



# WorldWide Observatory for Attractive Cities

**SMARTCITY**  
EXPO WORLD CONGRESS

**2023 Edition**



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## Foreword

I want to thank Blanca Herreros de Tejada and Marta Meneses, who helped refresh the data model and Ester Arvilla and Paloma Moya who helped format this document, all students at Universidad Francisco de Vitoria. (Madrid)

To my University, Francisco de Vitoria (Madrid) for supporting this research.

To Fira Barcelona, SmartCityExpo & WW Congress for inspiring this challenge.

To my beloved cities, magical places for human social development and solid foundations for mankind's future dreams.

Note to reader: If you had the chance to read the WW Observatory for Attractive Cities 2020 ([handle](#)) or 2021 ([handle](#)) or Edition 2022 ([handle](#)), then you can skip the model description and go directly to chapter 5.3 City Attractiveness Ranking 2023



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# 1. Introduction. City Attractiveness Model.

## 1.1 Why Cities Attractiveness. The Competition for talent

Cities are the epicenter of human activity, the central nervous system of economic growth, social interaction and innovation. In the current context of global stability (both in economy and peace), cities are the hotbed for creativity and human development. We live, indisputably, at the best moment in the history of mankind. Technology allows us to increasingly dominate our environment and enjoy a longer and more comfortable life, yet we must not make an idol of it: it's an enabler and catalyzer, not a destiny.

The main challenge for modern cities is how to become *Attractive* enough to both retain brilliant brains and draw talented citizens and investors. This will be fundamental for cities that want to play a role in the 4th Industrial Revolution. All the most prosperous cities have undergone a profound social transformation due to the past industrial revolutions. A surge of new disruptive technology affecting the way we work, manufacture, trade, and develop human activity has attracted talented citizens. In addition, this new technology fosters the creation of highly qualified and well-paid jobs, which then, pushes any given city's attractiveness to new heights. With rampant new AI technology in place and talented people developing it, we must provide them with a place to connect, engage and encounter each other: THE CITY.

### Cities Prosperity Recipe → 3 T's: Technology + **TALENT** + Tolerance



Talent is the key to the city's economic development. Without sufficient talent, the city is not innovative, it does not generate enough wealth or employment, it is not a leader in powerful new initiatives. Even worse, the talent attraction has a positive acceleration feedback: talent calls talent but also the opposite, the lack of attractiveness makes talent migrate, so the chances of being attractive are reduced. It is therefore a fierce competition to achieve this resource: talented citizens.

One of the main factors in making this happen is the exercise of tolerance, the door opening to anyone who demonstrates talent and a willingness to contribute to the city's development while respecting local laws and customs. Thus, we can say that the recipe for prosperity of most advanced cities has been determined by the rule of the 3 T's: Technology, Talent and Tolerance (Florida, 2007), with technology being the lynchpin of each industrial revolution and its main enabler.

Western cities need additional human capital. Eastern and emerging countries are working on building up their own human capital (their young populations) and retaining it to serve as the cornerstone of their prosperity.

The main aim of this research is to understand what is being done and what is needed to make a city attractive for these talented citizens. There are many partial studies about employment, safety, happiness, expat treatment, economy, cost of living, etc. but none has attempted to give talented citizens an integrated vision of this new world of cities. Let's try to cover that need.

## 1.2 Research Objectives

The main objective here is to answer how, within a 4th Industrial Revolution framework, the city is competing to become more attractive for talent, and furthermore to define which elements enhance attractiveness, and what options exist for cities to do so. The practical consequences are twofold:

1.- Help citizens choose the best city in the world for them to realize their full potential, their goals as a citizen and as a person, and make the greatest possible contribution to society.

2.- Advise mayors and city managers on how to create the most attractive city possible in order to retain and attract talented citizens, and furthermore build a more prosperous, innovative, fair, inclusive and human city. Help them design, prioritize and implement a:

- ✓ Long-term Transformational Plan (with main focus on physical conditions and social trends)
- ✓ Short/Mid-term Improvement/Integrated Plan (with main focus on citizen needs and leveraging technology for a digital transformation)

## 1.3 City Attractiveness = City Magnetism x City Profitability

By how cities are prepared and presented to talented citizens and investors, and on the other side, how citizens decide whether to move to another city or not, we can conclude that we are in front of a similar human decision process to a marriage or to a purchase. It looks like a marriage because there is a certain compromise between the parties, some love is necessary, or at least attraction, and it is not a decision that lasts a short time. It is not exactly a marriage because one part, the city, simply offer the conditions for the talent to stay or come, but without talent, city will languish then disappear. It is more like a purchase. The talented citizen “buys in” to live in a city and contribute to its economic and human development, and the city “sells” its attractions, advantages, and even offers special advantages, as incentives. There is no economic transaction, although it is clear that a price is paid due to differences in purchasing capacity (net-purchasing power) for the same citizen with the same kind of job but done in different cities. We have, therefore, that it is a human decision process among many alternatives, where mercantilist/trading benefits are involved, but also aesthetic and ethical questions about the possible destination cities. Do I like that city? And what about that city’s lifestyle? These seem to be previous questions to those related to terms & conditions (wage, safety, taxes, environmental care, services.)

Like any human decision involving a compromise between two parties, the motivation to settle in a city due to its attractiveness responds to two main drivers: the emotional and the rational. (Tybout, Calder, 2010) We will call the emotional component City Magnetism (‘I like it, I feel comfortable, it enriches me, it inspires me’); and we will label the rational component City Profitability (‘it is a good deal, with good city services, well-being is high, cost of living is affordable, conditions match my circumstances, preferences and lifestyle’). In the rational sphere there are no emotions, only purely functional and economic facts. But humans are emotional beings, so the emotional component is very relevant, often the most.

### Magnetism



x

### Profitability



## 2. City Magnetism

It's the magnetic part that attracts us to a specific city. In essence, a city is a sum of the collective past and present experiences (Marias, Ridruejo, Chueca, 1983) that make up the city's past identity and present dynamism. This emotional component has a lot to do with our tastes, preferences and feelings, and must match up perfectly with the city's aesthetic and ethical facets.

If we humanize the concept of cities, as a live ecosystem, clearly this emotional component would be the city's soul, while the rational part would be its physical aspects, its body. Cities are not just places and spaces that you can live in, they are living entities with emotional components, they have a 'soul' (Alcalde, 2017). This concept of the soul is part of their DNA, a series of emotional, intangible, and qualitative elements that make them stand out and distinguish them from the rest. It has to do with the environment and, above all, with the people who live there and their lifestyle. The opposite of a Magnetic city is the 'Generic' city (Koolhaas, 1997). An empty city, without history, superficial, sedated, as if it were drugged and numb. A city where the street has died because it is not walked and life happens vertically or in shacks, where the edges are marks of disruption (vertical – horizontal) leaving no opportunity for meeting up, for creative density. A city of fractal repetition where everything that is not strictly useful or functional has no place. A city whose center features formally directed architecture and where the wealth is concentrated leaving a diffuse wide stain of low-income areas around it, accentuating inequality.

### 2.1 Components of City Magnetism.

City Magnetism can be assessed through some preconditions and three main city components which are driven by the permanent creation of living history.

PreConditions: Language, Landscape, Religion. A main spoken language or the ability to be understood and talk to locals is a major primary enabler/blocker. Landscape (seashore, mountains, both) is also a strong personal preference. And finally, our personal divine dimension, our own confessions need to match or tolerate those found (Religions) on a local level.

Historical methodology can offer us an accurate analysis of any hypothesis about a city, because in itself, it is a repository of history. (Rossi, 1978). Cities are living history. The city must respect and balance the preservation and retention of its historical heritage with modern development. (Pinto, 2009). Therefore, City Magnetism is the result of human action, and covers three moments in time: Past, Present and Future, in an ascending line during progress and prosperity and a descending line during destruction and decline, following the human cycles in a perfect and infinite helix. We could say that to the city "nothing human is alien". (Terence, 163 BC).

Then, we can conclude that a model for City Magnetism can be approached by studying these three major areas:

- Identity (Past)
- Dynamism (Present)
- Strategy (Future)



**City Identity (Past):** The past marks, defines and writes the city identity in stone. It is like its DNA, the addition of collective contributions from its former dwellers, all adding parts of that DNA, evolving, constantly recombining itself. It can evolve, albeit slowly. It can be transformed, but through a long, complex process.

A city's identity is thus defined by those elements that make up its essence and that have been defined throughout its history, such as its culture, customs, gastronomy, and type of society and government. Also fixed determinants such as geographic location, climate and environment, green spaces, density or the risk of natural disasters come into play. Additionally, a city has to nurture its reputation (Reputation Institute, 2017), its external or projected image, its branding, through the impacts it makes on media, often by organizing cultural or sporting events.

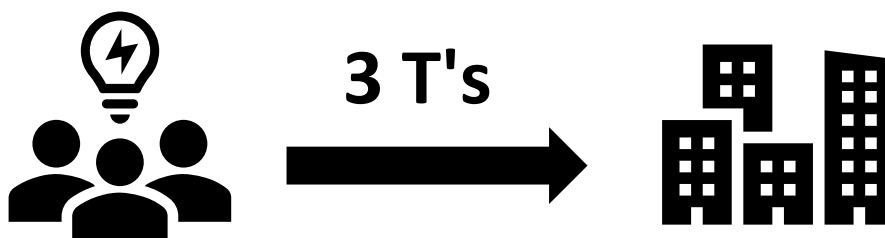
A city needs its own projected image, an advertising claim that is highly imageable (apparent, readable, visible). The goal is to become a city with a high chance of evoking a strong image in an external observer (Lynch, 1960). To approximate a model of measurable variables for a city's projected image, we turn to the different specialization areas that UNESCO attributes to a creative city: "Crafts & Folk Art, Design, Film, Gastronomy, Literature, Music and Media Arts" (UNESCO Creative Cities, 2019). All those areas are studied and included into City Branding component.

**City Dynamism (Present):** ["What is the City but the people?" \(Shakespeare, 1609\)](#) This aspect describes a city's psychology and ethics, how people make a living, and what the relationships among its inhabitants are like... The present represents City Dynamism. If identity lays the foundations of Magnetism, Dynamism marks the actions. A city attracts me because of its identity. When I arrive it delights me, welcomes me, motivates me, encourages me, moves me, helps me, or it does just the opposite all based on its Dynamism or lack thereof. The identity of a city is like a travel agent's brochure; Dynamism is the excursions that I can take at the destination.

We divide City Dynamism into four different indicators. First, competitiveness: those elements that measure the action, relationships, city creativity and motion, those elements which turn it into a social and economic hotbed creating complex interrelations of human development. Second, we measure how a city treats those who come, the expatriate, how easy or difficult social integration is in that city. Third, we also measure the city's ethical principles and social equity, inclusiveness and justice. And fourth, we evaluate equality.

**City Strategy (Future):** How can the future become a driver for a city's attractiveness? What do we expect from a city with a future? We expect it to have a solid plan (a SmartCity Plan), which includes strategies to cope with city challenges.

What makes that plan work? The rule of city prosperity, the 3 T's (Technology, Talent, Tolerance). We need investment in innovation as a fundamental and permanent driver and, of course, talent (human capital), too.



# City Identity (Past)

History  
Govern Basics  
Reputation  
GeoLocation Conditions  
Food/Gastronomy  
Branding



# City Dynamism (Present)

Competitiveness  
Expats Experience  
Ethics  
Equality



# City Strategy (Future)

Human Capital  
SmartCity Plan  
Innovation





## 3. City Profitability

The world is a marketplace of cities where citizens, depending on their preferences at that moment, decide to 'buy' a city and move there to live, and in this light, it makes sense that they give more value to employability when leaving the University, or to social services when they reach retirement age. Priorities vary based on their family dependencies (children or seniors) as well.

City Profitability is associated with the concept of 'is moving there a good deal?'. This is the non-emotional part, more related to a city's pure merits (economic and performance indicators).

City Profitability consists of: a city performance component (functions, services, variable elements that a city provides to the citizens and that are tangible and valuable) and an economic component (citizens' ability to acquire things or the net purchasing power that a citizen will attain in that city compared to others). It is, in short, a deal. So, City Profitability (yield) is made up of the combination of services offered by a city and the cost of living in that city. We name this implicit, virtual agreement between you and your city the Citizenship Contract.

### 3.1 Citizenship Contract.

Modern cities increasingly resemble Greek city-states. Despite the differences that social achievements have brought to our society during these 25 centuries, cities want to and must redefine the terms of their agreement with their citizens: the **citizenship contract**. It is a virtual contract that we all implicitly hold with our city. It is the value proposition that our city offers both to us and to the possible talent who wants to become established in our city. It is the list of gives and takes that our city has, like a billboard of city's offerings. It is a contract because the city offers us a series of services, benefits and development opportunities in competition with other cities in the world, in exchange for our contribution to the city's common project. This contribution has many facets, not only our taxes, but our generation of wealth, ideas, creativity, competitiveness, values, experience, co-creation, city development and drive to achieve its future goals. This is what millennials are evaluating now, and what local talented citizens weigh before deciding to emigrate in search of better opportunities.

### 3.2 Components of City Profitability.

To define the citizenship contract, we must detail the series of benefits and services the city offers us. This is the list of performance indicators to evaluate in which we group all the quantifiable services that a city can offer us into 10 areas:

- **DIGITAL GOVERNMENT:** A democratic, efficient, transparent, participatory, digitalized city government. Digital government as a service.
- **EDUCATION:** Lifelong training. Quality business schools, professional training and development.
- **EMPLOYABILITY:** The demand for talent.
- **CONNECTIVITY:** Internet infrastructure. 4G / 5G deployment.
- **HEALTHCARE / SOCIAL SERVICES**
- **ENVIRONMENTAL SUSTAINABILITY:** Water and energy efficiency. Air quality. Carbon emissions reduction, carbon neutral plans. Circular city.
- **CULTURE-TOURISM:** Culture as a city service, not traditions or emotions, but valuable services.
- **URBAN MOBILITY:** Traffic, public transportation. Mobility as a service.
- **URBAN PLANNING:** Urbanism as a city service.
- **SAFETY:** Physical and virtual safety

Then, we have to weigh these aspects against the cost of living in that city, or, in other words, the final net purchasing power (amount of things that I could buy with my final, after-tax income). Therefore, it is about comparing (multiplying) what I get from the city with what I get from my professional activity. The higher the result, the more profitable it will be for me to move to live in that city.

# City Profitability (Yield)

PERFORMANCE (Services obtained from City) / COST of Living

## Citizenship Contract

### City to provide:

- ✓ Governance
- ✓ Education
- ✓ Employability
- ✓ Health/Social SVS
- ✓ Sustainability
- ✓ Connectivity
- ✓ Urban Planning
- ✓ Culture
- ✓ Urban Mobility
- ✓ Safety

You: Cost of Living



## 4. City Attractiveness Model

### 4.1 Cities Selection Criteria

We decided to increase our initial 2020 Analysis (made of 140 Cities), up to the world's top 175 most attractive cities according to international studies in a model made up of more than 100 indicators.

City selection criteria: Top cities in the Quality of Living Ranking (Mercer, 2019) and IESE's Cities in Motion (Berrone, Ricard, 2020) and cities scoring over 50 (no personal risk or severe living restrictions) on the Global Liveability Index (The Economist, 2021). The first two are superior quality reports featuring a wealth of details and indicators, coming from very well-known, highly reputable sources, while the Liveability Index's minimal threshold corresponds to a basic fact: nobody wants to go and live in a city where their life will be threatened, or basic living conditions are severely restricted.

### 4.2 Set of Indicators.

28 Indicators for Magnetism-Identity, 15 for Magnetism-Dynamism, 23 for Magnetism-Strategy, totaling 66 indicators for City Magnetism, selected from international bodies, previously published key studies/analysis, and our own work are used for this research. Each of the 175 cities selected is also analyzed with data taken from city websites and their published SmartCity plans.

34 indicators make up the model for City Profitability (selected from international bodies, already published studies/analysis, and the author's own work).

The total number of evaluated indicators is 100, but many of them include a large number of subindicators, raising the total number of analyzed city dimensions to around 500. The selection of indicators to use follows the metanalysis methodology: researching all available indexes, then choosing those best matching previous criteria while avoiding biases. See the full list of used indicators and components in Figure 1

Our objective is not to create yet another ranking of cities. Cities hate rankings, unless they come out on top. As the concept of attractiveness is quite personal, the most attractive city for me may not be as attractive for another person depending on the different scale of values we use to weigh a city's performance indicators, different aesthetic, personal preferences (mountains or seashore or both, spoken languages, religion...), and personal status (family dependencies, children, elder people in their care...). The model we present allows for comparisons between cities in the same geo cluster, and obtains each city's "attractiveness radiography" which helps prioritize areas that are in need of improvement, and also provides a list of cities that best fit a particular citizen's values and preferences.

Area	W	Subarea	Class	Indicator	Subindicator	Entity		
Magnetism	User Input	Identity	History. Culture	Age	Foundation	Wikipedia		
				UNESCO	World Heritage	UNESCO		
				Top Museums		Wikipedia		
			Government Basics	Democracy Index		The Economist		
				Safe City Index		HUDSONS		
			Reputation	Reputation		Reputation Institute		
			Space. Density	% Natural Space		OECD. Better Life Index		
				Density (inh/km2)		Demographia		
			Climate	Avge. Temperature Deviation	Gradient	Climate-Data.org, Climatemps		
				Avge. Precipitation Deviation	Gradient	Climate-Data.org, Climatemps		
				Avge. Daily Sunshine		Climate-Data.org, Climatemps		
			Geo Risk	Natural Disaster Risk		World Risk Index		
			GeoEconomics	GDP Proximity	%WW	Own Work		
			Gastronomy	Food Security Index		The Economist		
				Cost Food		Numbeo		
				Guru Restaurant		Guru Restaurant		
				Michelin Guide and Guru	#Rest/Minh	Via Michelin		
			Branding. External Image	Music		Own work (Wikipedia and Youtube)		
				Movies	Own work	IMDB, Movie-locations.com		
				Street ART	Artwork/10k Inh	Street Art Cities		
				CITY BLOGGERS	SM Reach	Brand24		
				Best cities	Cities Marketing	BestCities.Org		
				Sports	Soccer Basketball Other Sports Events, Marathons	Football Database NBA Topendsports		
				Main Events	Olympics	Olympics org		
					Universal Expo	Bureau International des Expositions		
			User Input	Dynamism	Competitiveness	Global Competitiveness	Economic	IMD
						Global Talent Competitiveness	Talent	INSEAD - GTCI
						Development	Cities facing Challenges	IESE Cities Motion
					Liveable Citis	Creating Better City	The Economist numbeo	
						Expats Social Experience	Life Style - Quality	InterNations
	Ethics. Well-being	Quality of Life for EXPATS				InterNations		
		Happiness				Happiness Report		
		World Giving Score				Charities Aid Foundation		
		Civic Engagement				World Bank		
	Equality	Work-Life Balance				KISI		
		GINI Index				WorldBank		
		Gender			Economic Empowerment of women	INSEAD - GTCI		
					Global Gender Gap Index	WE FORUM		
		Leadership opportunities for women			INSEAD - GTCI			
		Tolerance			Tolerance Minorities	INSEAD - GTCI		
	Tolerance Immigrants	INSEAD - GTCI						
	Poverty	Pop < 6,85\$/d			World Bank			
User Input	Strategy	Human Capital			Population Age Average Per Country		World Population Review	
					Ranking Human Capital		IESE Cities Motion	
		Smart Cities Plan			Plan Smart Cities	15 Areas	Own Work	
		Innovation			R&D (% GDP)		INSEAD - GTCI	
					Global AI		Tortoise	
		Innovation Cities / Global Innovation Index					WIPO (World Intellectual Property Organization)	

ADDITIONAL PRE-CONDITIONS:			Landscapes		Own Work
			Language		Infoplease
			Religion		Own Work

Figure 1a. City Attractiveness Indicators. Magnetism. Source: Author



Profitability	50	Services	Digital Government	Digitalization of Government	eGovernment Survey	United Nations	
				eParticipation Index	eGovernment Survey	United Nations	
			Education. LifeLong Training	University Rankings in the subject Business and Economics Employee Development			INSEAD - GTCI (2022)
							INSEAD - GTCI (2022)
			Employability	LinkedIn Talent Hiring Demand	Talent Insights	LinkedIn	
				Employability			INSEAD - GTCI (2022)
			Connected City	MOBILE	Mobile Connectivity index	GSMA	
				Internet Speed			INSEAD - GTCI (2022)
				ICT Infrastructure			INSEAD - GTCI (2022)
			Health/Social SVS	Social Expenditure (% GDP)			OECD
				Life Expectancy	WHO		World Health Organization
				Physicians density Public Health Expenditure per Capita			INSEAD - GTCI (2022) OECD.
			Environmental Sustainability	Carbon Neutrality Plan	A-List		Own Work
				Sustainable City Index	Planet		arcadis 2022
				The Green Future Index			MIT
				Environmental Performance Index	EPI		Yale
			Culture-Tourism	Culture Creative Jobs %			World Cities Culture Jobs OECD. Eurostat
				City Destination			Euromonitor International
			Urban Mobility	Traffic INRIX Congestion	Hours Lost Congestion		INRIX
				TOM TOM Congestion %	Time in rush hour/y		TOM TOM Index
			Urban Planning	Urban Planning			IESE Cities Motion
			Safety	Safe Cities Index			The Economist
				Safety Index by City			Numbeo
50	Cost Of Living. Net Purchase Power	Net Real Income	Avg Wages/month	SINGLE, No CHILD	UNECE, ILOSTAT		
			Direct Tax + Social Contributions Indirect Tax		OECD OECD		
		Cost Of Life	Purchase Power Parity Plus Rent (NY=1)		Numbeo		

Figure 1b. City Attractiveness Indicators. Profitability. Source: Author

Main data sources updates vs 2022 Edition have been:

#### Added Indicators:

- Magnetism.Identity.Gastronomy.Cost of Food
- Magnetism.Identity. Branding External Image. Street ART
- Magnetism.Identity. Branding External Image. CITY BLOGGERS
- Magnetism.Identity. Branding External Image. Best cities
- Dynamism. Development. Cities in Motion
- Dynamism. Development. Liveable Cities
- Dynamism. Expat Social Experience. Quality of Life for EXPATS
- Profitability. Services. Lifelong Training. Education. University Rankings in the subject Business and Economics
- Profitability. Services. Connected City. MOBILE
- Profitability. Services. Environmental Sustainability. The Green Future Index
- Profitability. Services. Safety. Safety Index by City

#### Deleted Indicators (obsolete):

- Dynamism.Competitiveness. Creativity Index
- Dynamism. Expat Social Experience. Getting Settled
- Profitability. Services. Lifelong Training. Education. Quality of Management Schools
- Profitability. Services. Lifelong Training. Education. Prevalence of Training in firms
- Profitability. Connected City. 4G LTE

#### Changed sources at:

- Magnetism.Identity.Democracy Index
- Dynamism. Expat Social Experience. Life Style – Quality
- Dynamism. Equality. Gender. Gender Development Gap.
- Profitability. Services. Environmental Sustainability. Environmental Performance Index

Would you like to give it a try? Take either of these apps and enter your city preferences / scale of valued performance to get your short list of best fitting cities:

(If you can't install it, then look for AttractiveCities in your Apps store)

Android Store. <https://play.google.com/store/apps/details?id=com.barrabes.attractivecities>

IOS Store. <https://apps.apple.com/es/app/attractive-cities/id1487782051>

If problems with links, try finding ATTRACTIVECITIES in your Apps store.

## Attractive Cities, wanna try?

Get list of top 15 WW Cities better matching your preferences



<https://play.google.com/store/apps/details?id=com.barrabes.attractivecities>



<https://apps.apple.com/es/app/attractive-cities/id1487782051>



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Research: What's making a City Attractive to LIVE IN?

SmartCityExpo & WW Congress is very pleased to introduce a research study, in cooperation with Jose A. Ondiviela to better understand what our attendees consider an irresistible city to live in. The study is part of a wider PhD research by Mr. Ondiviela based on citizen involvement from people living in 140 Smart Cities worldwide. The research will give insights into citizens' preferences and help authorities develop even more attractive cities, which people wish to live in.

Please feel free to complete this short survey. It only takes 40 seconds. Participation is anonymous. If you wish to receive a copy of the results we ask that you submit your e-mail address. This will not be used for any other purposes. The results are expected towards the end of 2018.

THANK YOU VERY MUCH FOR YOUR TIME AND HELP.

## 5. City Attractiveness Research

### 5.1 Surveys.

Surveys. To prove that the model works and that all its components are relevant, we carried out two surveys at two SmartCities events, so our audience brought twofold advantages: they are quite familiar with the concept of city performance, and we can consider them all as talented citizens.

- Survey of 4,500 participants at an event (NordicEdge, 2018), Stavanger (Norway). Sep2018 attendees. The largest SmartCities event in the Nordic countries.
- Survey of 21,334 participants (SmartCity Expo & WW Congress, 2018), Barcelona (Spain). Nov2018 attendees. The largest SmartCities event in the world. Due to the large response (n=1550), the data obtained will be used to fine tune weights on Magnetism and Performance for global analytics and main ranking reference / chapter 6.2 Honors Board.

Reliability: High. The intention is not to develop a technical scientific analysis, but a human sciences study. Results will vary from citizen to citizen or for different life statuses (age, dependencies). The model obtained from the two surveys reaches 95% Confidence, <2% error.

## 5.2 Survey results.

Our target average respondent-age was 42 years old, half of them with children (51%) and a quarter of them with elder people in their care (25%). It is an unbalanced gender sample with 67% male, however that is consistent with a very male-driven technology market.

On Magnetism: Dynamism (present) rules, then come Identity (past) and then Strategy (future). Identity and Dynamism are significantly more important than Strategy, confirming the trend that a city's future and potential are less valued than its present facts or its experience gained from Identity. This result is easily associated with the Southern European lifestyle, which is most interested in the present moment, with a loving eye for the past and less emphasis on the future. However, the differences are not so large as to consider Strategy (future) as irrelevant seeing as this survey was world-wide in nature. Identity (past) becomes more and more appreciated as people get older (the over-50 crowd). And in terms of gender, men and women agree on Magnetism, which means they have essentially the same preferences for aesthetics, education and customs.

On Profitability. In city services (see figure 2), we can very clearly identify three zones: high (positions 1 through 4) scoring more than 8.30, then mid (positions 5 & 6), then low (7 through 10). There are appreciable changes among the different age ranges studied, but these services always fall within these general zones. All 10 areas studied are relevant, as all scored a minimum of 3.5 out of 5 on average in our original survey on importance, meaning that we can say that none are irrelevant, and none have a much higher score when compared to the rest.

The main top area is Urban Mobility, as everybody recognizes this city service is crucial to keeping a city alive. As such, we have named it the 'city bloodstream'. Since we define a city as a point in space/time where people meet with and encounter each other, and this service makes that possible, we are not surprised that it is the most appreciated. Then Health/SocSVS, Environmental Sustainability and Safety follow, all grouped together, separated by a small variation in scores. Safety is the top factor for those over 60. After those come the Education and Employability group; it is a little surprising that they are not rated even higher. To help interpret the data, we assume that our attendees are so talented that they face no challenges in these aspects. In any case, Education jumps up to position 3 for younger citizens, which seems reasonable. Employability falls to the bottom position for those aged more than 60, as they are about to retire. Urban Planning, Governance, Connected City, and Cultural Services occupy the lowest positions. I was personally expecting to see Connected City finish higher; maybe the audience did not understand the concept and the disruptive implications that 5G will bring, or maybe they consider this as a static, obvious service like water or energy, and see little to no difference among cities. Governance and Urban Planning are not perceived as star city services, but rather as business as usual, as regular tasks that must be guaranteed, not as brilliant services that citizens perceive as new, innovative or disruptive.

CITY SERVICES - SCALE OF VALUES	RK	1-10
URBAN MOBILITY / TRANSPORTATION	1	10,00
SOC SERVICES / HEALTH	2	9,04
ENV. SUSTAINABILITY	3	8,95
SAFETY (PHYSICAL/VIRTUAL)	4	8,37
EDUCATION	5	7,67
EMPLOYABILITY	6	7,11
URBAN PLANNING	7	4,78
GOVERNANCE	8	2,85
CONNECTED CITY	9	1,83
CULTURAL SVS / TOURISM	10	1,00

Figure 2. City Performance/Services Ranking for SmartCityExpo Attendees. Source: Author



By gender, we find almost the same rankings with only a few differences near the top, for instance, women position Health/SocSVS at number 1 and men situate EnvSustainability at number 2. Those with children give more consideration to EnvSustainability (thinking about the planet we leave for them, perhaps); those without follow the average. People with someone elderly in their care put Health/Social Svs on top, as expected; those without boost the score of EnvSustainability. Finally and sadly, Culture/Tourism is the least appreciated city service. This is clearly a major pending issue for most of our cities: how to serve as a kind of permanent university for citizens by constantly offering, incentivizing and promoting cultural services. A more skilled society is always a more prosperous one, and the opposite is true, too.

### ***5.3 City Attractiveness Ranking 2023***

If we apply these survey scores to our model, (see figure 3 with full list of top175 cities) we find the Top 30 positions lead by cities from Nordics (Norway, Denmark, Finland), Central Europe (Germany, Netherlands, Switzerland, Austria) and UAE (Abu Dhabi, Dubai). As exceptions from out of these areas, we have Taipei, Melbourne and Montreal. USA, Australia, UK are not present till positions 30-40 meaning a significant drop vs 2022.

City	Country	MAGNETISM	IDENTITY	DYNAMISM	STRATEGY	PROFITABILITY	PERFORMANCE	NetPurchase Power	ATTRACTIVENESS
Oslo	Norway	4	10	14	35	4	18	8	1
Bern	Switzerland	21	29	7	86	5	26	6	2
Stavanger	Norway	20	50	10	57	6	25	7	3
Bergen	Norway	28	53	15	67	7	21	9	4
Copenhagen	Denmark	2	22	6	12	29	1	68	5
Abu Dhabi	United Arab Em	111	135	56	106	1	93	1	6
Dubai	United Arab Em	109	126	47	114	2	73	3	7
Taipei	Taiwan	96	107	94	62	3	101	4	8
Aarhus	Denmark	7	32	5	43	26	20	42	9
Rotterdam	Netherlands	17	41	20	44	13	4	45	10
Basel	Switzerland	40	34	8	102	8	16	18	11
Berlin	Germany	9	11	38	22	28	9	54	12
Gothenburg	Sweden	14	36	17	27	24	32	26	13
Den Haag	Netherlands	35	61	16	64	9	3	37	14
Amsterdam	Netherlands	1	6	12	8	51	5	77	15
Zurich	Switzerland	10	42	9	18	34	32	38	16
Cologne	Germany	16	39	37	16	22	17	36	17
Melbourne	Australia	26	58	27	23	15	67	11	18
Tampere	Finland	30	91	2	31	14	2	50	19
Hamburg	Germany	23	56	39	14	17	15	41	20
Helsinki	Finland	6	66	1	6	54	6	79	21
Eindhoven	Netherlands	29	62	19	42	31	11	55	22
Stuttgart	Germany	36	38	35	65	27	30	33	23
Vienna	Austria	12	13	23	50	49	36	51	24
Malmo	Sweden	42	72	18	61	25	36	27	25
Geneva	Switzerland	34	17	13	100	32	59	22	26
Oulu	Finland	37	87	4	54	30	8	60	27
Luxembourg	Luxembourg	51	47	21	91	20	18	35	28
Munich	Germany	18	40	25	36	40	14	66	29
Montreal	Canada	64	90	26	63	12	62	12	30
Sydney	Australia	33	46	33	39	43	78	23	31
Manchester	United Kingdom	38	45	81	10	46	45	43	32
Las Vegas	United States	90	94	78	59	10	32	15	33
Glasgow	United Kingdom	48	49	83	17	41	49	40	34
Stockholm	Sweden	11	19	11	45	72	38	74	35
Adelaide	Australia	76	96	28	69	23	72	13	36
Frankfurt	Germany	43	57	36	48	48	31	52	37
Edinburgh	United Kingdom	19	33	62	9	61	61	56	38
Houston	United States	81	111	61	26	19	46	17	39
Ottawa	Canada	67	78	29	78	35	50	32	40
Antwerp	Belgium	46	31	58	66	55	55	46	41
Tokyo	Japan	32	20	84	25	62	68	47	42
Kansas City	United States	92	109	72	38	18	62	14	43
Canberra	Australia	58	80	30	73	42	71	28	44
Phoenix	United States	93	140	80	2	16	40	20	45
Dusseldorf	Germany	91	75	40	108	21	13	44	46
Belfast	United Kingdom	68	70	91	28	39	68	25	47
Nottingham	United Kingdom	75	74	89	40	37	57	31	48
Espoo	Finland	31	83	3	53	73	7	89	49
Washington, D.C	United States	27	42	44	20	74	44	73	50
Birmingham	United Kingdom	61	53	90	52	52	76	34	51
Singapore	Singapore	60	108	34	13	53	12	75	52
Philadelphia	United States	74	86	69	30	45	81	24	53
Toronto	Canada	41	73	24	33	69	74	53	54
Los Angeles	United States	50	64	70	15	63	24	76	55
Bristol	United Kingdom	54	48	92	37	58	46	57	56
Osaka	Japan	84	59	99	77	36	83	16	57
Liverpool	United Kingdom	77	69	86	58	50	78	29	58



City	Country	MAGNETISM	IDENTITY	DYNAMISM	STRATEGY	PROFITABILITY	PERFORMANCE	NetPurchase Power	ATTRACTIVENESS
Linz	Austria	63	51	31	97	56	40	59	59
Denver	United States	86	113	54	34	38	23	49	60
Atlanta	United States	62	101	52	7	57	90	30	61
New York City	United States	8	18	46	3	85	22	97	62
Madrid	Spain	15	5	45	68	83	27	95	63
Chicago	United States	49	63	49	24	75	84	61	64
Dallas	United States	88	110	66	32	47	57	39	65
Boston	United States	25	78	41	1	77	65	78	66
Seattle	United States	65	102	42	21	65	10	84	67
London	United Kingdom	3	2	51	11	94	43	103	68
Zaragoza	Spain	80	21	67	119	59	29	69	69
Yokohama	Japan	71	82	73	29	67	78	47	70
Miami	United States	73	96	59	19	71	54	67	71
San Francisco	United States	24	65	43	5	86	42	92	72
Valencia	Spain	39	16	55	75	79	55	86	73
Dublin	Ireland	22	27	32	60	89	99	71	74
Barcelona	Spain	13	3	64	56	92	27	104	75
Brussels	Belgium	47	30	63	71	78	93	65	76
Vancouver	Canada	82	99	22	85	64	53	63	77
Paris	France	5	1	65	55	97	48	105	78
Nagoya	Japan	101	96	97	82	44	88	21	79
Hong Kong	Hong Kong	107	121	112	46	33	70	19	80
Bordeaux	France	53	12	82	93	84	64	85	81
Málaga	Spain	57	23	57	92	82	52	88	82
Baltimore	United States	97	118	68	70	66	35	72	83
Seville	Spain	87	28	74	127	76	59	80	84
Marseille	France	66	14	93	95	87	87	81	85
Seoul	South Korea	44	55	96	4	96	95	90	86
Lyon	France	55	37	76	76	91	76	91	87
Nice	France	56	15	85	87	93	65	93	88
Honolulu	United States	104	147	75	49	68	38	70	89
Santander	Spain	72	34	60	96	90	51	94	90
Auckland	New Zealand	89	84	48	84	81	104	62	91
Wellington	New Zealand	83	81	53	80	88	105	64	92
Lille	France	95	67	87	88	80	74	81	93
Torino	Italy	78	9	108	90	95	98	87	94
Florence	Italy	52	7	107	79	99	85	99	95
Bilbao	Spain	70	24	71	101	98	81	98	96
Milan	Italy	45	8	104	47	104	89	110	97
Rome	Italy	69	4	103	107	101	100	100	98
Porto	Portugal	79	25	77	109	106	91	112	99
Doha	Qatar	120	167	105	98	70	110	10	100
Jerusalem	Israel	98	77	109	74	102	113	83	101
Tallinn	Estonia	94	89	88	72	107	96	109	102
Tel Aviv	Israel	100	115	100	41	103	108	96	103
Manama	Bahrain	132	138	115	149	60	128	5	104
Lisbon	Portugal	85	26	79	122	108	86	124	105
Ljubljana	Slovenia	102	84	98	103	105	97	106	106
Kuwait City	Kuwait	145	165	134	144	11	137	2	107
Prague	Czech Republic	59	44	50	81	119	102	139	108
Wroclaw	Poland	103	67	102	113	110	107	118	109
Warsaw	Poland	105	70	101	116	109	92	122	110
Budapest	Hungary	99	52	110	89	112	111	117	111
Riga	Latvia	110	92	111	94	111	106	121	112
Athens	Greece	112	59	121	121	113	116	113	113
Vilnius	Lithuania	106	95	95	110	125	103	149	114
Sofia	Bulgaria	114	76	122	120	122	118	126	115
Shanghai	China	108	93	126	51	132	117	141	116
Santiago	Chile	118	119	117	117	118	130	107	117
Chongqing	China	121	117	137	111	117	123	116	118

Figure 3 Full list of 2023 top 175 Attractive Cities. Source: Author

City	Country	MAGNETISM	IDENTITY	DYNAMISM	STRATEGY	PROFITABILITY	PERFORMANCE	NetPurchase Power	ATTRACTIVENESS
Beijing	China	113	104	124	83	131	119	137	119
Chengdu	China	126	127	133	111	115	121	115	120
Zagreb	Croatia	117	111	114	132	126	114	131	121
Wuhan	China	127	154	128	99	114	120	114	122
Bratislava	Slovakia	115	102	106	143	134	114	154	123
Bucharest	Romania	122	116	120	141	130	140	119	124
Guangzhou	China	136	151	131	128	116	112	120	125
Riyadh	Saudi Arabia	158	174	130	154	100	127	58	126
Shenzhen	China	137	169	127	104	120	109	128	127
Shenyang	China	135	143	132	134	123	123	123	128
Tianjin	China	133	134	141	129	129	123	127	129
Buenos Aires	Argentina	123	124	116	135	139	130	138	130
Moscow	Russia	134	149	139	115	128	147	111	131
Suzhou	China	125	128	136	104	140	121	150	132
Montevideo	Uruguay	116	114	113	131	148	135	160	133
Istanbul	Turkey	128	87	160	130	133	133	129	134
Kuala Lumpur	Malaysia	141	170	119	137	121	143	108	135
Belgrade	Serbia	119	105	125	136	143	133	157	136
Córdoba	Argentina	130	122	118	161	135	132	132	137
Guadalajara	Mexico	129	131	140	124	141	129	143	138
Mexico City	Mexico	124	105	144	124	146	138	152	139
Rio de Janeiro	Brazil	131	120	155	118	142	145	136	140
St Petersburg	Russia	148	168	143	138	124	150	101	141
Harbin	China	152	173	138	123	127	126	125	142
Bangkok	Thailand	138	136	129	148	147	141	151	143
Sao Paulo	Brazil	139	125	151	140	145	146	142	144
Brasilia	Brazil	150	151	148	150	138	136	133	145
Monterrey	Mexico	140	160	135	124	149	144	153	146
San José	Costa Rica	142	159	123	153	144	141	147	147
Ankara	Turkey	154	123	162	164	137	138	130	148
Minsk	Belarus	156	160	145	162	136	162	102	149
Panama City	Panama	147	150	142	159	150	154	134	150
Cape Town	South Africa	143	129	161	139	153	151	158	151
Quito	Ecuador	146	130	153	156	154	157	146	152
Bogota	Colombia	153	158	159	133	155	158	144	153
Kiev	Ukraine	144	131	149	158	159	154	164	154
Jakarta	Indonesia	151	144	156	147	157	149	163	155
Durban	South Africa	159	162	165	145	152	153	140	156
Lima	Peru	155	141	154	166	158	160	156	157
Johannesburg	South Africa	160	155	166	152	156	156	155	158
Hanoi	Vietnam	149	147	146	154	162	159	169	159
Medellín	Colombia	168	175	157	151	151	148	148	160
Tbilisi	Georgia	161	142	152	174	160	151	166	161
Asuncion	Paraguay	164	163	147	170	161	168	145	162
Ho Chi Minh City	Vietnam	162	172	150	146	165	161	171	163
Tunis	Tunisia	157	100	168	173	166	164	170	164
New Delhi	India	163	146	172	142	172	167	173	165
La Paz	Bolivia	165	153	163	168	169	172	165	166
Mumbai	India	166	145	171	157	171	165	175	167
Santo Domingo	Dominican Rep	169	166	158	171	164	163	167	168
Casablanca	Morocco	170	138	173	169	167	173	159	169
Cairo	Egypt	174	133	175	163	163	166	162	170
Bangalore	India	167	155	167	160	174	171	174	171
Rabat	Morocco	171	136	170	172	168	174	161	172
Manila	Philippines	173	171	164	167	170	170	168	173
Hyderabad	India	172	157	169	165	173	169	172	174
Accra	Ghana	175	164	174	175	175	175	135	175

## 6. City Attractiveness Findings

When interpreting the findings, it must be taken into account that the majority of international studies and independent sources consulted reflect the information corresponding to 2022. Therefore, we can see the impact of the war in Ukraine that began in February of that year and its corresponding impact on high inflation. In the study on the flow of talents carried out on LinkedIn we can observe a strong movement from Ukraine abroad and how both Kiev and Russian cities have dropped about 10 positions, placing themselves around 130-150, only ahead of the cities of India and Africa. While analyzing the evolution of the attractiveness of cities for talent during 2022, we see a year marked by the impact of inflation in cities that were trying to recover more or less quickly from the Covid pandemic. The pandemic changed lifestyles and perceptions of attractiveness in cities, while the incorporation of new technologies are accelerating these changes. We observe 3 general patterns or trends from all cities:

1.- Economy. We saw in the 2021 Observatory how the US, CAN, and AUS cities rose significantly as they faced the economic impact caused by the pandemic with greater resilience. It took them very little time to recover. However, in 2022 they have been surpassed by Europe and Japan, being less impacted by inflation, and the positive effect of the European recovery funds launched since 2021 (the American IRA plan started very late in 2022 (August)). We will study this effect in detail in chapter 6.5. It is worth highlighting the strong gain in positions of the Nordic, German, Swiss, and Dutch cities as a consequence.

2.- Innovation. In parallel to economic resilience, those cities with a solid strategic plan for innovation and leadership in the adoption of the latest technologies have gained relative positions compared to similar profile cities that have slowed down investment in innovation due to considerations of digital sovereignty, data location applicable laws, latest technologies adoption blockers, etc. These considerations, although important, cannot stop innovation leverage. Satisfactory ways can always be found to guarantee GDPR and other applicable legislation compliance without blocking new technologies, which are key to the city development and attraction of talent. New technologies, and especially advanced technologies in artificial intelligence, digital twin, predictive analytics, and others, are only possible with the parallel adoption of cloud computing strategies. This is the reason why Nordic cities are leading (and Norwegian, Finish have overtaken Swedish). The Netherlands gains a lot of ground and is positioned right behind the Norwegians and Danes. Germany and Switzerland are finally getting serious about investing in technology for cities and have shot up the rankings. The obligation that a good percentage of Green Deal investments (20%) must reinforce digital technologies has pushed a lot in this area. The UK also rises significantly (with the exception of London, which falls for social reasons and cost of life). With this combined effect, Impact Economy (Post-COVID & Inflation/Recession) & Technology Adoption Acceleration, we observe:

WINNERS: NOR, DK, NED, GE, UAE (Coface 2022), JPN (Economy & Technology Adoption Acceleration), and UK, AT (Due to Technology Investment). Timid improvement also from CHN. FR, SWE improve a little due to Economy, but need more openness in Cloud technology adoption. SouthEurope (SPA, ITA, POR) slight improvement due to EU funding investment.

LOSERS: USA, CAN, AUS due to technology investments slowdown, too late recovery actions and inflation impact. Gap with LatAm and all Asia increased a little due to economy impact (except CHN which gains a little, and some few cities investing more on technology)



3.- Non-capital cities. We see the rise of non-capital cities in most countries. These cities are proven more attractive than the capital cities of their countries. Examples are Bergen vs Oslo, Aarhus vs Copenhagen, Gothenburg vs Stockholm, Tampere vs Helsinki, Antwerp vs Brussels, Valencia vs Madrid. The explanation is obvious: these cities incorporate the general advantages of the country, while offering a better quality of life by more easily approaching the 15' city ideal model due to their size. They also have a much lower cost of living as they are not the capital, especially in real-state. In addition, if they are based in a country well connected by public transport, then the supposed advantages of living in the capital are reduced and, therefore, they surpass their capital cities in attractiveness. Top 20 best winners in positions due to Profitability are mid-sized non-capital Cities. See Figure 4.

City	Country	AREA	PROF-RK	PROF-RK	DIFF 23
Rotterdam	Netherlands	Western Europe	13	59	↑ 46
Eindhoven	Netherlands	Western Europe	31	72	↑ 41
Basel	Switzerland	Western Europe	8	49	↑ 41
Hamburg	Germany	Western Europe	17	57	↑ 40
Cologne	Germany	Western Europe	22	58	↑ 36
Dusseldorf	Germany	Western Europe	21	54	↑ 33
Luxembourg	Luxembourg	Western Europe	20	52	↑ 32
Stuttgart	Germany	Western Europe	27	56	↑ 29
Tampere	Finland	Western Europe	14	42	↑ 28
Munich	Germany	Western Europe	40	67	↑ 27
Den Haag	Netherlands	Western Europe	9	36	↑ 27
Linz	Austria	Western Europe	56	78	↑ 22
Birmingham	United Kingdom	Western Europe	52	73	↑ 21
Zaragoza	Spain	Western Europe	59	80	↑ 21
Bern	Switzerland	Western Europe	5	25	↑ 20
Liverpool	United Kingdom	Western Europe	50	70	↑ 20
Oulu	Finland	Western Europe	30	48	↑ 18

Figure 4. Growth on Profitability. Top 20 Cities. Source:Author

Other findings: No Correlation Attractiveness vs Population, Strong one vs GDP. See chapter 6.3

Main segments. **ADVANCED:** Top100. (Western Europe, AUS, US, CAN, JPN, 4 Asian tigers). Here we can split in three groups. 1-30 Attractive & Economy Resilient (Nordics, GE, NED, SWI), 30-70 Mainly Economy driven (US, UK, JPN), and 70-100 Attractive mainly because of Magnetism, facing problems in Profitability (FR, SouthEurope, NZ). **CHALLENGERS:** 100-115. (ME, CEE). **EMERGING:** 115-164. (with CHN leading 115-130, then LatAm, RUS, SouthEast Asia, SouthAfrica). **STARTERS:** 165-175. (IND, Africa). It is very important to highlight the latest study carried out from the Worldwide Observatory for Attractive cities at UFV (Meneses, 2022) where exactly same 4-5 groups were obtained by just using raw data, AI neural network unsupervised model without any human bias or subjective opinion or any criteria weight (as given by the explained experts survey). Looking at the list of the top 175 cities worldwide, let's explore those segments:

Advanced: From position 1 to 100, we find the most advanced, Western civilization cities. The first 30 cities in this advanced group correspond to those with the greatest economic resilience and Magnetism attractiveness. The position of NOR is especially noteworthy with the 3 cities studied in the top 4 positions. This is due to an extraordinary positive balance between magnetism and profitability. A strong magnetism based on an excellent system of social protection, high standards in democracy and government, reputation, ethics and social values, equality and care for the environment is added a very powerful economy, supported by its energy independence and enormous production capacity of gas and oil. Norway is the main gas supplier to Europe. In addition, the extraordinary profit from energy production feeds its sovereign fund, one of the largest in the world, and what sustains its high social welfare. DK, SWI, NED, GER, FIN, UAE accompany NOR in these top 30, all countries with low economic impact of recession, and investing strong on technologies with covid-recovery funds. Taipei has surprisingly jumped into position 8 due to technology investment, social stability and trust building.

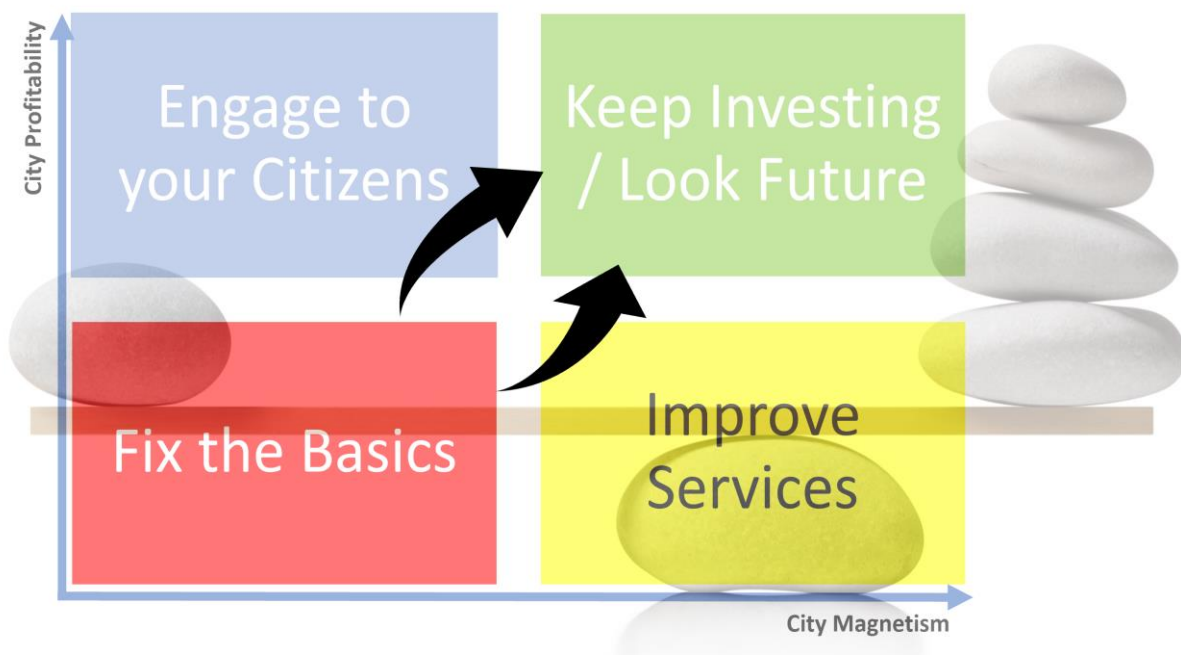
From position 30 to 70 we have USA, AUS, CAN, SIN, UK, JPN, all suffering strong the economic impact, but recovering quickly due to technology investment. They are not so Attractive from Magnetism point of view due to social inequity. Next, and from positions 70 to 100, we find BEL, FR, IRE, NZ, SPA, ITA, all of them with a strong Magnetism and trying to maximize the COVID recovery funds to compensate the recession and the four Asian tigers (SIN, KOR, TAI, HK) climbing from Challenger's area. Seoul shows generational conflicts. Despite of the Olympics, JPN continues with its economic reform and with problems in social equality (HRW 2022) but investing strong on technology and preparing Osaka's Expo to show world leadership here. Closing this group (80-100) we find ITA, NZ, FR, and POR with serious problems in terms of economic sustainability due to their high taxes, but they remain here due to high magnetism, although at risk of falling to the next group. Competition in this leading group is fierce. Climbing a few positions requires strong investments, solid, well-executed plans and dedicated teams with a generous budget and some international influence. Southern European cities may fall into the next, lower group if they don't accelerate smart investments. Their magnetism and quality of life are very high, but they won't be in that top group much longer without a strong component of innovation as well. We especially see Italy and Portugal on the brink.

Challengers: In this area, we group cities from positions 100 to 115 which are progressing rapidly, competing to join the leading group, following the example from Asian tigers. Here, we find the Middle East, led by Israel and Central/Eastern Europe. Any of these cities can join the top-tier group as soon as they gain prestige and consolidate the interesting advances they have made in recent years.

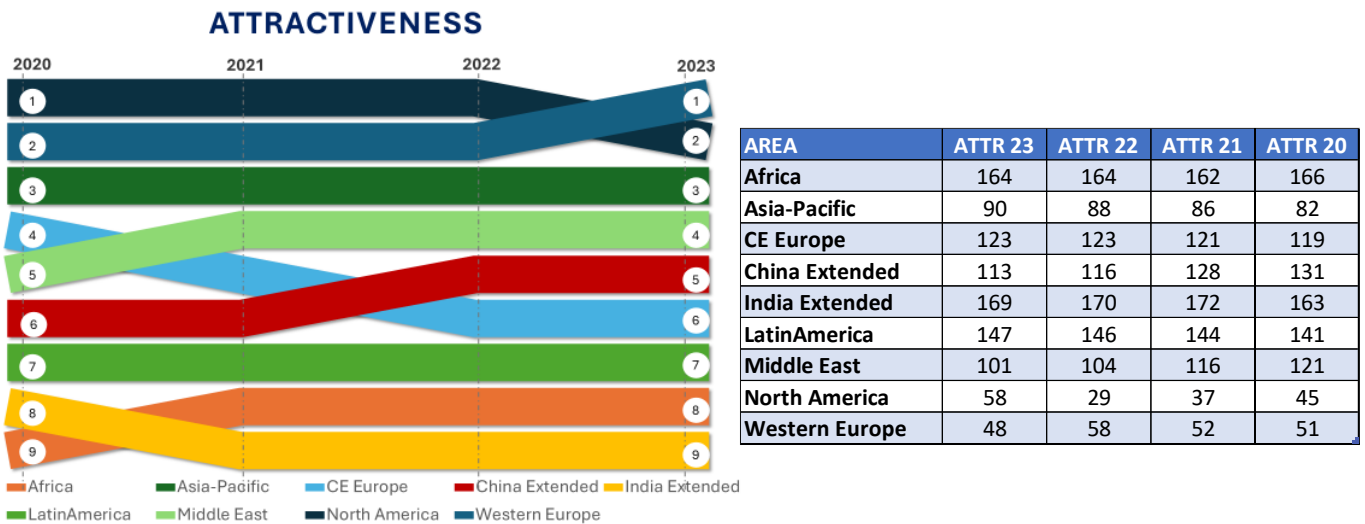
Emerging: Positions 115-164. Here we find first China growing slightly and taking (115-129), then most of Latin America (130-147). And finally, Russia, Turkey, South Africa and SouthEast Asia. It is like a BRIC group, but without India, which needs strong urban transformation (they already have an ambitious 100 SmartCities plan), replaced by Southeast Asia's Thailand, Malaysia although with obvious different dimensions. The cities in this group have plans, recognize this global competition, and are making rapid progress.

Starters: Positions 165-175. Among the Starters are Indians and Africans, These cities are beginning to plan their strategies for the global competition for talent although they continue to be burdened by unresolved, basic social and economic issues.

## Attractiveness: Balancing City Magnetism & City Profitability



## 6.1 City Attractiveness by GeoCluster.



AREA	PERF 23	PERF 22	PERF 21	PERF 20	NPP 23	NPP 22	NPP 21	NPP 20
Africa	164	162	163	168	154	154	162	163
Asia-Pacific	102	87	84	74	79	89	87	86
CE Europe	122	124	121	117	128	124	126	125
China Extended	114	111	118	115	109	114	128	137
India Extended	168	168	167	162	174	174	153	153
LatinAmerica	147	147	145	146	145	144	143	135
Middle East	121	128	129	132	62	60	69	78
North America	49	32	47	64	52	29	25	35
Western Europe	44	54	48	46	61	67	64	60

Figure 5. Average positions by Clusters. Attractive Cities by Geographic Area. Source: Author

Figure 5 shows the average position achieved by each geographic area. In the 2020 analysis, we find a head-to-head competition in Attractiveness between North America and Western Europe. With the economic impact of the pandemic, we can notice in the analysis of 2021 and 2022 that North American cities rose in the ranking, while European cities suffered more from the effects of the pandemic. Western Europe enjoys more magnetism, history, culture and human values, but pays a high price in taxes to maintain its welfare policy programs, making its profitability worse. North America does the opposite: it compensates for the lack of history and cultural / human flavor with strong economic and competitive traits where they occupy a prominent place in (and win in) everything offering high profitability, high salaries, moderate taxes and a reasonable cost of life. Better economic management of the pandemic crisis had this impact, improving the attractiveness of cities in the United States and Canada. However, in the 2023 data we see a significant deterioration in the North America (NA) (from average 29 to 58), being surpassed by Western Europe. We see the explanation below: WE improves Services-Performance (from 54 to 44) (due to investment in technology due to recovery plans), while the NA falls in this comparison (due to delay in application of the IRA) (32 to 49), but overall, it falls in NetPurchasePower due to the impact of Inflation (from 29 to 52). According to (OECD, 2023) Inflation gap between USA and Euro17 has reached an average of 1,34% in all quarters in 2021 and 2022. See table.

CE Europe falls due to the inclusion of Russia & Ukraine and economy impact. Middle East gains due to Technology investments and resiliency against economic downturn.

INFLATION (CPI)	USA	Euro17 area	GAP
2021Q1	1,82	1,03	0,80
2021Q2	3,86	1,70	2,16
2021Q3	4,17	2,62	1,54
2021Q4	4,60	3,13	1,48
2022Q1	4,21	2,12	2,09
2022Q2	3,20	2,15	1,05
2022Q3	2,58	1,71	0,87
2022Q4	2,37	1,65	0,72
			<b>1,34</b>

## 6.2 City Attractiveness. Honors Board.

Using the weights provided by the SmartCity Expo survey, we have assembled the following honors board. See figure 6.

# Honors Board. Magnetism IDENTITY

## HISTORY/CULTURE



1	Shanghai
2	Paris
3	Rome
4	Athens
5	London
6	Jerusalem
7	Florence
8	Seoul
9	Milan
10	Torino

## GOV-BASICS



1	Zurich
2	Oslo
3	Bergen
4	Stavanger
5	Helsinki
6	Espoo
7	Oulu
8	Tampere
9	Aarhus
10	Copenhagen

## REPUTATION



1	Montreal
2	Ottawa
3	Toronto
4	Vancouver
5	Melbourne
6	Canberra
7	Adelaide
8	Sydney
9	Oslo
10	Bergen

## SPACE/DENSITY



1	Riga
2	Oslo
3	Las Vegas
4	Ottawa
5	Gothenburg
6	Linz
7	Oulu
8	Chongqing
9	Tampere
10	Bordeaux

## CLIMATE



1	Washington, D.C.
2	Florence
3	Nice
4	Rome
5	Montevideo
6	Jerusalem
7	San Francisco
8	Lisbon
9	Marseille
10	Quito

## GeoRISK



1	Luxemburg
2	Singapore
3	Minsk
4	Manama
5	Bratislava
6	Budapest
7	Prague
8	Aarhus
9	Geneva
10	Basel

## GeoECONOMICS



1	Prague
2	Shanghai
3	Vienna
4	Linz
5	Warsaw
6	Wroclaw
7	Zurich
8	Amsterdam
9	Geneva
10	Bern

## GASTRONOMY



1	Antwerp
2	Bilbao
3	Amsterdam
4	Paris
5	Bordeaux
6	Lyon
7	Geneva
8	Yokohama
9	Nice
10	Brussels

## BRANDING



1	Paris
2	New York City
3	London
4	Barcelona
5	Chicago
6	Los Angeles
7	Madrid
8	Boston
9	Berlin
10	San Francisco

# Honors Board. Magnetism

## Magnetism DYNAMISM

## Magnetism STRATEGY

### COMPETITIVENESS



1	Zurich
2	San Francisco
3	Boston
4	Bern
5	Basel
6	Singapore
7	Geneva
8	Dublin
9	Seattle
10	Copenhagen

### EXPAT EXPERIENCE



1	Santander
2	Valencia
3	Madrid
4	Helsinki
5	Málaga
6	Zaragoza
7	Tampere
8	Bern
9	Vienna
10	Oulu

### ETHICS WELL-BEING



1	Copenhagen
2	Aarhus
3	Helsinki
4	Espoo
5	Tampere
6	Oulu
7	Oslo
8	Stavanger
9	Bergen
10	Seattle

### EQUALITY



1	Tampere
2	Oulu
3	Espoo
4	Helsinki
5	Stavanger
6	Bergen
7	Oslo
8	Malmo
9	Gothenburg
10	Dublin

### HUMAN CAPITAL



1	London
2	Boston
3	New York City
4	Washington, D.C.
5	Paris
6	Los Angeles
7	Berlin
8	Seoul
9	Canberra
10	Tokyo

### SMARTCITY



1	Helsinki
2	Amsterdam
3	Copenhagen
4	Manchester
5	Glasgow
6	Dublin
7	Belfast
8	Eindhoven
9	Valencia
10	Doha

### INNOVATION



1	San Francisco
2	Boston
3	New York City
4	Washington, D.C.
5	Los Angeles
6	Chicago
7	Miami
8	Phoenix
9	Philadelphia
10	Dallas



# Honors Board. Profitability. Performance

## DIGITAL GOV.



1	Sydney
2	Melbourne
3	Adelaide
4	Canberra
5	Tallin
6	Helsinki
7	Tampere
8	Espoo
9	Oulu
10	Amsterdam

## EDUCATION. LIFELONG TRAINING



1	San Francisco
2	Boston
3	New York City
4	Washington, D.C.
5	Chicago
6	Seattle
7	Los Angeles
8	Baltimore
9	Philadelphia
10	Dallas

## EMPLOYABILITY



1	Luxembourg
2	Dusseldorf
3	Hamburg
4	Berlin
5	Basel
6	Cologne
7	Singapore
8	Munich
9	Seattle
10	New York City

## CONNECTED CITY



1	Singapore
2	Washington
3	Seattle
4	San Francisco
5	Baltimore
6	Melbourne
7	Phoenix
8	Houston
9	Hong Kong
10	Los Angeles

## HLC / SOCIAL SVS



1	Brussels
2	Antwerp
3	Vienna
4	Linz
5	Paris
6	Lyon
7	Marseille
8	Nice
9	Bordeaux
10	Lille

## ENV.SUSTAINABILITY



1	Copenhagen
2	Helsinki
3	Tampere
4	Espoo
5	Stockholm
6	Gothenburg
7	Malmo
8	London
9	Oulu
10	Oslo

## CULTURE/TOURISM



1	London
2	Hong Kong
3	Paris
4	Los Angeles
5	Tokyo
6	Barcelona
7	Amsterdam
8	Rome
9	Osaka
10	Madrid

## URBAN MOBILITY



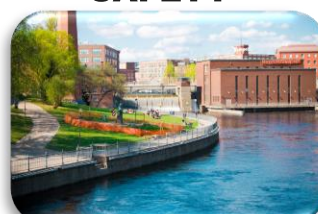
1	Santander
2	Oulu
3	Kuwait City
4	Kansas City
5	Bilbao
6	Doha
7	Tampere
8	Phoenix
9	Abu Dhabi
10	Canberra

## URBAN PLANNING



1	London
2	New York City
3	Toronto
4	Rotterdam
5	Berlin
6	Hamburg
7	Dubai
8	Munich
9	Washington, D.C.
10	Monreal

## SAFETY



1	Tampere
2	Munich
3	Bern
4	Aarhus
5	Den Haag
6	Zurich
7	Singapore
8	Taipei
9	Hong Kong
10	Copenhagen

# Honors Board. Profitability. Net Purchase Power

## MONTHLY WAGE (AVG)



1	Zurich
2	Geneva
3	Bern
4	Basel
5	Oslo
6	Bergen
7	Stavanger
8	Dubai
9	Abu Dhabi
10	Copenhagen

## INCOME AFTER DIR TAXES



1	Dubai
2	Abu Dhabi
3	Zurich
4	Geneva
5	Bern
6	Basel
7	Oslo
8	Bergen
9	Stavanger
10	Kuwait City

## NET REAL INCOME



1	Dubai
2	Abu Dhabi
3	Zurich
4	Geneva
5	Bern
6	Basel
7	Kuwait City
8	Oslo
9	Bergen
10	Stavanger

## COST OF LIFE



1	Cairo
2	Hyderabad
3	New Delhi
4	Bangalore
5	Córdoba
6	Tunis
7	Buenos Aires
8	Asuncion
9	Bogota
10	Medellín

# Honors Board. ATTRACTIVENESS



Figure 6. Honors Board. Source: Author

### 6.3 City Attractiveness vs Population vs GDP.

We study the possible correlation of City Attractiveness with city population (Metropolitan Area). In figure 7, we can see the 175 studied cities, distributed horizontally according to their size, and vertically according to their score in the model. There are megacities in high and low positions, as well as medium-sized cities. In Magnetism, we rated high-density as positive, as an enabler of personal communication and development of activity. It's also well studied that despite the possible dispersion in small towns brought by the new communication and Internet technologies, citizens continue to prefer living in medium and large cities over living in isolated small towns. We should not confuse small cities close in commuting time to other large cities: they must be associated to that main city. For humans, they are psychologically the same city, same metropolis. From the observation and the correlation coefficient  $R^2 = 0.082$  we conclude that there is NO correlation between City Attractiveness and city size. Furthermore, we see that largest cities are strongly attractive due to Magnetism, although they are usually more expensive, and therefore with less Profitability, but that the second/third ranked cities in each country are more affordable, maintaining very good performance standards and high Profitability, although they are less Magnetic, so both things are offset in both city sizes. As explained, midsized cities are winning the competition due to their better quality of life. Perhaps we could say that we find megacities with more problems and handicaps to be leaders in Attractiveness, but they provide a bonus when it comes to Magnetism which is important to value.

In figure 8, we can compare City Attractiveness with GDP/Capita. Here  $R^2 = 0.7077$ , indicating a strong correlation (and growing vs last years) between these two magnitudes. No surprises: larger budgets with which to invest improves city branding, the external image, events, cultural activities, competitiveness and obviously the city services and Net purchasing power, because of higher wages. The opposite is also true: as we studied, low budgets lead to poorer city development, urbanism, quality of live and services and lower wages, so all main items are severely impacted. Again, we cannot conclude that City Attractiveness is a just a matter of rich cities. That's not true, as we can see in vertical (same GDP) all the 18 studied U.S. cities ranging from Las Vegas (33) to Honolulu (89) positions, but obviously city wealth and capacity to invest strongly contributes to City Attractiveness.

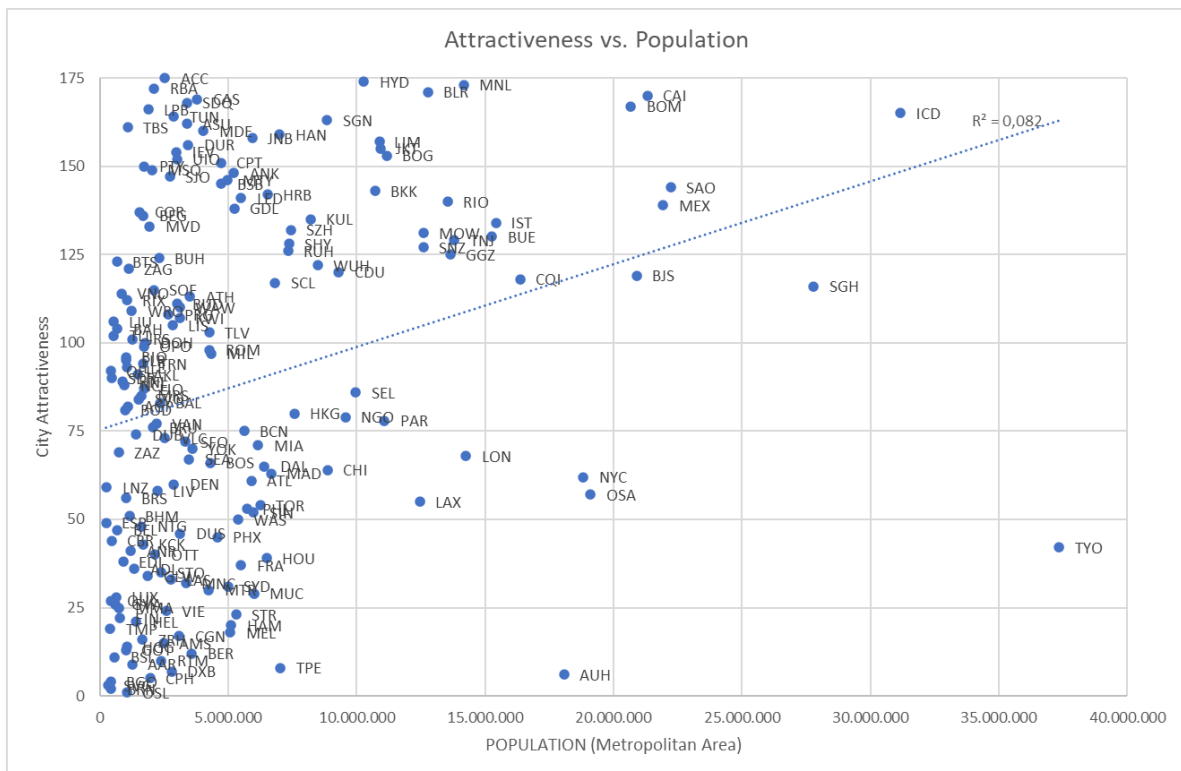
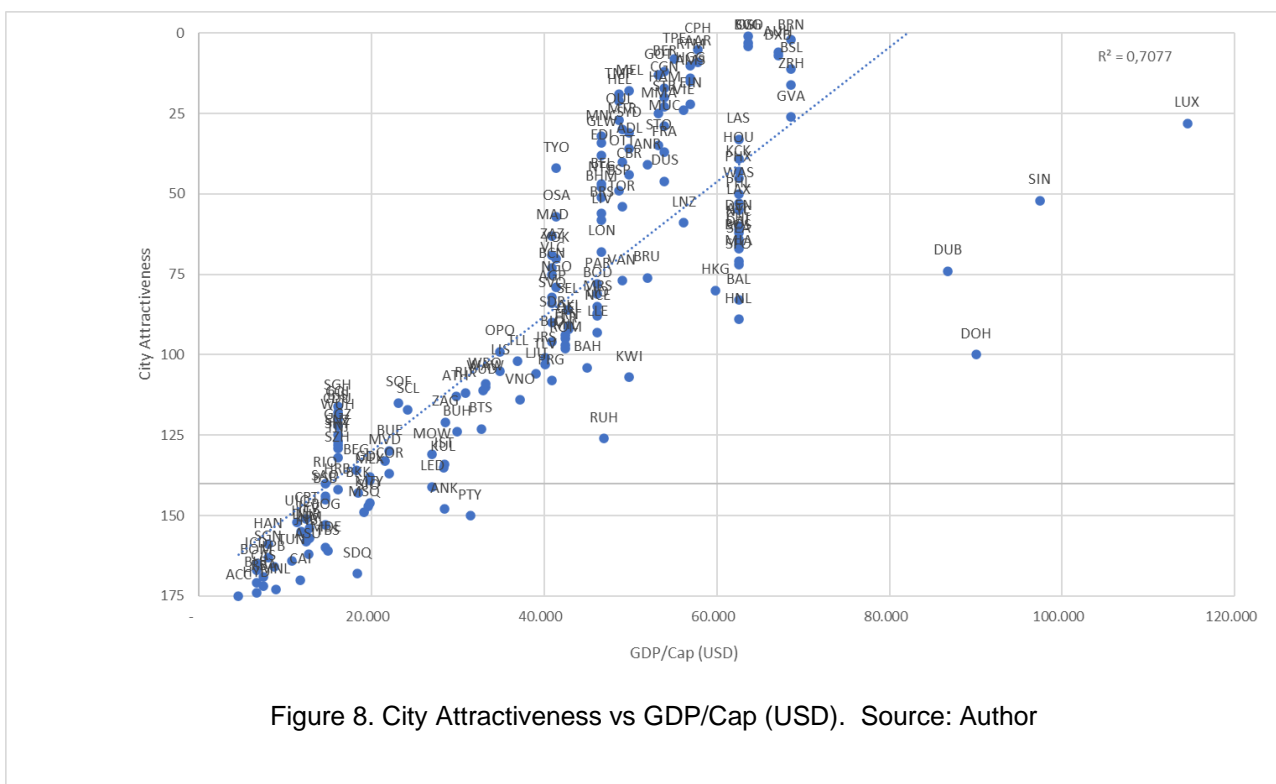
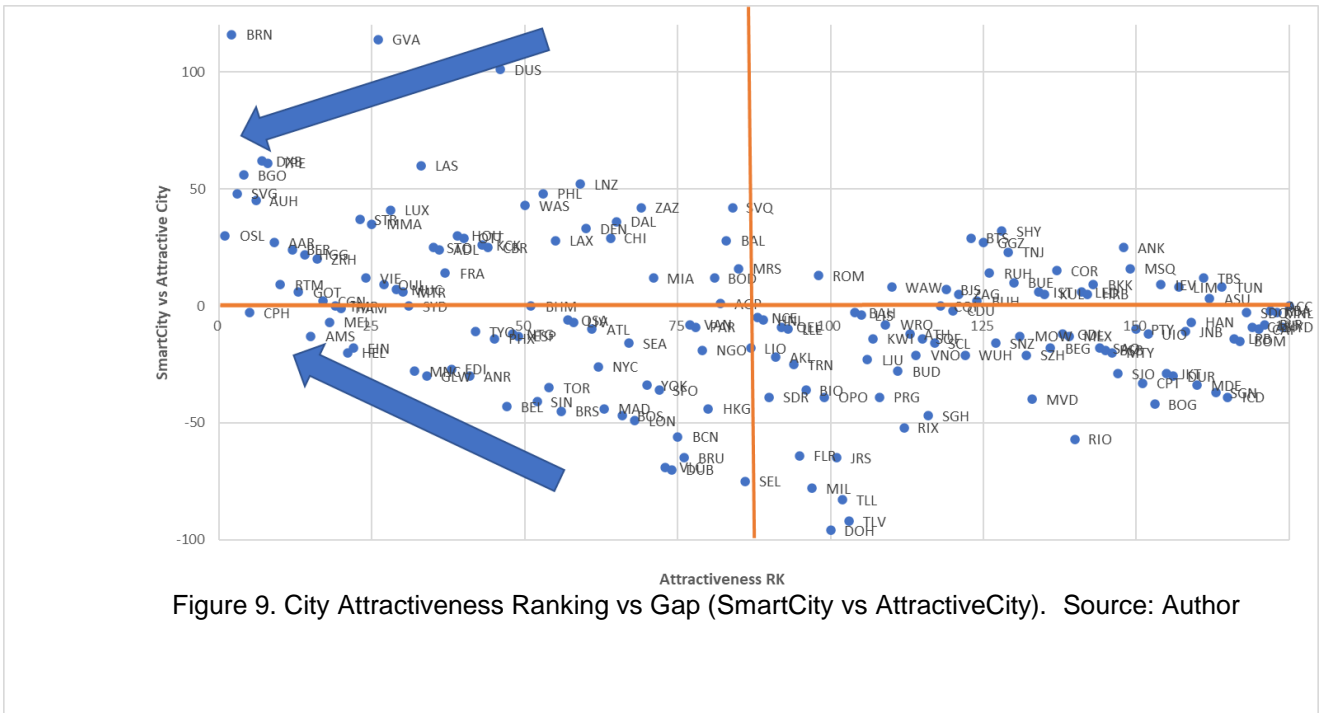


Figure 7. City Attractiveness vs Population (Metropolitan Area). Source: Author



## 6.4 Attractive Cities vs SmartCities.

We are going to study the impact of investments in SmartCities on making the city more Attractive. We found that for many cities, investments in their SmartCity plan are the main axis of their strategy to improve their Attractiveness. These investments directly improve performance in city services, and therefore their City Profitability. In addition, they improve their investment in the future, their strategy, also their image of modernity and their reputation, and therefore, their Magnetism. For many cities, it is an important question of prestige (Asian Tigers and Chinese cities). However, we see many cities that pay little attention to a consolidated SmartCities plan, (even if they offer very good services) because they do not consider that they should improve their external image because they think they simply do not need it, since they are already very attractive from economy point of view... We place the Swiss, and some German, US cities here. Let's study figure 9.



The horizontal line at zero: Over that line, cities more Attractive than Smart; under that line, those Smarter than Attractive.

On the vertical axis, the orange line marks rank 100, or the midpoint in Attractiveness, so to the left are the cities classified as Advanced; to the right the Challenging, then Emerging, then Starters.

To the left, above the top arrow we find the Swiss cities, much more attractive than smart, with short smart city plans, but they don't need them either! However, they are reacting and realizing that they need to invest in technology to maintain that leadership. Just below that arrow and to the right we find many US and German cities, with very good attractiveness, but that should improve their SmartCity plan. We then reach the orange line that marks many South Europe cities, on the border with the challenging cities. On this same left side, at the bottom, we find the leading cities in SmartCity, those investing heavily to improve positions in Attractiveness (Copenhagen, Amsterdam, Helsinki, Barcelona, Singapore...) Here is where the main battle for Attractiveness is fought nowadays, with large investments in Sustainability, citizen services, etc.

From the vertical orange line to the right, we see that most cities are at under the horizontal line: they are the Challengers, investing heavily in SmartCity plans to get promoted to the advanced group (Tel-Aviv, Doha, and many from Eastern Europe like Tallinn...) If we advance to the right, then we enter the Emerging group first and the Starters at the right end. We see that they all obtain better positions in SmartCity than in Attractiveness (most under the horizontal line), which indicates that they all use investments in SmartCity to improve their services for citizens, their image of modernity and their Attractiveness in general.





Therefore, as a general guideline, the SmartCities' Plan fulfills its mission of improving citizen services (Profitability), while helping in strategy, reputation, branding (Magnetism) and becoming the most powerful tool to improve in Attractiveness. Little can be done about fixed issues like geolocation. Some cities with poor geo conditions and large investment capacity (Doha, Singapore, Dubai,..) are exploring the creating of a virtual city in the metaverse (a MetaCity), to capture virtual talent? We will cover this later. Investments in changing or improving Identity are slow and always in the medium-long term. It is difficult to quickly improve economic conditions and net purchasing power. Therefore, the obvious lever, with more short-term results (even in a four-year legislature) is to invest heavily in a solid SmartCities plan. The cities that fail in this, have either fallen asleep in the leadership glory, (and are now waking up, like the Swiss, some US, German) or are losing positions and do not take advantage of excellent Magnetism to improve positions (Southern Europe). On the other hand, cities with handicaps in Magnetism, either due to a lack of history (U.S.), weather conditions (Nordics) or long distances (AUS) compensate with good SmartCity & Services plans that improve their attractiveness to leadership positions.

Finally, at figure 10 Attractive Cities vs SmartCities by GDP, we can see that investing in SmartCities is quite independent from GDP, so all cities can invest resources on creating and executing a compelling SmartCity Plan. This will improve Attractiveness, and if investment is done rationally, progress can be very significant with a moderate cost (we have seen great progress in Latam Cities with very reasonable budgets, but wise investments). On the other hand, Attractiveness is more directly dependent on GDP, so everything that could contribute to improving it counts and is welcome (including the improvement in talent and investors' investment because of an increase in awareness due to a brilliant SmartCity plan). So, we are circling around same concept. As a conclusion, all areas are intertwined, and a balanced plan will touch the most-effective levers.

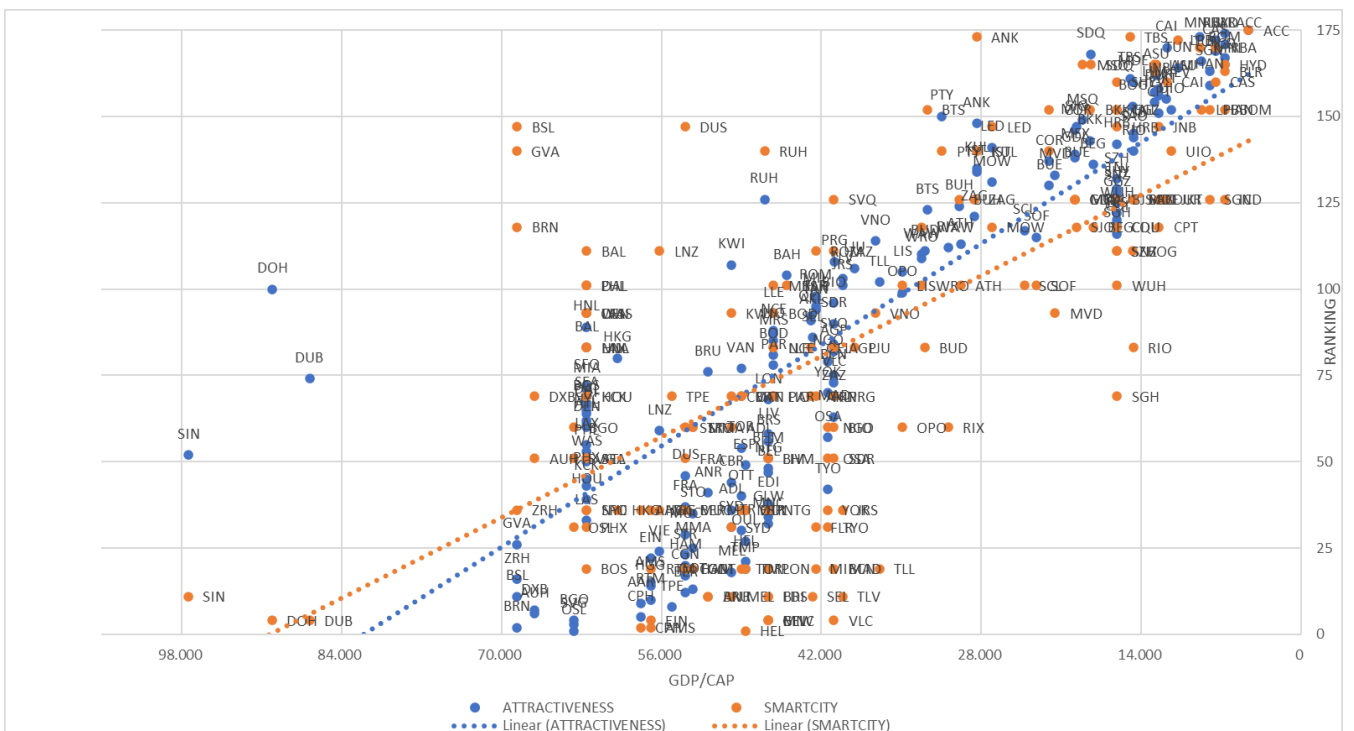


Figure 10. Attractive Cities vs SmartCities by GDP. Source: Author

## 6.5 Attractive Cities. Comparing 2023 vs 2022-21-20 Results.

Impact of Economy (COVID & Inflation – Ukraine War) vs Technology adoption acceleration

Last year we saw the positive impact on Attractiveness of the rapid recovery of pre-pandemic GDP in the USA and other countries (OECD, 2021). It is clear that the city that recovers the fastest is enjoying a significant advantage in competitiveness to retain and attract talent (Attractiveness). However, the effect of inflation (Ukrainian War) has been very important in the USA, CAN, AUS, NZ. See Figure 11. That is, it is not that they had a quick recovery from the pandemic, but rather that the pandemic had little impact on them (they were very resilient). However, the recession is seriously impacting their attractiveness.

City	Country	AREA	RK23	RK22	DIFF 23-	TREND
Taipei	Taiwan	China Extended	8	52	↑44	44
Eindhoven	Netherlands	Western Europe	22	65	↑43	43
Tokyo	Japan	Asia-Pacific	42	83	↑41	41
Hamburg	Germany	Western Europe	20	60	↑40	40
Munich	Germany	Western Europe	29	66	↑37	37
Rotterdam	Netherlands	Western Europe	10	46	↑36	36
Cologne	Germany	Western Europe	17	53	↑36	36
Stuttgart	Germany	Western Europe	23	59	↑36	36
Luxembourg	Luxembourg	Western Europe	28	62	↑34	34
Osaka	Japan	Asia-Pacific	57	87	↑30	30
Basel	Switzerland	Western Europe	11	41	↑30	30
Vienna	Austria	Western Europe	24	54	↑30	30
Dusseldorf	Germany	Western Europe	46	75	↑29	29
Nagoya	Japan	Asia-Pacific	79	107	↑28	28
Helsinki	Finland	Western Europe	21	49	↑28	28
Den Haag	Netherlands	Western Europe	14	39	↑25	25
Tampere	Finland	Western Europe	19	43	↑24	24
Linz	Austria	Western Europe	59	81	↑22	22
Berlin	Germany	Western Europe	12	32	↑20	20
Montreal	Canada	North America	30	48	↑18	18
Oulu	Finland	Western Europe	27	45	↑18	18
Frankfurt	Germany	Western Europe	37	55	↑18	18
Yokohama	Japan	Asia-Pacific	70	88	↑18	18
Antwerp	Belgium	Western Europe	41	58	↑17	17
Birmingham	United Kingdom	Western Europe	51	67	↑16	16
Belfast	United Kingdom	Western Europe	47	63	↑16	16
Nottingham	United Kingdom	Western Europe	48	64	↑16	16
Amsterdam	Netherlands	Western Europe	15	30	↑15	15
Malmö	Sweden	Western Europe	25	40	↑15	15
Riyadh	Saudi Arabia	Middle East	126	141	↑15	15
Wellington	New Zealand	Asia-Pacific	92	68	↓24	-24
Auckland	New Zealand	Asia-Pacific	91	80	↓11	-40
London	United Kingdom	Western Europe	68	21	↓47	-40
Seoul	South Korea	Asia-Pacific	86	85	↓1	-37
Denver	United States	North America	60	36	↓24	-35
Adelaide	Australia	Asia-Pacific	36	25	↓11	-34
Toronto	Canada	North America	54	29	↓25	-34
Canberra	Australia	Asia-Pacific	44	23	↓21	-32
Stockholm	Sweden	Western Europe	35	47	↑12	-30
Phoenix	United States	North America	45	12	↓33	-30
Kansas City	United States	North America	43	6	↓37	-30
Chicago	United States	North America	64	26	↓38	-28
Valencia	Spain	Western Europe	73	69	↓4	-27
Vancouver	Canada	North America	77	57	↓20	-27
Dallas	United States	North America	65	15	↓50	-27
Montreal	Canada	North America	30	48	↑18	-23
Seville	Spain	Western Europe	84	78	↓6	-23
Honolulu	United States	North America	89	79	↓10	-23
Sydney	Australia	Asia-Pacific	31	2	↓29	-23
Barcelona	Spain	Western Europe	75	76	↑1	-22
Atlanta	United States	North America	61	20	↓41	-22
New York City	United States	North America	62	33	↓29	-20
Lyon	France	Western Europe	87	89	↑2	-19
Córdoba	Argentina	LatinAmerica	137	138	↑1	-19
Baltimore	United States	North America	83	37	↓46	-19
Paris	France	Western Europe	78	77	↓1	-18
Melbourne	Australia	Asia-Pacific	18	9	↓9	-17
Ottawa	Canada	North America	40	44	↑4	-16
Buenos Aires	Argentina	LatinAmerica	130	135	↑5	-15
Santiago	Chile	LatinAmerica	117	116	↓1	-15

Figure 11. TOP30 Cities detailed comparison 2023 vs 2022/21/20 results (Growing vs Declining)

In all 18 American cities studied, rankings have dropped significantly. Although the economic impact of the pandemic was minimal and the new environmental position with President Biden stimulates investment in American cities, in 2022 we observe strong restructuring in American technology companies and a strong impact of the recession and inflation. The IRA Plan is a great support, but it arrived late (Aug 22) and its impact on employment and economic recovery is yet to be demonstrated (when this report is written, Oct 2023). US Cities Magnetism is also impacted by decrease on Competitiveness. CAN, AUS, NZ and Asian tigers (SG, KOR, HK) have the same analysis. The exception is (Taipei, Taiwan), which rises by showing resilience also to the current economic crisis, with its technological potential operating at full capacity.

In the list of winners, we see a strong rise from Japan. After the pandemic, its economy grew 2.2% percent in the second quarter of 2022, the fastest in 12 years, making the years of stagnation forgotten. Japan also announced a stimulus package of 29.1 trillion yen (207b USD) in November 2022. But the key we think is more in technological development: Japan advanced its vision of Society 5.0, a society focused on the human being who balances economic advancement with the resolution of social problems through a system that highly integrates cyberspace and physical space. Japan is investing 120b yen in R&D over five years starting in fiscal 2021, focusing on key technologies such as artificial intelligence, quantum technology, IoT and biotechnology. (Bloomberg, 2023). It should be noted that the traditional social challenges it faces, such as the aging of the population, and gender inequality, are being firmly addressed.

The main cities that have gained notable positions are European, with Germany, the Netherlands, Belgium, Austria and Finland leading the way. If we look at the engine of Europe, Germany, we have a growth of 2.7% in 2021, despite COVID and the energy crisis. Additionally, Germany kicked off its 130b€ (\$146b) fiscal stimulus package that was launched in June 2020 to support households and businesses. From technology, Germany launched its new digital strategy for the next three years in August 2021, with the aim of promoting its digital sovereignty, innovation and competitiveness. The strategy includes 18 initiatives to invest in key technologies such as artificial intelligence, quantum technology, IoT and biotechnology; accelerate the deployment of fast Internet connections and mobile networks; digitize health and public administration records; analyze mobility data; and use modern technology to fight climate change. (Delcker, 2022). Germany also ranked first among developed markets in R&D capabilities and early technology adoption, according to Bloomberg's Global FDI 2022 study.

UAE and ME also grew due to their resiliency to energy crisis. CE is stalled with Kiev & Russian Cities falling on Magnetism for obvious reasons. China is slightly growing due to economy. Southern Europe is gaining traction after all EU motion, but only Spain, France make some real improvement more because others fault than because of own merits. COVID recovery funding are landing but impact still unseen, not compensating recession. ITA, POR descend closer to the limit of position 100 that marks the beginning of the *Challengers* cities. Its extraordinary Magnetism sinks into a lack of technological investment. Southern Europe continues to be a fiscal hell that hinders its attractiveness for talent.

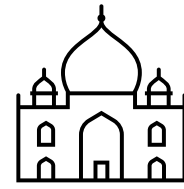
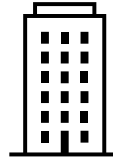
Latam, Africa, India maintain the worst positions and increase the gap with the Challengers (CEE, Middle East).





City	Country	AREA	RK23	RK22	DIFF 23-22	TREND	MAG-RK23	MAG-RK22	DIFF 23-22	TREND	PROF-RK23	PROF-RK22	DIFF 23-22	TREND
Oslo	Norway	Western Europe	1	4	↑	3	4	16	↑	12	4	21	↑	17
Bern	Switzerland	Western Europe	2	16	↑	14	21	25	↑	4	5	25	↑	20
Stavanger	Norway	Western Europe	3	3	→	0	20	40	↑	20	6	9	↑	3
Bergen	Norway	Western Europe	4	1	↓	-3	28	38	↑	10	7	7	→	0
Copenhagen	Denmark	Western Europe	5	11	↑	6	2	2	→	0	29	46	↑	17
Abu Dhabi	United Arab Emir	Middle East	6	13	↑	7	111	111	→	0	1	1	→	0
Dubai	United Arab Emir	Middle East	7	18	↑	11	109	105	↓	-4	2	2	→	0
Taipei	Taiwan	China Extended	8	52	↑	44	96	104	↑	8	3	8	↑	5
Aarhus	Denmark	Western Europe	9	5	↓	-4	7	14	↑	7	26	24	↓	-2
Rotterdam	Netherlands	Western Europe	10	46	↑	36	17	21	↑	4	13	59	↑	46
Basel	Switzerland	Western Europe	11	41	↑	30	40	31	↓	-9	8	49	↑	41
Berlin	Germany	Western Europe	12	32	↑	20	9	20	↑	11	28	44	↑	16
Gothenburg	Sweden	Western Europe	13	8	↓	-5	14	9	↓	-5	24	28	↑	4
Den Haag	Netherlands	Western Europe	14	39	↑	25	35	42	↑	7	9	36	↑	27
Amsterdam	Netherlands	Western Europe	15	30	↑	15	1	1	→	0	51	68	↑	17
Zurich	Switzerland	Western Europe	16	27	↑	11	10	17	↑	7	34	37	↑	3
Cologne	Germany	Western Europe	17	53	↑	36	16	35	↑	19	22	58	↑	36
Melbourne	Australia	Asia-Pacific	18	9	↓	-9	26	27	↑	1	15	16	↑	1
Tampere	Finland	Western Europe	19	43	↑	24	30	39	↑	9	14	42	↑	28
Hamburg	Germany	Western Europe	20	60	↑	40	23	59	↑	36	17	57	↑	40
Helsinki	Finland	Western Europe	21	49	↑	28	6	12	↑	6	54	66	↑	12
Eindhoven	Netherlands	Western Europe	22	65	↑	43	29	37	↑	8	31	72	↑	41
Stuttgart	Germany	Western Europe	23	59	↑	36	36	58	↑	22	27	56	↑	29
Vienna	Austria	Western Europe	24	54	↑	30	12	22	↑	10	49	65	↑	16
Malmö	Sweden	Western Europe	25	40	↑	15	42	44	↑	2	25	35	↑	10
Geneva	Switzerland	Western Europe	26	24	↓	-2	34	18	↓	-16	32	34	↑	2
Oulu	Finland	Western Europe	27	45	↑	18	37	36	↓	-1	30	48	↑	18
Luxembourg	Luxembourg	Western Europe	28	62	↑	34	51	75	↑	24	20	52	↑	32
Munich	Germany	Western Europe	29	66	↑	37	18	56	↑	38	40	67	↑	27
Montreal	Canada	North America	30	48	↑	18	64	69	↑	5	12	32	↑	20
Sydney	Australia	Asia-Pacific	31	2	↓	-29	33	5	↓	-28	43	22	↓	-21
Manchester	United Kingdom	Western Europe	32	34	↑	2	38	26	↓	-12	46	45	↓	-1
Las Vegas	United States	North America	33	14	↓	-19	90	65	↓	-25	10	10	→	0
Glasgow	United Kingdom	Western Europe	34	42	↑	8	48	53	↑	5	41	33	↓	-8
Stockholm	Sweden	Western Europe	35	47	↑	12	11	4	↓	-7	72	74	↑	2
Adelaide	Australia	Asia-Pacific	36	25	↓	-11	76	60	↓	-16	23	13	↓	-10
Frankfurt	Germany	Western Europe	37	55	↑	18	43	61	↑	18	48	51	↑	3
Edinburgh	United Kingdom	Western Europe	38	50	↑	12	19	15	↓	-4	61	69	↑	8
Houston	United States	North America	39	10	↓	-29	81	83	↑	2	19	5	↓	-14
Ottawa	Canada	North America	40	44	↑	4	67	49	↓	-18	35	38	↑	3
Antwerp	Belgium	Western Europe	41	58	↑	17	46	30	↓	-16	55	64	↑	9
Tokyo	Japan	Asia-Pacific	42	83	↑	41	32	77	↑	45	62	83	↑	21
Kansas City	United States	North America	43	6	↓	-37	92	81	↓	-11	18	3	↓	-15
Canberra	Australia	Asia-Pacific	44	23	↓	-21	58	55	↓	-3	42	14	↓	-28
Phoenix	United States	North America	45	12	↓	-33	93	84	↓	-9	16	6	↓	-10
Düsseldorf	Germany	Western Europe	46	75	↑	29	91	97	↑	6	21	54	↑	33
Belfast	United Kingdom	Western Europe	47	63	↑	16	68	80	↑	12	39	50	↑	11
Nottingham	United Kingdom	Western Europe	48	64	↑	16	75	89	↑	14	37	41	↑	4
Espoo	Finland	Western Europe	49	61	↑	12	31	47	↑	16	73	62	↓	-11
Washington, D.C.	United States	North America	50	7	↓	-43	27	24	↓	-3	74	17	↓	-57
Birmingham	United Kingdom	Western Europe	51	67	↑	16	61	54	↓	-7	52	73	↑	21
Singapore	Singapore	Asia-Pacific	52	19	↓	-33	60	43	↓	-17	53	15	↓	-38
Philadelphia	United States	North America	53	38	↓	-15	74	71	↓	-3	45	26	↓	-19
Toronto	Canada	North America	54	29	↓	-25	41	19	↓	-22	69	39	↓	-30
Los Angeles	United States	North America	55	17	↓	-38	50	29	↓	-21	63	23	↓	-40
Bristol	United Kingdom	Western Europe	56	51	↓	-5	54	64	↑	10	58	47	↓	-11
Osaka	Japan	Asia-Pacific	57	87	↑	30	84	98	↑	14	36	75	↑	39
Liverpool	United Kingdom	Western Europe	58	70	↑	12	77	78	↑	1	50	70	↑	20

Figure 12. Attractiveness (Magnetism – Profitability) Comparison 23 vs 22 and Trending 23/22/21/20. Source: Author



City	Country	AREA	RK23	RK22	DIFF 23-22	TREND	MAG-RK23	MAG-RK22	DIFF 23-22	TREND	PROF-RK23	PROF-RK22	DIFF 23-22	TREND
Linz	Austria	Western Europe	59	81	↑ 22	↑ 15	63	93	↑ 30	↑ 6	56	78	↑ 22	↑ 5
Denver	United States	North America	60	36	↓ -24	↓ -35	86	82	↓ -4	↓ -15	38	18	↓ -20	↓ -26
Atlanta	United States	North America	61	20	↓ -41	↓ -22	62	57	↓ -5	↑ 8	57	12	↓ -45	↓ -29
New York City	United States	North America	62	33	↓ -29	↓ -20	8	6	↓ -2	↓ -1	85	60	↓ -25	↓ -7
Madrid	Spain	Western Europe	63	73	↑ 10	↑ 10	15	13	↓ -2	↑ 8	83	87	↑ 4	↓ -2
Chicago	United States	North America	64	26	↓ -38	↓ -28	49	28	↓ -21	↓ -25	75	29	↓ -46	↓ -29
Dallas	United States	North America	65	15	↓ -50	↓ -27	88	88	⇒ 0	↓ -2	47	4	↓ -43	↓ -28
Boston	United States	North America	66	28	↓ -38	↓ -4	25	33	↑ 8	↑ 25	77	30	↓ -47	↓ -14
Seattle	United States	North America	67	35	↓ -32	↑ 9	65	63	↓ -2	↑ 8	65	27	↓ -38	⇒ 0
London	United Kingdom	Western Europe	68	21	↓ -47	↓ -40	3	3	⇒ 0	↓ -2	94	53	↓ -41	↓ -22
Zaragoza	Spain	Western Europe	69	71	↑ 2	↑ 10	80	50	↓ -30	↓ -31	59	80	↑ 21	↑ 25
Yokohama	Japan	Asia-Pacific	70	88	↑ 18	↑ 8	71	99	↑ 28	↑ 23	67	76	↑ 9	↓ -11
Miami	United States	North America	71	31	↓ -40	↓ -15	73	62	↓ -11	↑ 3	71	20	↓ -51	↓ -33
San Francisco	United States	North America	72	22	↓ -50	↑ 3	24	10	↓ -14	↓ -5	86	40	↓ -46	⇒ 0
Valencia	Spain	Western Europe	73	69	↓ -4	↓ -27	39	23	↓ -16	↓ -5	79	82	↑ 3	↓ -20
Dublin	Ireland	Western Europe	74	56	↓ -18	↓ -9	22	8	↓ -14	↑ 17	89	77	↓ -12	↓ -12
Barcelona	Spain	Western Europe	75	76	↑ 1	↓ -22	13	11	↓ -2	↓ -4	92	89	↓ -3	↓ -10
Brussels	Belgium	Western Europe	76	74	↓ -2	↑ 11	47	32	↓ -15	↑ 40	78	84	↑ 6	↑ 2
Vancouver	Canada	North America	77	57	↓ -20	↓ -27	82	79	↓ -3	↓ -29	64	43	↓ -21	↓ -14
Paris	France	Western Europe	78	77	↓ -1	↓ -18	5	7	↑ 2	↓ -3	97	91	↓ -6	↓ -8
Nagoya	Japan	Asia-Pacific	79	107	↑ 28	↑ 10	101	108	↑ 7	↓ -1	44	96	↑ 52	↑ 20
Hong Kong	Hong Kong	China Extended	80	72	↓ -8	↑ 15	107	101	↓ -6	↓ -26	33	31	↓ -2	↑ 68
Bordeaux	France	Western Europe	81	91	↑ 10	↑ 4	53	51	↓ -2	↑ 4	84	95	↑ 11	↑ 7
Málaga	Spain	Western Europe	82	82	⇒ 0	↓ -10	57	48	↓ -9	↓ -9	82	86	↑ 4	↓ -4
Baltimore	United States	North America	83	37	↓ -46	↓ -19	97	90	↓ -7	⇒ 0	66	11	↓ -55	↓ -44
Seville	Spain	Western Europe	84	78	↓ -6	↓ -23	87	66	↓ -21	↓ -54	76	81	↑ 5	↓ -7
Marseille	France	Western Europe	85	86	↑ 1	↓ -4	66	72	↑ 6	↓ -7	87	85	↓ -2	↓ -4
Seoul	South Korea	Asia-Pacific	86	85	↓ -1	↓ -37	44	34	↓ -10	↓ -28	96	90	↓ -6	↓ -25
Lyon	France	Western Europe	87	89	↑ 2	↓ -19	55	67	↑ 12	↓ -9	91	92	↑ 1	↓ -15
Nice	France	Western Europe	88	90	↑ 2	↓ -4	56	68	↑ 12	↓ -9	93	93	⇒ 0	↓ -3
Honolulu	United States	North America	89	79	↓ -10	↓ -23	104	96	↓ -8	↓ -5	68	61	↓ -7	↓ -45
Santander	Spain	Western Europe	90	92	↑ 2	↓ -7	72	52	↓ -20	↓ -18	90	97	↑ 7	↓ -3
Auckland	New Zealand	Asia-Pacific	91	80	↓ -11	↓ -40	89	85	↓ -4	↓ -27	81	79	↓ -2	↓ -40
Wellington	New Zealand	Asia-Pacific	92	68	↓ -24	↓ -62	83	74	↓ -9	↓ -28	88	71	↓ -17	↓ -61
Lille	France	Western Europe	93	95	↑ 2	↓ -5	95	95	⇒ 0	↓ -21	80	94	↑ 14	↑ 5
Torino	Italy	Western Europe	94	98	↑ 4	↑ 5	78	91	↑ 13	↑ 17	95	98	↑ 3	↑ 9
Florence	Italy	Western Europe	95	94	↓ -1	↑ 1	52	46	↓ -6	↑ 20	99	105	↑ 6	↑ 4
Bilbao	Spain	Western Europe	96	84	↓ -12	↓ -6	70	41	↓ -29	↓ -9	98	88	↓ -10	↓ -7
Milan	Italy	Western Europe	97	93	↓ -4	↓ -6	45	45	⇒ 0	↓ -2	104	99	↓ -5	↓ -7
Rome	Italy	Western Europe	98	105	↑ 7	↓ -4	69	73	↑ 4	↓ -9	101	109	↑ 8	↑ 4
Porto	Portugal	Western Europe	99	96	↓ -3	↓ -1	79	76	↓ -3	↓ -4	106	102	↓ -4	↑ 2
Doha	Qatar	Middle East	100	99	↓ -1	↑ 12	120	123	↑ 3	↑ 17	70	55	↓ -15	↑ 24
Jerusalem	Israel	Middle East	101	102	↑ 1	↓ -8	98	87	↓ -11	↓ -5	102	106	↑ 4	↓ -7
Tallinn	Estonia	CE Europe	102	101	↓ -1	↓ -2	94	92	↓ -2	↑ 10	107	101	↓ -6	↓ -11
Tel Aviv	Israel	Middle East	103	104	↑ 1	↓ -11	100	94	↓ -6	↓ -4	103	103	⇒ 0	↓ -10
Manama	Bahrain	Middle East	104	100	↓ -4	↑ 21	132	121	↓ -11	↑ 30	60	63	↑ 3	↑ 51
Lisbon	Portugal	Western Europe	105	103	↓ -2	↓ -4	85	70	↓ -15	↓ -1	108	108	⇒ 0	↑ 4
Ljubljana	Slovenia	CE Europe	106	106	⇒ 0	↓ -3	102	102	⇒ 0	⇒ 0	105	100	↓ -5	↑ 1
Kuwait City	Kuwait	Middle East	107	97	↓ -10	↑ 6	145	137	↓ -8	↑ 25	11	19	↑ 8	↑ 36
Prague	Czech Republic	CE Europe	108	108	⇒ 0	↓ -11	59	86	↑ 27	↑ 31	119	113	↓ -6	↓ -21
Wroclaw	Poland	CE Europe	109	110	↑ 1	↓ -3	103	109	↑ 6	↑ 2	110	110	⇒ 0	↓ -3
Warsaw	Poland	CE Europe	110	109	↓ -1	↓ -3	105	113	↑ 8	↑ 4	109	107	↓ -2	↑ 1
Budapest	Hungary	CE Europe	111	112	↑ 1	⇒ 0	99	112	↑ 13	↑ 4	112	114	↑ 2	↑ 7
Riga	Latvia	CE Europe	112	111	↓ -1	↑ 4	110	106	↓ -4	↑ 13	111	112	↑ 1	↑ 4
Athens	Greece	CE Europe	113	113	⇒ 0	↓ -3	112	107	↓ -5	↓ -4	113	116	↑ 3	↑ 1
Vilnius	Lithuania	CE Europe	114	115	↑ 1	↓ -5	106	103	↓ -3	↑ 5	125	123	↓ -2	↓ -12
Sofia	Bulgaria	CE Europe	115	117	↑ 2	↑ 7	114	110	↓ -4	⇒ 0	122	130	↑ 8	↑ 13
Shanghai	China	China Extended	116	114	↓ -2	↑ 3	108	100	↓ -8	↓ -2	132	120	↓ -12	↑ 10

Figure 12. Attractiveness (Magnetism – Profitability) Comparison 23 vs 22 and Trending 23/22/21/20. Source: Author



City	Country	AREA	RK23	RK22	DIFF 23-22	TREND	MAG-RK23	MAG-RK22	DIFF 23-22	TREND	PROF-RK23	PROF-RK22	DIFF 23-22	TREND
Santiago	Chile	LatinAmerica	117	116	↓	-1	118	119	↑	1	118	111	↓	-7
Chongqing	China	China Extended	118	122	↑	4	121	120	↓	-1	117	125	↑	8
Beijing	China	China Extended	119	119	→	0	113	114	↑	1	131	133	↑	2
Chengdu	China	China Extended	120	128	↑	8	126	134	↑	8	115	122	↑	7
Zagreb	Croatia	CE Europe	121	123	↑	2	117	118	↑	1	126	132	↑	6
Wuhan	China	China Extended	122	130	↑	8	127	133	↑	6	114	129	↑	15
Bratislava	Slovakia	CE Europe	123	118	↓	-5	115	116	↑	1	134	124	↓	-10
Bucharest	Romania	CE Europe	124	127	↑	3	122	126	↑	4	130	131	↑	1
Guangzhou	China	China Extended	125	121	↓	-4	136	131	↓	-5	116	117	↑	1
Riyadh	Saudi Arabia	Middle East	126	141	↑	15	158	168	↑	10	100	104	↑	4
Shenzhen	China	China Extended	127	132	↑	5	137	139	↑	2	120	121	↑	1
Shenyang	China	China Extended	128	129	↑	1	135	132	↓	-3	123	125	↑	2
Tianjin	China	China Extended	129	124	↓	-5	133	125	↓	-8	129	127	↓	-2
Buenos Aires	Argentina	LatinAmerica	130	135	↑	5	123	130	↑	7	139	134	↓	-5
Moscow	Russia	CE Europe	131	134	↑	3	134	127	↓	-7	128	137	↑	9
Suzhou	China	China Extended	132	120	↓	-12	125	122	↓	-3	140	118	↓	-22
Montevideo	Uruguay	LatinAmerica	133	133	→	0	116	117	↑	1	148	149	↑	1
Istanbul	Turkey	Middle East	134	145	↑	11	128	142	↑	14	133	146	↑	13
Kuala Lumpur	Malaysia	Asia-Pacific	135	126	↓	-9	141	143	↑	2	121	115	↓	-6
Belgrade	Serbia	CE Europe	136	137	↑	1	119	129	↑	10	143	147	↑	4
Córdoba	Argentina	LatinAmerica	137	138	↑	1	130	136	↑	6	135	148	↑	13
Guadalajara	Mexico	LatinAmerica	138	131	↓	-7	129	124	↓	-5	141	136	↓	-5
Mexico City	Mexico	LatinAmerica	139	125	↓	-14	124	115	↓	-9	146	139	↓	-7
Rio de Janeiro	Brazil	LatinAmerica	140	136	↓	-4	131	128	↓	-3	142	143	↑	1
St Petersburg	Russia	CE Europe	141	142	↑	1	148	145	↓	-3	124	138	↑	14
Harbin	China	China Extended	142	147	↑	5	152	156	↑	4	127	128	↑	1
Bangkok	Thailand	Asia-Pacific	143	140	↓	-3	138	140	↑	2	147	140	↓	-7
Sao Paulo	Brazil	LatinAmerica	144	139	↓	-5	139	138	↓	-1	145	144	↓	-1
Brasilia	Brazil	LatinAmerica	145	148	↑	3	150	151	↑	1	138	142	↑	4
Monterrey	Mexico	LatinAmerica	146	144	↓	-2	140	144	↑	4	149	141	↓	-8
San José	Costa Rica	LatinAmerica	147	149	↑	2	142	150	↑	8	144	150	↑	6
Ankara	Turkey	Middle East	148	155	↑	7	154	164	↑	10	137	135	↓	-2
Minsk	Belarus	CE Europe	149	143	↓	-6	156	154	↓	-2	136	119	↓	-17
Panama City	Panama	LatinAmerica	150	154	↑	4	147	152	↑	5	150	155	↑	5
Cape Town	South Africa	Africa	151	146	↓	-5	143	135	↓	-8	153	153	→	0
Quito	Ecuador	LatinAmerica	152	152	→	0	146	148	↑	2	154	156	↑	2
Bogota	Colombia	LatinAmerica	153	151	↓	-2	153	153	→	0	155	152	↓	-3
Kiev	Ukraine	CE Europe	154	150	↓	-4	144	141	↓	-3	159	159	→	0
Jakarta	Indonesia	Asia-Pacific	155	153	↓	-2	151	147	↓	-4	157	158	↑	1
Durban	South Africa	Africa	156	157	↑	1	159	159	→	0	152	151	↓	-1
Lima	Peru	LatinAmerica	157	156	↓	-1	155	149	↓	-6	158	160	↑	2
Johannesburg	South Africa	Africa	158	159	↑	1	160	158	↓	-2	156	154	↓	-2
Hanoi	Vietnam	Asia-Pacific	159	158	↓	-1	149	146	↓	-3	162	164	↑	2
Medellin	Colombia	LatinAmerica	160	161	↑	1	168	170	↑	2	151	145	↓	-6
Tbilisi	Georgia	CE Europe	161	160	↓	-1	161	160	↓	-1	160	157	↓	-3
Asuncion	Paraguay	LatinAmerica	162	164	↑	2	164	161	↓	-3	161	162	↑	1
Ho Chi Minh City	Vietnam	Asia-Pacific	163	162	↓	-1	162	157	↓	-5	165	163	↓	-2
Tunis	Tunisia	Africa	164	163	↓	-1	157	155	↓	-2	166	166	→	0
New Delhi	India	India Extended	165	166	↑	1	163	163	→	0	172	167	↓	-5
La Paz	Bolivia	LatinAmerica	166	168	↑	2	165	162	↓	-3	169	171	↑	2
Mumbai	India	India Extended	167	167	→	0	166	165	↓	-1	171	168	↓	-3
Santo Domingo	Dominican Republic	LatinAmerica	168	165	↓	-3	169	166	↓	-3	164	161	↓	-3
Casablanca	Morocco	Africa	169	172	↑	3	170	172	↑	2	167	173	↑	6
Cairo	Egypt	Middle East	170	170	→	0	174	167	↓	-7	163	175	↑	12
Bangalore	India	India Extended	171	171	→	0	167	171	↑	4	174	170	↓	-4
Rabat	Morocco	Africa	172	173	↑	1	171	173	↑	2	168	174	↑	6
Manila	Philippines	Asia-Pacific	173	169	↓	-4	173	169	↓	-4	170	165	↓	-5
Hyderabad	India	India Extended	174	174	→	0	172	174	↑	2	173	172	↓	-1
Accra	Ghana	Africa	175	175	→	0	175	175	→	0	175	169	↓	-6

Figure 12. Attractiveness (Magnetism – Profitability) Comparison 23 vs 22 and Trending 23/22/21/20. Source: Author

## 6.6 Attractiveness vs Employability

The world is now, more than ever, being fueled by talent and human resources. With fast growing economies, and constant rivalry to be number one, cities are constantly racing to prosper both economically and socially.

However, with globalization, a great advantage rises for those who are talented (Parilla and Liu, 2019). A massive pool of opportunities from which to pick. Those wanting to develop their career in tech will probably try to work in Silicon Valley or Shanghai, while those interested in finance will aspire to grab a job in New York or London. (Haqqi, 2021)

As part of our model, we are interested in understanding to what extent the overall Attractiveness of a city impacts on its ability to attract talent. Although professional opportunities are a very strong attracter of human capital, we believe that a cities appeal is characterized by more than that.

Employability is extremely related to talent. Talent attraction is, together with profitability (high wages, low taxes) what makes Cities topping our Attractiveness ranking. One of our points of interest arising from this study was to find out whether a city's attractiveness influences in any way the amount of talent the city attracts.

To analyze this, we have combined two sources with same weight. On one hand, The Global Talent Competitiveness Index, INSEAD 2022 (Lanvin and Monteiro, 2022), where we take the Employability index, as a proxy to know the easiness to find skilled employees and talented educated citizens in a city. This is quantified by indicators about skills gaps and labor market mismatches and by the good provision of professionals by local education systems. On the other hand, we take LinkedIn Talent Insights report for each studied Metropolitan Area. This report gives us three main indicators to be equally weighted and combined. First, Hiring Demand (measuring the level of activity from recruiters in the area in the past 12 months), then % Jobs posted vs Total amount of professionals (measuring the jobs availability in the area), then Talent net flow (Professionals won or lost in the past 12 months vs total). These three indicators really offer a picture of employability situation in that area, based on the activity from demand and offer, and net talent win or loss. Only creative professionals have been studied (according to Pf. Florida's approach). Let's look at top25 at Figure 13.

City	Country	LinkedIN Talent Insights NOR	Employability GTCI NOR	Employability y NOR
Luxembourg	Luxembourg	10,00	7,58	10,00
Dusseldorf	Germany	9,99	7,61	10,00
Hamburg	Germany	9,72	7,61	9,76
Berlin	Germany	9,67	7,61	9,72
Basel	Switzerland	7,67	9,96	8,50
Cologne	Germany	8,13	7,61	8,38
Singapore	Singapore	6,93	9,69	7,79
Munich	Germany	7,01	7,61	7,41
Seattle	United States	6,41	9,96	7,40
New York City	United States	6,09	9,96	7,12
Denver	United States	6,00	9,96	7,05
Baltimore	United States	5,71	9,96	6,79
Geneva	Switzerland	4,91	9,96	6,10
Dallas	United States	4,91	9,96	6,10
Bern	Switzerland	4,60	9,96	5,83
Vancouver	Canada	4,86	8,22	5,68
Nice	France	5,06	7,02	5,59
Warsaw	Poland	5,02	6,98	5,55
Tbilisi	Georgia	4,87	7,21	5,47
Houston	United States	3,91	9,96	5,23
Las Vegas	United States	3,74	9,96	5,08
Stuttgart	Germany	4,31	7,61	5,07
Miami	United States	3,67	9,96	5,02
Phoenix	United States	3,66	9,96	5,02
Eindhoven	Netherlands	5,22	2,67	4,79

Figure 13. City Employability. TOP 25 Source: Author

Employability is topped by Western Europe Cities, followed by most innovative cities in US, Canada, Singapore, Japan, Switzerland. This result is consistent with the general results on Attractiveness. If we compare it with last year, Europe (and especially Germany and Northern Europe) surpasses the USA, who was the resounding winner last year. The continuous restructuring and layoffs in the main American technology companies are reducing the attractiveness for talent, while European stimuli are favoring the attractiveness for employment in Northern Europe. We must highlight the variability of this photo that we can date to January 1, 2023. The INSEAD study uses data from 2021/22 and continues to position the USA ahead. LinkedIn data is more current and reflects this change between the USA and Western Europe. Perhaps the truth is the average that we indicate. However, and as the year 2023 evolves, we see that the German locomotive slows down and US technology companies rise sharply again on the stock market. We will study it in the next Observatory 2024.

We have analyzed the City Attractiveness by more than 100 indicators, including emotional and rational components. But, how much pure Employability is related to City Attractiveness? We have concluded that investors/companies go where talent is, no longer the other way around. So, a city well prepared and equipped with talent will attract investors which will make the city to thrive. McKinsey (Cassim et al, 2020) positions workforce upskilling as one of four main recovery plans factors together with Green energy investment, Digitalization and new technologies and Resilience of supply chains and security of essential goods. They point to a 30% of potentially automatable tasks and a very waving demand patterns pushing to hundreds of millions of skilled workers to switch jobs. In this context, enjoying an over the average skilled population makes a city resilient to these fluctuations and competitive enough to leverage the new opportunities and growth potential.

But let's compare our Employability and Attractiveness results. In order to understand the relationship - between these two indexes. Final Correlation number  $R^2=0,4176$ , which is high and means a strong association between the two concepts. Improving Employability (by improving citizen skilling) seems to be a clear driver for all cities over the average line, moving top right. For those performing better in Employability that in Attractiveness, other concepts described in our Observatory like Magnetism or Cost of life should be considered the main levers to activate. (See figure 14)

But, let's remind that professional opportunities are not definite drivers when choosing a city, although they definitely help.

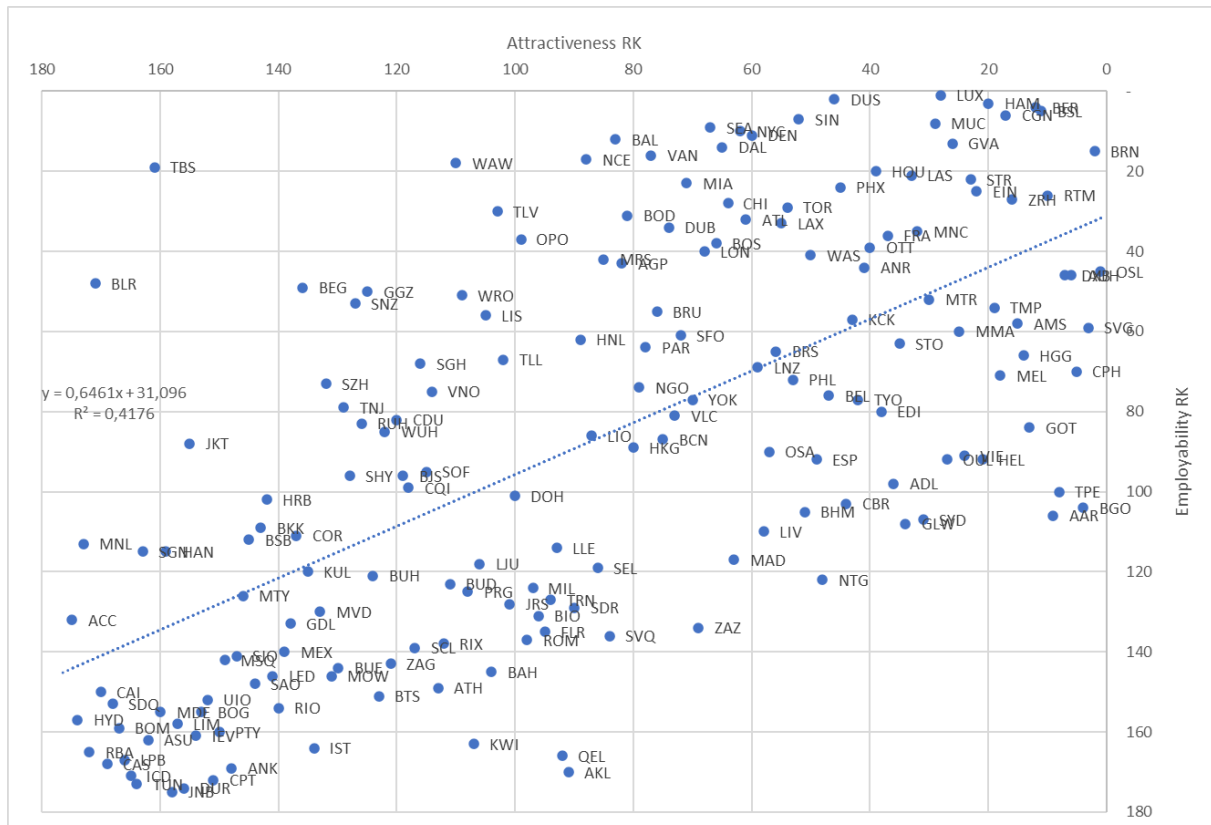


Figure 14. City Attractiveness vs Employability. Source: Author

# 7. Conclusions

## 7.1 Balancing City Magnetism and City Profitability

The key is to find a balance between transforming the essence of the city (its physical and virtual shape) while improving its benefits and services. The two aspects feed off of each other. A city's essence determines how the services provided should improve, while the new services have an impact on transforming the city's essence. The transition to an information- and knowledge-based economy represents both a revolution, due to its new acceleration and blistering speed, and a challenge as we try to balance the concept of an attractive and accessible city with social and environmental progress. (Van den Berg, Van de Meer, Oligaar, 2006)

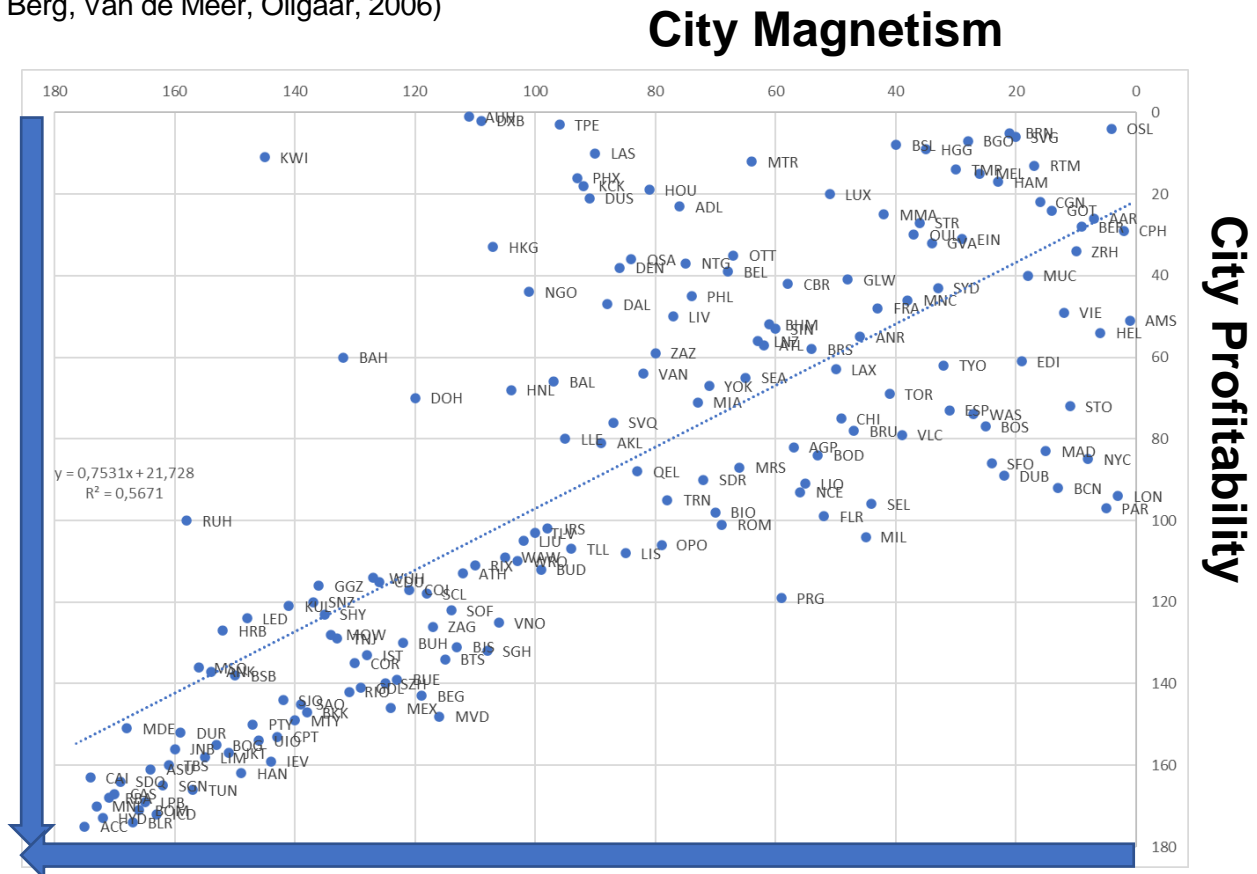


Figure 15. Balancing City Magnetism and City Profitability. Cities in UNLOCODE three letters nomination. Source: Author

The magic quadrant is in the upper right (see figure 15) where we find cities with top positions at Magnetism and Profitability. These are mainly cities in the Advanced area of the ranking. These cities compete hard day after day to stay there, to gain positions step by step, making a huge investment. The message for them is clear: keep investing, keep progressing.

In the lower left quadrant, we see cities with low magnetism and low profitability. These are Emerging and Starter cities. Our message is again clear: 'fix the basics'. In the upper left quadrant, we find cities with low magnetism but high profitability. They are mainly some less-than-magnetic US and Japanese cities, as well as some very industrial, German cities, UAE, Doha, Hong-Kong and Kuwait. They have the opportunity to improve and evolve and move into the magic quadrant if they invest in achieving social sustainability, improving their dynamism, cultivating their identity, and designing an attractive future plan that is connected to their citizens. In the lower right quadrant, we find cities with high magnetism but low profitability. Those are cities with a great identity and rich human values, but talent also demands opportunities for compensation and professional success. Most come from Southern Europe, as magnetic as tax-hell. They must improve the provision of citizen services and the economic equation, or they run the risk of falling behind in overall attractiveness. This looks to be true of Italian and Portuguese cities with high Magnetism, but poor Profitability.

## 7.2 Cities of Future. The AI aided City.

Our cities are experiencing an unprecedented moment. At the beginning of 2022, cities were taking advantage of the arrival of the first recovery funds after the pandemic. In February, the war in Ukraine began and as a consequence, the economic crisis and recession. In this context, our cities are trying to avoid the impact of the recession while moving forward with many uncertainties in the recovery of economic and social sustainability losses while investing in a future of environmental neutrality. And all this while observing the relentless arrival of the climate change tsunami on the horizon. This situation involves two types of actions: on the one hand, emissions reductions to achieve carbon neutral status, and on the other hand, improving resilience to prepare for the inevitable impact.

Technology has been and continues to be our faithful ally to respond to all these challenges. At the end of 2022 / beginning of 2023 we were spectators of an unprecedented technological revolution: the emergence of generative artificial intelligence (GenAI). This new technology broke all records in mass adoption with 100m users in just two months (1m in first 5 days!) (McKinsey, 2023). We are therefore in 2023, the year of the massive incorporation of artificial intelligence in the management and development of our cities. We can consider artificial intelligence as an essential assistant to improve all our internal processes, relationships and communication with citizens, and analysis and prediction of physical and social events. We are going to explore how the different artificial intelligence proposals mark our digital transformation strategy in the city.

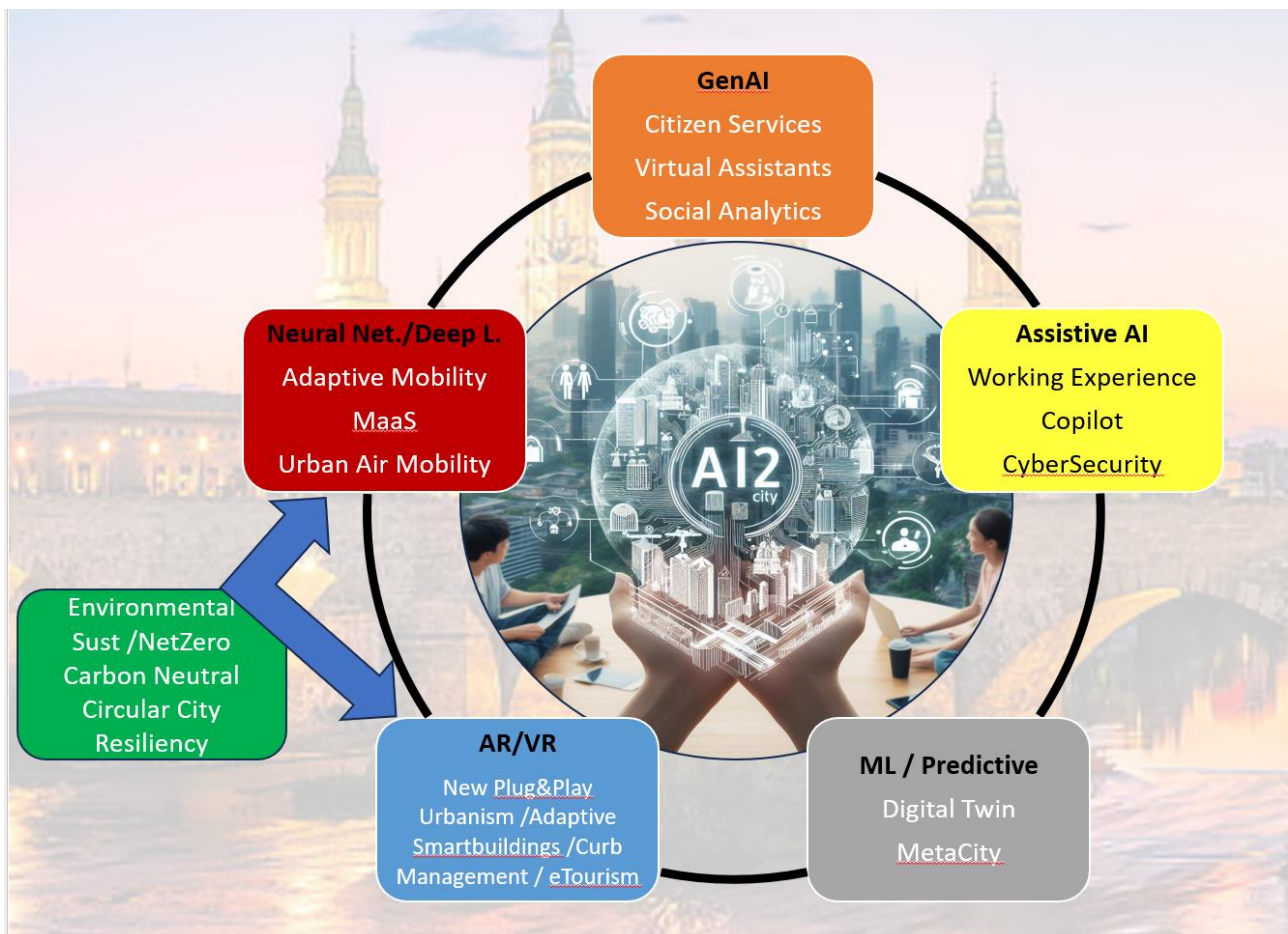


Figure 16. The AI aided City. Central image generated with DALL-E AI.  
Source: Author

## Accelerated technological adoption

These new announcements of disruptive technologies only further accelerate the already accelerated incorporation of these innovations into our lives and the necessary processes of change (exponential or turbo boost technologies) (Diamandis & Kotler, 2020). We think that we are at a time in which many technological developments that have been perfected for years are going to reach a disruptive moment: virtual and augmented reality as the basis of the metaverse, 3D printing, digital twins, Blockchain, nanotechnologies, biotechnologies and neurotechnology, robotics, autonomous systems, 5G and 6G communications and a new era of artificial intelligence will, combined, bring new lifestyles and production systems that are extraordinarily efficient and respectful of the planet.

Although all the different facets of Artificial Intelligence contribute to solving the city's challenges, we have tried to make a mapping, associating each type with the main value contributions that it provides in the city digital transformation areas. Thus, we have 5 fundamental types plus a sixth area as a combination of two others. Let's explore this mapping (see figure 16).

- GenerativeAI (GenAI). Semantic knowledge. Citizen Services.
- Assistive AI. Working Experience (Copilot). CyberSecurity guard.
- Predictive. Machine Learning. Digital Twins. MetaCity
- Augmented / Virtual Reality. Urbanism Management. eTourism.
- Neural Networks / Deep Learning. Complex Urban Mobility models.
- Combining Urbanism & Mobility: Environmental Sustainability & Resiliency

### **1.- GenerativeAI (GenAI). Semantic knowledge. Citizen Services.**

When we talk about generative artificial intelligence (GenAI) we immediately think of ChatGPT. We must consider that it is a huge probabilistic semantic neural network. Therefore, it develops its enormous advantages in everything related to understanding and relating concepts associated with words. Let's think about the great help it can provide in all types of document processing and interpretation, voice, relating concepts stored in different pieces of information, and analysis of enormous amounts of information.

The first major area of application of GenAI is to improve the productivity of our civil servants. This type of technology will multiply productivity in document management, classification and interpretation of documents, generation of forms, development of internal training tools, assistance with applicable internal policies, and generating new documentation.

Another huge area of application of GenAI is the comprehensive management of the relationship with citizens and the provision of services. In this sense, chatbots or virtual assistants based on multi-languages and NLP (natural language processing) are beginning to become popular to offer citizens information about any policy or regulation, cultural agenda, critical information about disaster response, health or social services. In addition, this technology is crucial in the management of modern call centers, helping the operator to interpret the citizen's voice, identify them, connect with relevant information, reduce response time, and improve the citizen experience.



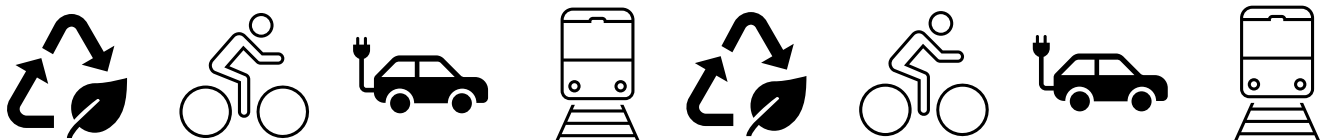
These types of multilingual services are fundamental in the advanced management of the new eTourism systems, as well as participatory democracy tools (eDemocracy). We can additionally integrate all communication with citizens, social networks, generate campaigns or social marketing, and even make recommendations based on their life facts. So, this new technology contributes to achieve the ambitious targets of Digital Rights.

Three trends are observed on this citizen Digital Rights crusade:

- Data-driven technologies have intensified Digital Rights concerns. We have witnessed the rise of manifestos/ governance frameworks claiming to help cities in the greenfield of digital rights-based policymaking. For instance, the Cities' Coalition for Digital Rights (CC4DR) have developed a framework used by European cities such as Amsterdam and Helsinki.
- No citizen left behind. Demonstrate fairness, openness, consent, equality and transparency. Discuss potential inequalities caused by digitalization (aka. the digital divide).
- Participatory Democracy. Cities are expanding their Urban Data Platform with means to collect citizen feedback, opinions, and adapt the new applications to their needs and preferences.

GenAI can help adapt the public and private services we enjoy to give us the best possible personalized experience. For this reason, most cities are rethinking their services for citizens, incorporating personalization techniques learned from the retail market and complemented with social marketing.

As the third major area of application of GenAI we can mention all the semantic information analysis services. In this chapter we can incorporate all the detection of patterns, anomalies, observable trends by analyzing all the enormous amount of documents that a city owns. In addition to building a knowledge base, we can do predictive analysis by anticipating risks and improving forecasts. We can also implement fraud detection engines and many other tools to support decision making. These analyzes will allow us to know our citizens and personalize the service we offer them. City managers need to know the citizens social situation. It is urgent to activate and analyze the historical data available on citizens in order to determine the different levels of economic and social vulnerability in which they find themselves, mapped by district. In this way, city managers can balance budgets and prioritize serving those who need it most. It is not easy to find a common definition of the term vulnerability. Each city can find different approaches to this situation and analyze it from different angles. Also, special importance must be given to the groups at greatest risk: the elderly, children, women at risk of gender-based violence, homeless people, immigrants, etc, as studied by EU Social Challenges in Cities (Mulvik et al, 2022) More general analytics can also be done to identify the level of poverty, happiness, vitality and mental health (which has been greatly impacted by the pandemic). This georeferenced social analysis is very useful for building the ideal 15' city, identifying the necessary services by distance. It should be noted that a city barely uses 9% of its data at daily operations. The remaining 91% is historical data that is not analyzed, and in many cases, it is not known how it can be accessed or integrated. Modern cross-platform database systems allow you to integrate all these different data sources or silos to get the information you need. At the same time, the advanced cooperative and confidential analytic systems allow guaranteeing anonymity and GDPR compliance to extract aggregated information, respecting the citizens sensitive data. Initiatives like (SmartCities4All 2015) try to reinforce the attention needed to provide systems, tools and services that can be used, accessed and operated by all, making the city inclusive from the new technologies and services approach. Once again cities must be human-centered as explained.



## 2.- Assistive AI. Working Experience (Copilot). CyberSecurity guard.

It will therefore be essential in improving the efficiency of our officials and their skills. Covid has “escalated the need for the digitization of a wide range of government processes and citizen services (such as unemployment benefits), making digital skills a prerequisite for government employees” (IDC, 2021). The new post-pandemic work model is hybrid, remote and distributed, impacting the traditional country-capital model with thousands of civil servants to a more decentralized concept. Possible teleworking for civil servants is estimated between 30-50%. The combination of remote, cooperative work, integrated into teams, will facilitate new models of development of the public duty.

Here artificial intelligence behaves like an assistant, like a shadow that helps multiply productivity. The AssistiveAI, or also called copilot, offers us a comprehensive and correlated vision of all the information pieces that I might need for the development of my work at any given moment: all the information available at my fingertips, the correlation of concepts, generation and creativity of new materials relying on GenAI, and the analysis and monitoring of all information exchanges that occur on our network, which is obviously crucial for cybersecurity management. Productivity practically improves. The quality and integration of concepts, products, people, and processes allows obtaining the maximum performance from the knowledge that the organization owns. It allows you to spend less time on communication and dissemination of information and more on creativity, generating new information and taking advantage of the knowledge base.

In cybersecurity environments it behaves like a guardian, monitoring access, information flows and detecting anomalies. The impact of ransomware attacks on local administration reaches 58% (Wray, 2022). It is an organized crime whose income is already comparable to drug trafficking. Therefore, we face a challenge of extreme importance, since criminals are trying to cause maximum damage and attack the environments with the most sensitive and vital information for the city operations. Accepting extortion and paying is not an option. Nor is it the paralysis of public service. Therefore, cities must organize a specialized response to manage this situation. If we add to this the difficulty of hiring highly qualified personnel, we find that the only solution is to rely on externally managed systems, main Cloud providers that guarantee the necessary data protection and security and advanced AI-based tools protecting the operations from end user device, tools to overall systems and data centers. Back up systems and decentralized servers (Cloud) for redundancy, are necessary to protect the city from outages. Shadow IT: Non approved tools and software not managed by IT Department reach more than 60% of cloud services in large organizations, according to Capgemini. They pose a threat when not securely integrated within the wider city IT ecosystem. The well accepted BYOD (Bring your own device) is many times turning on *Bring your Own Disaster* if not well managed. Identify, Respond, Recover, Protect/Detect and Sustain has proven to be the virtuous cycle to keep the city digital assets safe. (WEFORUM, 2022)



### 3.- Predictive. Machine Learning. Digital Twins. MetaCity.

Artificial intelligence applied from the perspective of machine learning and predictive analytics is essential for the simulation of physical environments through digital twins. A Digital twin is a virtual 3D representation of the physical City. This technology began in the industrial environment associated with a specific device, a machine or a system to be monitored and managed remotely. As an extension, we can associate it with each and every one of the physical elements that make up a city. Each of them is incorporated as an identity defined by a metadata standard, properties and relationships with others. Through these relationships we can develop applications and algorithms in artificial intelligence that allow us to learn from existing data and generate predictive models of behavior. The digital twin is, therefore, a subset of the metaverse that requires real data from IoT sensors. It allows real-time monitoring and can help us develop simulations. We can say that a digital twin is a metaverse that is exactly true to reality. Therefore, a digital twin gives us enormous advantages in three specific areas:

1.- On the one hand, it allows us to integrate data of a very different nature such as traffic, weather, infrastructure and other resources to innovate in areas such as Urban Mobility, emergency management and energy use. This way we can experiment with the details of the physical city without having to modify it.

2.- The second area is innovation. We can test the benefits that new structural elements, engineering, urban planning and other infrastructure possibilities would bring us. This offers us the opportunity to accelerate and multiply inspiration, ingenuity and tenacity in our city management.

3.- Finally, and as the most important area, it is worth highlighting simulation. We can try the different alternatives to solving a problem, eliminating the need for physical experimentation, saving the costs associated with the use of physical elements and works, and avoiding inconvenience to neighbors. These simulation techniques allow us to make the best decisions without the cost associated with testing, with the guarantee that the city's predictive model tells us that they will be the most appropriate. (Deblaere, Eitel-Porter, Krüger, & Purdy, 2002) For example, we have a pollution problem in a plaza. We have different alternatives, such as closing some adjacent streets, pedestrianizing others, or diverting vehicles through some alternatives. We can try all of them, and finally determine the optimal one, without having to cause any disruption to the normal life of the city. Additionally, we can evaluate the consequences of each of them on the other parameters of the city, such as traffic, noise, etc. (Many cities are using these advanced technologies to face their main challenges, such as Helsinki in energy, Gothenburg in resilience and urban planning, Porto in water management, Antwerp in joint traffic and pollution management, and many others. (Bentley, 2020)

MetaCity. The parallel virtual City. While the metaverse is still in its early stages, the continued development of innovations, user adoption, utilization in large corporations, technological advancement and integrations, as well as rising valuations of associated digital assets, are indicative of the continued growth of the metaverse and the likely trajectory toward its destiny as the next third-generation, immersive, three-dimensional Internet. (Web3)

This enormous opportunity for human development has its advantages and disadvantages, but it seems to be consolidating itself as an innovation for the future that we all will live with. The parallelism between the metaverse and the possible literary worlds suggests that the first is assimilated to a virtual city: the MetaCity. This concept represents a revolution in the way of operating and offering public services in the city, in the social relations of its citizens and in their leisure activities. Our city, therefore, incorporates a fifth virtual dimension. It is also a new challenge, a new opportunity to improve the attractiveness of our cities in their global competition to attract talent (in this case from its virtual dimension).. If we observe the parallel development of neurotechnology and remember once again the movie *Avatar* where the protagonist connected his hair with the mother tree uniting in a single community consciousness, could we dream as the American urban planner Jane (Jacobs, 1961) did about a beehive city, where we are all co-creators of it and we can all enjoy its benefits by connecting our minds to the MetaCity? Cities like Doha, Seoul or Singapore are already offering their MetaCities to attract virtual talent. Will we have two cities? A virtual taking care of my body, and a virtual where I develop my creativity and professional career, creating wealth? We still have time to reflect on this.

#### 4. AR/VR, Augmented / Virtual Reality. Urbanism Management. eTourism.

Artificial intelligence applied to the virtual representation of reality is fundamental in new urbanism. The support of high-resolution LIDAR-type cameras allows us to have a very high-resolution image of the entire city and, through artificial intelligence algorithms, to be able to detect each and every one of the elements that compose it, its position and its dimensions, that is, have a complete inventory of the city. Based on this inventory, we will be able to carry out modern Curb Management, allowing us to analyze the parameters of environmental management, trees and green spaces, elements associated with traffic and Urban Mobility, and even elements associated with taxes for the use of public space. This technology applied to buildings and combined with GIS and BIM systems allows us to think about plug&play urbanism where I can adapt the buildings and physical structures of the city to the changing needs that citizens propose to us, managing to generate more human and habitable cities. and equipped with the necessary services for the ideal 15 minutes city. Furthermore, this type of technologies will allow us to add intelligence to new and existing buildings (Smartbuildings).

ChronoUrbanism. 4D City. 3 Distances (15' City...). Postpandemic Cities are moving towards the postCar paradigm and the 4D Cities (adding time as main dimension). Distances are no longer measured in miles/km but in time to go. That way, we can observe Cities reallocating resources and lifestyles around these three main distances:

	Distance (t) / (km)	Mean	Benefit	Concept
Metro/Regio polis	90' / 350km	Transportation	International Hub	Compete 4th Ind. Rev.
Villages	15'-20' / 10km	EmicroV, Bike	Quality Life	95% all you need (job)
District	1' / 1km	Walking	Social	Superblocks

We observe the city with different approaches according to its function, its role in the global urban ecosystem, and its capacity to serve the citizen. In this sense, the efficiency of public transport determines the real size of the city. In this way, if we consider 90 minutes as the maximum commuting time that a citizen is able to invest to access his job (it is the average time in a city with one of worst traffic in the world: Los Angeles, USA), we conclude that all reachable area in less than 90 minutes by public transport should be associated with the same metropolis. This is the actual psychological size of a city. In this way, Madrid is assimilated to the Community of Madrid (Region) and more, Paris is associated with Île-de-France, we observe Big London occupying the entire England's southeastern quarter, we could assimilate the Benelux to the same single large Metropolis, etc. This concept of metropolis enables cities to become hubs of international influence in the global competition for talent. In a context of peace and economic stability, cities compete to retain and attract talented citizens. At the beginning of the fourth industrial revolution, cities interact and play this competition internationally, within their blocs / civilizations and above the countries in which they are located. If we zoom in detail, we find the concept of the 15 minutes city (15CITY, 2021). This concept, developed by Professor Carlos Moreno for the city of Paris, aims at the generation of Villa-cities where citizens can find 95% of the things they need, including their work, at a distance of less than 15 minutes using public transport or micro electric vehicles. From the very well-connected grouping of villas you get the metropolis. In this way, the concept of suburb, ghetto, is avoided, and social inequalities are fought. Each villa must have minimum standards of quality of life and services. Zooming in once again we focus on the concept of district, and within the district we talk about the 1 minute city (Peters, 2021). This concept, proposed by the city of Stockholm, tries to encourage the development of areas of social interaction within the districts at very short, walkable distances. It is about building social spaces for the elderly, children, parking and charging micro electric vehicles and other social functions all within our district. Also associated with this concept of proximity urban development we can find the concept of superblock. Initiated in Barcelona, a superblock is a grouping of blocks where traffic is only allowed on its perimeter. Inside, we develop elements of social coexistence such as boulevards, benches, tree-lined elements, etc., allowing only the superblock inhabitants domestic traffic and the provision of merchandise. These superblocks are already being tested in various cities such as Barcelona, Ghent, and there is an ambitious plan for Madrid and many more.

By redesigning our streets and squares we can reduce the space dedicated to cars and add more social spaces, recovering playgrounds, environments for social, cultural and creative life.



Piazza Dergano, Milano. (from cars to children) Source: City of Milano

By applying these technologies to tourism, we can offer tourists a *phygital* experience, that is, an experience that combines the physical with the contribution of digital information, helping them discover the city, its service offering and its attractions. We are also observing the tourism recover to pre-pandemic levels. But technology has advanced in parallel, and cities want to use it to achieve higher-quality, longer-stay tourism and higher spending per visitor. It is about using the latest technologies to show the attractiveness of our city, provide much faster and more efficient booking services, offer the best physical and digital (phygital) experience while visitors are in the city (by using AR/VR, virtual tours, personalized services, etc), manage the tourism ecosystem stakeholders to run special campaigns and promotions, analyze all the associated parameters with advanced Big Data systems. and finally create a loyalty community using social marketing techniques. A new eTourism for a new physical but digital immersive experience, which for many cities means a boost in the economy recovery.

## 5. Neural Networks / Deep Learning. Complex Urban Mobility models.

Finally, when we talk about complex dynamic models such as traffic management, we must turn to the most advanced AI environments: neural networks and Deep Learning. With these technologies we will be able to build an Adaptive mobility model in real time, advanced Mobility as a service (MaaS) systems that combine the information available at all times with all known knowledge and experience. Furthermore, cities have the challenge of designing from scratch the new models of urban air mobility (drones, air taxis and eVTOLs) that will represent a revolution in the rapid and sustainable distribution of goods and the movement of passengers.

PostCar City. Urban mobility is one of the most dynamic, fast changing, citizens appreciated-by concepts and the one that faces the greatest challenges. It must combine: an economic sustainable and emission-free service, with the psychological effect that pushes citizens to use individual means of transport (we are experiencing a back to heavy traffic), together with the appearance of new individual vehicles and flying machines. Also, new shared mobility services are offered. Clearly, Urban Mobility tends to consolidate a service model offered by more or less autonomous and shared electric vehicles. It seems clear that the owned vehicle model is going to become obsolete due to the concept of mobility as a shared service. (Thompson, 2015) Large manufacturers face the challenge of offering mobility as a service and maintaining a huge fleet of vehicles that must respond quickly and flexibly to the demands of citizens. And all of it stored no one knows where, but ready at the user's door when they demand it. A Renault's manager pointed to this concept applied to the Paris metropolitan area: it is physically impossible to store more than 1 million cars around, ready to be used on the weekend, and hire a legion of operators who park them near users on Friday and pick them up after Sunday...and if they are autonomous, it would be worse, as they can spend all their batteries life trying to park, but consumer demands always rules. Will see.

## **6.- Combining Urbanism & Mobility: Environmental Sustainability & Resiliency. Carbon Neutral, Circular City.**

Urban environmental sustainability models are fundamentally based on the reduction of emissions from transport and buildings. Both elements can reach 75% of a city's emission and their AI models combine.

Post-Covid cities face the challenge of sustainability with the aim of the European Green Deal and parallel initiatives across the world (like California's AB32 Global Warming Solutions Act, UK Climate Change Act, and others). Cities are the fundamental pillar to combat climate change. Every modern city sets itself the objectives of Carbon Neutral and Circular City. The economic recovery will be slower or faster, depending on the good analysis and prioritization in the use of recovery funds. But whatever its speed, it will be green. European cities are leading, once again, this global process. In this sense, the initiative 100 Carbon Neutral cities by 2030 of the European Union is framed (EU, 2022). Copenhagen leads urban initiatives with the goal of being Carbon Neutral by 2025. Furthermore, Copenhagen sets this goal not only for city operations, but also for emissions from all citizens, becoming the first world capital to pursue this status. Other European cities mark 2030 as the final destination of their Carbon neutral initiatives within the global European Green Deal framework for 2050.

The proper management of matter and, in general, waste, make up the basic pillars of circular cities. Reduce, Reuse, Recycle, Regenerate and Redesign are the 5 R's that mark the direction of development of a modern and sustainable city from the point of view of matter. Therefore, any city that intends to be minimally attractive for talent must prioritize the objectives of environmental sustainability (Carbon neutral and Circular economy).

It is clear that extreme weather events are becoming more frequent (droughts, downpours, extreme temperatures, cyclones, sudden changes in climate, etc.) and the increase in global temperature is already becoming more evident. The construction of climatic shelters allows an important reduction of the risk that affects people vulnerable to heat. The intelligent use of the phenomena of convection, radiation and heat conduction enables efficient temperature regulation in buildings and energy savings. The intelligent maintenance of buildings plays a fundamental role, firstly because they are responsible for 40% of a city's carbon emissions, secondly because glass towers cause an additional greenhouse effect and thirdly because the efficient management of these buildings can help generate more climatic islands. The use of traditional remedies such as blinds, balconies, use of white paint have always worked in this regard. Cities are investing in the construction of forest crowns that allow lowering the temperature of the city while facilitating leisure (running a marathon without leaving the parks). Another issue to take into account is the use of asphalt. Research is being carried out on new materials that reduce the heat that this type of floor radiates. Also, the use of the subsoil and underground spaces as shelter from inclement weather is also proving tremendously valuable. Another clear threat to cities is excess water. The water floods can sink buildings and so on. To combat its effect, the concept of the sponge city is created.

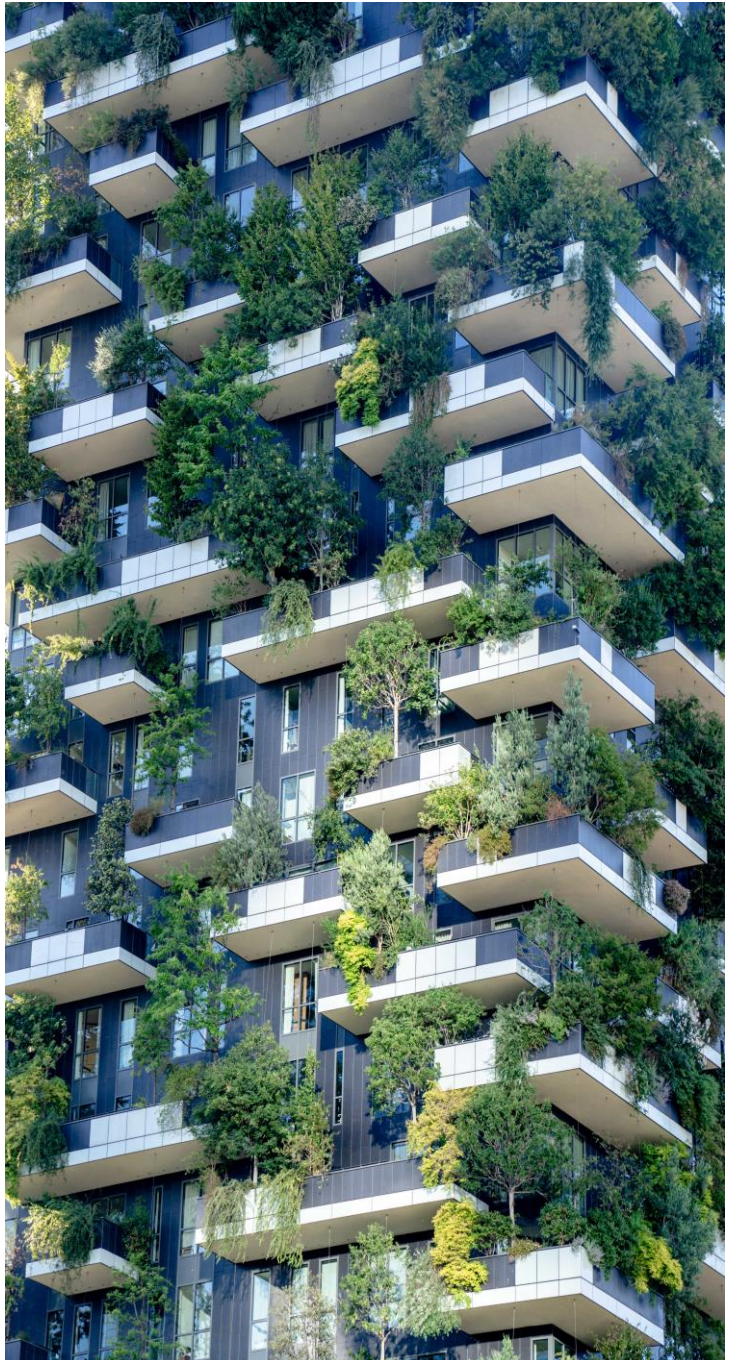
A sponge city is one that allows water to be absorbed and managed, evacuating its excess and avoiding damage. In this sense, there are cities like Barcelona that have built huge underground spare tanks to mitigate the effect of heavy rains that devastated the city due to its steep slope towards the sea. Another fundamental element is to design green infrastructures that filter and drain the water to the subsoil. Much remains to be learned from the efficient management carried out by the Netherlands. On the contrary, those cities with a water deficit must learn to manage it. We are seeing how cities that traditionally have a surplus of water have suffered a summer of drought and even the impact of forest wildfires. Their water storage and distribution systems were unprepared for these dry spells due to poor storage and outdated distribution infrastructure with huge leakages. Additionally, the efficient use of water and its recycling are essential to achieve a self-sufficient city. Here the example to follow is Tel Aviv. And once again, the use of the latest technologies in digital twin simulation allows us to design cities that are resilient to climate change. Examples of this are the digital twin projects for water management in Porto and Goteborg or for efficient energy management in Helsinki.

## 7.3 Cities of Future. What might they look like?

Transforming City Magnetism may take 15 years or more. This slow but constant evolution should not discourage us from making the transformation. Before beginning the development of a strategy to transform the City Identity / Magnetism, we must recognize our existing advantages, assets, values, identity, heritage, and culture and use them to build upon, to lean on them to begin to thrive. We should think of our city as a house that we want to sell, or rather, that we want to rent to talented citizens. We have to include in that house the most appreciated elements so that talent can live, achieve maximum well-being and develop their full potential, and all this with a reasonable income or cost of living (citizenship contract). Magnetism is the house itself; Profitability is the services available in that house combined with its rent price. Let's pay attention to those lower-Magnetism secondary cities in countries that already have a widely recognized and strong capital city. They can transform themselves and stand out globally if the right political decisions are made and their citizens contribute. They don't compete with their capitals on Magnetism, but their lower cost of living make them more attractive.

The transformational plan must be the long-term, consensual result of an all-parties debate. A combination of the three fundamental axes is also a must: Urbanism, Humanism and Technology, with urbanism leading and the others supporting and complementing.

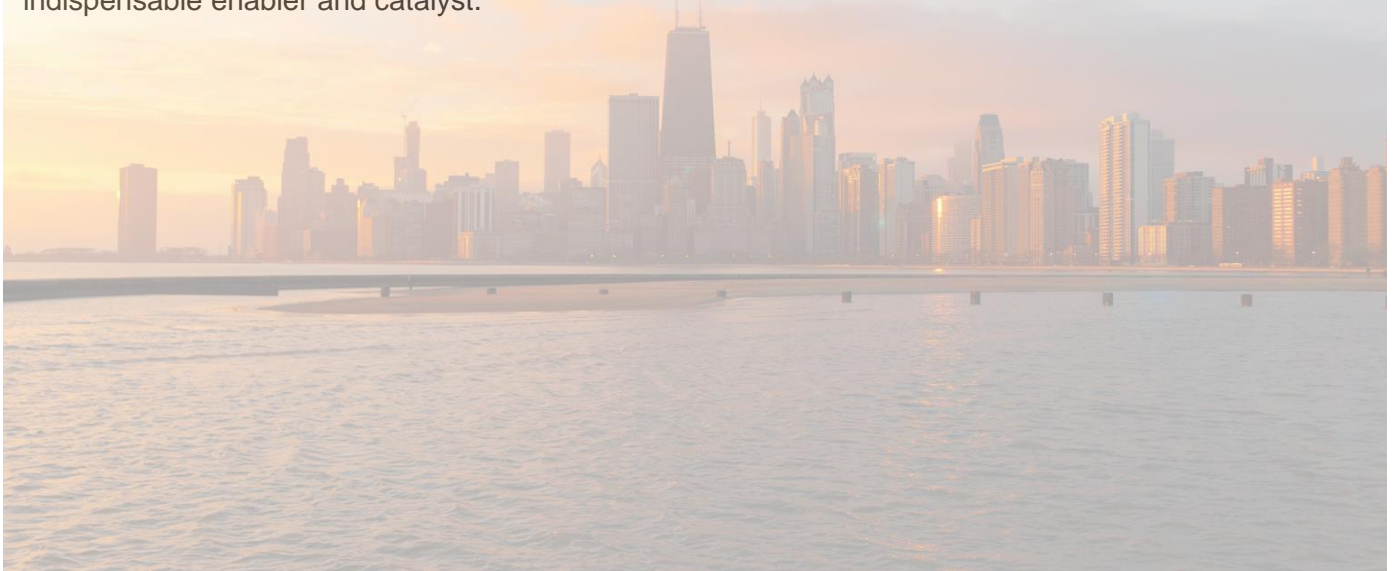
And finally, we have the technological side, from investment in innovation to the focus on human capital and the proposal of an ambitious SmartCities plan. The SmartCities Plan fulfills the mission of improving citizen services (Profitability), while also helping in strategy, reputation, and innovation (Magnetism) making it the most powerful tool we have to improve Attractiveness. As we have mentioned, little can be done about fixed issues like geolocation, and changes in Identity are slow and always mid- to long-term projects, and improving economic conditions and net purchasing power is difficult to do quickly. Therefore, the obvious lever, with the most short-term results (even in a 4-year legislature), is to invest heavily in a solid SmartCities plan. Cities that fail in this aspect have either fallen asleep in the glory of leadership (and are now waking up, like the Swiss) or are losing ground by not taking advantage of their excellent magnetism to climb in the ranking (like in Southern Europe). On the contrary, cities with handicaps in Magnetism—either due to lack of history (US), weather conditions (Nordics, Emirates) or long distances (AUS)—can compensate those shortcomings with SmartCities plans that improve their attractiveness, or even thinking about future MetaCities...



## A New Model for SmartCommunities

- Human: **Citizen-centric** with welfare and quality of life as the major goal.
- Sense of **community** (ideally a beehive) with all citizens cooperating around a collective task or project, with a strong sense of unity, belonging and identity. Multiplicity as the new city social paradigm, where the total sum of ideas, opinions, and preferences set the city's evolution. We have demonstrated this concept with solidarity and volunteers at pandemic.
- **Self-everything**: sufficient in water, energy, matter, people-talent, funding, resiliency...
- **Zero-everything**: car fatalities (zero vision), pollution, carbon, violence, unrecycled waste, unmanaged water, non-renewable energies, crime, inequality, poverty.
- **Sustainability**: social, economic, and eventually environmentally: Carbon negative, Circular.
- City as a **social enabler**: relationships facilitator, inclusive, social diversity, livable, leisure-fostering and shared activities.
- **Citizens as co-creators**: permanent engagement, proud to contribute. City as an expression of collective experience. SmartArt as a combination of technology and creativity.
- Megalopolis is broken, walking-distance suburbs/districts, making them next to one another. More spaces for humans, soft heights gradient, boulevards as an urbanism principle, walkable city, bike-friendly. Curb Management. 3 Distances (**90'-15'-1'**) **City**
- **Smart-DataSphere**: AI-driven Digital Twin models monitoring the physical city (from sensor to IoT to Edge to Cloud Analytics to AI), simulating potential improvement alternatives, but always understanding living humans. A respectful and ethical technological city, conscious and persuasive city by tracking citizens' psychologies.
- **Agile, Dynamic and Versatile**: Always creating projects, experimenting, listening to citizens, applying feedback, adapting to new circumstances and needs, developing new solutions and starting over again and again. Creativity always as the leading motion.  
*"Create opportunities, solve problems, innovate. All three are inseparable." Jane Jacobs*
- Open, Respectful, Ethical, based on a **strong identity and values**.
- A city with **smart Recovery & Resiliency funds investments**, making a fast recovery the driver for new competitiveness and prosperity.

To conclude, I would like to close by sharing my dream of a new cultural revival brought about by an increasing appreciation for human artwork and the essential principles of human creativity: beauty, goodness, truth. Human destiny has long been about labor, but our human future points increasingly toward a creative value mission. To achieve this dream, we will need to unlock the full capacity of our creative mind. It is not just a matter of technology or investment. Identity, urban planning and social sustainability are and will remain determining factors, with Technology as the essential and indispensable enabler and catalyst.





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