



The Cultural and Creative Cities Monitor

Questions & Answers (Q&A)

04 July 2017

PART I - ABOUT THE MONITOR

1.1 What is the Cultural and Creative Cities Monitor?

This first edition of the Cultural and Creative Cities Monitor shows how well 168 selected cities in 30 European countries (EU plus Norway and Switzerland) perform on a range of carefully selected measures grouped along a nine-dimensional model describing the 'Cultural Vibrancy', the 'Creative Economy' and the 'Enabling Environment' of a city.

Figure 1. Cultural and Creative Cities Monitor's conceptual framework



The Cultural and Creative Cities Monitor is designed to help national, regional and municipal policy makers identify local strengths and opportunities and benchmark their cities vis-à-vis peer urban centres, based on similar population size, employment rate and wealth.

The Cultural and Creative Cities Monitor is thus an instrument to promote mutual exchange and learning between cities. For researchers, the pool of comparable data is expected to generate new questions and insights into the role of culture and creativity in cities' social and economic well-being.

The Cultural and Creative Cities Monitor supports the European Commission's efforts to put culture at the heart of its policy agenda. It provides a common evidence base at city level that illuminates the culture and creativity's contribution to improving socio-economic perspectives and resilience.

The first ever Cultural and Creative Cities Monitor includes a main report which presents the policy context, methodology and main findings of the work. In addition, an interactive [Cultural and Creative Cities Monitor Online](#) allows users to browse the 168 selected cities and the quantitative and qualitative information about their performance. Infographics with key results, country fact sheets providing for easy benchmarking of cities within countries, technical annexes explaining in detail the methodology used to build the Cultural and Creative Cities Monitor, and data tables for additional analysis are also available for download [online](#).

The Monitor shows that the best performing cities are not necessarily best in everything, but instead rely on key strengths in different areas. The results unveil what cities are good at (which can help them hone their Smart Specialisation Strategies) and where there is room for improvement.

1.2 What is the main goal of the Culture and Creative City Monitor?

Since the adoption of the first 'European Agenda for Culture in a Globalising World' (2007), culture has taken an increasingly prominent place in **European Union policymaking**. However, mapping cultural and creative assets and measuring their value and impact in a systematic and comparable way across Europe remains a challenge, with no shared definitions or metrics, particularly at city level.

The Joint Research Centre (JRC) of the European Commission has developed the '**Cultural and Creative Cities Monitor**' in order to fill this information gap. It provides a **common evidence base** on culture and creativity at city level to:

- **Support policy makers** in identifying strengths, benchmarking their city against peers and learning from them, and assessing the impact of policy action;
- **Illuminate and communicate** the importance of **culture** and **creativity** for **improving socio-economic perspectives** and **resilience**;
- **Inspire new research questions** and approaches to studying the role of culture and creativity in cities.

Overall, the goal of the Cultural and Creative Cities Monitor is to engage the public and policy makers alike to fully acknowledge the importance of culture and creativity on today's society and trigger investments in promoting culture and creativity.

1.3 There are many city rankings already. Why do we need this?

40 similar international indices inspired the development of the Cultural and Creative Cities Monitor, most of which have been developed at city level (60%). However, they generally cover a smaller sample of cities, mainly including capitals and other major cities, such as London, Berlin, Barcelona or Milan. In a few cases, they are accompanied by qualitative facts that help illustrate the quantitative scores, or interactive platforms allowing users to explore data and offering customisation options (for instance to adapt the Index's weighting scheme).

The Cultural and Creative Cities Monitor combines eight key design and quality features that set it apart from other similar indices and make it valuable for a large number of cities, thus providing a powerful resource that can inform city-level policy debates both within and across countries. The first edition covers 168 European cities of diverse demographic and economic features in 30 countries.

More specifically, the Cultural and Creative Cities Monitor:

1. Provides a **holistic and actionable measurement framework** that is intended to inform the development of culture- and creativity-related policies. It thus provides not only an aggregate Index score, but also allows for benchmarking cities on three sub-indices, nine policy dimensions and 29 individual indicators.
2. Is **relevant to all city types and makes benchmarking possible** between five different city groups (see Table 1) to help local authorities interpret results in the light of peer cities' performances.
3. Offers two different and complementary versions – '**standardised**' and '**flexible**' – in the accompanying Cultural and Creative Cities Monitor [Online](#). This tool enables users to **input their own data** for an existing city, create a new city entry or change the **weights** of dimensions or sub-indices to create tailored versions of the Monitor.
4. **Clearly spells out the cities' selection criteria**, so that the approach to the extremely broad concept of 'Cultural and Creative Cities' can be easily understood (see also question 1.4).
5. Goes **beyond 'usual suspects'** by including a majority are small and medium-sized cities (with a minimum of 50,000 inhabitants).
6. Has been developed to **ensure representativeness** of the results, **comparability** (both within and across city peer groups), and ease of use.
7. Follows, in its development, the methodology detailed in the JRC–OECD 'Handbook on Constructing Composite Indicators' (2008). Both the **data** and the complete **methodology can be accessed online**.
8. Is based on **both official statistics** and **key qualitative information** showing the diverse forms that cities' cultural and creative vibrancy can take, from the hosting of internationally renowned festivals to state-of-the-art policy measures supporting culture and creativity.

Table 1. City peer groups

GDP per capita groups (in PPS)	Number of cities	Employment rate groups	Number of cities	Population groups	Number of cities
> 35,000	40	> 74%	47	> 1 million	21
30,000-35,000	26	71-74%	22	500,000 - 1,000,000	36
25,000-30,000	38	68-71%	24	250,000 - 500,000	38
20,000-25,000	27	65-68%	31	100,000 - 250,000	54
< 20,000	37	< 65%	44	50,000 - 100,000	19

The principal value added of the Cultural and Creative Cities Monitor is not in establishing rankings, but in helping cities understand the manifold and complex relationships among the many factors that contribute to a city’s capacity to produce and disseminate culture and creative content, and to make them attractive and accessible. In this way, the Cultural and Creative Cities Monitor shows that there is no single ‘formula’ to copy, but rather a spectrum of possibilities along which each city has to position itself on the basis of a deep understanding of its unique characteristics and priorities.

1.4 How did you select cities? What other criteria could have been used?

168 cities have been selected based on three measurable and comparable criteria which can be consistently applied across a wide and diverse pool of cities in Europe (see Annex I in the [report](#)), namely:

- 1. 93 cities** which have been or will be **European Capitals of Culture (ECoCs)** up to 2019, or which have been shortlisted to become an ECoC up to 2021;
- 2. 22 UNESCO Creative Cities** (including the most recent winners in 2015) – excluding overlap with the ECoC;
- 3. 53 cities hosting at least two regular international cultural festivals** running until at least 2015.

The selection also includes all the capital cities of the 30 countries covered by the Monitor (EU plus Norway and Switzerland).

The three selection criteria were used to refine the list from about 1000 cities in Eurostat’s Urban Audit database (with a minimum of 50,000 inhabitants) down to 168 cities on the basis of their demonstrable engagement in the promotion of culture and creativity – being included in the Cultural and Creative Cities Monitor is thus in itself an acknowledgement of these cities’ efforts in this domain.

Thirteen cities have been included in the Monitor but not in the final rankings because they did not meet the data coverage criterion, meaning at least 45% data coverage at the index level and at least 33% for the ‘Cultural Vibrancy’ and ‘Creative Economy’ sub-indices, or because they were located in countries outside the EU (namely: Switzerland and Norway). The rankings and the analysis presented are therefore always based on a total of 155 cities, but qualitative information is provided for the full sample of 168 cities.

However, these criteria are not intended to be exhaustive nor definitive. Clearly, many other cities can be active in promoting arts, culture and relating creative activities and professions to reach their socio-economic objectives. For instance, cities may have adopted ambitious cultural strategies or initiated culture-led urban regeneration projects.

Other criteria were initially considered (such as international sports events or number of UNESCO World Heritage sites) but in the end they were not retained because they were less operationally exploitable due to the lack of relevant city listings (i.e. for sports events) or different geographical scope (i.e. UNESCO World Heritage sites often cover entire regions rather than cities and are difficult to be 'quantified' at city level).

Ultimately, any city is given the opportunity to monitor its performance on culture- and creativity-related aspects. While the three selection criteria represent a pragmatic entry point to select a first city sample to start with, the [online platform](#) enables users to input new data or change the weights to the dimensions and sub-indices to better reflect what matters more locally.

1.5 How objective is the criterion for European Capitals of Culture from the pre-competitive era?

Many of the 46 European Capitals of Culture (ECOC) from the pre-competitive era (namely from 1985 until 2012) are undoubtedly culturally rich cities, such as Athens (ECOC in 1985), Florence (1986), Amsterdam (1987), Berlin (1988), Paris (1989), Dublin (1991), Madrid (1992) up to Copenhagen (1996), Thessaloniki (1997), Kraków and Prague (2000), or Genoa (2004), Vilnius (2009) and Istanbul (2010). Others - such as Lille 2004, Linz 2009 or Essen 2010 - well exploited the ECOC title to start a culture-led regeneration process that still continues today.

Moreover, ten of them have been awarded the title of UNESCO Creative City (Berlin, Glasgow, Dublin, Bergen, Bologna, Helsinki, Prague, Graz, Liverpool and Linz) based on their commitment to sharing best practice and developing partnerships in order to strengthen the creation, production, distribution and dissemination of cultural activities, goods and services and to develop hubs of creativity and innovation.

Last but not least, in 2011 and 2012, Estonia (2011), Finland (2011) and Slovenia (2012) decided to set up a national competition (even if there was no obligation in this sense). Therefore, Turku 2011, Tallinn 2011 and Maribor 2012 were actually selected in a competitive manner.

More generally, the Cultural and Creative Cities Monitor adopts and promotes an inclusive approach: any city is given the opportunity to monitor its performance on culture- and creativity-related aspects. While the three selection criteria (see question 1.4) represent a pragmatic entry point to select a first city sample to start with, the online platform enables users to input new data or change the weights to the dimensions and sub-indices better reflect what matters more locally.

1.6 Why do you think festivals make a city creative?

The organisation and promotion of international cultural festivals is perhaps the longest running type of 'creative city' initiative, usually having deep roots in the local forms of cultural expressions. In more recent times, there has been an important upswing both in the number and scale of festivals, reaching national or international significance such as the Edinburgh festival (opera, music, theatre and dance), the massive music festivals Reading or Glastonbury, the Berlinale (film), the Festival d'Avignon (contemporary theatre), the Festival of Lights in Lyon, the Cheltenham Festivals (music, science and literature) and Ars Electronica in Linz (art, technology and new media). Festivals increasingly figure as part of urban regeneration, tourist or place marketing plans of cities and nations.

1.7 How were 'international cultural festivals' identified?

In order to apply the festival criterion in a coherent way across Europe, two comparable data sources were used, namely:

- The [Platform EFFE](#) (Europe for Festivals, Festivals for Europe): an online platform which gathers more than 700 festivals across Europe that received the EFFE Label. This is a quality label awarded to European festivals meeting three criteria: artistic commitment, involvement in their local communities and a European and global outlook. EFFE is a result of many years of intense collaboration between the European Festivals Association (EFA), the European Commission and the European Parliament.
- A [Wikipedia page on film festivals](#) in Europe gathering a list of more than 500 film festivals (local, national and international) taking place across Europe. Only international festivals were considered for the city selection.

The city selection based on this criterion is however constrained by the completeness and exhaustiveness of the two sources used meaning that other internationally relevant cultural festivals may exist that are not mentioned in these sources.

In order to give any city the opportunity to benchmark their performance on culture- and creativity-related aspects, the [online platform](#) enables users to input their own data and create their own customised rankings.

1.8 Why is city x not in? Is there scope for adding new cities in the next edition?

Some of the European cities meeting at least one of the three selection criteria (see question 1.4) have not been included in this 2017 edition of the Cultural and Creative Cities Monitor due to poor data coverage, as shown in Table 2.

More precisely, out of a total of 103 European Capitals of Culture (winners from 1985 until 2019 plus shortlisted cities from 2013 – when the shortlisting phase was introduced – until 2021), 11 have been excluded. Of the 44 UNESCO Creative Cities based in Europe, 15 were included under the 'ECOC criterion', whilst 6 have been excluded.

Table 2. Cities that met the selection criteria but were not included due to poor data coverage

No.	European Capitals of Culture (shortlisted)	Why not included in the Cultural and Creative Cities Monitor
1	Dubrovnik (HR)	Not in Urban Audit, < 50,000 inhabitants
2	Elefsina (EL)	Not in Urban Audit, < 50,000 inhabitants
3	Martin (SK)	Not in Urban Audit
4	Paphos (EL)	Not in Urban Audit, < 50,000 inhabitants
5	Pula (HR)	Not in Urban Audit, < 50,000 inhabitants
6	Reykjavík (IS)	Not in Urban Audit
7	Rhodes (EL)	Not in Urban Audit, < 50,000 inhabitants
8	Segovia (ES)	Not in Urban Audit
9	Siena (IT)	Not in Urban Audit
10	Sønderborg (DK)	Not in Urban Audit, < 50,000 inhabitants
11	Istanbul (TR)	Only a few indicators available
	UNESCO Creative Cities	
1	Dénia (ES)	Not in Urban Audit, < 50,000 inhabitants
2	Enghien-les-Bains (FR)	Not in Urban Audit, < 50,000 inhabitants
3	Fabriano (IT)	Not in Urban Audit, < 50,000 inhabitants
4	Idanha-a-Nova (PT)	Not in Urban Audit, < 50,000 inhabitants
5	Óbidos (PT)	Not in Urban Audit, < 50,000 inhabitants
6	Östersund (SE)	Not in Urban Audit, < 50,000 inhabitants
TOT	17	

Some or all of the excluded cities could be added in future editions as long as more data become available.

More generally, the Cultural and Creative Cities Monitor adopts and promotes an inclusive approach: any city is given the opportunity to monitor its performance on culture- and creativity-related aspects. While the three selection criteria (see question 1.4) represent a pragmatic entry point to select a first city sample to start with, the [online platform](#) enables users to input new data or change the weights to the dimensions and sub-indices to better reflect what matters more locally.

1.9 Who is the target audience of this tool and how can it be used?

The Cultural and Creative Cities Monitor has been designed to be used by anyone with an interest in their city or in cities in Europe, including local authorities, policy makers, businesses, non-governmental organisations, academics and citizens.

The Cultural and Creative Cities Monitor, together with its accompanying [online platform](#), allows users to:

- **Assess** how cultural and creative a city is in relation to others;
- **Benchmark** cities **within countries** and **across Europe**;
- **Learn** what **peers** are good at and look for opportunities for fruitful exchanges;

- **Use findings** on the relation between culture and creativity on one hand and growth and resilience on the other for **advocacy purposes**;
- **Create** a new ranking by creating new entries, adding or changing data for existing entries or adapting weights;
- **Simulate** the impact of policies (e.g. increased visitor numbers) on a city's performance in the rankings;
- **Explore** policy and research questions such as:
 - What is the relationship between a city's 'Enabling Environment' and the strength of its 'Creative Economy' or 'Cultural Vibrancy'?
 - In which cities do 'Cultural Vibrancy' and the 'Creative Economy' reinforce each other most?
 - Do culture and creativity contribute to job creation, wealth and resilience?

Ultimately, the Cultural and Creative Cities Monitor is expected to encourage cities to take further action to enhance culture-driven development in ways that go beyond models based solely on efficiency, in a more sustainable and inclusive approach to economic growth.

1.10 What is the future of the Monitor? How often will it be updated?

This tool represents a first attempt towards a better measurement and understanding of how diverse Cultural and Creative Cities behave and perform across Europe, based on a snapshot of most recent years.

Although the Cultural and Creative Cities Monitor will be continuously refined as long as new and better quality data become available, the 2017 edition establishes a sound starting point. This is confirmed by the good-to-strong correlations that all indicators have with their respective dimensions. Furthermore, all dimensions correlate strongly with the three sub-indices and the Index itself, meaning that the statistical structure of the Index 2017 is coherent with its conceptual framework. In addition, the reasonably narrow confidence intervals for the majority of the cities' ranks (fewer than ± 3 positions for 78% of the cities) imply that the Cultural and Creative Cities ranks are also, for most cities, robust to changes in modelling assumptions (e.g. the chosen weights). For more information on the statistical assessment see [Annex B](#)).

The Cultural and Creative Cities Monitor is expected to be updated every two years in order to make sure that it remains both conceptually and statistically sound across countries, cities and time, and that progress can be tracked. The JRC team is in particular already exploring big data sources that would enhance the Monitor's capacity to capture informal cultural venues – such as cultural clubs, for instance. Google Maps and OpenStreetMap look promising in this sense.

In addition, an app will be released in the course of 2018 to complement the Cultural and Creative Cities' profiles with facts and opinions, offered by citizens, on cities' 'hidden treasures'.

PART II – DIMENSIONS, INDICATORS & DATA










2.1 What does the Monitor measure?

The first edition of the Cultural and Creative Cities Monitor allows monitoring and assessing the performance of 168 ‘Cultural and Creative Cities’ in Europe vis-à-vis their peers using both quantitative and qualitative data.

The **quantitative information** is captured in **29 indicators** relevant to **nine dimensions** reflecting **three major facets** of cities’ cultural, social and economic vitality (see Figure 2):

- **Cultural Vibrancy** measures the cultural ‘pulse’ of a city in terms of cultural infrastructure and participation in culture;
- **Creative Economy** captures how the cultural and creative sectors contribute to a city’s employment, job creation and innovative capacity;
- **Enabling Environment** identifies the tangible and intangible assets that help cities attract creative talent and stimulate cultural engagement.

Figure 2. Cultural and Creative Cities Monitor’s conceptual framework and indicators

Sub-indices	Dimensions		Indicators	
1. Cultural Vibrancy	 1.1 Cultural Venues & Facilities		1	Sights & landmarks
			2	Museums
			3	Cinema seats
			4	Concerts & shows
			5	Theatres
	 1.2 Cultural Participation & Attractiveness		6	Tourist overnight stays
			7	Museum visitors
			8	Cinema attendance
			9	Satisfaction with cultural facilities
2. Creative Economy	 2.1 Creative & Knowledge-based Jobs		10	Jobs in arts, culture & entertainment
			11	Jobs in media & communication
			12	Jobs in other creative sectors
	 2.2 Intellectual Property & Innovation		13	ICT patent applications
			14	Community design applications
	 2.3 New Jobs in Creative Sectors		15	Jobs in new arts, culture & entertainment enterprises
			16	Jobs in new media & communication enterprises
17			Jobs in new enterprises in other creative sectors	
3. Enabling Environment	 3.1 Human Capital & Education		18	Graduates in arts & humanities
			19	Graduates in ICT
			20	Average appearances in university rankings
	 3.2 Openness, Tolerance & Trust		21	Foreign graduates
			22	Foreign-born population
			23	Tolerance of foreigners
			24	Integration of foreigners
			25	People trust
	 3.3 Local & International Connections		26	Passenger flights
			27	Potential road accessibility
	 3.4 Quality of Governance		28	Direct trains to other cities
			29	Quality of governance

The **qualitative component** includes key facts and manifestations of cities' cultural and creative assets to illustrate and complement the quantitative evidence. These touch on features ranging from the main cultural sites, artistic institutions or live events to the development of policy strategies and infrastructure (e.g. funds, tax incentives, creative incubators, fab labs) that demonstrate a city's commitment to supporting culture and creativity. Some samples of qualitative information are offered in this report, with more comprehensive information available in the accompanying [online version of the Monitor](#).

For more information on the dimensions and indicators see Chapter 3 and Annex III of the report.

2.2 Some of the terms used are vague – what does 'Cultural Vibrancy' mean, for example, and how do you measure it? How do you measure 'Openness, Tolerance and Trust'?

'Cultural Vibrancy' measures the cultural 'pulse' of a city here approximated by indicators relating to the number of sights and landmarks, museums, theatres, cinema seats and concerts and shows in the city as well as by indicators related to local and international publics, namely overnight tourists, museum visitors, cinema attendance and perceived satisfaction with cultural facilities.

'Openness, Tolerance & Trust' measures tolerance of diversity and mutual trust among inhabitants using indicators on the numbers of foreign graduates in tertiary education and foreign-born people and on people's perception of foreigners' integration and trust in each other coming from the Eurobarometer Survey on 'Quality of life in cities'.

A full explanation of the dimensions and indicators used can be found in Chapter 3 and Annex III of the report available [online](#).

2.3 How did you choose the indicators?

Almost 200 variables were initially considered for their relevance to the dimensions of the Cultural and Creative Cities (C3) Index on the basis of a literature review and expert consultation at a first workshop that took place at the JRC in Ispra on 17-18 September 2015. After screening for data coverage and subsequently testing for statistical coherence, 29 indicators were selected. Given that the validity of the C3 Index relies on the combination of both statistical and conceptual soundness, the C3 model was developed in an iterative process involving rounds of exchange between theoretical perspectives on culture and creativity on the one hand and empirical observation on the other. For instance, during the second and final workshop that took place in Brussels on 9 November 2016, experts agreed that 'Cultural Vibrancy' should capture more than 'formal' cultural institutions; it should include, among others, informal cultural venues such as multidisciplinary arts spaces, clubs or voluntary associations. Indeed, the statistical analysis shows that the underlying indicators currently used capture only 45% of the cities' 'Cultural Vibrancy'. However, comparable, comprehensive and reliable observations on informal cultural venues could not be found at this stage for such a large and diverse sample of cities. It was therefore agreed that only major cultural facilities would be counted in the first edition. The JRC team has started to explore big data sources that would enhance the

Monitor's capacity to capture informal cultural venues, such as cultural clubs, for instance. Google Maps and OpenStreetMap look promising in this sense.

2.4 What are the data sources?

Seven main sources were used to collect the relevant data:

- (i) Urban Audit, Eurostat (city level) – 31% of all collected data;
- (ii) Regional statistics, Eurostat (NUTS 3 level; good approximation for cities with more than 150,000 inhabitants, corresponding to 76% in the sample) – 17%;
- (iii) Eurobarometer Survey on 'Quality of life in cities', jointly prepared by the European Commission Directorate-General for Communication (DG COMM), the Directorate-General for Regional and Urban Policy (DG REGIO) and the market research company TNS (city level) – 14%;
- (iv) DG REGIO (city level for transport indicators, NUTS 2 and NUTS 1 and NUTS 0 level for governance indicators, which represent a good approximation for 'system indicators' such as governance) – 14%;
- (v) University rankings (QS, Shanghai, Leiden, Times) (city level) – 4%;
- (vi) European Tertiary Education Register (ETER) (city level) 10%;
- (vii) Experimental data from TripAdvisor (city level) – 10%.

Almost 70% of available data refer to 2013–2015.

For a full explanation of technical terms, see the Lexicon in the main [report](#).

2.5 Isn't it far too focused on traditional expressions of culture such as festivals, operas and theatre? How do you account for new or less established forms of cultural activities or the coolness factor that more underground activities have to offer?

See question 2.3

2.6 Is there a risk of cinema bias? Are you not giving too much prominence to cinema (where data may be more easily available) by including indicators on cinema seats and cinema attendance, on the one hand, and only one indicator on concerts and shows and not on tickets sold for concerts and shows, on the other?

It is true that data on cinema are more easily available through official statistics (i.e. the data used indeed come from Eurostat's Urban Audit) compared to data on concerts, for instance (coming from TripAdvisor). However, there is no risk of double counting because the indicators on cinema are not too strongly correlated (i.e. their correlation is about 0.7), meaning that they are indeed measuring two complementary concepts.

2.7 What does 'Tourist overnight stays' measure? (e.g. Frankfurt has one of the highest figures, which probably means that we are talking about 'overnight stays' also including business tourists)

Despite being broad and comprehensive, the set of 29 quantitative indicators that feed the Cultural and Creative Cities Monitor cannot be exhaustive. It carefully looks into some of the key multifarious aspects of culture and creativity in cities. Furthermore, in some cases the

indicators do not isolate the 'cultural component': for example, the tourism indicator counts all tourists rather than 'cultural tourists'; the innovation indicators mainly capture ICT-based innovation and not process, management or artistic innovation; the jobs indicators, which are based on aggregates, might include jobs that are not strictly related to culture and creativity; and the governance indicator refers to government efficiency in areas not strictly related to culture (namely: education, healthcare and law enforcement).

The Cultural and Creative Cities Monitor's weighting scheme (see details on question 2.11) helps correct - at least partially - these shortcomings in the data. It indeed gives a greater weight to 'Cultural Vibrancy' and 'Creative Economy' (40% each) and less to the 'Enabling Environment' (20%) which contains the governance indicator, amongst others.

2.8 Why are most indicators denominated by the number of inhabitants?

Data checking included a number of steps, amongst which the expression of the indicators in per capita terms. This approach is primarily intended to enable cross-city comparability but also rewards more 'inclusive' cities which have more cultural and creative assets per inhabitant.

Indicators were denominated by the number of inhabitants when the correlation with the population was considered relatively high, meaning above 0.3. The indicator 'Average number of a university's appearances in university rankings' makes exception - despite its correlation with the population above 0.35 - based on the review of the relevant literature on indices including similar indicators.

2.9 How did you deal with missing data?

Missing data for each city were estimated using a three-step approach. In the first step, missing values on two perception-related indicators under D3.2, Openness, Tolerance & Trust (Tolerance of foreigners and Integration of foreigners), were replaced by the average of the cities within a given country. This first step made it possible to fill in 18% of the 1284 values missing in the dataset. In a second step, the peer-group average based on the trio of GDP, population size and the employment rate was used. This second step made it possible to fill in 64% of the 1284 values missing in the dataset. In a third step, the remaining missing values (18% of the 1284 values) were estimated using the nearest neighbour approach using the average of the values of the three nearest (or statistically closest) neighbours. This three-step approach for estimating missing values in the Cultural and Creative Cities framework was adopted as it resulted in lower cross-validation error compared to the other method tested, the expectation maximisation method.

2.10 How did you define the GDP per capita, population and employment rate groups?

Quantiles are used as cut-off points to obtain the five income and employment rate groups, where income has been approximated by the level of GDP per capita in comparable euros (or Purchasing Power Standards -PPS) at metro level, or NUTS 3 level for non-metro regions. As regards population, the official classification of urban centre sizes elaborated by the European Commission and the OECD is applied ([EC-OECD, 2012](#)).

For a full explanation of technical terms, see the Lexicon in the [report](#).

2.11 Why are cities such as Lisbon, Dublin and Athens, for instance, in the XL rather than in the XXL group?

The data in the Cultural and Creative Cities Monitor have mostly been collected at city level (see question 2.4 for more details on the data sources).

Based on Eurostat's definitions, a City is a local administrative unit (LAU) where the majority of the population live in an urban centre of at least 50,000 inhabitants. Differently from a city, the Greater City is an approximation of the urban centres when this stretches far beyond the administrative city boundaries.

If the Greater City level had been used, Lisbon, Dublin and Athens and probably other cities would have been classified under the XXL group. However, due to poor data coverage at Greater City level, the city level was finally used, apart from a few indicators collected at higher levels of aggregation (such as NUTS 3).

For a full explanation of technical terms, see the Lexicon in the [report](#).

2.12 How do the different components of the Monitor contribute to the C3 Index? Are you putting culture and governance, for instance, on an equal footing?

No. As an aggregated measure, the total score on the C3 Index for each city is calculated based on a fixed and 'customised' structure of weights obtained after consultation with about fifteen experts, including policy makers, academics and practitioners.

The structure (see Figure 3) gives more prominence to culture- and creativity-related variables and less to more 'general' enabling factors such as transport links or quality of governance. In this way, the framework will help inform and guide policy action that can actually lead to the promotion of culture and creativity rather than of 'collateral' factors, and will reward such action in the final scores and rankings.

Figure 3. Cultural and Creative Cities Monitor’s conceptual framework, indicators and weighting structure

Weight	Sub-indices	Weight	Dimensions	Indicators					
40%	1. Cultural Vibrancy	50%	1.1 Cultural Venues & Facilities	1	Sights & landmarks				
				2	Museums				
				3	Cinema seats				
		50%	1.2 Cultural Participation & Attractiveness	4	Concerts & shows				
				5	Theatres				
				6	Tourist overnight stays				
	40%	2. Creative Economy	40%	2.1 Creative & Knowledge-based Jobs	7	Museum visitors			
					8	Cinema attendance			
					9	Satisfaction with cultural facilities			
		20%	2.2 Intellectual Property & Innovation	40%	2.3 New Jobs in Creative Sectors	10	Jobs in arts, culture & entertainment		
						11	Jobs in media & communication		
		20%	3. Enabling Environment	40%	3.1 Human Capital & Education	12	Jobs in other creative sectors		
						13	ICT patent applications		
						14	Community design applications		
				40%	3.2 Openness, Tolerance & Trust	15%	3.3 Local & International Connections	15	Jobs in new arts, culture & entertainment enterprises
								16	Jobs in new media & communication enterprises
	5%			3.4 Quality of Governance	5%	3.4 Quality of Governance	17	Jobs in new enterprises in other creative sectors	
18							Graduates in arts & humanities		
19		Graduates in ICT							
				20	Average appearances in university rankings				
				21	Foreign graduates				
				22	Foreign-born population				
				23	Tolerance of foreigners				
				24	Integration of foreigners				
				25	People trust				
				26	Passenger flights				
				27	Potential road accessibility				
				28	Direct trains to other cities				
				29	Quality of governance				

First, the normalised indicator scores are aggregated and weighted into nine dimensions. A city’s dimension score is calculated from the simple average of all its underlying normalised indicator scores. Within a dimension, a scaling coefficient of 0.5 or 1.0 is assigned to the indicators with the aim of arriving at dimension scores that were balanced in their underlying indicators. As a result of this analysis, three out of 29 indicators — Sights & landmarks, Museums, Tourist overnight stays —are assigned half-weight while all other indicators were assigned a weight of 1.

Second, the sub-index scores are calculated from the weighted average of the relevant dimensions, namely:

- The ‘Cultural Vibrancy’ sub-index is the weighted average of 1.1, Cultural Venues & Facilities, (50%) and 1.2, Cultural Participation & Attractiveness, (50%).
- The ‘Creative Economy’ sub-index is the weighted average of 2.1, Creative and Knowledge-based Jobs (40%), 2.2, Intellectual Property & Innovation (20%), and 2.3, New Jobs in Creative Fields (40%).
- The ‘Enabling Environment’ sub-index is the weighted average of 3.1, Human Capital & Education (40%), 3.2, Openness, Tolerance & Trust (40%), 3.3, Local & International Connections (15%), and 3.4, Quality of Governance (5%).

Third, the main C3 Index score is calculated from the weighted average of the three sub-indices. In particular, ‘Cultural Vibrancy’ and ‘Creative Economy’ are each assigned double the weight (40%) of ‘Enabling Environment’ (20%) to reflect the importance of measuring primarily culture and creativity in the C3 Index.

For more information about the weighting scheme see Chapter 3 of the [report](#).

PART III – RESULTS

3.1 What are the most Cultural and Creative Cities?

The ‘ideal’ Cultural and Creative City in Europe would be the amalgam of the best performing cities on each dimension. Namely, it would have the **Cultural Venues & Facilities** of **Cork (IE)**, the **Cultural Participation & Attractiveness** and the **Creative & Knowledge-based Jobs** of **Paris (FR)**, the **Intellectual Property & Innovation** of **Eindhoven (NL)**, the **New Jobs in Creative Sectors** of **Umeå (SE)**, the **Human Capital & Education** of **Leuven (BE)**, the **Openness, Tolerance & Trust** of **Glasgow (UK)**, the **Local & International Connections** of **Utrecht (NL)** and the **Quality of Governance** of **Copenhagen (DK)**. Of these eight cities, five have fewer than 500,000 inhabitants, namely Cork, Eindhoven, Umeå, Leuven and Utrecht.

Figure 4. The ideal Cultural and Creative City



The top five cities in their respective population groups are very good ‘on average’ but they do not necessarily excel on all the underlying dimensions. **Paris**, for instance (top one in the XXL group), has seven out of nine dimensions in the top five (D1.1, Cultural Venues & Facilities; D1.2, Cultural Participation & Attractiveness; D2.1, Creative & Knowledge-based Jobs; D2.2, Intellectual Property & Innovation; D2.3, New Jobs in Creative Fields; D3.1, Human Capital & Education and D3.3, Local & International Connections). **Copenhagen** (top one in the XL group) has six (D1.1, Cultural Venues & Facilities; D1.2, Cultural Participation & Attractiveness; D2.1, Creative & Knowledge-based Jobs; D2.2, Intellectual Property &

Innovation; D3.2, Openness, Tolerance & Trust; and D3.4, Quality of Governance).

Edinburgh (top one in the L group) has four (D1.1, Cultural Venues & Facilities; D2.3, New Jobs in Creative Fields; D3.1, Human Capital & Education; and D3.2, Openness, Tolerance & Trust). **Eindhoven** (top one in the S-M group) has five (D1.1, Cultural Venues & Facilities; D1.2, Cultural Participation & Attractiveness; D2.1, Creative & Knowledge-based Jobs; D2.2, Intellectual Property & Innovation; and D3.4, Quality of Governance).

These results unveil what cities are good at (to help them strengthen their Smart Specialisation Strategies, for instance) and where there is space for improvement learning from similar cities. European diversity thus provides a learning platform for cities wishing to further develop a culturally vibrant and creative ecosystem.

3.2 Why is London not among the top cities?

This is due to its size. Nearly all the Cultural and Creative Cities Monitor indicators are expressed in per capita terms. This approach is primarily intended to enable cross-city comparability, but also rewards more 'inclusive' cities which have more cultural and creative assets per inhabitant, namely cities which have more assets many people rather than just for the 'happy few'. As London eclipses other European cities with its population of eight million (it is almost three times as big as the second largest EU city, Berlin), it does not lead on any dimension in the overall ranking, but does reach seventh place among the 21 cities in its population group. Also, London comes third in the ranking of capital cities, after Paris and Brussels and before Berlin.

3.3 How can you say small cities have more culture than Paris or Amsterdam or Budapest?

Data checking included a number of steps, amongst which the expression of the indicators in per capita terms. This approach is primarily intended to enable cross-city comparability but also rewards more 'inclusive' cities which have more cultural and creative assets per inhabitant, namely cities that have more assets for many people rather for a bunch of 'happy few'. This is why smaller cities may score higher than bigger (and often uncontestedly rich and vibrant) cities. For instance, Limerick (S-M) scores higher on museums than Florence (L), Lisbon of (XL) or Paris (XXL). To avoid misinterpretations, interested users are invited to benchmark similar cities. The [online platform](#) offers users the opportunity to explore results based on similar population, employment rate and wealth groups.

The polycentric pattern of 'Cultural Vibrancy', with strong capitals and non-capital cities in many parts of Europe, is particularly encouraging in terms of the power of smaller or more peripheral areas of Europe to attract and retain educated and creative individuals.

According to recent literature, in a post-industrial economy, for the same job and same monetary returns, given a choice, workers would seem to prefer locations with better weather, education, arts, and other amenities.

3.4 Why 'top one' cities in each population/GDP/employment group not always take the maximum score (=100)?

To make it possible to aggregate and compare diverse data on a common scale, the raw data for each indicator were normalised on a 0–100 scale, where 0 is the lowest performance in the dataset of 168 cities and 100, the highest.

3.5 How did you rank these cities? City x would be expected to score much higher. How do you ensure validity of the results?

The Cultural and Creative Cities Monitor alone is not intended to establish causation or to ascertain the complex relationship among different dimensions of culture and creativity in various cities. Its scores and rankings are the product of a rigorous data collection and aggregation methodology. Nonetheless, as with all measures, they are subject to measurement error. Given the uncertainties associated with choosing a particular weighting scheme or aggregation rule, just to name a few of the choices in the construction of the Cultural and Creative Cities Monitor, confidence intervals have been calculated to test whether the overall city ranks are statistically significant. The reasonably narrow confidence intervals for the majority of the cities' ranks (fewer than ± 3 positions for 78% of the cities) imply that the Cultural and Creative Cities ranks are also, for most cities, robust to changes in modelling assumptions.

It must also be borne in mind that all indices and indicators are vulnerable to potential abuse and misinterpretation. Once published, they can take on a life of their own and be used for purposes unanticipated by their developers. Taking data out of context can lead to unintended or erroneous policy decisions.

For a full explanation of the methodology and statistical assessment of the Monitor, see [Annex A](#) and [Annex B](#) available online.

3.6 What is the meaning of each score? How can it be interpreted?

To make it possible to aggregate and compare diverse data on a common scale, the raw data were normalised on a 0–100 scale, meaning that the total scores of the Index, sub-indices and indicators range on a 0 to 100 scale where 0 is the lowest performance in the dataset and 100, the highest. The normalisation was based on the min-max method, whereby the minimum and maximum of the indicator serve as the lower and upper bound of the normalised data, respectively.

The minimum and maximum values for each indicator are presented in the Annex C available [online](#) together with an interpretation of the scaled scores. For instance, a score of 100 would correspond roughly to 77 sights and landmarks per inhabitant, a score of 90 to roughly 70 sights and landmarks per inhabitant and so on.