., the comprehensive conversion of Haishanghai Department Store into an anime-themed youth space) and partial functional adaptation (e.g., the introduction of trendy youth-oriented retail in Fashion Lady, Xinjiekou). These models demonstrate successful implantation of subcultural semiotics into physical spaces, facilitating cultural capital reproduction while reshaping place identity and spatial justice. Notably, this cultural transformation process often involves intergenerational cultural dialogue, preserving urban historical memory while infusing contemporary cultural significance. This study empirically validates the positive impact of shopping malls on the agglomeration of youth subcultural consumption spaces, providing theoretical underpinnings for the redevelopment of underutilized commercial assets in urban contexts. From a spatial economics perspective, malls generate synergistic agglomeration effects through intensive physical clustering, thereby reducing spatial fragmentation of subcultural consumption scenes and achieving a "1+1>2" multiplier effect that aligns with youth demands for diversified experiential consumption. Practically, renovating aging retail infrastructure not only revitalizes inefficient commercial properties but also facilitates cultural value reproduction within urban public spaces. Exemplary cases such as Shanghai's TX Huaihai and Chengdu's ACG Plaza demonstrate how integrating subcultural formats—including collectible art toys, ACG (Anime-Comics-Games) culture, and guochao (national trend) elements—significantly enhances their appeal to Generation Z demographics, catalyzing the transformation of commercial spaces from monofunctional retail venues into integrated cultural-social complexes. However, current revitalization initiatives face persistent challenges including homogenized competition and insufficient cultural depth, where some projects merely engage in superficial stacking of trendy formats without excavating subcultural essences, consequently resulting in consumption scenes with ephemeral appeal.

(2) Cultivating Cultural Habitats: Multicultural Inclusivity and Human-Centred Urbanism

The construction of "cultural habitats" through multicultural inclusivity constitutes a profound practice of reshaping urban humanistic values via spatial empowerment. Youth subcultural consumption spaces serve as convergence fields integrating diverse cultures, populations, spatial configurations, and behavioral patterns, wherein leisure-socialization spaces embody principles of egalitarian interaction, creative-retail environments manifest self-expressive freedoms, and artistic-creation zones signify cultural pluralism. This symbiotic relationship between youth subcultural spaces and broader urban consumption landscapes intrinsically reflects the core values of human-centred cultural habitats. Urban regeneration initiatives must therefore strategically leverage the catalytic capacity of these spaces to advance urban consumption ecosystems, delivering inclusive spatial provisions and functional services responsive to diverse cultural needs. As polycultural aggregators, youth subcultural spaces and their synergistic coexistence with mainstream consumption arenas epitomize the humanistic logic underpinning cultural habitat development: leisure-socialization spaces dissolve social hierarchies through equitable encounters; creative-retail venues empower individual agency through personalized

expression; artistic-creation domains embrace cultural heterogeneity through radical openness—collectively forming a microcosm of urban multicultural inclusivity. Nevertheless, persistent value disjunctures in integrating these spaces within mainstream urban fabrics reveal significant challenges: certain redevelopment projects prioritize commercial imperatives to the extent of commodifying subcultural spaces into mere traffic-generating instruments, thereby neglecting their essential cultural articulation and community-building functions; simultaneously, spatial planning frequently fails to accommodate differentiated group needs, creating disconnects between subcultural consumption scenes and residents' quotidian realities. These contradictions fundamentally manifest the tension between humanistic values and economic logics in urban spatial production, necessitating urgent recalibration through integrated institutional frameworks and transformative spatial praxis to achieve sustainable equilibrium.

(3) Negotiating Institutional-Spatial Dialectics: Elastic Coordination in Urban Regeneration

The interplay between institutional frameworks and spatial production manifests pronounced regional differentiation within Nanjing's Old City renewal initiatives. In the northern sectors, the industry policy-driven spatial production paradigm—while facilitating technology-oriented subcultural consumption scenarios through developments like data industrial parks—suffers from functional mismatches stemming from rigid industrial land conversion mechanisms and lagging commercial infrastructure planning. Conversely, the southern districts leverage culturally-grounded governance policies to cultivate flexible institutional environments. Through instruments such as intangible cultural heritage protection ordinances and adaptive reuse of culturally protected buildings, these frameworks enable symbiotic integration between subcultural expressions and historical settings. This institutional design achieves dual objectives: preserving spatial cultural memory while fostering structured growth of subcultural consumption scenes through regulatory control over business typologies. Such configurations empirically validate how institutional elasticity positively correlates with spatial diversity and inclusivity. However, both northern and southern practices reveal an inherent tension: the contradiction between institutional inertia and spatial innovation demands. The north's excessive reliance on industrial policies constrains spatial vitality, while the south's stringent cultural governance potentially inhibits subcultural experimentation and boundary-pushing innovation.

Research on youth subcultural consumption spaces constitutes a strategic implementation of national cultural industry development policies. This study elucidates macro-scale spatial distribution patterns and their determinants within Nanjing's Old City, while acknowledging that meso-micro level empirical investigations remain underdeveloped. Future scholarship should prioritize strengthening theoretical-empirical integration through quantitative analysis of spatial agglomeration dynamics across diverse subcultural business formats, thereby establishing standardized revitalization assessment frameworks for aging retail infrastructure. Concurrently, research must explore synergistic pathways between subcultural spaces and urban cultural ecosystems by facilitating their convergence with localized intangible heritage and collective memory—achieving equilibrium between cultural continuity and commercial innovation. The transformative potential of emerging technologies warrants rigorous examination, particularly regarding blended reality environments leveraging metaverse platforms and AI-driven immersion to reconfigure consumption experiences. Policy formulation requires enhanced regulatory frameworks addressing copyright protection, safety protocols, and operational standards to ensure sustainable sectoral development. Crucially, the integration of underutilized commercial assets with youth subcultural elements may catalyze urban transformation and consumption upgrading—a phenomenon demanding sustained scholarly attention given its profound socioeconomic implications for urban futures.

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