



WorldWide Observatory for Attractive Cities

2021 Edition

Prof. José A. Ondiviela

Associate Researcher at UFV

www.linkedin.com/in/jondiviela/

josea.ondiviela@ufv.es



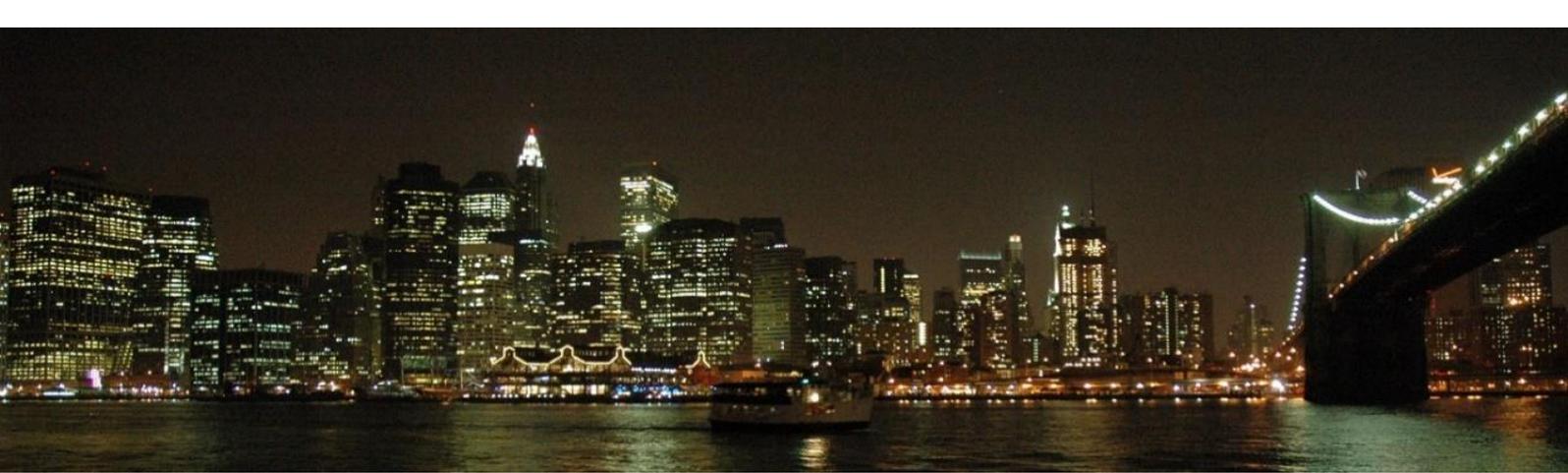
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SMARTCITY
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Foreword

I want to thank Blanca Herreros de Tejada and Marta Meneses, both students at Universidad Francisco de Vitoria. (Madrid) who helped refresh the model and interpret the changes / evolutions from previous year Observatory.

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 2020 Edition, WW Observatory Attractive Cities 2020 ([handle](#)), then you can skip the model description and go directly to 2021 Findings, Chapter 6.



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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, 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 of the most prosperous cities have undergone a profound social transformation due to the past industrial revolutions. In all of them, 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 brings with it the creation of highly qualified and well-paid jobs, which then, pushes any given city's attractiveness to new heights. With rampant new technology in place and talented people developing it, we only have to 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 talent or 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 opening of the door 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.

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 has to 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).

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.

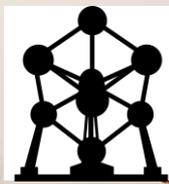
City Strategy (Future): How can the future become a driver for a city's attractiveness? What do we expect from a city with a future? We expect it to have a solid plan (a SmartCity Plan), which includes strategies to cope with city challenges.

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 2020 Analysis (made of 140 Cities), to study 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.

67 indicators selected from international bodies, previously published key studies/analysis, and our own work will be used for this research. Each of the 175 cities selected is also analyzed with data taken from city websites and their published SmartCity plans.

33 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	W	Class	W	Indicator	Subindicator	Entity		
Magnetism	User Input	Identity		History. Culture		Age	Foundation	Own Work		
						UNESCO	World Heritage	UNESCO		
						Top Museums		Own Work		
				Government Basics		Democracy Index		V-DEM INSTITUTE		
						Safe City Index		HUDSONS		
				Reputation		Reputation		Reputation Institute		
				Space. Density		% Natural Space		OECD. Better Life Index		
						Density (inh/km2)		Demographia		
				Climate		Avge. Temperature Desviation	Gradient	Climate-Data.org, Climatedemps		
						Avge. Precipitation Desviation	Gradient	Climate-Data.org, Climatedemps		
						Avge. Daily Sunshine		Climate-Data.org, Climatedemps		
				Geo Risk		Natural Disaster Risk		WorldRiskReport		
				GeoEconomics		GDP Proximity	%WW	Own Work		
				Gastronomy		Food Security Index		The Economist		
						Guru Restaurant		Guru Restaurant		
						Michelin Guide and Guru	#Rest/Minh	Via Michelin		
				Branding. External Image		Music		Own work		
						Movies		Own Work		
						Sports	Soccer Basketball Other Sports Events, Marathons	Football Database NBA Topendsports		
						Main Events		Olympics	Olympics org	
								Universal Expo	Bureau International des Expositions	
								Cultural Events	Day Zero Project	
			User Input	Dynamism		Competitiveness		Creativity Index		Martin Prosperity
								Global Competitiveness	Economic	World Economic Forum
		Cities In Motion						IESE		
		Global Talent Competitiveness					Talent	INSEAD - GTCI		
		Expat Social Experience				Life Style - Quality		HSBC Expat Explorer		
						People Around		HSBC Expat Explorer		
						Relationship - Social Life		HSBC Expat Explorer		
		Ethics. Well-being				Happiness		Happiness Report		
						World Giving Score		Charities Aid Foundation		
						Civic Engagement		OECD. Better Life Index		
						Work-Life Balance		OECD. Better Life Index		
		Equality				GINI Index		WorldBank		
						Gender		Female Graduates	INSEAD - GTCI	
								Gender Development Gap	INSEAD - GTCI	
							Leadership opportunities for women	INSEAD - GTCI		
					Tolerance		Tolerance Minorities	INSEAD - GTCI		
							Tolerance Immigrants	INSEAD - GTCI		
							Poverty		World Bank	
User Input					Strategy		Human Capital		Population Age Average Per Country	
		Ranking Human Capital							IESE Cities Motion	
		Smart Cities Plan					Plan Smart Cities	15 Areas	Own Work	
		Innovation					R&D (% GDP)		INSEAD - GTCI	
							Global Innovation Index		Cornell INSEAD WIPO	
							Innovation Cities		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	User Input	Digital Government	Online Service Index	eGovernment Survey	United Nations
					eParticipation Index	eGovernment Survey	United Nations
					Digitalization of Government	eGovernment Survey	United Nations
			User Input	Education. LifeLong Training	Quality of Management Schools		INSEAD - GTCI
					Prevalence of Training in firms		INSEAD - GTCI
					Employee Development		INSEAD - GTCI
			User Input	Employability	LinkedIn Talent Hiring Demand	Talent Insights	LinkedIN
					Employability		INSEAD - GTCI
			User Input	Connected City	4G LTE	Mobile Connectivity index	GSMA
					5G LTE	Mobile Connectivity index	GSMA
					Internet Speed		INSEAD - GTCI
					ICT Infrastructure		INSEAD - GTCI
			User Input	Health/Social SVS	Social Expenditure (% GDP)		OECD
					Life Expectancy at age 60	WHO	World Health Organization
					Physicians (per 1k)		INSEAD - GTCI
					Public Health Expenditure (%GDP)		OECD.
			User Input	Environmental Sustainability	Carbon Neutrality Plan		Own Work
					Sustainable City Index		EPI 2020
					Environment		IESE Cities Motion
			User Input	Culture-Tourism	Culture Creative Jobs %	Libraries, musems and other cultural activities	ILO
					City Destination		Euromonitor International
			User Input	Urban Mobility	Smart Parking	SmartCities Index	Easy Park Group
					Car Sharing Services	SmartCities Index	Easy Park Group
					Traffic INRIX Congestion		INRIX
Mobility and Transportation		IESE Cities Motion					
User Input	Urban Planning	Urban Planning		IESE Cities Motion			
User Input	Safety	Safe Cities Index		The Economist			
		Cities In Motion		IESE			
		Personal Safety		INSEAD - GCTCI			
50	Cost Of Living. Net Purchase Power	50	Net Real Income	Avg Wages/month	SINGLE, No CHILD	UNECE, ILOSTAT	
				Direct Tax + Social Contributions		OECD	
				Indirect Tax		OECD	
50	Cost Of Life		Purchase Power Parity Plus Rent (NY=1)		Numbeo		

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

Main data sources updates vs 2020 Edition have been:

Added Indicators:

- Magnetism.Identity.Gastronomy.Guru Restaurant, as proxy for mid/high Quality restaurants in the area.
- Profitability.Services.Connected City.5G LTE
- Profitability.Services.Environmental Sustainability.Carbon Neutrality Plan

Deleted Indicators (obsolete):

- Profitability.Services.Connected City.WIFI Hotspots

Changed sources at:

- Magnetism.Identity.Government Basics.Democracy Index and Safe City Index
- Magnetism.Identity.Gastronomy.Food Security Index
- Magnetism.Dynamism.Equality.Poverty
- Magnetism.Strategy.Innovation.Innovation Cities Index
- Profitability.Services.Digital Government.Digitalization of Government
- Profitability.Services.Connected City.4G LTE
- Profitability.Services.Health/Social SVS.Public Health Expenditure (%GDP)
- Profitability.Services.Environmental Sustainability.Sustainable City Index
- Profitability.Services.Culture-Tourism.Culture Creative Jobs%

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>

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 (for SCE2018 Attendees).

If we apply these survey scores to our model, (see figure 3 with full list of top175 cities) we find the Top 15 among several world cities from Australia, Switzerland, Netherlands, USA, as well as Berlin, Vienna, and Copenhagen. Extraordinary Profitability with good wages and reasonable taxes push US, Swiss Cities into those top positions, while cities with excellent scores in Magnetism (like in London, Vienna, Berlin and Amsterdam) compete from another angle. We can perceive a balanced summary of results with no surprises on which cities come out on top (based on the SmartCityExpo attendees' opinions). Given the vast number of answers and its small margin of error, we can conclude that the model works, is easy to understand and correctly reflects the complex reality it describes.

City	Country	MAGNETISM	IDENTITY	DYNAMISM	STRATEGY	PROFITABILITY	PERFORMANCE	NetPurchase Power	ATTRACTIVENESS
Zurich	Switzerland	12	12	31	45	9	22	21	1
Amsterdam	Netherlands	1	18	1	8	43	13	59	2
Kansas City	United States	42	60	77	13	4	42	8	3
London	United Kingdom	2	1	60	22	45	7	63	4
Berlin	Germany	14	24	47	17	19	11	41	5
Sydney	Australia	13	53	8	29	23	41	26	6
Melbourne	Australia	24	61	14	43	15	59	14	7
Copenhagen	Denmark	3	45	4	2	54	1	70	8
Den Haag	Netherlands	18	68	5	50	18	32	27	9
Bern	Switzerland	51	47	39	74	6	34	12	10
Dallas	United States	82	110	77	35	1	27	2	11
Vienna	Austria	16	11	50	47	22	6	47	12
Rotterdam	Netherlands	15	64	6	33	27	19	45	13
Washington, D.C.	United States	27	21	75	32	16	24	30	14
Basel	Switzerland	34	27	27	75	12	27	22	15
Toronto	Canada	10	43	11	38	37	45	34	16
Phoenix	United States	84	132	82	5	2	50	3	17
Manchester	United Kingdom	23	42	59	12	35	49	33	18
Atlanta	United States	61	100	83	9	10	58	10	19
New York City	United States	8	10	56	14	59	17	64	20
Adelaide	Australia	57	107	12	58	14	71	11	21
Chicago	United States	38	56	70	16	28	43	29	22
Aarhus	Denmark	9	51	9	26	57	12	66	23
Tokyo	Japan	60	35	96	46	13	8	35	24
Hamburg	Germany	37	44	48	53	30	18	46	25
Geneva	Switzerland	48	19	35	95	21	69	17	26
Oslo	Norway	25	37	30	55	42	14	56	27
Stockholm	Sweden	5	24	22	3	70	8	78	28
Eindhoven	Netherlands	17	72	7	37	53	39	52	29
Glasgow	United Kingdom	52	67	61	31	25	56	23	30
Edinburgh	United Kingdom	21	32	58	21	51	66	44	31
Helsinki	Finland	7	80	10	1	67	2	80	32
Houston	United States	90	113	79	51	5	69	5	33
Miami	United States	69	94	81	27	17	56	16	34
Cologne	Germany	32	37	51	44	44	53	42	35
Montreal	Canada	65	75	15	92	20	65	19	36
Denver	United States	88	129	85	15	7	26	13	37
Birmingham	United Kingdom	54	64	71	34	31	55	28	38
Los Angeles	United States	44	54	67	30	40	62	31	39
Malmo	Sweden	20	57	26	24	61	20	65	40
San Francisco	United States	33	58	68	6	52	35	54	41
Espoo	Finland	22	86	18	18	63	3	75	42
Stavanger	Norway	45	82	28	49	46	14	57	43
Ottawa	Canada	71	99	17	79	32	61	25	44
Belfast	United Kingdom	75	101	64	36	29	80	15	45
Bergen	Norway	66	83	28	72	39	14	53	46
Gothenburg	Sweden	19	75	32	10	69	27	69	47
Las Vegas	United States	101	127	88	68	3	36	7	48
Baltimore	United States	97	105	86	77	8	48	9	49
Munich	Germany	41	29	44	71	60	30	60	50
Frankfurt	Germany	70	48	54	91	38	23	48	51
Wellington	New Zealand	55	96	2	83	55	46	49	52
Tampere	Finland	43	113	18	18	64	4	73	53
Stuttgart	Germany	74	52	55	87	41	43	40	54
Yokohama	Japan	85	97	100	23	26	31	35	55
Bristol	United Kingdom	67	73	64	48	50	68	38	56
Luxembourg	Luxembourg	50	40	33	85	62	51	55	57
Oulu	Finland	39	116	18	11	68	4	79	58

City	Country	MAGNETISM	IDENTITY	DYNAMISM	STRATEGY	PROFITABILITY	PERFORMANCE	NetPurchase Power	ATTRACTIVENESS
Boston	United States	63	74	74	40	58	73	43	59
Liverpool	United Kingdom	76	62	64	67	47	83	24	60
Canberra	Australia	91	121	12	99	24	71	18	61
Philadelphia	United States	86	90	87	65	36	82	20	62
Dublin	Ireland	26	41	25	56	72	83	58	63
Nottingham	United Kingdom	79	68	63	69	49	78	32	64
Vancouver	Canada	92	128	16	86	33	38	37	65
Singapore	Singapore	56	135	21	7	66	8	76	66
Dusseldorf	Germany	94	68	53	115	34	32	39	67
Seattle	United States	87	108	76	42	48	36	50	68
Auckland	New Zealand	58	84	3	98	71	67	61	69
Paris	France	4	2	46	52	87	24	102	70
Barcelona	Spain	6	4	24	63	86	40	95	71
Linz	Austria	83	48	52	113	65	21	67	72
Valencia	Spain	31	17	34	79	77	62	82	73
Antwerp	Belgium	59	37	99	41	74	59	74	74
Madrid	Spain	11	5	23	81	89	62	94	75
Seville	Spain	28	8	37	90	80	76	87	76
Zaragoza	Spain	29	9	38	88	83	88	82	77
Lyon	France	35	20	57	61	81	51	91	78
Brussels	Belgium	73	35	94	70	75	74	72	79
Málaga	Spain	36	23	36	76	85	86	86	80
Marseille	France	64	16	69	93	78	75	84	81
Nice	France	46	14	62	78	88	85	90	82
Honolulu	United States	107	157	88	64	56	47	51	83
Seoul	South Korea	30	15	112	4	92	79	100	84
Lille	France	80	50	72	84	84	87	85	85
Bordeaux	France	68	26	72	89	90	89	89	86
Osaka	Japan	104	106	104	73	73	53	71	87
Santander	Spain	47	33	41	82	96	92	98	88
Bilbao	Spain	53	22	41	96	95	91	98	89
Milan	Italy	49	6	105	62	98	80	109	90
Nagoya	Japan	99	109	107	57	82	77	88	91
Florence	Italy	40	7	115	39	101	100	104	92
Hong Kong	Hong Kong	77	86	95	25	97	96	96	93
Tel Aviv	Israel	93	129	91	20	94	97	92	94
Rome	Italy	62	3	111	102	104	98	106	95
Jerusalem	Israel	78	59	92	54	99	114	81	96
Lisbon	Portugal	81	46	43	114	103	90	111	97
Doha	Qatar	119	161	97	94	76	119	6	98
Porto	Portugal	72	30	49	107	107	99	110	99
Torino	Italy	95	12	116	106	100	101	101	100
Dubai	United Arab Emirates	108	150	40	103	93	105	77	101
Ljubljana	Slovenia	100	64	103	100	102	101	105	102
Abu Dhabi	United Arab Emirates	117	166	45	124	91	109	62	103
Manama	Bahrain	131	154	84	149	79	129	4	104
Kuwait City	Kuwait	159	149	145	161	11	130	1	105
Tallinn	Estonia	96	93	108	59	109	93	116	106
Prague	Czech Republic	89	34	98	97	113	95	121	107
Wroclaw	Poland	106	62	129	101	106	104	107	108
Taipei	Taiwan	103	120	131	28	110	94	117	109
Warsaw	Poland	113	78	120	131	108	103	112	110
Athens	Greece	105	31	128	128	114	110	114	111
Santiago	Chile	122	134	114	116	105	107	93	112
Shanghai	China	98	27	150	60	125	113	145	113
Budapest	Hungary	110	55	136	110	115	114	115	114
Bratislava	Slovakia	123	88	142	138	112	106	113	115
Vilnius	Lithuania	109	85	122	105	117	111	123	116
Buenos Aires	Argentina	111	104	80	140	121	114	135	117
Riga	Latvia	116	103	109	133	119	111	126	118

Figure 3 Full list of top 175 Attractive Cities for SmartCityExpo attendees. Source: Author

City	Country	MAGNETISM	IDENTITY	DYNAMISM	STRATEGY	PROFITABILITY	PERFORMANCE	NetPurchase Power	ATTRACTIVENESS
Zagreb	Croatia	114	95	124	123	122	120	120	119
Moscow	Russia	102	112	101	66	141	134	144	120
Beijing	China	118	75	153	109	128	120	138	121
Istanbul	Turkey	125	71	147	143	124	147	108	122
Mexico City	Mexico	115	78	119	139	142	139	139	123
Minsk	Belarus	138	132	121	155	116	143	97	124
Sofia	Bulgaria	112	80	127	112	147	133	150	125
Córdoba	Argentina	121	123	90	159	136	132	135	126
Montevideo	Uruguay	120	138	93	130	138	127	148	127
Suzhou	China	130	91	163	129	130	124	128	128
Bucharest	Romania	128	111	133	142	133	138	118	129
St Petersburg	Russia	124	136	110	127	140	140	125	130
Kuala Lumpur	Malaysia	142	175	102	104	118	108	134	131
Chongqing	China	135	115	158	122	129	123	128	132
Shenyang	China	134	119	160	117	130	124	128	133
Guadalajara	Mexico	132	145	125	120	137	142	119	134
Tianjin	China	133	102	165	132	135	130	128	135
Guangzhou	China	145	147	157	110	120	117	122	136
Chengdu	China	141	116	156	141	126	122	128	137
Rio de Janeiro	Brazil	129	124	126	136	145	151	124	138
Shenzhen	China	146	152	155	108	127	118	143	139
Monterrey	Mexico	139	155	123	134	139	137	137	140
Wuhan	China	144	140	159	117	134	124	140	141
Riyadh	Saudi Arabia	166	172	132	167	111	146	68	142
Ankara	Turkey	152	125	154	166	123	152	103	143
Sao Paulo	Brazil	137	140	117	145	146	149	141	144
Kiev	Ukraine	127	118	118	146	152	145	163	145
Belgrade	Serbia	126	92	137	148	153	141	166	146
San José	Costa Rica	147	153	134	150	144	136	149	147
Bangkok	Thailand	136	139	106	147	151	135	165	148
Panama City	Panama	143	160	113	154	148	155	147	149
Brasília	Brazil	153	168	130	158	143	148	127	150
Harbin	China	163	173	162	117	132	128	128	151
Cape Town	South Africa	140	151	138	121	163	153	173	152
Bogota	Colombia	151	159	148	135	154	157	162	153
Lima	Peru	161	143	164	151	150	162	146	154
Durban	South Africa	150	169	140	125	160	150	171	155
Johannesburg	South Africa	148	142	139	153	165	153	174	156
Tbilisi	Georgia	160	125	146	173	157	160	160	157
Quito	Ecuador	162	165	152	144	155	158	161	158
Tunis	Tunisia	155	88	167	175	164	168	164	159
Jakarta	Indonesia	149	146	161	126	174	161	175	160
Manila	Philippines	154	137	135	169	171	165	172	161
Hanoi	Vietnam	157	144	143	164	170	164	168	162
Casablanca	Morocco	156	122	168	160	172	172	158	163
Medellín	Colombia	170	174	151	152	149	144	159	164
Asuncion	Paraguay	164	148	149	168	168	166	167	165
Ho Chi Minh City	Vietnam	165	171	141	156	167	159	170	166
La Paz	Bolivia	167	161	166	162	166	171	154	167
Santo Domingo	Dominican Republic	168	163	144	171	162	156	169	168
New Delhi	India	171	167	175	137	156	163	152	169
Cairo	Egypt	158	97	171	165	175	175	156	170
Rabat	Morocco	169	131	169	172	173	173	155	171
Mumbai	India	172	158	172	157	159	167	157	172
Bangalore	India	173	156	173	163	161	170	153	173
Hyderabad	India	174	164	174	170	158	169	151	174
Accra	Ghana	175	170	170	174	169	174	142	175

6. City Attractiveness Findings

Looking at the list of the top 175 cities worldwide, we can group them in 4 groups:

Advanced: From position 1 to 93, we find the most advanced, Western civilization cities. Top28 concentrate most of main capital cities, while midsized non-capital cities take most 29-93 seats. Australian cities lead with all 4 studied cities ending up in the top 21 positions, with Melbourne at (7). In Western Europe, 4 Swiss cities lead with Zurich (1) till Geneva (26), then 4 Dutch Cities ranging from Amsterdam (2) to Eindhoven (29), then Nordic capitals Copenhagen (8), Oslo (27), Stockholm (28) and Helsinki (32). Following that, we find UK (9 cities ranging from London (4) to Nottingham (64)) and Germany (7 cities from Berlin (5) to Dusseldorf (67)). Southern Europe takes the lowest area in this category with France (6 cities from Paris (70) to Bordeaux (86)), Spain (8 cities from Barcelona (71), Madrid (75) till Bilbao (89)). At this group limit, we find Italy with 4 cities (from Milano (90), Rome (95) to Torino (100)). Also here is Portugal with Lisbon (97). Turning to North America, Canada makes a strong showing with 4 cities ranging from Toronto (16) to Vancouver (65). And all 18 US studied cities, with a surprising Kansas City placed at (3), NYC (20) till Honolulu at (83). From Asia, only the main tigers can compete on this leading squad: Seoul (84), Taiwan (109), Singapore (66) and Hong Kong (93). Japan shows 4 cities from Tokyo (24) to Nagoya (91). 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.

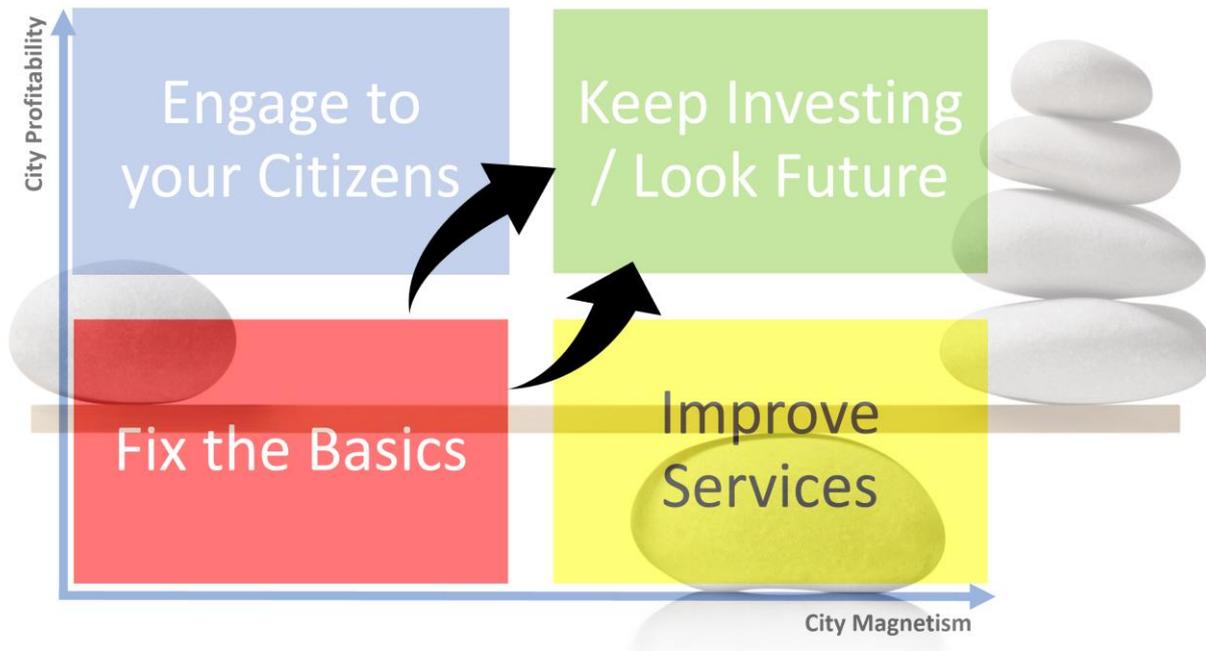
Challengers: In this area, we group cities from positions 94 to 116 which are progressing rapidly, competing to join the leading group, following the example of the Asian tigers. Among the Challengers, we find the Middle East, led by Israel Tel-Aviv (94) and Gulf (98-105); Central/Eastern Europe with Ljubljana (102), Prague (107) till Zagreb (119). 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 117-151. Here we find most of Latin America, led by Santiago (112), Buenos Aires (117); then Mexico City (123); Montevideo (127); Rio de Janeiro and other cities in Brazil (138-150); and Bogotá (153) and Medellín (164) in Colombia. 11 studied cities from China are represented in the positions between Shanghai (113) and Harbin (151). And finally, Russia and surroundings with Moscow (120). 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 Bangkok (122), Manila (131), and Hanoi (134). Malaysia has Kuala Lumpur (131) although with obvious different dimensions. The cities in this group have plans, recognize this global competition, and are making rapid progress.

Starters: Positions 152-175. Among the Starters are South Africa's CapeTown (152), 4 Indians with Delhi (169 - 174), Northern Africa's Tunis (159) and Cairo (170), 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	n	MAGNETISM	PROFITABILITY	ATTRACTIVENESS AVERAGE
Africa	7	156	167	164
Asia-Pacific	18	91	84	87
CE Europe	19	116	125	124
China Extended	13	128	125	128
India Extended	4	173	159	165
LatinAmerica	19	143	145	144
Middle East	11	128	98	106
North America	22	66	26	27
Western Europe	62	41	60	57
	175			

Figure 4. Average positions. Attractive Cities by Geographic Area. Source:Author

Figure 4 shows the average position attained by each geographic area. In 2020 analysis, we found a face-to-face competition between North America and Western Europe, both with the same average position (38). With more cities in the 2021 analysis, we can notice that North American cities have moved up in the ranking, while European have suffered more the pandemic effects. Western Europe enjoys more Magnetism, history, culture, and human values, but it pays a high price in taxes to maintain its welfare policy programs causing its Profitability to worsen. North America does the opposite: it makes up for a lack of history and cultural and human flavor with strong economic and competitiveness traits where they rank high in—and win at—everything, offering high profitability, high wages, moderate taxes and a reasonable cost of living. Better economic management of pandemic crisis has made this impact, improving US/Canada cities attractiveness.

6.2 City Attractiveness. Honors Board.

Using the weights provided by the SmartCity Expo survey, we have assembled the following honors board. See figure 5.

Honors Board. Magnetism IDENTITY

HISTORY/CULTURE



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

GOV-BASICS



1	Zurich
2	Aarhus
3	Copenhagen
4	Geneva
5	Basel
6	Bern
7	Espoo
8	Helsinki
9	Oulu
10	Tampere

REPUTATION



1	Zurich
2	Geneva
3	Basel
4	Bern
5	Stockholm
6	Malmö
7	Gothenburg
8	Bergen
9	Oslo
10	Stavanger

SPACE/DENSITY



1	Toronto
2	Manila
3	Kansas City
4	Kuwait City
5	Washington, D.C
6	Vilnius
7	Ottawa
8	Doha
9	Cairo
10	Chicago

CLIMATE



1	Johannesburg
2	Kansas City
3	Cape Town
4	San Francisco
5	Nice
6	Marseille
7	Mexico City
8	Washington, D.C
9	Florence
10	Rome

GeoRISK



1	Doha
2	Riyadh
3	Cairo
4	Helsinki
5	Espoo
6	Tampere
7	Oulu
8	Tallinn
9	Geneva
10	Basel

GeoECONOMICS



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

GASTRONOMY



1	Bilbao
2	Antwerp
3	Singapore
4	Luxembourg
5	Geneva
6	Zurich
7	Paris
8	Florence
9	Lyon
10	Zaragoza

BRANDING



1	London
2	Paris
3	New York City
4	Los Angeles
5	Barcelona
6	Rome
7	Melbourne
8	Chicago
9	Madrid
10	Mexico City

Honors Board. Magnetism

Magnetism DYNAMISM

Magnetism STRATEGY

COMPETITIVENESS



1	New York City
2	Singapore
3	London
4	Copenhagen
5	Stockholm
6	Helsinki
7	Paris
8	San Francisco
9	Amsterdam
10	Boston

EXPAT EXPERIENCE



1	Madrid
2	Valencia
3	Málaga
4	Zaragoza
5	Seville
6	Bilbao
7	Santander
8	Barcelona
9	Lisbon
10	Porto

ETHICS WELL-BEING



1	Auckland
2	Amsterdam
3	Den Haag
4	Rotterdam
5	Eindhoven
6	Wellington
7	Sydney
8	Adelaide
9	Canberra
10	Melbourne

EQUALITY



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

HUMAN CAPITAL



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

SMARTCITY



1	Helsinki
2	Copenhagen
3	Tel Aviv
4	Singapore
5	Amsterdam
6	Oulu
7	Gothenburg
8	Antwerp
9	Doha
10	Stockholm

INNOVATION



1	Zurich
2	Bern
3	Basel
4	Geneva
5	Gothenburg
6	Stockholm
7	Malmo
8	Seoul
9	Kansas City
10	Phoenix

Honors Board. Profitability. Performance

DIGITAL GOV.



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

EDUCATION. LIFELONG TRAINING



1	Zurich
2	Geneva
3	Bern
4	Basel
5	Washington, D.C.
6	New York City
7	Seattle
8	Phoenix
9	San Francisco
10	Philadelphia

EMPLOYABILITY



1	Seattle
2	Dallas
3	Phoenix
4	Denver
5	Atlanta
6	Eindhoven
7	Berlin
8	Tokyo
9	Yokohama
10	Dusseldorf

CONNECTED CITY



1	Singapore
2	Geneva
3	Zurich
4	Basel
5	Bern
6	Dublin
7	Vienna
8	Seoul
9	Bristol
10	Manchester

HLC / SOCIAL SVS



1	Oslo
2	Stavanger
3	Bergen
4	Paris
5	Marseille
6	Lyon
7	Bordeaux
8	Nice
9	Lille
10	Vienna

ENV.SUSTAINABILITY



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

CULTURE/TOURISM



1	Singapore
2	London
3	Tallinn
4	Bangkok
5	Hong Kong
6	Prague
7	Paris
8	New York City
9	Copenhagen
10	Vilnius

URBAN MOBILITY



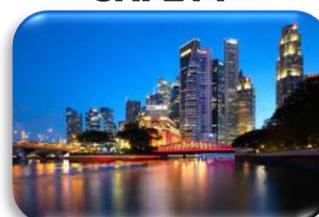
1	Barcelona
2	Madrid
3	Valencia
4	Málaga
5	Vienna
6	Bergen
7	Stavanger
8	Aarhus
9	Amsterdam
10	Sevilla

URBAN PLANNING



1	New York City
2	London
3	Chicago
4	Kiev
5	Vancouver
6	Moscow
7	Taipei
8	Toronto
9	Washington, D.C
10	Ottawa

SAFETY



1	Singapore
2	Tokyo
3	Yokohama
4	Nagoya
5	Osaka
6	Toronto
7	Vancouver
8	Ottawa
9	Montreal
10	Sydney

Honors Board. Profitability. Net Purchase Power

MONTHLY WAGE (AVG)



1	Zurich
2	Geneva
3	Bern
4	Basel
5	Oslo
6	Bergen
7	Stavanger
8	Copenhagen
9	Aarhus
10	Sydney

INCOME AFTER DIR TAXES



1	Zurich
2	Geneva
3	Bern
4	Basel
5	Oslo
6	Bergen
7	Stavanger
8	Aarhus
9	Copenhagen
10	Sydney

NET REAL INCOME



1	Zurich
2	Geneva
3	Bern
4	Basel
5	Kuwait City
6	Oslo
7	Bergen
8	Stavanger
9	Sydney
10	Melbourne

COST OF LIFE



1	Hyderabad
2	New Delhi
3	Bangalore
4	Tbilisi
5	Mumbai
6	Asuncion
7	Ankara
8	Medellín
9	Kiev
10	Tunis

Honors Board. ATTRACTIVENESS

IDENTITY



1	London
2	Paris
3	Rome
4	Barcelona
5	Madrid
6	Milan
7	Florence
8	Sevilla
9	Zaragoza
10	New York City

DYNAMISM



1	Amsterdam
2	Wellington
3	Auckland
4	Copenhagen
5	Den Haag
6	Rotterdam
7	Eindhoven
8	Sydney
9	Aarhus
10	Helsinki

STRATEGY



1	Helsinki
2	Copenhagen
3	Stockholm
4	Seoul
5	Phoenix
6	San Francisco
7	Singapore
8	Amsterda,
9	Atlanta
10	Gothengurb

PROFITABILITY



1	Dallas
2	Phoenix
3	Las Vegas
4	Kansas City
5	Houston
6	Bern
7	Denver
8	Baltimore
9	Zurich
10	Atlanta

MAGNETISM



1	Amsterdam
2	London
3	Copenhagen
4	Paris
5	Stockholm
6	Barcelona
7	Helsinki
8	New York City
9	Aarhus
10	Toronto

ATTRACTIVENESS



1	Zurich
2	Amsterdam
3	Kansas City
4	London
5	Berlin
6	Sydney
7	Melbourne
8	Copenhagen
9	Den Haag
10	Bern
11	Dallas
12	Vienna
13	Rotterdam
14	Washington, D.C
15	Basel

PERFORMANCE



1	Copenhagen
2	Helsinki
3	Espoo
4	Tampere
5	Oulu
6	Vienna
7	London
8	Tokyo
9	Singapore
10	Stockholm

NET PURCHASE POWER



1	Kuwait City
2	Dallas
3	Phoenix
4	Manama
5	Houston
6	Doha
7	Las Vegas
8	Kansas City
9	Baltimore
10	Atlanta

Figure 5. 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 6, 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 $R^2 = 0.0704$ 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. 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 7, we can compare City Attractiveness with GDP/Capita. Here $R^2 = 0.6738$, indicating a strong correlation 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 life 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 Kansas City (3) to Honolulu (83) positions, but obviously city wealth and capacity to invest strongly contributes to City Attractiveness

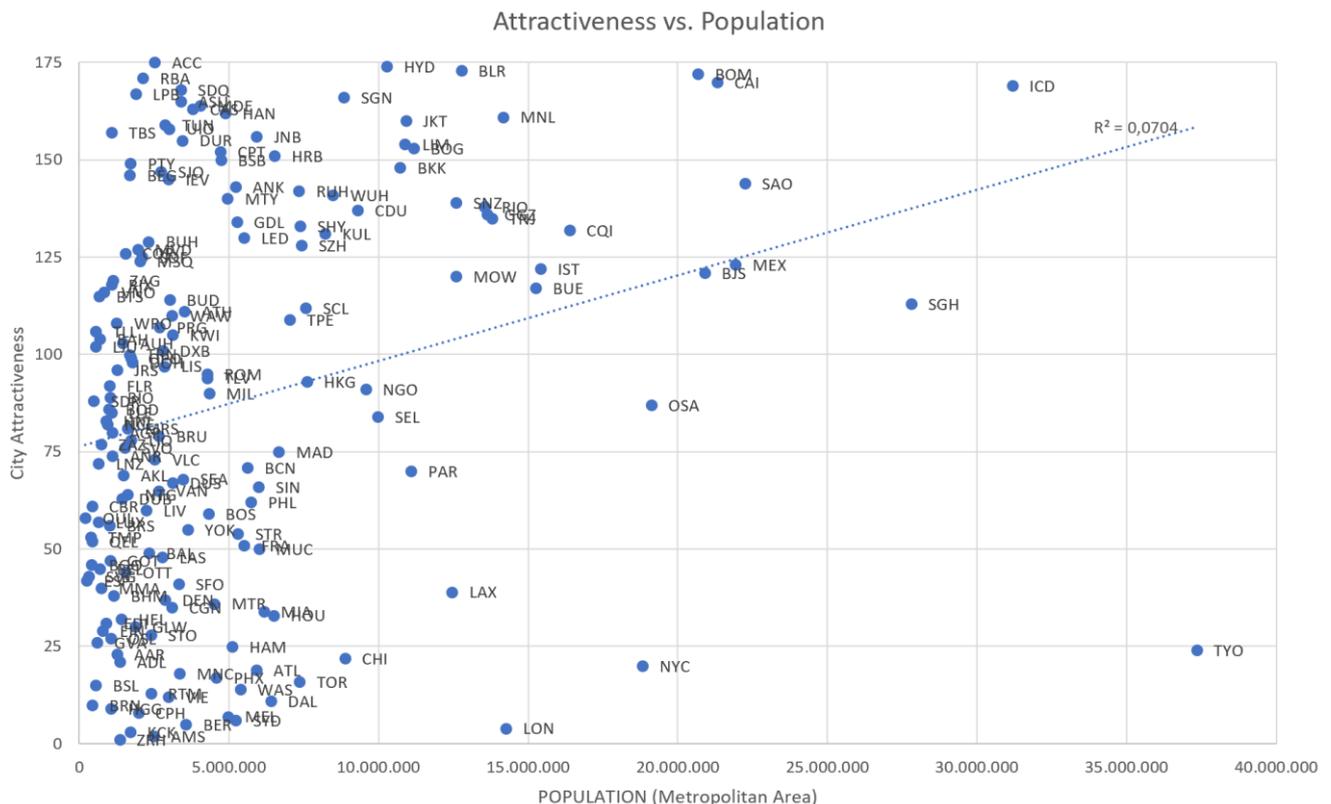


Figure 6. City Attractiveness vs Population (Metropolitan Area). Source: Author



Figure 7. City Attractiveness vs GDP/Cap (USD). 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 (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... We place the Swiss, and some German, US cities here. Let's study figure 8.

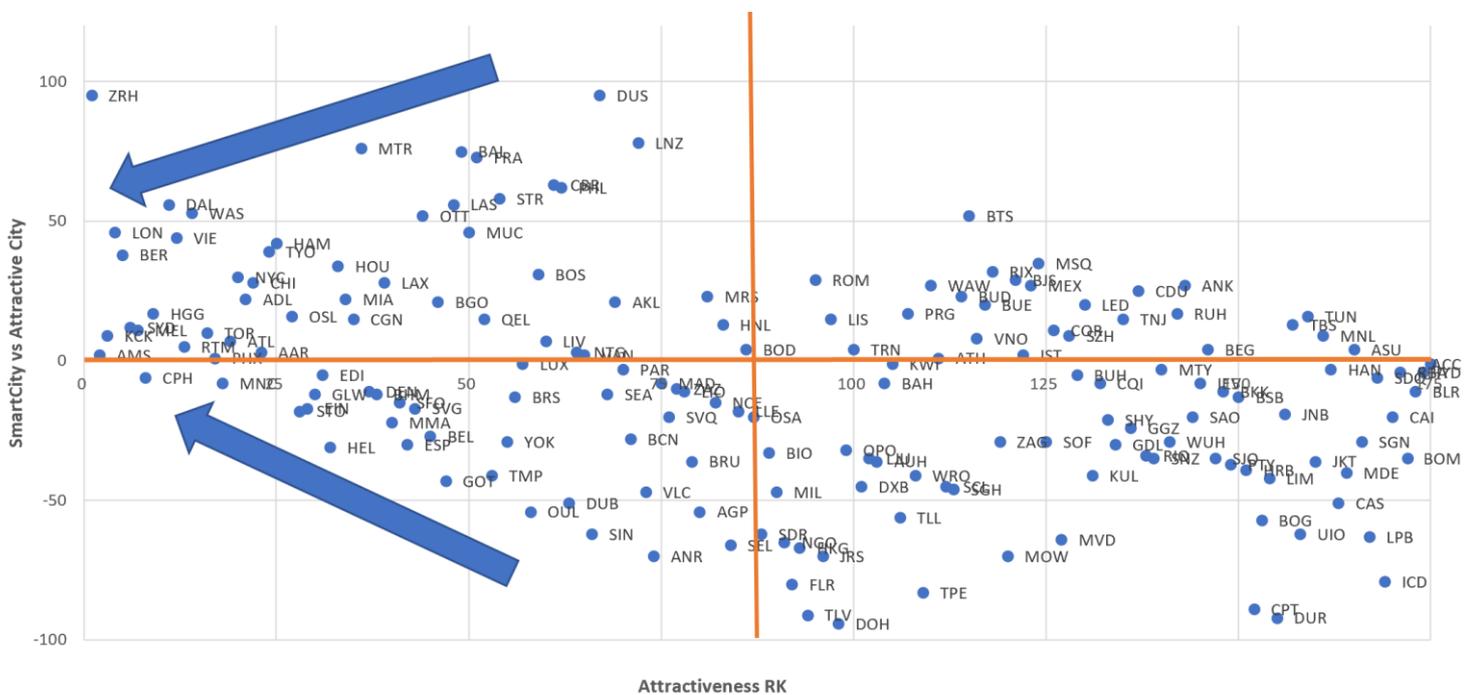


Figure 8. City Attractiveness Ranking vs Gap (SmartCity vs AttractiveCity). Source: Author

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

On the vertical axis, the orange line marks rank 87, 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, Hong Kong, Doha, Taipei and many from Eastern Europe...) 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. 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 9 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.

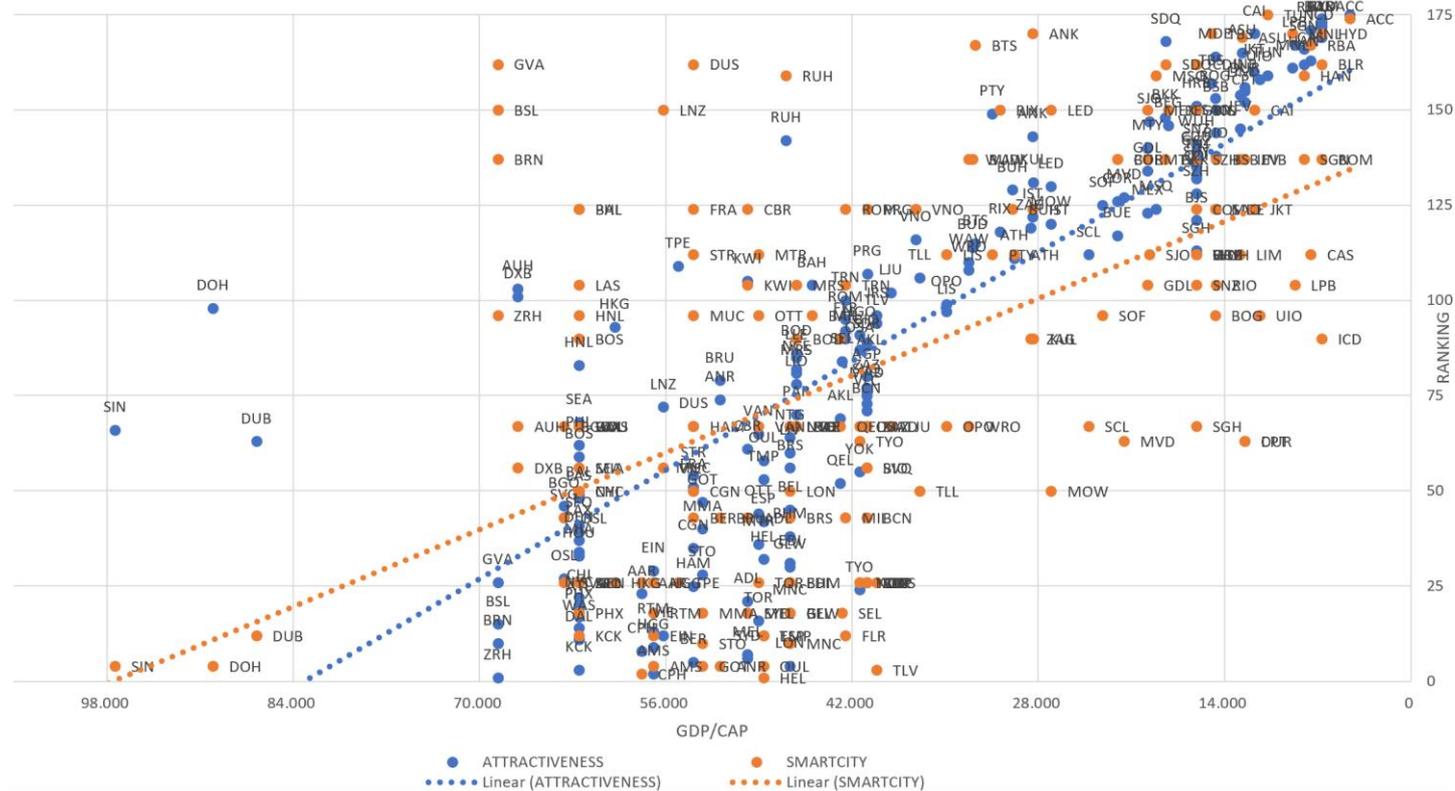


Figure 9. Attractive Cities vs SmartCities by GDP. Source: Author

6.5 Attractive Cities. Comparing 2021 vs 2020 Results.

Let's study the evolution of our 140 (2020 edition) and the impact of the new added 35 (for a total of 175) studied cities.

Impact of COVID vs Technology adoption acceleration

To study the economic impact of the pandemic, we have added to our ranking a comparison of the evolution of cities GDP and the expected post-pandemic recovery time (OECD, 2021). It's clear that the city which recovers the fastest, will enjoy a significant advantage in competitiveness to retain and attract talent (Attractiveness). We can very easily identify the winners and associate them with the economies that are recovering the fastest (before end of Q3 2021). These are the US, China, Japan, cities.

Most studied 18 US Cities have significantly escalated positions and a newcomer, Kansas City, has entered directly to position (3). It's notorious their excellent Profitability. The way US managed the pandemic, minimizing the economic impact over social damage, and the changes on state and local investments and new environmental position with new President Biden have boosted US Cities in comparison with all other western competitive metropolises. The excellent appeal of American technological companies has been further accelerated by the cities adoption of technology to mitigate the effects of the pandemic (teleworking, processes analysis, market reassessment, digital transformation, reskilling in technologies and new developments to help with the green transition).

Although Chinese cities have suffered in reputation because of the origin of the virus, this effect has been small as they had little to lose. On the contrary, the very rapid recovery has made them gain positions (although not as strongly as the US cities) in Attractiveness. The model of society, economy, environmental care and language continue to be a strong drag.

Japanese cities are all winning because of their fast recovery as well, with Tokyo gaining 28 positions due to the Olympics impact, external branding, re-boosted innovation investment, especially on Artificial Intelligence and social unbalancing reduction.

Although they plan to recover later (Q2 2022), Dutch and UK cities are gaining positions due to massive technology adoption. This improvement (also appreciated in Austria, Belgium, Finland) corresponds not only to a greater adoption of technologies in SmartCities (especially in social and environmental sustainability), but also to the comparison with other cities heavily hit by the pandemic and with setbacks in investments. Basically, they kept investing while other were stagnated.

Some unique cities experienced very notable increases such as Zurich (despite the decline in Switzerland) topping the ranking, Amsterdam, Copenhagen, London, Singapore, Rotterdam, Helsinki due to their leadership in innovation and sustainability.

On the other way, cities have experienced significant decreases in Attractiveness in countries like Argentina, Brazil, India, due to the tremendous impact of the pandemic. Others such as France, Sweden, Switzerland due to a stagnation of investments in innovation, especially in Cloud technologies, so important to quickly respond with service continuity, innovation, cybersecurity and needed agility to readapt processes to new normalcy. Other countries such as Canada and Australia have been overtaken by USA. Germany and Switzerland have not finished to waking up and investing heavily in urban digital transformation and they lack as well of Cloud adoption. Spain has been the European country with the greatest economic impact and the longest expected recovery time, due to its strong dependence on the services sector (hospitality, tourism, etc.), very damaged.

Impact of the new 35 cities. NonCapitals relevance.

We did not observe bias as they were distributed almost evenly. The results indicate 33 cities increasing (> 5 positions) and 37 cities decreasing (> 5 positions), with the other half of cities (70) showing small fluctuations. This indicates that the inclusion of these new cities brings richness to the study without causing disruption.

The newly incorporated cities are almost all second cities (not capitals), which adds depth to the study and continues to highlight the relevance of these types of cities. They have worse Magnetism than the associated capitals, but much better Profitability, quality and cost of living, so it is important to study and propose them.

See Figure 10 with detailed comparison 2021 vs 2020 results.

City	Country	RK21-175	RK21-140	RK20-140	DIFF	INCR GDP (Q42019-Q42021)	Recovery Expected
Zurich	Switzerland	1	1	4	↑ 3	0,7	Q1 2022
Amsterdam	Netherlands	2	2	15	↑ 13	-0,1	Q2 2022
Kansas City	United States	3		NEW!	N/A	4,8	Q2 2021
London	United Kingdom	4	3	21	↑ 18	-0,2	Q2 2022
Berlin	Germany	5	4	5	↑ 1	0,6	Q4 2021
Sydney	Australia	6	5	7	↑ 2	3,2	Q1 2022
Melbourne	Australia	7	6	1	↓ -5	3,2	Q1 2022
Copenhagen	Denmark	8	7	16	↑ 9	1,4	Q4 2021
Den Haag	Netherlands	9		NEW!	N/A	-0,1	Q2 2022
Bern	Switzerland	10	8	6	↓ -2	0,7	Q1 2022
Dallas	United States	11	9	35	↑ 26	4,8	Q2 2021
Vienna	Austria	12	10	12	↑ 2	-1,3	Q3 2022
Rotterdam	Netherlands	13	11	18	↑ 7	-0,1	Q2 2022
Washington, D.C.	United States	14	12	52	↑ 40	4,8	Q2 2021
Basel	Switzerland	15	13	11	↓ -2	0,7	Q1 2022
Toronto	Canada	16	14	20	↑ 6	1,6	Q2 2022
Phoenix	United States	17	15	14	↓ -1	4,8	Q2 2021
Manchester	United Kingdom	18	16	22	↑ 6	-0,2	Q2 2022
Atlanta	United States	19	17	37	↑ 20	4,8	Q2 2021
New York City	United States	20	18	27	↑ 9	4,8	Q2 2021
Adelaide	Australia	21	19	2	↓ -17	3,2	Q1 2022
Chicago	United States	22	20	33	↑ 13	4,8	Q2 2021
Aarhus	Denmark	23		NEW!	N/A	1,4	Q4 2021
Tokyo	Japan	24	21	49	↑ 28	0,4	Q3 2021
Hamburg	Germany	25	22	17	↓ -5	0,6	Q4 2021
Geneva	Switzerland	26	23	19	↓ -4	0,7	Q1 2022
Oslo	Norway	27	24	9	↓ -15	3,1	Q3 2021
Stockholm	Sweden	28	25	3	↓ -22	2,8	Q4 2021
Eindhoven	Netherlands	29	26	30	↑ 4	-0,1	Q2 2022
Glasgow	United Kingdom	30		NEW!	N/A	-0,2	Q2 2022
Edinburgh	United Kingdom	31	27	28	↑ 1	-0,2	Q2 2022
Helsinki	Finland	32	28	39	↑ 11	1,4	Q3 2021
Houston	United States	33	29	38	↑ 9	4,8	Q2 2021
Miami	United States	34	30	45	↑ 15	4,8	Q2 2021
Cologne	Germany	35	31	23	↓ -8	0,6	Q4 2021
Montreal	Canada	36	32	8	↓ -24	1,6	Q2 2022
Denver	United States	37		NEW!	N/A	4,8	Q2 2021
Birmingham	United Kingdom	38	33	53	↑ 20	-0,2	Q2 2022
Los Angeles	United States	39	34	32	↓ -2	4,8	Q2 2021
Malmo	Sweden	40		NEW!	N/A	2,8	Q4 2021
San Francisco	United States	41	35	56	↑ 21	4,8	Q2 2021
Espoo	Finland	42		NEW!	N/A	1,4	Q3 2021
Stavanger	Norway	43		NEW!	N/A	3,1	Q3 2021
Ottawa	Canada	44	36	26	↓ -10	1,6	Q2 2022
Belfast	United Kingdom	45		NEW!	N/A	-0,2	Q2 2022
Bergen	Norway	46		NEW!	N/A	3,1	Q3 2021
Gothenburg	Sweden	47	37	10	↓ -27	2,8	Q4 2021
Las Vegas	United States	48		NEW!	N/A	4,8	Q2 2021
Baltimore	United States	49	38	59	↑ 21	4,8	Q2 2021
Munich	Germany	50	39	31	↓ -8	0,6	Q4 2021
Frankfurt	Germany	51	40	24	↓ -16	0,6	Q4 2021
Wellington	New Zealand	52	41	25	↓ -16	2,7	Q4 2021
Tampere	Finland	53		NEW!	N/A	1,4	Q3 2021
Stuttgart	Germany	54	42	42	→ 0	0,6	Q4 2021
Yokohama	Japan	55	43	64	↑ 21	0,4	Q3 2021
Bristol	United Kingdom	56		NEW!	N/A	-0,2	Q2 2022
Luxembourg	Luxembourg	57	44	29	↓ -15	3,3	Q3 2021
Oulu	Finland	58		NEW!	N/A	1,4	Q3 2021

City	Country	RK21-175	RK21-140	RK20-140	DIFF	INCR GDP (Q42019-Q42021)	Recovery Expected
Boston	United States	59	45	46	↑ 1	4,8	Q2 2021
Liverpool	United Kingdom	60	46	48	↑ 2	-0,2	Q2 2022
Canberra	Australia	61	47	13	↓ -34	3,2	Q1 2022
Philadelphia	United States	62	48	55	↑ 7	4,8	Q2 2021
Dublin	Ireland	63	49	51	↑ 2	5,2	Q2 2021
Nottingham	United Kingdom	64		NEW!	N/A	-0,2	Q2 2022
Vancouver	Canada	65	50	43	↓ -7	1,6	Q2 2022
Singapore	Singapore	66	51	60	↑ 9	N/A	N/A
Dusseldorf	Germany	67	52	41	↓ -11	0,6	Q4 2021
Seattle	United States	68	53	58	↑ 5	4,8	Q2 2021
Auckland	New Zealand	69	54	44	↓ -10	2,7	Q4 2021
Paris	France	70	55	47	↓ -8	-0,9	Q3 2022
Barcelona	Spain	71	56	40	↓ -16	-2,1	Q2 2023
Linz	Austria	72	57	61	↑ 4	-1,3	Q3 2022
Valencia	Spain	73	58	36	↓ -22	-2,1	Q2 2023
Antwerp	Belgium	74	59	62	↑ 3	-0,5	Q4 2022
Madrid	Spain	75	60	50	↓ -10	-2,1	Q2 2023
Seville	Spain	76		NEW!	N/A	-2,1	Q2 2023
Zaragoza	Spain	77		NEW!	N/A	-2,1	Q2 2023
Lyon	France	78	61	54	↓ -7	-0,9	Q3 2022
Brussels	Belgium	79	62	67	↑ 5	-0,5	Q4 2022
Málaga	Spain	80	63	57	↓ -6	-2,1	Q2 2023
Marseille	France	81	64	63	↓ -1	-0,9	Q3 2022
Nice	France	82	65	65	→ 0	-0,9	Q3 2022
Honolulu	United States	83		NEW!	N/A	4,8	Q2 2021
Seoul	South Korea	84	66	34	↓ -32	N/A	N/A
Lille	France	85		NEW!	N/A	-0,9	Q3 2022
Bordeaux	France	86		NEW!	N/A	-0,9	Q3 2022
Osaka	Japan	87	67	66	↓ -1	0,4	Q3 2021
Santander	Spain	88		NEW!	N/A	-2,1	Q2 2023
Bilbao	Spain	89	68	68	→ 0	-2,1	Q2 2023
Milan	Italy	90	69	69	→ 0	-2	Q2 2022
Nagoya	Japan	91		NEW!	N/A	0,4	Q3 2021
Florence	Italy	92	70	74	↑ 4	-2	Q2 2022
Hong Kong	Hong Kong	93	71	73	↑ 2	N/A	N/A
Tel Aviv	Israel	94	72	71	↓ -1	2,9	Q1 2022
Rome	Italy	95	73	70	↓ -3	-2	Q2 2022
Jerusalem	Israel	96	74	72	↓ -2	2,9	Q1 2022
Lisbon	Portugal	97	75	77	↑ 2	-1,9	Q3 2022
Doha	Qatar	98	76	89	↑ 13	N/A	N/A
Porto	Portugal	99	77	75	↓ -2	-1,9	Q3 2022
Torino	Italy	100		NEW!	N/A	-2	Q2 2022
Dubai	United Arab Emira	101	78	82	↑ 4	N/A	N/A
Ljubljana	Slovenia	102	79	79	→ 0	-2,1	Q3 2022
Abu Dhabi	United Arab Emira	103	80	87	↑ 7	N/A	N/A
Manama	Bahrain	104		NEW!	N/A	N/A	N/A
Kuwait City	Kuwait	105	81	97	↑ 16	N/A	N/A
Tallinn	Estonia	106	82	78	↓ -4	1,7	Q4 2021
Prague	Czech Republic	107	83	76	↓ -7	-0,9	Q2 2022
Wroclaw	Poland	108	84	83	↓ -1	2,8	Q3 2021
Taipei	Taiwan	109	85	81	↓ -4	N/A	N/A
Warsaw	Poland	110	86	88	↑ 2	2,8	Q3 2021
Athens	Greece	111	87	85	↓ -2	-2,2	Q2 2022
Santiago	Chile	112	88	80	↓ -8	3,3	Q3 2021
Shanghai	China	113	89	95	↑ 6	11,9	Q2 2020
Budapest	Hungary	114	90	86	↓ -4	-0,8	Q1 2022
Bratislava	Slovakia	115	91	90	↓ -1	1,5	Q4 2021
Vilnius	Lithuania	116	92	84	↓ -8	2,6	Q1 2021

Figure 10. 2021 vs 2020 Comparison. GDPR Increase. Expected Recovery time. Source: Author

City	Country	RK21-175	RK21-140	RK20-140	DIFF	INCR GDP (Q42019-Q42021)	Recovery Expected
Buenos Aires	Argentina	117	93	91	↓ -2	-3,1	Q2 2026
Riga	Latvia	118	94	92	↓ -2	1,6	Q3 2021
Zagreb	Croatia	119	95	93	↓ -2	N/A	N/A
Moscow	Russia	120	96	96	→ 0	2,7	Q2 2021
Beijing	China	121	97	105	↑ 8	11,9	Q2 2020
Istanbul	Turkey	122	98	99	↑ 1	5	Q3 2020
Mexico City	Mexico	123	99	100	↑ 1	-1,9	Q3 2023
Minsk	Belarus	124		NEW!	N/A	N/A	N/A
Sofia	Bulgaria	125	100	98	↓ -2	0,6	N/A
Córdoba	Argentina	126	101	94	↓ -7	-3,1	Q2 2026
Montevideo	Uruguay	127	102	102	→ 0	N/A	N/A
Suzhou	China	128		NEW!	N/A	11,9	Q2 2020
Bucharest	Romania	129	103	101	↓ -2	2	N/A
St Petersburg	Russia	130	104	106	↑ 2	2,7	Q2 2021
Kuala Lumpur	Malaysia	131	105	107	↑ 2	N/A	N/A
Chongqing	China	132	106	110	↑ 4	11,9	Q2 2020
Shenyang	China	133	107	109	↑ 2	11,9	Q2 2020
Guadalajara	Mexico	134	108	111	↑ 3	-1,9	Q3 2023
Tianjin	China	135		NEW!	N/A	11,9	Q2 2020
Guangzhou	China	136	109	119	↑ 10	11,9	Q2 2020
Chengdu	China	137	110	115	↑ 5	11,9	Q2 2020
Rio de Janeiro	Brazil	138	111	103	↓ -8	-0,4	Q3 2022
Shenzhen	China	139	112	116	↑ 4	11,9	Q2 2020
Monterrey	Mexico	140	113	113	→ 0	-1,9	Q3 2023
Wuhan	China	141		NEW!	N/A	11,9	Q2 2020
Riyadh	Saudi Arabia	142	114	133	↑ 19	-0,4	Q1 2024
Ankara	Turkey	143	115	114	↓ -1	5	Q3 2020
Sao Paulo	Brazil	144	116	104	↓ -12	-0,4	Q3 2022
Kiev	Ukraine	145	117	118	↑ 1	N/A	N/A
Belgrade	Serbia	146	118	108	↓ -10	N/A	N/A
San José	Costa Rica	147		NEW!	N/A	-2,1	Q2 2023
Bangkok	Thailand	148	119	122	↑ 3	N/A	N/A
Panama City	Panama	149	120	120	→ 0	N/A	N/A
Brasilia	Brazil	150	121	112	↓ -9	-0,4	Q3 2022
Harbin	China	151		NEW!	N/A	11,9	Q2 2020
Cape Town	South Africa	152	122	123	↑ 1	-2,6	Q4 2024
Bogota	Colombia	153	123	117	↓ -6	0,1	N/A
Lima	Peru	154	124	128	↑ 4	N/A	N/A
Durban	South Africa	155	125	126	↑ 1	-2,6	Q4 2024
Johannesburg	South Africa	156	126	127	↑ 1	-2,6	Q4 2024
Tbilisi	Georgia	157		NEW!	N/A	N/A	N/A
Quito	Ecuador	158	127	125	↓ -2	N/A	N/A
Tunis	Tunisia	159	128	135	↑ 7	-5,6	N/A
Jakarta	Indonesia	160	129	132	↑ 3	2,8	Q4 2021
Manila	Philippines	161	130	131	↑ 1	N/A	N/A
Hanoi	Vietnam	162	131	134	↑ 3	N/A	N/A
Casablanca	Morocco	163	132	136	↑ 4	N/A	N/A
Medellín	Colombia	164	133	121	↓ -12	0,1	N/A
Asuncion	Paraguay	165	134	140	↑ 6	N/A	N/A
Ho Chi Minh City	Vietnam	166	135	138	↑ 3	N/A	N/A
La Paz	Bolivia	167	136	137	↑ 1	N/A	N/A
Santo Domingo	Dominican Republ	168		NEW!	N/A	N/A	N/A
New Delhi	India	169	137	124	↓ -13	4,5	Q4 2021
Cairo	Egypt	170	138	139	↑ 1	N/A	N/A
Rabat	Morocco	171		NEW!	N/A	N/A	N/A
Mumbai	India	172	139	129	↓ -10	4,5	Q4 2021
Bangalore	India	173	140	130	↓ -10	4,5	Q4 2021
Hyderabad	India	174		NEW!	N/A	4,5	Q4 2021
Accra	Ghana	175		NEW!	N/A	N/A	N/A

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 US 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, 2020 (Lanvin and Monteiro, 2020), 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 top20 at Figure 11.

City	Country	LinkedIn Talent Insights NOR	Employability GTCI NOR	Employability NOR
Seattle	United States	9,98	10,00	10,00
Dallas	United States	9,66	10,00	9,84
Phoenix	United States	7,94	10,00	8,97
Denver	United States	7,28	10,00	8,63
Atlanta	United States	6,80	10,00	8,39
Eindhoven	Netherlands	8,14	8,34	8,23
Berlin	Germany	8,20	8,11	8,14
Tokyo	Japan	10,00	5,77	7,87
Yokohama	Japan	10,00	5,77	7,87
Dusseldorf	Germany	7,65	8,11	7,87
Washington, D.C.	United States	5,21	10,00	7,59
Baltimore	United States	5,21	10,00	7,59
Hamburg	Germany	7,08	8,11	7,58
Munich	Germany	6,97	8,11	7,52
Cologne	Germany	6,37	8,11	7,22
Singapore	Singapore	5,92	8,44	7,16
Tel Aviv	Israel	6,32	7,77	7,02
Philadelphia	United States	3,99	10,00	6,97
Vancouver	Canada	6,62	7,32	6,95
Miami	United States	3,94	10,00	6,94

Figure 11. City Employability. TOP 20 Source: Author

Employability is topped by US Cities, followed by most innovative cities in Germany, Japan, Netherlands and extraordinary technology investors like Singapore and Tel-Aviv. 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, we will use a simple statistical method called Coefficient of Correlation (R). This formula explains to what extend two variables are related. If we obtain a result over 0.5, we will conclude that out two variables are indeed related. Final number is $R=0,739$ (or $R^2=0,546$), which is very 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 12)

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

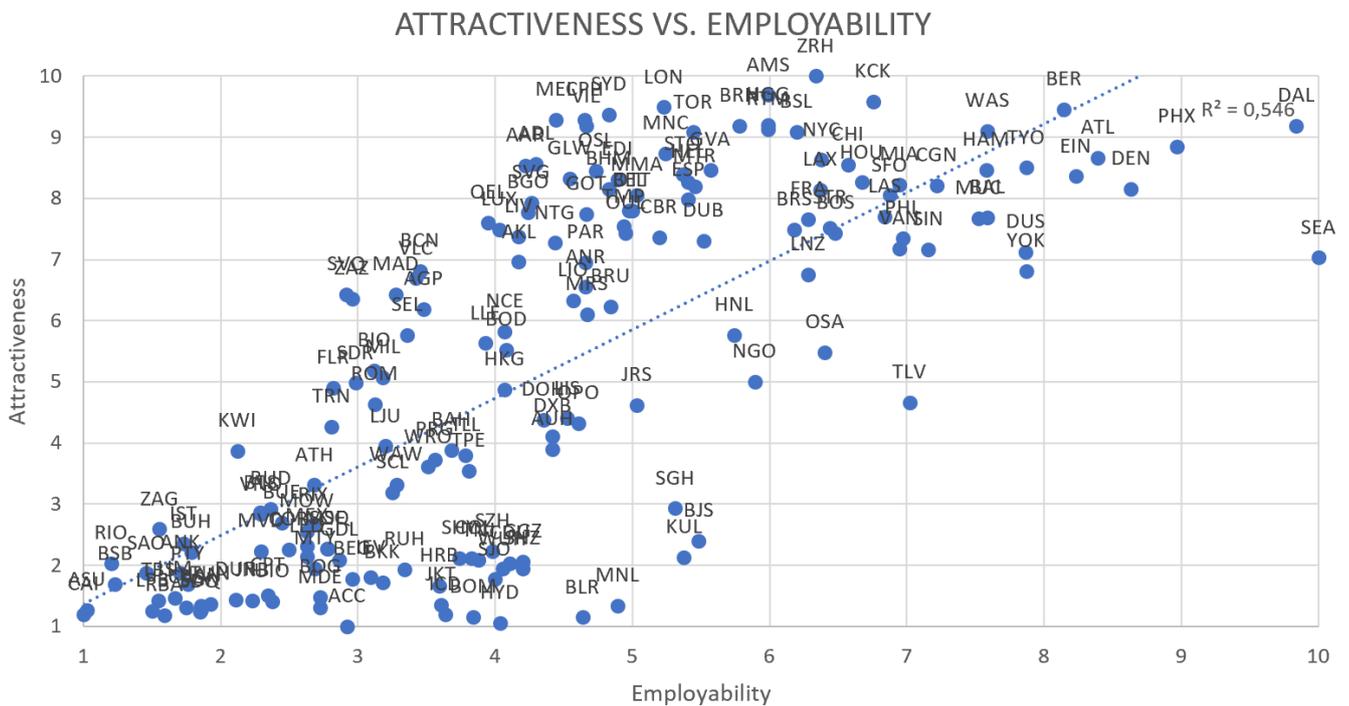


Figure 12. City Attractiveness vs Employability. Source: Author

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)

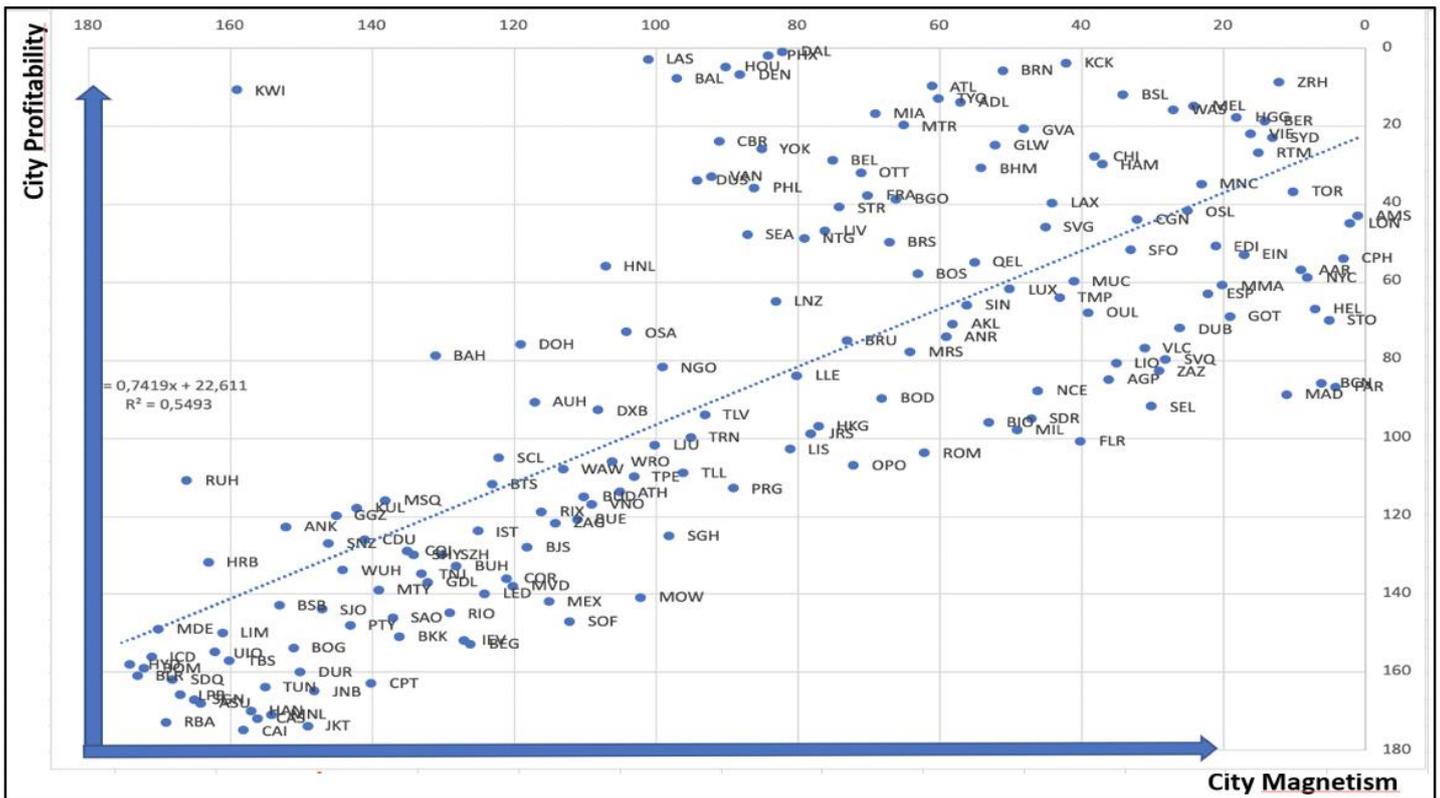


Figure 13. Balancing City Magnetism and City Profitability. Cities in UNLOCODE three letters nomination. Source: Author

The magic quadrant is in the upper right (see figure 13) where we find cities with high Magnetism and Profitability. These are mainly cities in the Advanced & Challengers levels 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, cold German cities, 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. 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, and of Hong Kong, with declining Profitability during China's integration process.

7.2 Cities of Future. 10 keys to understand the postCOVID City

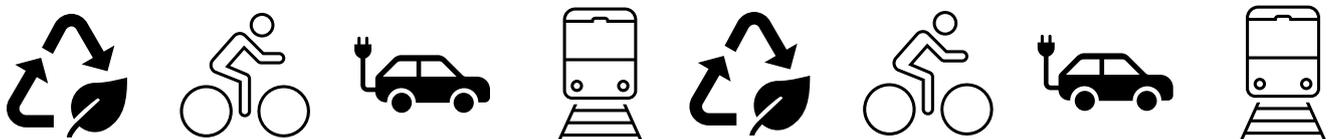
The pandemic has changed the concepts of sustainability derived from the United Nations Sustainable Development Goals applicable to cities. In the West, we have gone from associating sustainability exclusively with the environment, to reconsider the other two other fundamental components: economic and social sustainability. The pandemic has accelerated the use of technology and has put it on value. It has also changed our habits regarding work, social behaviors, and consumption. Let us briefly study which areas have significantly changed the most.

1.- Sustainable and Green city

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. 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.

2. New Urban Mobility

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 a reduction in capacity due to distance restrictions, 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. Cities re-evaluate their spaces to reduce areas for cars and win social spaces for citizens. In this rethinking, the construction of new lanes for individual electric vehicles such as bicycles or scooters prevails. I want to show my surprise at what I call the theory of *four*: if an alien visited our planet, it would conclude that we adore those four-wheeled machines called automobiles. We dedicate 40% of our urban space to them, 40% of the energy we use, for a use that barely reaches 4% of time. There is no other good that depreciates so quickly: when leaving the dealership our vehicle is worth 27% less, on average. It seems clear that the owned vehicle model is going to become obsolete due to the concept of mobility as a shared service. 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: small vehicle to go to work, large family vehicle for weekend, sports vehicles for celebrations. 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... but consumer demands always rules. Will see.



3. Accelerated technological adoption

The pandemic has taught us the value of technology to allow us to continue our work and economic activity. In addition, it has been essential for the development of vaccines and the rapid communication of risks, minimizing the impact of the pandemic. Our cities have learned to telework using technology. They have been able to maintain good quality public service and to make the necessary decisions in a completely new and changing environment. After responding to the initial challenge, cities use technology to try to predict new service demands, prioritize investments based on the impact of the pandemic, and incentivize economic recovery.

Simulation tools are added to the predictive models. In this sense, Digital Twin systems allow simulating the different alternatives to solve an urban challenge associated with physical elements, such as traffic, pollution, energy supplies, security, urban development, intelligent building management, among others. In this way, the use of artificial intelligence to develop a 3D virtual model of the city that allows us, in real time, to understand its situation and carry out future simulations on the possible measures to be implemented, represents an enormous advance in the improvement of the quality of urban life, since it allows testing the possible alternatives without having to disturb the neighbors with works and expensive physical movements in the city.

4. The new city in 3 distances.

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 the city with the 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.

5. Local versus Online Commerce

The enormous boom in online commerce during the pandemic has highlighted the fragility of the local retail and commerce system. All cities are considering the recovery of the thousands of neighborhood businesses that have disappeared. To compete with the online commerce monsters, they need not only to take advantage of technology to offer their products online, but also taking advantage of their proximity and the quality of local and fresh products. Likewise, cities must regulate the intense merchandise traffic and the abuse of packaging waste generated by large online commerce companies. There is also a preference for the local over the international standard product. In any case, the impact on business closure is tremendous. It is worth noting the effort of many cities to facilitate the work and operation of small local businesses. Initiatives such as providing free parking for buyers (Albuquerque, New Mexico), promoting the development of cooperative electronic commerce tools, or the most advanced ones, such as Barcelona, where City Council directly invests on adding innovation and intelligence to local businesses (smartstores) to make them more competitive (Beabloo, 2021). These initiatives demonstrate the big effort that cities are making to save the massive employment this sector generates. In parallel, cities are moving towards a Cashless model, that is, the elimination of conventional coins and bills to go to a totally based on electronic transactions model. This helps to combat tax fraud since all transactions are traceable and should generate the corresponding taxes, avoiding the black market.

6. Hybrid Work Model

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. There has been a population movement from large cities center to the surrounding rural areas (all under same metropolitan areas). If we consider these areas inside the perimeter of 90' commuting time, we observe that the impact of repopulation of the rural environment is very relevant in small countries or at state level. Confinement has shown that technology enables this new way of working. It allows officials to improve their work/life balance. It requires new tools to verify work performance and the achievement of objectives. At the same time, it poses the challenge of providing civil servants with the computing and communications technologies necessary to carry out their work remotely. Workers are rethinking not only how and where they work, but why, reopening the traditional "social contract" between employers and employees and rising the teleworking paradox: Most workers prefer teleworking, but ask employers a more flexible workplaces where they can better meet physically their workmates and make a more focused work. Employees plan to go office more time than managers! Definitely, the adoption of advanced hybrid teamworking technologies and all-integrated work and personal life digital tools are a must for our cities.

Security in the handling of sensitive data in public administration and privacy must be taken into account when setting up this new work environment. As a consequence, the real need for the use of offices and their capacity is reconsidered. This implies an unexpected excess of public office spaces that can be used for other social functions. At the same time, teleworking lowers the costs associated with public service both in offices and infrastructure, public transport, time, while helping on the climate protection.

7. Need for additional training (ReSkilling)

The new technological tools and the need to treat public data with the exquisite care that compliance with the GDPR requires, forces us to improve technical training and administrative processes for civil servants. In parallel, governments need to recruit a significant number of new qualified technical and advanced security environments staff. This is a fundamental challenge due to the huge gap in salary that this type of professionals finds in comparison with private companies: an additional challenge for public administration managers. They need to add other incentives, such as vocation for public service, or job stability so that working for the public administration brings an incentive that makes it attractive and comparable to working for private companies. The demand for STEM (Science, Technology, Engineering Math's) professionals is accelerating in all settings.

Additionally, cities must become large human resources departments to manage all the talent they encompass. Crucial in these moments, at the beginning of the fourth industrial revolution, the companies and therefore the prosperity that they bring, are moving closer to where the talent is. It is therefore vital to improve the employability and skills of our citizens. Policies that improve the general qualification of all citizens will raise their capacities and therefore improve the attractiveness of that city for investors. Due to the constant acceleration in the use of new technologies, citizens must adapt and retrain in those most in demand. Constant lifelong training offered by the city and by the employing entities is critical.

8. Cybersecurity and digital rights

Cities responded immediately to the threat of the pandemic. They provided their employees with the necessary technologies to be able to telework and maintain active service continuum. In most cases, this sudden incorporation of new technologies did not drag an associated security project in parallel. The impact of ransomware attacks on local administration reaches 40-50%. 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 tools protecting the operations from end user device, tools to overall systems and data centers.

Compliance with the GDPR is neither optional. Cities and administrations must observe exemplar behavior in this regard. Citizens trust the city to manage their private and sensitive information. This trust relationship is the basis for the provision of quality public services adapted to the peculiarities of citizens and anticipating their needs. Additionally, and with special emphasis on the European Union, new digital rights are being developed, allowing citizens to be the unique and exclusive owners of their digital identity. The new decentralized identity environments allow citizens to decide which part of their identity could be transferred to each public or private entity at all times. Obviously, this management requires the use of the latest technologies. The current situation where certain providers of information and internet services obtain all the citizens personal information by all means must cease, with the citizen being the exclusive owner of what is done with their personal data. It is an added challenge to cybersecurity, and one more reason to invest on the needed technologies and processes to control it.

9. The value of the critical supply chain

The pandemic has shown the extreme value that critical supplies, such as food or energy, bring to the community. The need for a resilient provisioning system has become highlighted. Subsequent cybersecurity attacks (ransomware) such as that impacted at the Continental Pipeline (US), which supplies half of fuel at US west coast, have reinforced this need to protect the fundamental supply chain.

10. A Renaissance in Culture?

The value of spaces and activities dedicated to culture and social relations has been made clear. The pandemic has reached the very beginning of the fourth industrial revolution where robotization and artificial intelligence will replace all non-creative work. This fact emphasizes the value of purely human developments. Could we dream of a new renaissance as a global movement that appreciates creative proposals in all the arts and sciences? The city adapts both in its public spaces and in its social activities and cultural agenda to favor this human development. In short, the city once again offers its essential values: to enable man's social capacities and to offer the necessary mechanisms for citizens to meet / encounter each other and therefore multiply their creativity, accelerating the city prosperity.

Let's dream.

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) or long distances (AUS)—can compensate those shortcomings with SmartCities plans that improve their attractiveness.



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 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. **(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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Written by:

Prof. Jose A. Ondiviela

Researcher. SmartCities SME. Urbanologist.
Director WW Observatory for Attractive Cities. UFV
Universidad Francisco de Vitoria (UFV) – Madrid

<http://orcid.org/0000-0001-6732-8754>

Western Europe Industry Advisor. Government. Local&Regional. Microsoft

Extracted from PhD Thesis:

“Beyond SmartCities: Creating Attractive Cities for talented citizens”. Nov2020. Universidad Francisco de Vitoria (Madrid, Spain)

Based on Book:

Ondiviela, J. A. (2021). *Beyond SmartCities: How to create an Attractive City for Talented Citizens*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-83371-8>

And Article:

Ondiviela Garcia, J. A. (2020). Beyond SmartCities: How to create an Attractive City for Talented Citizens. *Kult-Ur*, 7(13), 205-232. <https://doi.org/10.6035/Kult-ur.2020.7.13.8>

Previous Edition: 2020 Edition, WW Observatory Attractive Cities 2020 ([handle](#))

Research initiative materials at website www.attractivecities.com

Interested on SmartCities / Cities Transformation Training / other?

Find latest offerings from Universidad Francisco de Vitoria here: www.postgrado.ufv.es

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