Architecture
Image Studies

Vol.7, Issue 1, pp.861-883, 2026
DOI: https://doi.org/10.62754/ais.v7i1.941

https://journals.ap2.pt/index.php/ais/index

Governance Configurations Driving Equity and Sustainability in Concentration Cities: A Cross-Contextual Crisp-Set QCA

Do Phu Hai[1]

Abstract

Concentration cities where economic activity, administrative power, and infrastructure coalesce within a compact urban core offer unparalleled productivity gains but also exacerbate spatial inequities, infrastructure stress, and environmental challenges. While prior research has richly documented individual policy tools (e.g., congestion pricing, inclusionary zoning, smart-city platforms), three critical gaps persist: governance instruments are typically studied in isolation; single-city case analyses hinder cross-contextual transferability; and there is a paucity of governance-focused metrics linking specific interventions to equity and sustainability outcomes, especially in peripheral and informal settlements. To address these gaps, this study employs crisp-set Qualitative Comparative Analysis on a globally diverse sample of 25 concentration cities, coding eight evaluative dimensions, economic conditions, governance policy, demographic trends, environmental performance, social factors, technology and innovation, cultural assets, and global connectivity—against a composite Concentration City Quality Index (CCQ). We derive minimal causal pathways that reveal how combinations of policy levers and contextual factors drive high-quality versus underperforming urban outcomes, and we propose an integrated governance framework that orchestrates instruments across scales and sectors. By applying set-theoretic methods to uncover cross-contextual causal configurations, this study contributes an empirically grounded governance framework that guides policymakers in balancing efficiency, equity, and sustainability within concentration cities.

Keywords: *Concentration Cities, Governance Configurations, Equity, Sustainability, Crisp-Set Qualitative Comparative Analysis.*

Introduction

Urbanization in the twenty-first century has been marked by the rapid emergence and intensification of “concentration cities,” where economic activity, administrative power, and infrastructure coalesce within a compact urban core. Such spatial concentration harnesses agglomeration economies to drive productivity and global competitiveness, yet simultaneously exerts pressure on governance systems through spatial inequality, infrastructure overload, and environmental stress . As policymakers grapple with the dual imperative of maintaining efficiency while promoting equity and sustainability, understanding how different governance instruments interact to shape urban outcomes becomes ever more critical (Fig. 1).

A substantial body of research has elucidated individual policy tools—dynamic congestion pricing, inclusionary zoning, public–private R&D partnerships, and smart–city platforms—to address specific facets of concentration-city challenges. Seminal theories, from Soja’s Thirdspace to Harvey’s critique of capital accumulation, have highlighted the socio-spatial dynamics at play, while empirical studies have measured density gradients, accessibility indices, and Gini coefficients to diagnose urban disparities. These advances underscore the richness of insights into both the mechanics of core-area agglomeration and discrete governance responses.

However, despite these theoretical and empirical contributions, three critical gaps persist. First, existing studies tend to examine governance instruments in isolation, lacking an integrated framework to orchestrate policies across scales and sectors without reinforcing existing power imbalances. Second, the predominance of single-city case analyses limits our capacity to identify which governance

[1] University of Economics and Business, Vietnam National University – Hanoi (VNU/UEB) Email: haiphudo@gmail.com

approaches are transferable across diverse political and cultural contexts or are resilient to shocks such as economic crises or climate extremes. Third, although diagnostic indicators abound, there remains a paucity of governance-focused metrics linking specific interventions to equity and sustainability outcomes, particularly in peripheral and informal settlements. Addressing these gaps is vital to equipping urban decision-makers with coherent, evidence-based strategies that advance holistic citywide development.

To fill these gaps, this article employs Qualitative Comparative Analysis (QCA) on a sample of 25 global concentration cities, coding eight evaluative dimensions—economic conditions, governance policy, demographic trends, environmental performance, social factors, technology and innovation, cultural assets, and global connectivity—against a composite Concentration City Quality Index (CCQ). Our aims are twofold: (1) to derive minimal causal pathways that articulate how combinations of governance instruments and contextual factors drive positive or negative concentration-city outcomes; and (2) to propose an integrated governance framework that aligns policy levers across scales and sectors to balance efficiency with equity and sustainability. The remainder of the paper is structured as follows: Section 2 reviews relevant literature; Section 3 details the QCA methodology; Section 4 presents results and causal configurations; Section 5 synthesizes implications for governance practice; and Section 6 concludes with recommendations for future research.

Literature Review

The concentration city characterized by the intense aggregation of administrative power, economic activity, and core infrastructure within a single urban nucleus—has emerged as a dominant paradigm in contemporary urbanism. By harnessing agglomeration economies, such cities achieve remarkable productivity gains and global competitiveness. Yet they also engender profound governance challenges, notably spatial inequality, infrastructure overload, and environmental stress. This essay examines the theoretical foundations of concentration cities, explores their defining features and functional typologies, evaluates common measurement indicators, and delineates the governance strategies required to reconcile efficiency with equity and sustainability.

Several seminal theories illuminate the dynamics and governance imperatives of concentration cities. Soja's Third space framework emphasizes that spatial form both reflects and reproduces power relations (Soja, 2000, as cited in Liu, 2003). In concentration cities, the core becomes a site of privileged investment and decision-making, necessitating governance measures to redistribute resources and political voice toward peripheral areas (Liu, 2003). Florida (2002, as cited in Breheny, 2001) argues that cores flourish by attracting the "creative class" through high-amenity environments. Governance therefore must balance talent magnetism with protections against displacement, for example via inclusionary zoning and community benefit agreements (Florida, 2002; Citizens Budget Commission, 2020). Drawing on Harvey (1976, 2012), the city is viewed as a mechanism for capital accumulation that deepens socio-spatial inequalities (Harvey, 1976, 2012, as cited in Van Ginkel, 2008). Governance frameworks must thus incorporate redistributive policies—such as progressive land-value taxation and public investment in under-served neighborhoods—to promote social justice (Harvey, 1976; Kii, 2021). Castells (1996, as cited in Secchi, 2000) identifies global cities as command nodes in the international economy. Governance in these contexts entails coordinating local planning with transnational capital flows, regulatory standards, and infrastructure networks to maintain global connectivity while safeguarding local interests (Castells, 1996; Forrest et al., 2004).

Four interrelated characteristics of concentration cities carry specific governance demands. A dominant Central Business District (CBD) channels economic and administrative functions, generating scale efficiencies but also peak-period congestion. Governance responses include dynamic congestion pricing, bus rapid transit corridors, and flexible land-use zoning to distribute activity temporally and spatially (Bertinelli & Black, 2004; Zhong, Jiang, & Nielsen, 2022). A steep density-and-service gradient radiates from the core to the periphery. Equitable governance requires calibrated service provision—ranging from decentralized health clinics to satellite administrative centers—to mitigate the core–periphery divide (Breheny, 2001; Yeh, 2000). Focused public investment in transit, utilities, and digital networks amplifies agglomeration benefits but risks underinvestment on the margins. Integrated governance frameworks must link metropolitan planning organizations with local jurisdictions to ensure region-wide infrastructure equity (Liu, 2003; Villani, Talamini, & Xue, 2022). Elevated land values and job clustering in the CBD marginalize low-income residents. Governance instruments—such as inclusionary zoning, community land trusts, and targeted transit subsidies—are essential to uphold affordable housing and access to economic opportunity (Kii, 2021; Citizens Budget Commission, 2020).

Concentration cities manifest in diverse forms, each with tailored governance challenges: Economic–Technological Hubs (e.g., Silicon Valley, Shenzhen) demand governance of innovation districts, intellectual-property regimes, and public-private partnerships for R&D infrastructure (Liu, 2003; Dewolf, 2016). Political–Administrative Capitals (e.g., Washington, D.C.; Beijing), governance here focuses on spatial distribution of governmental functions, diplomatic enclaves, and public-sector employment clustering, while ensuring transparency and citizen engagement across urban districts (Secchi, 2000; Citizens Budget Commission, 2020). Compact Vertical Cities (e.g., Hong Kong, Tokyo) with extreme land-use intensification necessitates governance of vertical zoning, high-rise safety standards, and public-space design, as well as sustainable resource management in dense built environments (Shelton, Karakiewicz, & Kvan, 2011; Hong Kong Planning Department, 2021a).

Robust governance approaches rely on empirical indicators to diagnose concentration-city dynamics acting as measurement indicators as governance tools. They are population density gradients (persons/km²) capture spatial pressure points for housing and transit (Census and Statistics Department, 2021) or the core's share of metropolitan GDP, signals the degree of economic centralization, guiding fiscal-redistribution policies (Bertinelli & Black, 2004). Public-transport accessibility indices measure connectivity equity, informing transit-service improvements and fare-subsidy programs (Villani et al., 2022; Zhong et al., 2022). Gini coefficients for service distribution reveal disparities in education, healthcare, and green-space access, prompting targeted social infrastructure investments (Kii, 2021; Masanobu, 2021).

Governance challenges and policy responses can be observed in dynamic road-pricing, expanded mass transit, and non-motorized transport networks help redistribute demand while generating revenue for peripheral infrastructure (Van Ginkel, 2008; Lefèvre, 2009). Policies such as metropolitan-wide inclusionary zoning, land-value capture for affordable-housing funds, and legal frameworks for community land trusts can rebalance opportunity (Kii, 2021; Citizens Budget Commission, 2020). Green zoning overlays, building-height regulations tied to carbon targets (Barr, 2018), and ecosystem service valuation counteract ecological depletion (Warren-Rhodes & Koenig, 2001; WWF, 2014). Real-time monitoring platforms, adaptive infrastructure codes, and participatory e-governance systems bolster urban resilience to extreme weather while fostering civic engagement (Transport and Housing Bureau, 2016; Highways Department, 2016).

Digital technologies—ranging from urban-form energy models to AI-driven accessibility analytics—are being integrated into governance toolkits to optimize land use, transit planning, and resource management (Lefèvre, 2009; Zhong et al., 2022).

Concentration cities offer unparalleled economic dynamism through agglomeration, yet they simultaneously magnify spatial inequities, infrastructural stress, and environmental footprints. Effective governance must therefore blend spatial theory with pragmatic policy instruments—dynamic pricing, inclusive zoning, decentralized service delivery, and digital-first planning—to harness the benefits of concentration while safeguarding equity and sustainability. By aligning measurement indicators with participatory governance frameworks, policymakers can steer concentration cities toward more balanced, resilient, and just futures.

The rapid expansion of concentration cities has generated a rich body of scholarship on their spatial form, economic dynamics and social impacts. Yet despite considerable theoretical and empirical advances, significant gaps remain in our understanding of how to govern these intensely focused urban systems in a holistic, equitable, and adaptive manner.

First, while individual policy tools, congestion pricing, inclusionary zoning, smart-city platforms are well documented, we lack an integrated governance framework that shows how these instruments can be orchestrated across scales (municipal, metropolitan, national) and sectors (public, private, civil society). Without such coherence, isolated reforms risk working at cross-purposes or reinforcing existing power imbalances.

Second, most studies are rooted in single-city case analyses, limiting our ability to discern which governance approaches are transferable across different political and cultural settings or resilient to shocks—whether economic crises or climate extremes. Comparative, longitudinal research is needed to trace policy evolution over time, identify best-practice sequences, and understand how institutions learn (or fail to learn) from one another.

Third, although metrics like Gini coefficients and accessibility indices diagnose disparities, there is a paucity of governance-focused indicators that link specific interventions to equity outcomes—both

procedural (who participates) and distributive (who benefits). Similarly, the literature on smart-city technologies remains largely technical, with little attention to data governance, algorithmic accountability, and digital inclusion. Empirical studies must examine whether—and how—these platforms can be democratically managed to avoid deepening socio-spatial divides.

Finally, peripheral and informal settlements, which often bear the brunt of underinvestment, are too seldom the subject of targeted governance research. Exploring participatory budgeting, micro-planning and community land trusts in these contexts could illuminate pathways for inclusive urban development.

Filling these gaps will require interdisciplinary collaboration, spanning planning, public policy, political economy and data science to craft governance models that harness the efficiencies of concentration while advancing justice, resilience and sustainability across the entire metropolitan region.

Theoretical Framework

Effective governance of concentration cities requires a multi-dimensional framework that accounts for institutional structures, socio-economic dynamics, global linkages, infrastructure delivery, and equity considerations. By integrating insights from planning theory, political economy, and urban informatics, we can better understand how centralized urban cores are shaped, managed, and contested.

At the heart of institutional–spatial governance lies the legacy of top-down master planning. Early urbanists such as Aymonino (1976) and Secchi (2000) argued that formal zoning codes, land-use regulations, and comprehensive plans concentrate development within the Central Business District (CBD), privileging core growth over peripheral needs. This volumetric approach—controlling not only horizontal land parcels but also vertical air rights and infrastructure corridors—has been vividly illustrated in Hong Kong, where three-dimensional governance structures reinforce central control of land and building form (Shelton, Karakiewicz, & Kvan, 2011).

Socio-economic governance examines the policy levers that mediate who benefits from a city's core concentration. Florida's (2002) Creative Class thesis describes how subsidies, cultural investments, and innovation districts intentionally draw talented workers into the urban core, fueling growth but accelerating gentrification. Harvey's (1976, 2012) work on urban capital accumulation exposes the flip side: public–private financing of infrastructure and land-value capture mechanisms often deepen inequalities between wealthy core stakeholders and marginalized peripheral communities (Van Ginkel, 2008).

Concentration cities also function as nodes in global economic networks, necessitating a governance perspective that transcends municipal boundaries. Castells (1996) identifies cities such as New York, London, and Tokyo as "command points" in the network society, where governance involves coordinating local agencies, multinational corporations, and supranational institutions. Clark and Moir (2015) extend this by advocating for polycentric coordination—formal linkages between the core and satellite centers—that can distribute growth benefits while retaining the efficiency dividends of density.

Infrastructure and service governance focuses on the planning, delivery, and regulation of transport, utilities, and digital platforms. Innovations in smart-city governance—such as lexicographic, multi-objective road-pricing models that dynamically adjust tolls based on land-use patterns—demonstrate how real-time data can manage peak flows into the CBD (Zhong, Jiang, & Nielsen, 2022). Meanwhile, environmental stewardship tools, including green-building codes and ecological-footprint monitoring, seek to mitigate the outsized environmental impacts of core concentration (Warren-Rhodes & Koenig, 2001; WWF, 2014).

Finally, equity and participatory governance underscore the need to incorporate peripheral voices and mitigate socio-spatial injustice. Soja's (2000, as cited in Liu, 2003) concept of third space calls for procedural and distributive justice, urging planners to design participatory processes that empower marginalized neighborhoods. Kii (2021) further highlights policy instruments—such as affordable-housing mandates and community benefits agreements—to counteract the displacement pressures inherent in core-area revitalization.

Together, these five governance dimensions offer a comprehensive framework for analyzing how concentration cities are planned, financed, networked, serviced, and contested. By recognizing the interplay of institutional structures, economic incentives, global networks, infrastructure regimes, and

equity imperatives, scholars and practitioners can design more resilient, inclusive, and sustainable governance strategies for today's highly centralized urban landscapes.

Research Method

This study applies Qualitative Comparative Analysis (QCA), a set-theoretic approach suited to "small-N" comparative research, to identify configurations of governance, economic, social, and environmental conditions that produce high-quality concentration-city outcomes. Rooted in the foundational work of Rihoux and Ragin (2006), QCA bridges case-oriented and variable-oriented methods by systematically comparing cases through Boolean logic. Drawing on Do Phu Hai et al. (2016), who employed QCA to uncover minimal policy configurations for innovative governance in Vietnam, we adapt their methodological framework to the urban context

We selected 25 global "concentration cities" representing diverse political systems, geographies, and development stages. For each city, we compiled secondary data—urban GDP reports, demographic statistics, environmental indicators, policy documents, and quality-of-life surveys—sourced from authoritative databases (e.g., UN Habitat, OECD, national statistical offices) and peer-reviewed studies. These data provided the basis for coding eight condition variables (ECO, GOVP, DEMO, ENVI, SOCF, TECH, CULT, GLOB) and the outcome variable (Concentration-City Quality Index, CCQ) on a 0–1 scale.

Following Rihoux and De Meur's crisp-set QCA guidelines, we dichotomized each condition and the outcome into set memberships (1 = membership; 0 = non-membership) using theoretically meaningful thresholds on a 100-point scoring scale (e.g., top tercile = 1; bottom two terciles = 0). Calibration thresholds were informed by distributional breaks and policy-relevant benchmarks. This crisp-set calibration enables clear interpretation of necessary and sufficient conditions for high-quality outcomes.

We constructed a truth table enumerating all observed configurations of the eight conditions across the 25 cases. Following the procedures outlined by Ragin (2008) and implemented by Do Phu Hai et al. (2016), we applied the TOSMANA software package to perform sequential minimizations: (a) without logical remainders (to identify core configurations fully supported by cases), and (b) with logical remainders (to explore simplifying assumptions and derive parsimonious solutions). Consistency and coverage thresholds were set at 0.90 and 0.75, respectively, ensuring both high empirical support and explanatory relevance.

To test robustness, we conducted sensitivity analyses by varying calibration cut-points (e.g., changing membership thresholds by ±5 points) and re-estimating the solutions. We also examined alternative Boolean reduction algorithms (e.g., inclusion/exclusion of counterfactual remainders) and cross-validated findings against fuzzy-set QCA (fsQCA) specifications for key pathways. These steps follow best practices in configurational methods to confirm the stability of identified causal recipes.

By integrating rigorous set-theoretic procedures with a clear, theory-driven calibration strategy—and by drawing on comparative policy-QCA precedents from Do Phu Hai et al. (2016)—this research method yields systematic, reproducible insights into how combinations of governance and contextual factors drive concentration-city performance.

Research Results

Construction of QCA model

The degree of central urban development was assessed by assigning scores on a 100-point scale to 25 selected compact cities (see Annex 1). To evaluate the quality and level of central-city development of the 25 cities listed above, we employ the following criteria:

- *Governance and Economic Concentration: degree of administrative centralization; economic agglomeration and industrial clustering.*
- *Urban Infrastructure Concentration: extent and coherence of transportation, utilities, and public facilities.*
- *Population and Housing Density: residential density and housing stock utilization.*
- *Land-Use Efficiency: allocation and intensity of urban land uses.*

- *Planning-Policy Effectiveness: success in translating planning objectives into tangible outcomes.*
- *Social Equity and Service Accessibility: disparities in income and access to education, health, and welfare services.*
- *Sustainability and Resource Efficiency: environmental performance, resource consumption, and resilience.*
- *Mobility and Urban Accessibility: ease of movement within the city and access to key destinations.*
- *Housing Affordability and Availability: cost-burden ratios and the adequacy of housing supply.*
- *Cultural Concentration: presence of cultural institutions, events, and heritage sites.*
- *Administrative Framework: structure and capacity of municipal and metropolitan authorities.*
- *Urban Safety and Order: rates of crime, public-safety measures, and law-enforcement effectiveness.*
- *Crisis Response and Disaster Management: preparedness, mitigation, and recovery mechanisms.*
- *Resident Perceptions of Quality of Life: subjective assessments of well-being and satisfaction.*

These multidimensional criteria, collectively coded as **CCO** (Concentration City Quality Index)—ensure that assessment encompasses not only economic performance but also equity, environmental stewardship, and livability. They provide a comprehensive framework for benchmarking each city's central-city development.

Next, the study evaluates each condition in detail against a 100-point scale for the world's most prominent central cities. The criteria include urban planning, infrastructure, economy, technological innovation, quality of life, population management, and climate-resilience.

In Annex 2, the scoring matrix presents the 25 cities' central-city development scores, based on the following conditions:

- *Economic Conditions (ECO): measured by urban GDP, financial strength, investment attraction, labour-market characteristics, and business environment competitiveness.*
- *Government Policies (GOVP): assessed via economic support measures (tax incentives, investment subsidies), urban planning and development frameworks, labour and social-welfare policies, governance transparency and effectiveness, and environmental-sustainability regulations.*
- *Demographic Trends (DEMO): evaluated by population-growth rate, population structure (youth share, migrant workforce, ageing ratio), ethnic and cultural diversity, workforce quality and migration patterns, and fertility rates alongside family-support policies.*
- *Environmental Conditions (ENVI): gauged through air quality (pollution levels, PM2.5), urban water-management and ecosystem health, green-space coverage, natural-hazard exposure (floods, earthquakes, storms, sea-level rise, drought), and environmental-protection and sustainability policies.*
- *Social Factors (SOCF): measured by education and health-care quality, social inclusion and diversity, resident well-being and satisfaction, crime rates and public safety, and income inequality plus access to social services.*
- *Technology and Innovation (TECH): appraised via digital-infrastructure maturity, presence of innovation hubs and startups, R&D investment levels, technology-supporting and digital-transformation policies, and urban applications of AI, IoT, blockchain, fintech, and smart-city solutions.*
- *Cultural and Historical Factors (CULT): assessed by cultural-heritage assets (historic sites, museums, monuments, events), cultural diversity and global influence, roles in art, music,*

cuisine, and fashion, historical significance in world affairs, and capacities for heritage preservation alongside contemporary cultural development.

By codifying these multifaceted dimensions as ECO, GOVP, DEMO, ENVI, SOCF, TECH, and CULT, the framework ensures a rigorous, holistic appraisal of each city's central-urban development. Global Trends (GLOB): This condition is evaluated on the basis of the following dimensions:

- *Position within global trajectories: integration into worldwide technological, economic, political, and environmental shifts.*
- *International influence and connectivity: degree of global outreach, network centrality, and diplomatic or commercial linkages.*
- *Industrial relocation dynamics: extent to which global firms and supply chains have (re)located to the city.*
- *Impact of transnational agreements: effects of international political, trade, and environmental accords.*
- *Openness to and attraction of global partnerships: capacity to host cross-border research, investment, and cultural collaborations.*

The full scoring matrix for all 25 cities appears in Annexes.

Score Analysis

1. Singapore and Tokyo lead the ranking with the highest aggregate scores, owing to their strong politico-economic concentration, proactive governance frameworks, and cutting-edge technological ecosystems.
2. Dubai, Berlin, and Toronto also achieve top-tier results, driven by economic agglomeration, efficient policy implementation, and robust alignment with global trends.
3. New York City and Seoul register very high total scores but exhibit relative weaknesses in environmental management and certain regulatory areas.
4. Mumbai, Cairo, Jakarta, and Manila occupy the lower end of the spectrum, constrained by underperforming economic conditions, less effective government policies, and pressing environmental challenges.
5. Bangkok, Mexico City, and Istanbul fall within the mid-range, indicating significant latent potential yet a need for targeted improvements in several urban-condition domains.

These scores collectively reflect each city's degree of central-urban development and sustainability across the specified criteria. The observed variance highlights both the obstacles and opportunities each metropolis faces in governing compact-city growth effectively.

Building upon these condition-specific scores, we construct a Qualitative Comparative Analysis (QCA) model to elucidate the configurational relationships between concentration-city development (CCO) and the eight evaluative dimensions (ECO, GOVP, DEMO, ENVI, SOCF, TECH, CULT, GLOB).

Table 1: Truetable of Minimal Boolean Reduction

ID	ECO	GOVP	DEMO	ENVI	SOCF	TECH	CULT	GLOB	CCQ
Tokyo,Seoul	1	1	0	1	1	1	1	1	1
Singapore,Melbourne, Toronto,Sydney	1	1	1	1	1	1	0	1	1
Hong Kong	1	1	0	1	1	1	0	1	1
New York,London,Paris, Los Angeles	1	1	1	1	1	1	1	1	1
Shanghai	1	1	0	0	0	1	1	1	1
Dubai	1	1	1	0	1	1	0	1	1

Mumbai,Mexico City,Jakarta,Cairo	0	0	1	0	0	0	1	0	0
Beijing	1	1	0	0	1	1	1	1	1
S□o Paulo	1	0	1	0	0	0	0	1	0
Moscow	1	1	0	1	0	1	1	1	1
Istanbul	1	1	1	0	0	1	1	1	0
Bangkok	1	0	1	0	0	0	1	1	0
Buenos Aires	0	0	1	1	0	0	1	0	0
Karachi,Manila	0	0	1	0	0	0	0	0	0

The resulting QCA framework is presented below.

QCA Analysis

A. Implementation of the first procedure: Minimal Boolean Reduction without Logical Remainders for positive concentration city development (Outcome = 1)

Firstly, the execution of the TOSMANA Procedure, it is minimal solution without Logical Remainders for positive concentration city outcome (Outcome = 1). The TOSMANA software—specifically configured for Qualitative Comparative Analysis of socio-economic conditions using both outcome and condition variables was employed to derive a minimal Boolean solution with no logical remainders for the "***positive concentration-city***" outcome across the 25 selected global metropolises. The analysis yielded a fully consistent, logically coherent solution set.

And then we have:

ECO * GOVP * ENVI * SOCF * TECH * GLOB +	ECO * GOVP * demo * TECH * CULT * GLOB +	ECO * GOVP * DEMO * SOCF * TECH * cult * GLOB
(Tokyo,Seoul+Singapore,Melbourne,Toronto,Sydney+Hong Kong+New York,London,Paris,Los Angeles)	(Tokyo,Seoul+Shanghai+Beijing+Moscow)	(Singapore,Melbourne,Toronto,Sydney+Dubai)

From this, the following three equations can be derived as follows:

ECO * GOVP * ENVI * SOCF * TECH * GLOB +	→ P***ositive concentration-city*** Outcome[1]
(Tokyo,Seoul+Singapore,Melbourne,Toronto,Sydney+Hong Kong+New York,London,Paris,Los Angeles)	

ECO * GOVP * demo * TECH * CULT * GLOB +	→ P***ositive concentration-city*** Outcome[1]
(Tokyo,Seoul+Shanghai+Beijing+Moscow)	

ECO * GOVP * DEMO * SOCF * TECH * cult * GLOB	→ P***ositive concentration-city,*** Outcome[1]
(Singapore,Melbourne,Toronto,Sydney+Dubai)	

And then, we can have 03 equations as follows:

1th - ECO * GOVP * ENVI * SOCF * TECH * GLOB → P***ositive concentration-city,*** Outcome[1]

2th - ECO * GOVP * demo * TECH * CULT * GLOB → P***ositive concentration-city,*** Outcome[1]

3rd - ECO * GOVP * DEMO * SOCF * TECH * cult * GLOB → P***ositive concentration-city,*** Outcome[1]

Nevertheless, these solutions [outcome = 1] are lacks sufficient logical granularity. The scope of the case analysis remains overly broad, encompassing fourteen compact cities that have been identified as exhibiting high-quality central-urban development.

B. Implementation of the second procedure: Minimal Boolean Reduction without Logical Remainders for negative concentration city development (Outcome = 0)

Running the TOSMANA under above conditions, we have:

eco * govp * DEMO * socf * tech * CULT * glob +	eco * govp * DEMO * envi * socf * tech * glob +	ECO * govp * DEMO * envi * socf * tech * GLOB +	ECO * GOVP * DEMO * envi * socf * TECH * CULT * GLOB
(Mumbai,Mexico City,Jakarta,Cairo+Buenos Aires)	(Mumbai,Mexico City,Jakarta,Cairo+Karachi,Manila)	(Sao Paulo+Bangkok)	(Istanbul)

Continuing the TOSMANA analysis using the specified outcome and condition variables—with the minimal-solution option and no logical remainders for the low-quality central-city concentration outcome across the 25 selected global metropolises—the procedure yielded four distinct causal pathways, as follows:

4th- eco * govp * DEMO * socf * tech * CULT * glob → Negative ***concentration-city,*** Outcome[0]

5th - eco * govp * DEMO * envi * socf * tech * glob → Negative ***concentration-city,*** Outcome[0]

6th - ECO * govp * DEMO * envi * socf * tech * GLOB → Negative ***concentration-city,*** Outcome[0].

7th - ECO * GOVP * DEMO * envi * socf * TECH * CULT * GLOB → Negative ***concentration-city,*** Outcome[0]

We proceed with the following analytical observations in academic style:

Demographic trends (DEMO) as a Core Condition. The minimal Boolean reduction identifies demographic trends (DEMO) as a pivotal factor in the emergence and development of central-city concentration. However, its configuration does not yet align consistently with a positive central-city concentration outcome; accordingly, further in-depth analysis of the DEMO condition is warranted.

Economic, Policy, and Innovation conditions become important condition. The conditions Economic (ECO), Government Policy (GOVP), and Technology & Innovation (TECH) all exhibit positive contributions—even in configurations associated with low-quality central-city concentration—indicating that these two dimensions in combination exert a significant influence on central-city development quality.

The configuration with specific conditional configurations: The 4th Equation and 5th equation each comprise four to five causal factors driving a negative concentration outcome: ECO * GOVP * SOCF * TECH * GLOB and ECO * GOVP * ENVI * SOCF * TECH * GLOB. The 2nd Equation and the 3rd Equation involve two to three factors related to a negative concentration outcome [1]: GOVP * ENVI * SOCF * TECH and ENVI * SOCF.

These identified configurations corroborate that the aforementioned conditions are indeed critical to central-city development quality. Nonetheless, the solution paths numbered 4–7 lack sufficient granularity to isolate the primary driving conditions. Therefore, it is imperative to extend the analysis by incorporating logical remainders to refine and specify the core configurations that underpin high-quality central-city concentration.

C. Implementation of the first procedure: Minimal Boolean Reduction with Logical Remainders for positive concentration city development (Outcome = 1)

demo +	SOCF
(Tokyo,Seoul+Hong Kong+Shanghai+Beijing+Moscow)	(Tokyo,Seoul+Singapore,Melbourne,Toronto,Sydney+Hong Kong+New York,London,Paris,Los Angeles+Dubai+Beijing)

It can be observed that, in the minimal solution allowing logical remainders, a negative value for **Demographic Trends (DEMO = 0)** does not preclude stable development of concentration cities. This implies that demographic conditions alone are not an effective driver of compact-city growth. In contrast, the **Social Factors (SOCF)** condition makes a highly positive contribution to concentration city development. As such, SOCF emerges as a key factor, reflecting dimensions of education and healthcare quality, social inclusion and diversity, resident well-being and satisfaction, crime rates and

public safety, and income inequality and access to social services. We thus arrive at **Equation 8** as follows:

8th - SOCF → → P***ositive concentration-city,*** Outcome[1]

[(Tokyo,Seoul+Singapore,Melbourne,Toronto,Sydney+Hong Kong+New York,London,Paris,Los Angeles+Dubai+Beijing)]

The aforementioned central-city concentration cases have now emerged. At this stage, the study will concentrate specifically on these cases and their respective cities. This part of the research will be presented in the "Synthesis" section. Moreover, we consider the following equations, selected from the 184 potential formulas generated during the simplification process for analysis in the Synthesis section. These include:

ECO{1}GOVP{1}DEMO{1}ENVI{0}SOCF{1}TECH{1}CULT{1}GLOB{1} +
ECO{1}GOVP{1}DEMO{1}ENVI{1}SOCF{1}TECH{0}CULT{0}GLOB{0} +
ECO{1}GOVP{1}DEMO{1}ENVI{1}SOCF{1}TECH{0}CULT{0}GLOB{1} +
ECO{1}GOVP{1}DEMO{1}ENVI{1}SOCF{1}TECH{0}CULT{1}GLOB{0} +
ECO{1}GOVP{1}DEMO{1}ENVI{1}SOCF{1}TECH{0}CULT{1}GLOB{1} +
ECO{1}GOVP{1}DEMO{1}ENVI{1}SOCF{1}TECH{1}CULT{0}GLOB{0} +
ECO{1}GOVP{1}DEMO{1}ENVI{1}SOCF{1}TECH{1}CULT{1}GLOB{0.

D. Implementation of the second procedure: Minimal Boolean Reduction with Logical Remainders for negative concentration city development (Outcome = 0)

We continued to run the TOSMANA, we have:

DEMO * socf
(Mumbai,Mexico City,Jakarta,Cairo+Sao Paulo+Istanbul+Bangkok+Buenos Aires+Karachi,Manila)

The research findings indicate that demographic conditions play a crucial role in the formation of a non-positive central-city concentration outcome (DEMO = 0)

9th - DEMO * socf → P***ositive concentration-city,*** Outcome[1]

[Mumbai,Mexico City,Jakarta,Cairo+Sao Paulo+Istanbul+Bangkok+Buenos Aires+Karachi,Manila]

In a symmetrical configuration, when Social Factors (SOCF) are unfavorable and Demographic Trends **(DEMO = 1)** are favorable, the outcome remains a non-positive central-city concentration (CCO = 0). "Favorable" DEMO is defined by conditions including population-growth rate; population structure (shares of youth, migrant labour, and elderly); ethnic and cultural diversity; workforce quality and migration patterns; fertility rate; and family-support policies.

The concentration cities are examined as follows: [Mumbai,Mexico City,Jakarta,Cairo+Sao Paulo+Istanbul+Bangkok+Buenos Aires+Karachi,Manila], Consequently, the study shifts focus to these case-study cities to examine how the combination **DEMO × SOCF** yields a non-positive central-city concentration outcome (CCO = 0). The findings of this analysis will be presented in the Synthesis section

Additionally, from the set of 58 simplifying assumptions (Number of Simplifying Assumptions: 58), the following formulae may be accepted. These include:

ECO{0}GOVP{0}DEMO{1}ENVI{0}SOCF{0}TECH{0}CULT{0}GLOB{1}
ECO{0}GOVP{0}DEMO{1}ENVI{0}SOCF{0}TECH{0}CULT{1}GLOB{1}
ECO{0}GOVP{0}DEMO{1}ENVI{0}SOCF{0}TECH{1}CULT{0}GLOB{0}
ECO{0}GOVP{0}DEMO{1}ENVI{0}SOCF{0}TECH{1}CULT{0}GLOB{1}
ECO{0}GOVP{0}DEMO{1}ENVI{0}SOCF{0}TECH{1}CULT{1}GLOB{0}
ECO{0}GOVP{0}DEMO{1}ENVI{0}SOCF{0}TECH{1}CULT{1}GLOB{1}
ECO{0}GOVP{0}DEMO{1}ENVI{1}SOCF{0}TECH{0}CULT{0}GLOB{0}
ECO{0}GOVP{0}DEMO{1}ENVI{1}SOCF{0}TECH{0}CULT{0}GLOB{1}

Synthesis And Policy Discussions

We rewrite the equation 1 and 3 with SOCF condition as follows:

1/ ECO * GOVP * ENVI * SOCF * TECH * GLOB → P***ositive concentration-city,*** Outcome[1]

3/ ECO * GOVP * DEMO * SOCF * TECH * cult * GLOB → P***ositive concentration-city,*** Outcome[1]

And we can re-write as follows:

1/ SOCF (ECO * GOVP * ENVI * TECH * GLOB) → Positive concentration-city,*** Outcome[1]

3/ SOCF (ECO * GOVP * DEMO * TECH * cult * GLOB) → Positive concentration-city,*** Outcome[1]

When examining the selected global metropolises (Figure 1): Tokyo; Seoul and Singapore; Melbourne; Toronto; Sydney; Hong Kong and New York; London and Paris; Los Angeles, Dubai, and Beijing, we may categorise them functionally as follows:

Economic–Financial Hubs: New York, London, Tokyo, Hong Kong, Singapore, and Dubai serve primarily as centres of international finance, commerce, and business. Their advanced banking sectors, stock exchanges, and corporate headquarters underpin their roles as the world's leading financial agglomerations.

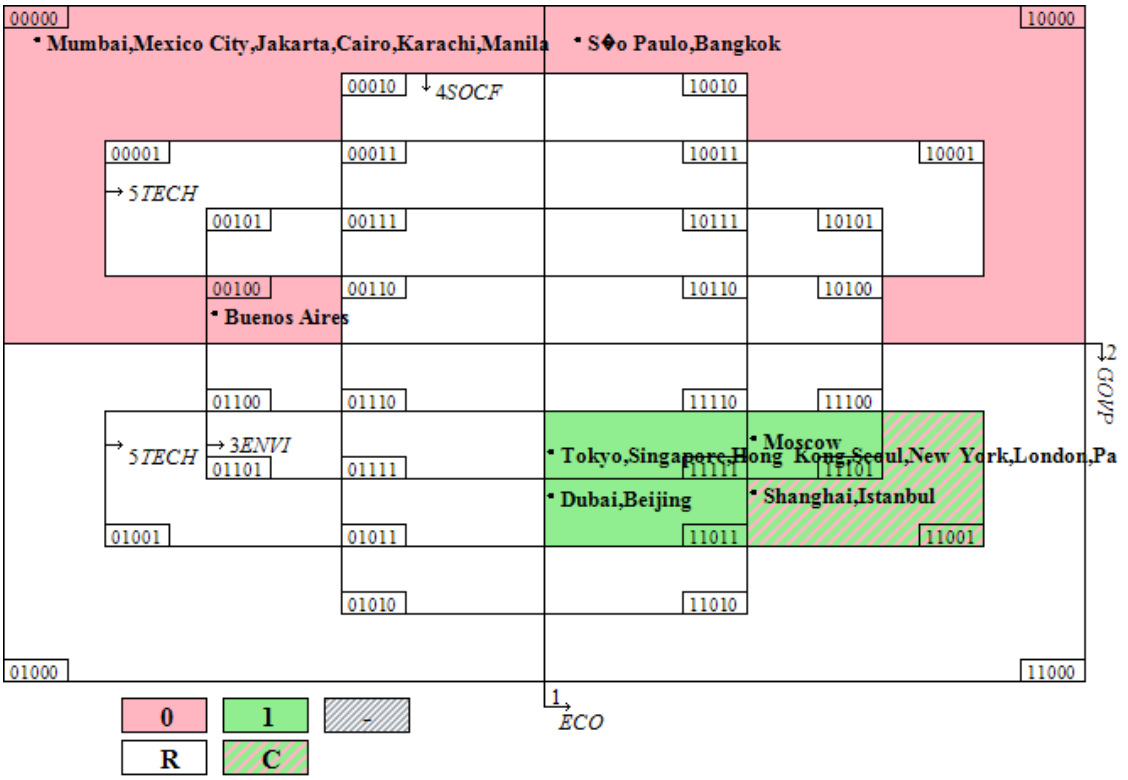

Figure 1: Venn Diagram Corresponding to Table 1

Political–Administrative Capitals: Beijing, Paris, and London (which doubles as an economic powerhouse) function as nodes of sovereign authority, diplomatic engagement, and policy-making. These cities host major government institutions, embassies, and intergovernmental organisations.

Technology–Innovation Clusters: Seoul, Tokyo, and Los Angeles excel in high-technology industries, start-up ecosystems, and R&D. Seoul and Tokyo are renowned for electronics and manufacturing innovation, while Los Angeles distinguishes itself through digital media, entertainment technology, and creative tech ventures.

Cultural–Creative Centres: Paris, New York, London, Los Angeles, Melbourne, and Sydney are recognised for their vibrant cultural industries—arts, fashion, cinema, and music. These cities attract global talent, host major cultural festivals, and sustain influential creative markets.

Tourism–Leisure Destinations: Dubai, Paris, Los Angeles, Sydney, and Melbourne draw large international visitor flows thanks to iconic landmarks, entertainment venues, and leisure infrastructure. Their tourism sectors contribute significantly to local economies and urban branding.

The Role of Social Conditions in Shaping Economic–Financial Central Cities: A Comparative Perspective

In the context of globally concentrated urban development, social factors (SOCF) play a vital role in shaping the quality and sustainability of economic–financial hubs. This essay examines the influence of social conditions on the development trajectories of prominent cities known for their economic and financial centrality—namely, New York, London, Tokyo, Hong Kong, Singapore, and Dubai. Through a comparative assessment across multiple social dimensions, including education, healthcare, inclusion, quality of life, public safety, and equity, this analysis highlights the integral link between social foundations and economic resilience.

First, the quality of education and healthcare emerges as a foundational driver of urban competitiveness. Cities such as New York, London, and Tokyo host some of the world's most prestigious universities—Harvard, Columbia, Oxford, Cambridge, and the University of Tokyo—alongside advanced medical systems. While New York and London face criticism over the high cost of healthcare services, Tokyo's universal health insurance system offers greater inclusivity. Similarly, Hong Kong and Singapore provide excellent educational and healthcare infrastructure, supported by world-class international schools and efficient hospitals. In contrast, Dubai, though progressing rapidly in this domain, continues to lag behind in terms of institutional maturity. These factors directly enhance a city's capacity to attract global talent and multinational enterprises, reinforcing its position as a financial and commercial centre.

Second, social inclusion and cultural diversity significantly influence a city's global appeal. High levels of immigration and multiculturalism define the urban fabric of New York, London, Dubai, and Singapore. These cities host large expatriate communities and are often cited for their openness. However, issues such as racial discrimination and social barriers still surface, especially in older metropolitan centres. Dubai and Singapore present more restrictive immigration policies despite their friendly working environments for foreigners. On the other hand, Tokyo's conservative societal norms have historically limited labor migration, though ongoing reforms suggest a shift toward greater openness. Hong Kong, previously a model of integration, has recently seen political instability undermine its inclusiveness. Empirical evidence suggests that cities embracing diversity are better positioned to attract human capital and international investment, fostering a dynamic and competitive urban economy.

A third dimension concerns quality of life and resident satisfaction. Cities like Tokyo and Singapore score consistently high on global livability indices due to clean environments, efficient public services, and general urban orderliness. In contrast, New York, London, and Hong Kong, while offering high living standards, contend with high costs of living, traffic congestion, and housing shortages. Dubai, known for its high-end amenities and modern infrastructure, faces challenges stemming from cultural restrictions and legal norms that may limit personal freedoms. Resident satisfaction directly impacts a city's ability to retain skilled workers and support long-term productivity and competitiveness.

Furthermore, public safety and crime management are critical for fostering secure environments conducive to economic activity. Tokyo, Singapore, and Dubai rank among the safest cities globally, with low crime rates and high trust in public institutions. New York and London continue to experience localized criminal activity but maintain relatively strong law enforcement systems. Hong Kong, once among the safest cities in Asia, has experienced increasing instability due to political unrest since 2019. Effective safety measures not only improve quality of life but also enhance a city's appeal to investors and high-skilled labor.

Finally, income inequality and access to social services represent significant challenges for several global cities. Hong Kong, New York, and London face stark wealth gaps and growing concerns over the affordability of basic services, including housing and healthcare. In contrast, Tokyo and Singapore have implemented proactive public policies—such as social housing and universal healthcare—that help mitigate inequality. Dubai exhibits significant income disparities, especially among its large migrant worker population, which remains underserved by public welfare programs. High levels of inequality threaten urban stability and undermine social cohesion, which in turn can impair long-term economic development.

In conclusion, the analysis reveals that cities with strong, inclusive, and equitable social foundations—such as Singapore and Tokyo—are better positioned to sustain economic and financial centrality in the long run. These cities exemplify the effective balance between growth and social well-being. Conversely, cities like New York, London, and Hong Kong, while dynamic and influential, face

structural social challenges that may hinder their resilience. Dubai presents a case of high potential constrained by incomplete social systems. Ultimately, the findings underscore the importance of aligning economic growth with social development to maintain urban competitiveness and global relevance.

The Role of Social Conditions in Political–Administrative Global Cities: A Comparative Analysis of Beijing, Paris, and London

Political–administrative cities function not only as national power centers but also as nodes of global governance, diplomacy, and influence. Cities such as Beijing, Paris, and London exemplify this dual role, combining political authority with significant economic clout. In understanding their long-term stability and global influence, it is critical to assess the role of social conditions—education, healthcare, inclusion, quality of life, public safety, and equity—in shaping their development and resilience. This essay explores how these social factors (SOCF) interact with the urban political function to reinforce or challenge their effectiveness as global power centers.

First, education and healthcare constitute a foundation for national leadership and international soft power. London and Paris benefit from elite institutions such as Oxford, Cambridge, and the Sorbonne, alongside robust public healthcare systems like the UK's National Health Service (NHS) and France's Sécurité Sociale. However, both systems face growing strain from dense urban populations. Beijing also boasts elite institutions such as Peking University and Tsinghua University, but access is highly competitive, and the education system exerts significant pressure on students. Healthcare in Beijing is public and largely accessible, but urban–rural disparities remain a concern. Strong educational and healthcare infrastructure enables these cities to attract and nurture talent, strengthening their political and economic leadership.

Second, social inclusion and diversity represent both strengths and challenges. London and Paris are multicultural hubs, shaped by significant immigration flows. This diversity contributes to cultural vibrancy and global connectivity, yet also presents tensions—evidenced by episodes of racial discrimination, social unrest, and mass protests such as the Brexit-related demonstrations in London or the "Yellow Vest" movement in Paris. In contrast, Beijing maintains strict immigration controls and a relatively homogenous cultural environment. While social cohesion is high, there remains a divide between urban and rural populations. Greater openness and inclusion enhance a city's adaptability, innovation potential, and global legitimacy.

Third, quality of life and resident satisfaction are pivotal for sustaining political legitimacy and attracting professionals to support administrative functions. London and Paris offer high-quality public services, cultural amenities, and infrastructure, but they also suffer from high living costs, housing shortages, and transport inefficiencies. Frequent strikes and protests further affect urban livability. In Beijing, quality of life is generally favorable, especially in central districts, but environmental concerns—particularly air pollution—and tight social controls diminish public satisfaction. These factors directly influence the ability of political centers to maintain a productive, stable, and engaged population.

Fourth, public safety and security are critical for cities that symbolize national authority. Beijing is considered one of the safest major cities globally due to stringent social and surveillance controls. London and Paris, while generally safe, experience periodic threats such as terrorism, civil unrest, and petty crime. Despite these challenges, security frameworks in both cities remain resilient. The ability to ensure public safety significantly affects investor confidence, diplomatic activity, and the sustainability of political institutions.

Finally, income inequality and access to social services influence public trust in political leadership and long-term urban stability. Both Paris and London exhibit pronounced wealth gaps and escalating housing costs, limiting access to affordable housing and social mobility. In Beijing, disparities are more evident between urban and rural populations, though government programs aim to reduce this gap. Persistent inequality can erode social cohesion, incite protests, and undermine the legitimacy of public institutions.

In sum, the social conditions shaping political–administrative cities vary considerably. London emerges as the most socially balanced, benefiting from a strong welfare system and cultural diversity, though it struggles with high living costs. Beijing maintains exceptional urban security and centralized stability, albeit at the expense of openness and inclusivity. Paris offers a high quality of life and global prestige but remains vulnerable to social volatility through frequent demonstrations and labor disputes.

These findings underscore the importance of fostering inclusive, equitable, and livable urban environments to sustain the global role and political stability of administrative capitals.

Social Conditions and the Innovation Capacity of Technology-Driven Cities: A Comparative Analysis of Seoul, Tokyo, and Los Angeles

In the age of the knowledge economy, cities that lead in technology, research and development (R&D), and innovation ecosystems play a central role in shaping the global future. Among these, Seoul, Tokyo, and Los Angeles stand out as major urban centers that exemplify different trajectories of technological leadership—whether in high-tech manufacturing, scientific innovation, or creative digital industries. This essay explores how social conditions (Social Factors - SOCF) interact with the technological and innovative character of these cities, influencing their capacity to attract talent, sustain growth, and remain globally competitive.

A robust education system and accessible healthcare are essential for nurturing the human capital that drives innovation. Seoul and Tokyo offer leading STEM (Science, Technology, Engineering, and Mathematics) education through globally recognized institutions such as KAIST, Seoul National University, and the University of Tokyo. Their healthcare systems are advanced, affordable, and contribute to high life expectancy, creating a stable environment for research and technological work. Los Angeles is home to elite universities like UCLA, USC, and Caltech, making it a magnet for top-tier talent. However, while the healthcare infrastructure is sophisticated, high medical costs pose a significant challenge. Overall, strong education and accessible healthcare not only support the immediate workforce but also foster long-term innovation ecosystems.

Los Angeles excels in social diversity, offering a multicultural environment that attracts international talent and supports a thriving startup culture. Its openness to immigration and ethnic diversity has resulted in a dynamic mix of entrepreneurial communities. In contrast, Seoul and Tokyo are relatively homogenous and maintain restrictive immigration policies. Cultural barriers and rigid work environments further limit the appeal for international workers. Work-life balance issues, particularly in Japan and Korea, present additional obstacles to retaining young innovators. As innovation thrives in diverse and inclusive settings, Los Angeles possesses a clear advantage in leveraging global talent, while Seoul and Tokyo must reform workplace norms to remain globally competitive.

High quality of life is critical in attracting and retaining the creative and technical professionals who drive innovation. Tokyo is noted for its efficient public transportation, cleanliness, and general safety. However, long working hours and high job stress reduce overall satisfaction. Seoul offers cutting-edge infrastructure and digital convenience, but intense social pressure and a fast-paced lifestyle contribute to burnout. In contrast, Los Angeles provides a more relaxed atmosphere, greater personal freedom, and abundant creative opportunities—albeit with persistent issues such as traffic congestion and a high cost of living. Without a supportive living environment, even technologically advanced cities may struggle to maintain a sustainable innovation workforce.

Security and public safety are important for both personal well-being and business confidence. Tokyo and Seoul rank among the safest major cities in the world, with very low crime rates. This level of safety supports foreign investment and allows startups and tech firms to operate without disruption. Los Angeles, on the other hand, experiences higher crime rates in specific neighborhoods, although these are generally manageable and do not overshadow the city's overall innovation appeal. Maintaining a secure environment remains a key factor for business continuity and the attractiveness of innovation clusters.

Economic inequality can hinder social cohesion and discourage participation in entrepreneurial activity. In Los Angeles, the gap between high-income earners and the broader population is stark, exacerbated by housing unaffordability and rising living expenses. Although Seoul and Tokyo are more equal in relative terms, wage growth often lags behind the rising cost of living, making it difficult for younger generations to purchase homes or achieve financial independence. These socioeconomic barriers may lead to brain drain or reduced innovation capacity over time. Policies that address housing and wealth disparities are therefore essential for sustaining a thriving innovation ecosystem.

While Seoul and Tokyo are technological powerhouses, they face challenges related to workplace rigidity, cultural homogeneity, and rising urban pressures that may limit their capacity to retain and attract creative talent. Los Angeles, on the other hand, benefits from a more inclusive and diverse innovation ecosystem but must address issues related to affordability and urban safety. To maintain their edge in the global innovation economy, these cities must not only invest in technology but also

improve social conditions—by enhancing work-life balance, supporting startup ecosystems, and fostering inclusive urban environments. Innovation is ultimately a social as well as technological phenomenon, and cities that align both dimensions will lead the next wave of global transformation.

Social Conditions and the Cultural-Creative Capacity of Global Cities: A Comparative Analysis of Paris, New York, London, Los Angeles, Melbourne, and Sydney

Cultural-creative cities play a critical role not only in preserving artistic heritage but also in incubating new forms of expression in arts, fashion, cinema, and music. Cities such as Paris, New York, London, Los Angeles, Melbourne, and Sydney have emerged as key nodes in the global cultural economy. The relationship between social conditions (Social Factors – SOCF) and the creative vitality of these cities determines their ability to attract, retain, and support creative talent. This paper analyzes key social factors influencing the performance and sustainability of global cultural-creative hubs.

High-quality education in the arts and access to reliable healthcare underpin a sustainable creative economy. London, New York, and Paris host world-renowned creative institutions such as Central Saint Martins, Juilliard, and La Sorbonne, cultivating leading designers, performers, and scholars. Healthcare, however, varies: the U.S. model (New York, Los Angeles) is technologically advanced but expensive; France and the UK offer strong public healthcare systems. Meanwhile, Los Angeles, Melbourne, and Sydney also host top-tier creative schools (AFI Conservatory, NIDA, VCA), and Australia's universal healthcare system (Medicare) provides a stable social foundation. Education and healthcare not only shape individual creative trajectories but also determine long-term cultural productivity.

Cultural diversity and social openness are critical for fostering vibrant creative milieus. New York, London, and Los Angeles are globally recognized for their cosmopolitanism, drawing artists and creators from across the world. These cities support personal expression, LGBTQ+ rights, and ethnic diversity, forming inclusive creative ecosystems. Paris, while diverse, often emphasizes elite and high culture, with less institutional support for popular or subcultural expression. Melbourne and Sydney are highly livable and culturally open but do not yet possess the same global intensity or density of creative migration. Diversity and inclusion serve as engines of experimentation and innovation, particularly in transdisciplinary and hybrid art forms.

While creativity thrives on stimulation, excessive stress and instability can undermine long-term engagement. Melbourne and Sydney stand out for their high quality of life, stable housing, and well-being infrastructure—offering a healthy environment for creative work. In contrast, Paris, London, and New York, while culturally rich, are marked by fast-paced lifestyles and high costs of living, increasing pressure on emerging artists. Los Angeles is both a global center of creative industries and a site of deep urban inequality, facing crises in housing and homelessness. Creative sustainability thus hinges not only on artistic infrastructure but also on urban liveability.

Safe and secure urban environments are essential for cultural production, particularly in neighborhoods where creative clusters emerge. Melbourne and Sydney are among the safest cities in the group, facilitating the growth of art districts and alternative spaces. London and Paris experience moderate levels of street crime, though generally well-managed. New York and Los Angeles face higher crime rates in certain districts, which may hinder accessibility and reduce the desirability of living and working in artistic hubs. Public safety plays a critical, if indirect, role in sustaining vibrant cultural ecologies.

Economic barriers disproportionately affect young and emerging artists, who often lack financial security. New York, London, and Paris suffer from pronounced income inequality and high housing costs, making it difficult for artists to survive on irregular or low incomes. Los Angeles, despite its vast creative infrastructure, presents similar challenges—marked by housing precarity and weak safety nets. Melbourne and Sydney fare better in this regard: lower inequality and stronger governmental support for the arts make them more accessible for artists across socioeconomic backgrounds. Sustained creative development depends on addressing affordability and equitable access to resources.

Global cultural-creative cities must strike a balance between cultural dynamism and social sustainability. New York, London, and Paris remain global leaders in artistic innovation, yet their high cost of living and social stratification limit accessibility and long-term sustainability. Los Angeles continues to serve as a magnet for creative industries, but faces deep structural inequalities. In contrast, Melbourne and Sydney offer a more balanced model—combining a high quality of life with inclusive creative policy frameworks. As the cultural economy globalizes, cities that integrate social well-being,

cultural openness, and institutional support will not only remain competitive but also foster more equitable and enduring forms of creative expression.

Social Conditions and the Tourism-Entertainment Performance of Global Cities: Comparative Insights from Dubai, Paris, Los Angeles, Sydney, and Melbourne

Urban tourism is increasingly shaped not only by infrastructure and attractions, but also by underlying social conditions that affect visitor experiences, workforce quality, and long-term sector sustainability. Cities such as Dubai, Paris, Los Angeles, Sydney, and Melbourne stand out as global tourism and leisure hubs. This section examines how social factors (SOCF) contribute to or hinder tourism development across these cities, with attention to quality of services, inclusiveness, safety, and workforce dynamics.

Strong education systems ensure a skilled tourism workforce, while robust healthcare systems reduce risk and enhance visitor confidence. Paris, Sydney, and Melbourne benefit from comprehensive public education and healthcare services that support tourism quality and resilience. These systems also ensure rapid response to health risks affecting travelers. In contrast, Los Angeles and Dubai offer premium private healthcare but at high costs, with Dubai requiring insurance coverage for foreign visitors. In both cases, health infrastructure is advanced but uneven in affordability. Education in hospitality and tourism contributes significantly to service standards and international competitiveness.

Cultural openness and diversity are critical for cities competing in the global tourism market. Dubai, Paris, and Los Angeles exhibit high levels of ethnic and cultural diversity, which aligns with their strategy of appealing to a wide international audience. These cities also maintain institutional support for multiculturalism, facilitating diverse tourist experiences. Sydney and Melbourne are also diverse but position themselves more toward lifestyle-based tourism (e.g., eco-tourism, wine, and food tourism) than cultural spectacle. Diversity and inclusivity directly affect destination attractiveness, particularly for millennial and Gen Z travelers who value authenticity and openness.

Tourism development increasingly depends on overall urban livability, which affects both tourist experiences and local attitudes toward tourism. Sydney and Melbourne are among the world's most livable cities, offering clean environments, favorable climates, and high-quality public services—ideal for leisure and resort tourism. Paris offers rich cultural experiences but faces urban congestion, infrastructure strain, and periodic civil unrest. Los Angeles provides extensive entertainment options but is burdened by traffic and visible homelessness. Dubai excels in infrastructure and service standards, though restrictions on personal freedoms may affect perception among some traveler segments. A favorable living environment increases the likelihood of positive tourist experiences and return visits.

Safety is a prerequisite for tourism growth. Dubai stands out for exceptionally low crime rates, largely due to strict enforcement and surveillance. Sydney and Melbourne maintain high safety standards, enhancing their appeal for family and elderly tourists. Paris and Los Angeles continue to face challenges related to petty crimes, especially in high-tourism zones (e.g., pickpocketing, tourist scams). Public safety contributes not only to visitor satisfaction but also to the overall competitiveness of a city in the tourism economy.

The tourism industry is labor-intensive and highly dependent on service workers, many of whom operate under precarious conditions. Dubai and Los Angeles exhibit high levels of income inequality, with significant portions of the tourism workforce living under constrained economic conditions. This can lead to labor turnover, service inconsistency, and reputational risks. Paris benefits from a strong welfare state but is also prone to labor strikes, which periodically disrupt tourism. In contrast, Sydney and Melbourne offer relatively stable working conditions and better social protections for tourism-sector workers. Equitable labor conditions ensure higher service quality and enhance the city's long-term tourism reputation.

The success of global tourism cities depends not only on their physical and cultural assets but also on the depth and resilience of their social conditions. Dubai leads in premium tourism experiences and urban safety, though its model is marked by regulatory limitations and social stratification. Paris and Los Angeles offer rich cultural content and entertainment infrastructure but are challenged by social inequality and urban disorder. Sydney and Melbourne represent a more integrated model—balancing cultural appeal, high quality of life, and inclusive social policies. To maintain competitiveness in the global tourism economy, cities must prioritize not only innovation and branding, but also social equity, livability, and human-centered service systems.

It can be observed that social conditions (SOCF) play a central role; however, this factor contributes to the formation of positively performing central cities only when it is synergistically combined with economic, governance, environmental, technological, and global factors [ECO * GOVP * ENVI * TECH * GLOB]. Therefore, it can be concluded that achieving sustainable central urban development requires the presence of positive social conditions as a necessary prerequisite, which must be accompanied by the positive interaction of the remaining factors.

Conversely, based on the analysis of configurations 4, 5, 6, 7, and especially configuration 9 (DEMO * socf → central city underperformance [0]), the study of the following cities—Mumbai, Mexico City, Jakarta, Cairo, São Paulo, Istanbul, Bangkok, Buenos Aires, Karachi, and Manila—demonstrates that negative social conditions, even when coupled with economic and governance factors, can lead to unsustainable centralized urban development.

The configuration [eco * govp * socf * tech] thus corresponds to central cities that do not achieve sustainable development outcomes.

Conclusions

In this study, we applied crisp-set QCA to 25 global “concentration cities” to reveal how combinations of economic, institutional, social, technological, cultural, and global-connectivity conditions shape urban performance. Our analysis uncovered three core causal pathways leading to high-quality outcomes—each featuring robust social foundations alongside economic agglomeration, sound governance, and technological innovation—and four configurations associated with underperformance. The consistent presence of social factors (education, healthcare, inclusion, safety, and equity) in every positive pathway underscores their indispensable role in sustaining compact-city growth.

Theoretically, our findings demonstrate the power of set-theoretic methods for urban governance research, capturing complex configurational dynamics that conventional variable-oriented models often overlook. By showing that no single dimension alone can guarantee success—and that social conditions frequently act as a linchpin—we challenge paradigms that privilege economic or policy levers in isolation. Moreover, the recurrence of similar high-social-foundation recipes across diverse political and geographic contexts suggests a degree of cross-contextual robustness.

From a policy perspective, the study highlights the need to embed social-equity measures—such as affordable housing mandates, participatory planning, and inclusive service provision—into broader economic and innovation strategies. City managers should resist purely technocratic or market-driven approaches and instead integrate equity-oriented instruments into core-area revitalization and infrastructure investments. Such an integrated governance framework can mitigate displacement pressures, enhance resident well-being, and sustain the productivity dividends of urban density.

We acknowledge several limitations. Our crisp-set approach, while transparent, abstracts away gradations in condition strength; fuzzy-set extensions could capture more nuanced variation. Longitudinal QCA designs would illuminate how governance configurations evolve over time and under shocks, and in-depth case studies—particularly in peripheral or informal settlements—could unpack the micro-mechanisms through which social factors operate. Pursuing these avenues will further refine integrated governance frameworks that balance efficiency, equity, and sustainability in twenty-first-century concentration cities.

References

[1] Aymonino, C. (1976). Il significato della città. Roma-Bari: Laterza.
[2] Barr, J. M. (2018). Building height and greenhouse gas emissions: The case of New York City.
[3] Bertinelli, L., & Black, D. (2004). Urban density and economic performance. Journal of Urban Economics, 55(3), 520–541.
[4] Breheny, M. (2001). Densities and sustainable cities: The UK experience. In M. Echenique & A. Saint (Eds.), Cities for the New Millennium (pp. 126–146). London: E. & F.N. Spon.
[5] Bunker, R., Tice, A., & Easthope, H. (2009). Travel characteristics and access to jobs by higher density residents in Sydney and Melbourne. Urban Policy and Research, 27(3), 251–264.
[6] Castells, M. (1996). The rise of the network society. Oxford: Blackwell.
[7] Citizens Budget Commission. (2020). Strategies to boost housing production in the New York City metropolitan area. New York, NY: CBC.
[8] Clark, G., & Moir, E. (2015). Density: Drivers, dividends and debates. London: Urban Land Institute.

[9] Census and Statistics Department. (2021). 2021 Population Census. https://www.census2021.gov.hk/en/index.html
[10] Christ, E., Dechmann, N., Easton, V., & Gantenbein, C. (2010). Hong Kong typology.
[11] Dewolf, C. (2016). The Vertical City, Part I: How Hong Kong grew up. Zolima City Magazine. https://zolimacitymag.com/vertical-city-part-i-how-hong-kong-grew-up/
[12] Forrest, R., La Grange, A., & Yip, N. M. (2004). Hong Kong as a global city? Social distance and spatial differentiation. Urban Studies, 41(1), 3–20.
[13] Florida, R. (2002). The rise of the creative class. New York, NY: Basic Books.
[14] FYA. (2015). The new work order. Foundation for Young Australians.
[15] Girard, G., Lambot, I., & Goddard, C. (1999). City of Darkness: Life in Kowloon Walled City. London: Watermark Publications.
[16] Government of Hong Kong. (2021). About Hong Kong. https://www.gov.hk/en/about/abouthk/facts.html
[17] Grayoct, C. (2005, July 24). Are Manhattan's right angles wrong? The New York Times.
[18] Harvey, D. (1976). Social justice and the city. Baltimore, MD: Johns Hopkins University Press.
[19] Harvey, D. (2012). Rebels without a cause? London: Verso.
[20] Highways Department. (2016). Hong Kong road network. http://www.hyd.gov.hk/en/road_and_railway/existing/road_network/road.html
[21] Hong Kong Planning Department. (2021a). Hong Kong Planning Standards and Guidelines (Chap. 11). Government of the HKSAR. https://www.pland.gov.hk/pland_en/tech_doc/hkpsg/full/pdf/ch11.pdf
[22] Kii, M. (2021). Projecting future populations of urban agglomerations around the world and through the 21st century. Population and Development Review, 47(Suppl. 1), 123–146.
[23] Koolhaas, R., & Di Robilant, M. (2010). Singapore songlines: Ritratto di una metropoli Potemkin… o trent'anni di tabula rasa. Milan: Electa.
[24] Land Transport Authority. (2014). Four times more sheltered walkways by 2018. Singapore: LTA.
[25] Lai, L. W., & Chua, M. H. (2018). The history of planning for Kowloon City. Planning Perspectives, 33(5), 723–744.
[26] Lefèvre, B. (2009). Urban transport energy consumption: Determinants and strategies for its reduction. Transportation Research Part D: Transport and Environment, 14(7), 512–518.
[27] Liu, Z. (2003). Review and rethinking of urban clusters and relevant concepts. Human Geography, 18(2), 1–9.
[28] Masanobu, K. (2021). Projecting future populations of urban agglomerations around the world and through the 21st century. Population and Development Review, 47(Suppl. 1), 123–146.
[29] Philip Vivian. (2015). Sydney 2050: A sustainable city vision for greater height, public benefit & tall building resurgence.
[30] Raymond Bunker, A. Tice, & H. Easthope. (2009). Travel characteristics and access to jobs by higher density residents in Sydney and Melbourne. Urban Policy and Research, 27(3), 251–264.
[31] Regional Australia Institute. (2019). What is Regional Australia? http://www.regionalaustralia.org.au/home/what-is-regional-australia
[32] Secchi, B. (2000). Prima lezione di urbanistica. Roma-Bari: Laterza.
[33] Shelton, B., Karakiewicz, J., & Kvan, T. (2011). The making of Hong Kong: From vertical to volumetric. New York, NY: Routledge.
[34] Tang, W. S., Lee, J. W., Hui, T. W., & Yip, M. K. (2019). The 'urban density' question in Hong Kong: From absolute space to social processes. Cities, 88, 207–216.
[35] Transport and Housing Bureau. (2016). Hong Kong The Facts: Railway Network. HKSAR Government.
[36] Villani, C., Talamini, G., & Xue, Q.-L. (2022). Pedestrian access to transit in evolution: Unfolding the spatialization of rapid-transit planning. Journal of Transport Geography, 99, 103–117.
[37] Warren-Rhodes, K., & Koenig, A. (2001). Ecosystem appropriation by Hong Kong and its implications for sustainable development. Environmental Science & Policy, 4(3), 123–134.
[38] WWF. (2014). WWF Hong Kong ecological footprint: 2014 update. Hong Kong: WWF Hong Kong.
[39] Yeh, A. G.-O. (2000). The planning and management of a better high-density environment. Landscape and Urban Planning, 52(2–3), 145–152.
[40] Yeh, A. G.-O. (2011). High-density living in Hong Kong. In Cities, Health and Well-Being in Hong Kong (pp. 45–62). Hong Kong: Hong Kong University Press.
[41] Zhong, S., Jiang, Y., & Nielsen, O. A. (2022). Lexicographic multi-objective road pricing optimization considering land use and transportation effect. Transportation Research Part A, 156, 234–250.

Annex 1: Summary of characteristics of the selected cities.

City	Selection Description
New York	A global financial and cultural hub with a dense skyline of skyscrapers. It features modern infrastructure, advanced transportation networks, and a thriving tech ecosystem; however, high living costs and population-density management remain significant challenges.
London	An international financial centre characterized by concentrated urban districts

	and a complex public-transport network. As Europe's financial and cultural core, it enjoys robust infrastructure but faces social inequality and elevated living expenses.
Tokyo	A megacity with very high population density and a state-of-the-art public-transport system. It demonstrates exemplary population management and urban planning, yet contends with an aging demographic while remaining one of the world's leading cities.
Shanghai	China's economic and commercial centre, marked by rapid urbanization and strong economic growth. Despite being the country's largest city, it continues to grapple with environmental issues and resource-allocation challenges.
Frankfurt	A major European financial hub with highly efficient transport infrastructure; however, its population size and global economic influence are smaller compared to other leading world cities.
Paris	An urban nexus of art, culture, and politics, renowned for its iconic architecture. Economically and culturally significant, it still confronts pollution, high living costs, and needs improved population-management strategies.
Zurich	A financial centre offering one of the highest qualities of life worldwide; nevertheless, its scale and international influence are more limited relative to larger global metropolises.
Mexico City	The largest metropolis in Latin America with a growing economy, yet in need of enhancements in transportation systems, population management, and environmental sustainability.
Mumbai	A densely populated city with extensive built-up areas and heavy traffic. As India's economic core, it faces substantial infrastructure deficits, severe crowding, and lower overall living standards.
New York	A global financial and cultural hub with a dense skyline of skyscrapers. It features modern infrastructure, advanced transportation networks, and a thriving tech ecosystem; however, high living costs and population-density management remain significant challenges.
London	An international financial centre characterized by concentrated urban districts and a complex public-transport network. As Europe's financial and cultural core, it enjoys robust infrastructure but faces social inequality and elevated living expenses.
Tokyo	A megacity with very high population density and a state-of-the-art public-transport system. It demonstrates exemplary population management and urban planning, yet contends with an aging demographic while remaining one of the world's leading cities.
Shanghai	China's economic and commercial centre, marked by rapid urbanization and strong economic growth. Despite being the country's largest city, it continues to grapple with environmental issues and resource-allocation challenges.
Frankfurt	A major European financial hub with highly efficient transport infrastructure; however, its population size and global economic influence are smaller compared to other leading world cities.
Paris	An urban nexus of art, culture, and politics, renowned for its iconic architecture. Economically and culturally significant, it still confronts pollution, high living costs, and needs improved population-management strategies.
Zurich	A financial centre offering one of the highest qualities of life worldwide;

	nevertheless, its scale and international influence are more limited relative to larger global metropolises.
Mexico City	The largest metropolis in Latin America with a growing economy, yet in need of enhancements in transportation systems, population management, and environmental sustainability.
Mumbai	A densely populated city with extensive built-up areas and heavy traffic. As India's economic core, it faces substantial infrastructure deficits, severe crowding, and lower overall living standards.
Los Angeles	A major U.S. metropolis with a strong economy; however, it faces significant challenges in traffic congestion and population-density management.
Istanbul	A transcontinental city bridging Europe and Asia, pivotal for commerce and history. It boasts a rich cultural heritage but struggles with population management, infrastructure capacity, and environmental sustainability.
Cairo	Africa's largest city, renowned for its ancient history and cultural legacy, yet hampered by inadequate infrastructure and ineffective population-density control.
Moscow	Russia's political and economic centre, characterized by high-density urban districts. Despite well-developed infrastructure, it contends with limitations on economic freedom and environmental governance.
Seoul	A modern metropolis with advanced technology and a state-of-the-art public-transport network. As a hub of innovation, it benefits from robust infrastructure but must address high population density and elevated living costs.
Buenos Aires	A major South American city with a developing economy that remains unstable, and requiring substantial infrastructure upgrades.
Silicon Valley	The world's leading technology-innovation hub, yet grappling with housing affordability crises and severe traffic congestion.
Berlin	Germany's historical and economic centre, supported by modern infrastructure; however, its population size and global reach are smaller compared to other leading world cities.
Bangalore	India's premier technology centre, facing ongoing challenges in infrastructure provision and population-density management.
Detroit	A city once renowned as an industrial powerhouse that experienced severe economic decline and is now in the process of economic revitalization.
Osaka	A thriving Japanese metropolis with a robust economy and modern infrastructure, yet confronted by the challenges of an aging population.
Pune	A rapidly growing technology hub in India, in need of significant improvements in both population management and infrastructure development.
Montreal	A city offering high quality of life and strong infrastructure, although its international influence remains limited compared to larger global metropolises.
Turin	Italy's traditional industrial centre, supported by solid infrastructure but with constrained international influence.
Taipei	A developed metropolis with modern infrastructure and a strong economy, yet challenged by limited living space and the complexities of population management.
Singapore	A city-state exemplifying intelligent urban planning and efficient energy management. Renowned for its sustainability, smart-city innovation, and

	climate resilience, it serves as a global model for compact-city development.

Annex 2: Evaluation the quality of concentration cities for 25 cities based on the criteria you proposed, with scores ranging from 1 to 100

City	Governance	Economy & Industry	Infrastructure	Density	Planning	Inequality	Sustainability	Mobility	Housing	Culture	Security	Crisis	Quality of Life	Total Score	Average
Tokyo	90	95	95	85	90	75	80	95	70	95	90	90	90	**1010**	**77.69**
Singapore	95	90	98	80	95	85	85	90	75	85	95	95	92	**1080**	**83.08**
Hong Kong	85	90	90	95	85	70	75	85	65	80	85	85	85	**985**	**75.77**
Seoul	85	85	90	85	85	70	80	90	70	90	85	85	88	**998**	**76.77**
New York	80	95	90	80	80	60	70	85	50	95	75	85	85	**940**	**72.31**
London	85	90	95	75	85	65	80	90	60	95	85	85	90	**1010**	**77.69**
Paris	80	85	90	80	80	70	75	85	60	95	80	80	85	**965**	**74.23**
Shanghai	85	95	90	90	85	60	70	85	55	85	80	85	80	**955**	**73.46**
Dubai	80	85	95	70	80	55	75	85	50	85	90	85	85	**940**	**72.31**
Mumbai	60	80	60	95	65	45	55	60	40	80	60	70	65	**835**	**64.23**
Beijing	85	95	90	85	80	60	65	80	55	85	80	80	75	**945**	**72.69**
São Paulo	65	80	70	85	70	50	60	70	45	80	65	70	70	**825**	**63.46**
Mexico City	60	80	70	85	65	50	60	70	40	80	60	70	70	**820**	**63.08**
Los Angeles	75	90	85	65	70	55	65	80	55	85	75	75	80	**910**	**70.00**
Moscow	75	85	85	70	75	50	65	75	50	85	70	75	75	**905**	**69.62**
Istanbul	70	80	75	80	70	55	60	75	45	85	70	75	75	**885**	**68.08**
Bangkok	65	80	75	85	65	50	60	70	40	80	65	70	70	**825**	**63.46**

Jakarta	55	75	60	90	60	45	55	60	35	75	55	65	65	**800**	**61.54**
Buenos Aires	65	75	70	75	65	50	60	70	40	80	65	70	70	**825**	**63.46**
Cairo	50	70	55	90	55	40	50	55	30	70	50	60	60	**735**	**56.54**
Karachi	45	65	50	95	50	35	45	50	25	65	45	55	55	**725**	**55.77**
Manila	55	70	55	90	55	40	50	55	30	75	50	60	60	**750**	**57.69**
Melbourne	85	85	90	65	85	80	85	85	70	85	90	90	92	**1012**	**77.85**
Toronto	85	85	90	70	85	80	85	85	70	85	90	90	92	**1012**	**77.85**
Sydney	85	85	90	70	85	80	85	85	70	85	90	90	92	**1012**	**77.85**

Annex 2: Evaluation Results for the Outcomes and Conditions of Concentration Cities

ID	CCO	ECO	GOVPs	DEMO	ENVI	SOCF	TECH	CULT	GLOB
Tokyo	**77.69**	97	95	75	88	92	99	95	95
Singapore	**83.08**	98	99	85	96	94	98	85	98
Hong Kong	**75.77**	95	90	78	80	85	90	88	90
Seoul	**76.77**	93	92	74	78	86	97	90	91
New York	**72.31**	99	85	88	82	88	96	97	99
London	**77.69**	98	94	90	90	90	95	99	98
Paris	**74.23**	94	91	87	89	87	92	99	96
Shanghai	**73.46**	96	93	80	72	80	94	92	94
Dubai	**72.31**	92	97	95	70	83	91	80	92
Mumbai	**64.23**	70	75	98	60	75	75	96	75
Beijing	**72.69**	95	96	82	65	81	95	98	93
São Paulo	**63.46**	80	78	92	68	76	80	87	80
Mexico City	**63.08**	78	76	90	66	78	78	95	77
Los Angeles	**70.00**	96	84	85	75	84	96	93	96
Moscow	**69.62**	85	88	70	74	79	85	97	84
Istanbul	**68.08**	82	80	88	73	77	83	99	85
Bangkok	**63.46**	81	77	86	70	80	82	94	80
Jakarta	**61.54**	75	72	89	62	74	77	90	72
Buenos Aires	**63.46**	76	74	85	78	79	79	93	79
Cairo	**56.54**	65	65	96	55	70	70	99	65
Karachi	**55.77**	60	60	99	50	65	65	89	60
Manila	**57.69**	72	70	97	58	72	72	88	70
Melbourne	**77.85**	97	96	88	94	95	97	85	97
Toronto	**77.85**	96	97	92	95	96	96	87	96
Sydney	**77.85**	97	96	90	96	95	97	86	97