

Employment distribution in the cultural and creative industries of Baja California, Mexico

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Abstract

This research contributes to the analysis of Local Production Systems (LPS), particularly in the case of cultural and creative industries in the state of Baja California, Mexico. As a pioneering work, it presents an approach for the study of employment and its distribution across the state, and examines the distribution of personnel employed in the aforementioned industries using regional analysis techniques. Using data from the 2014 INEGI Economic Census, employment was analyzed in the state's five municipalities. The variable used was total employed personnel, and quotients and coefficients were calculated for location, specialization and territorial concentration. The results show dispersed employment in the cultural and creative industries throughout the state's territory, according to the characteristics of each municipality.

Keywords: Baja California; employment distribution; cultural and creative industries; regional economy; municipalities.

1. INTRODUCTION¹

Baja California, a border state in northern Mexico, has been closely linked to the development of the manufacturing industry since the 1960s. Despite this, between 2008 and 2013 the industrial sector showed an average annual growth rate of -0.1%, while commerce and services—especially high value-added services such as education; cultural, sports and recreational activities; and mass media—grew at rates between 1.2 and 4.6%. These figures account for the polarization of the regional economic system and point to the potential of tertiary sectors that contribute to wealth generation.

In Mexico, it is estimated that around 7% of the Gross Domestic Product (GDP) is generated by the cultural and creative industries (ProMéxico, 2013), meaning that activities related to culture and creativity create concentrated spaces in the market, thus transforming the economy.

Given the importance of this sector, the present work lays the foundations for an empirical approach to employment and its distribution throughout the region in question, as a way to contribute to the analysis of Local Production Systems (LPS) in the cultural and creative industries in Baja California, Mexico. Accordingly, the primary objective of this work is to examine the distribution of personnel employed in the cultural and creative industries in the state, using degrees of concentration, specialization and location.

To do this, the article is structured as follows: in the next section, a brief introduction to the concept of LPS is presented and the relevance of the employment factor as one of its determinants is discussed. The third section explicates the origins of the ways cultural and creative industries have been categorized, how the concepts have been adopted in various models of international politics, as well as the economic activities that constitute them. The fourth section identifies efforts to estimate the economic contributions of the cultural sector in Mexico. In the fifth section, the regional analysis techniques, data sources, and selected variable used for the study are explained. Following this, results are laid out and their interpretation within the framework of dynamics of employment location, concentration and specialization is discussed. Finally, conclusions and prospects are presented regarding future research on cultural and creative industries as LPS.

2. LOCAL CREATIVE PRODUCTION SYSTEMS: AN INTRODUCTION TO THE CONCEPT

The existing literature does not offer one single definition of Local Production Systems (LPS); rather, it can be said that such systems are complex entities within which social, economic, institutional and geographic factors which are closely linked. As such, definitions of LPS as a unit of analysis are quite heterogeneous.

Despite this, Lombardi (2000, 2003) does offer an extensive treatment of the LPS concept using a cognitive and evolutionary approach. He identifies three distinctive characteristics of LPS, which also nurture the networks that LPS are comprised of. These characteristics are described as follows: first is the local community, which possesses a homogeneous value system shared by people and institutions; this value system reinforces social actors' behavior, and is linked to identity and a sense of the local. The second characteristic is businesses, referring to the widespread breakdown of production processes, resulting in many businesses which are specialized in one or a limited number of stages of the process. Here, Lombardi argues that the breakdown of production processes implies the development of a local context within which transactions happen continuously on the basis of specialized goods and services; for example, in Baja California these include wine, beer, and gastronomy, among others. Third is human resources, where in addition to associations, unions and government, workers are highlighted as agents who frequently change their position in a wide range of production activities. This happens both with improvements in personal skills and competition, and with the pull of demand for economic specialization.

From another perspective, Albuquerque (2004, p. 5)—without departing from the points made by Lombardi—defines LPS as:

The geographic references or units in which production economies within businesses merge with local external economies, thus surpassing an analysis according to business type, since what is important is the interaction of the various local economies. Thus, along with economic and technical production relations, local economic development necessitates specific social relations and the promotion of an entrepreneurial culture, the formation of associative networks between local actors and the construction of what we now call “social capital”.

For their part, Novoselov and Seliverstov (2015) point out that LPS represent the geographic junction of the economy with political and social actors, whose efforts focus on a specific group of economic activities and occupations. In other words, LPS are an approximation of the inextricably linked local and social production structures found within a region.

There is also an important emerging debate around the role of cultural and creative industries as tools for urban renewal, in addition to elements of local economic development. Cunningham (2002) describes the foundations of the knowledge-based economy as based on its relationship with culture and creativity, as well as explaining the growth and diversification of the regional economy. Higgs *et al.* (2008) work on mapping the creative economy in the UK, while Lazeretti *et al.* (2008, 2012) and Flew and Cunningham (2010) see the role of the creative and cultural industries as underpinned by economic development. Additionally, Stevens (2015) addresses the relationship between a region and its cultural industries and examines options for the location and distribution of these industries and related job openings. In other words, he studies the ways that productive capital stock is concentrated, where it is located and the spatial specializations within a region.

Lazeretti *et al.* (2008) focus on the use of LPS as units of analysis for creative clusters. They emphasize that LPS must include a high concentration of businesses or employees in creative industries, which explains the relevance of studying employment distribution in a region. Furthermore, in LPS, geographical proximity is a necessary element in enabling the exchange of new knowledge among workers who enter such industries. Labor markets of this sort are multifaceted—meaning that the local workforce represents differing skills, capabilities and responsiveness—and they reflect the wide range of demand for human capital in creative and cultural employment.

To conclude, based on the above as well as other efforts to define the concept of LPS, an approach is proposed here to identify and analyze them based on their determinants, which in this case is employment. Thus, what can be defined as the LPS of cultural and creative industries are based on the structure of local labor markets as geographical units. Those who participate in productive spaces are the most important element in accounting for successful LPS.

3. CULTURAL AND CREATIVE INDUSTRIES IN LOCAL DEVELOPMENT

Debate around the recognition of culture and creativity as drivers of local economic development has taken place in various locations; for example, Australia and England were pioneers in proposing policies aimed at promoting creative industries. Since the 1980s, they have considered art and culture as sectors which contribute to the generation of national wealth and economic development, not only as activities that demand public resources to be assigned on the basis of their intrinsic, non-market value (Flew and Cunningham, 2010).

The British Labor government of the late 1990s formalized the concept of creative industries after the creation of the Department of Culture, Media and Sport (DCMS) (2001),² with the goal of valorizing and identifying “those activities which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property” (DCMS, 2001). In the United Kingdom, the decision to frame certain activities in the terminology of creative industries has served to identify changes in the productive environments linked to creativity and culture.

These changes have been driven by digital technologies, which facilitate new ways of producing, distributing and accessing cultural consumption. While such technologies offer more possibilities for users and content creators, they demand more consideration when it comes to preserving the economic value of their creations. According to the British Council, intellectual property is the catalyst that turns creative activity into a profitable industry, because of the way it protects inventors of new products, processes and services and allows them to make decisions about their creations (BOP Consulting, 2010).

Digital technologies and intellectual property are the elements that the British model emphasizes in order to propose a new perspective on activities that would otherwise have been included in the definition of cultural industries prevailing in the European Union.³

The British government's efforts to account for the economic value of creative production in their internal economy as well as in their exports have allowed other countries to develop their own models that make visible, map and identify such economic activity (see table 1).

Table 1. Comparison of terms among different countries: activities considered to be part of the cultural and creative industries

Term used	United Kingdom	Germany	Spain	France	Mexico
	Creative industries	Creative and cultural industries	Cultural industries	Cultural sector	Cultural sector
Architecture	X	X		X	X
Audiovisual	X	X	X	X	X
Performing arts	X	X	X	X	X
Bookstores			X	X	X
Design	X	X			X
Visual arts	X	X	X	X	X
Publishing	X	X	X	X	X
Fashion	X				X
Software/Multimedia	X	X			X
Museums/Cultural heritage			X	X	X
Music	X	X	X	X	X
Handicrafts	X				X
Advertising	X	X			X

Source: adapted from BOP Consulting (2010), and for Mexico based on data from Villaseñor (2018).

In a study of southern Europe, Lazeretti *et al.* (2008) make the distinction between traditional and non-traditional creative industries. Broadly speaking, the former category integrates sectors that were originally considered part of the cultural industries such as publishing, music, film, video and the performing arts; it also includes other sectors such as architecture and engineering, as well as consulting services linked to them. On the other hand, non-traditional creative industries involve research and development activities in the natural sciences, engineering, the social sciences and humanities—in addition to how these are applied in architecture, graphic design and fashion—as well as software development, online services and advertising.

Lazeretti *et al.* (2008) point out that countries in southern Europe tend to maintain the term cultural industries because they have an abundant cultural and artistic heritage that they have capitalized on. Meanwhile, northern European countries are more inclined to adopt the term creative industries, since they are more oriented towards the knowledge economy and Information and Communication Technologies (ICTs).

Since the adoption of cultural and creative industries as a category of economic analysis, it has been used as an instrument of public policy in the United Kingdom and other regions of the world. Governmental discourses around the creative industries—focused on economic growth and their potential to create jobs—introduce a new way to conceptualize cultural and creative activities. According to the United Nations Conference on Trade and Development (UNCTAD) (2010, p. 6): “the purpose is to better understand the dynamics of creativity and its overall interactions with the world economy, including its multidisciplinary dimension in which cultural policies interact with technological and trade policies.” This agency also points out that in order to identify the goods and services that the cultural and creative industries produce, it is important to assess whether:

- a) They require contributions from human creativity.
- b) They have a dual nature, as both a product and a symbolic commodity.
- c) They allow for some degree of intellectual property to be demonstrated.

Given this panorama, Cunningham's (2002) position is valid when he points out the importance of maintaining a differentiation between cultural policies—which have an institutional basis linked to the State and its institutions—and cultural industries, such as entertainment, which are tied to the productive scaffolding of the industrial model. Thus, important incentives emerge from public policies to identify and value the economic contributions of the cultural sector and related activities. At the same time, public and private organizations will be able to obtain indications and incentives to provide support for companies and ventures in the cultural and creative sector.

4. PRECURSORS OF THE ANALYSIS OF CREATIVE AND CULTURAL INDUSTRIES IN MEXICO

In Mexico, the analysis of economic activities linked to cultural and creative industries is recent.⁴ From the beginning, economic studies of culture focused on an analysis of the cultural sector, to account for the cultural infrastructure's characteristics and location (Consejo Nacional para la Cultura y las Artes, 2003) and to identify the contributions of Industries Protected by Copyright (IPC) (Piedras, 2004) and their link with to sociocultural context and economic development (García and Piedras, 2006).

Piedras (2004) carried out one of the first studies to measure the economic contribution of cultural industries in Mexico while taking into account the IPC sector. In Mexico these activities are identified by Federal Copyright Law and are comprised of literary, musical, pictorial, photographic, cinematographic works, and applied works of art that include graphic and textile design. Piedras calculated that the participation of IPC in the GDP was 6.7%, using data from the 1998 Economic Census—the most recent census available. In that study, cultural industries are comparable to IPC. It is relevant to note that among the categories used in said study, the shadow economy is included as a way to indicate informal contributions not accounted for in official figures.

The shadow economy is an element worthy of consideration, both for the cultural and creative industries, since this underground economy infringes on intellectual property rights and entails economic losses for sectors such as the audiovisual, music and publishing industries (Piedras, 2004). In a later calculation, Piedras (n.d.) warns that the part attributed to the shadow economy—deemed to be 1%—rose to 2.2% of the GDP, fixing the production of IPC at 7.3% for 2003. According to that author, the growth of this component over the course of four years is alarming and indicates negative effects related to ICTs.

Digital technology and intellectual property play a leading role in the definition used for the ProMéxico road map (2013, p. 15), which defines “creative industries [as] cinematography, animation, television and advertising audiovisual development, multimedia, e-learning and video game development. That is, all that content or intellectual property which has a screen as its output channel, in any of its modalities and purposes”. This definition sees digital technology as a priority in economic analysis, whether it is analyzed using the term cultural industry or creative industry.

In Mexico, a characterization of the cultural sector has become possible since the adoption of the Cultural Satellite Account System from the National Institute of Statistics and Geography [Spanish acronym INEGI]. This instrument has allowed for the identification of economic activities that are characteristic of the sector, as well as related activities. Based on that system, Cruz (2011) carried out a study of the cultural-economic region in the state of Oaxaca. Subsequently, Cruz and Lara (2012) have pointed out that despite the importance of cultural economic activities in the country, conceptual and methodological difficulties or discrepancies persist in attempts to characterize the sector.

Villaseñor (2018) states that in Mexico activities linked to the cultural and creative industries are defined as related to the visual arts; performing arts; music and concerts; books, printing and the press; audiovisual media and the internet; crafts, design, creative services, architecture and advertising; as well as those linked to tangible and intangible heritage. Overall, these activities constitute all of the creative industry classification terms proposed by the UNCTAD (2010).

Thus, in the absence of a clear delimitation between cultural and creative industries, a definition that encompasses and integrates the activities described by the UNCTAD (2010) was chosen. This definition pays little attention to the details of intellectual property, which must be considered for a complete description. However—as discussed in this article—thorough information is needed in order to characterize the latter elements. Furthermore, the methodology developed by Piedras (2004) is considered adequate to study the contributions of creations protected by intellectual property rights.

Without ignoring the components referred to above, the present research addresses the structure of the sectors and economic activities linked to cultural and creative industries, using the North American Industrial Classification System (NAICS) to identify sectors, branches and sub-branches of activities and services related to these industries.

5. METHODOLOGY

An analysis of the region suggests that the cultural and creative industries are distributed in a heterogeneous way. The approach taken to the geographic distribution of employment and the value of additional production from creative activities during the labor process, as well as transformations in the region of Baja California, is based on the study of administrative units—in this case, cities, with the limitation that each one has specific characteristics which capture its economic and social processes (Lazzeretti *et al.*, 2008).

Determining how cultural and creative activities play out in a region allows for connections to be made between those industries and economic growth. For the purposes of this work, total employed personnel (TEP) will be used as the unit of analysis. This variable captures the number of people who were employed during a reference period of time, depending on the economic unit and regardless of the existence of a contract. The TEP is then able to identify socioeconomic processes across space, and concurrently analyze patterns of specialization and concentration of people who have jobs which are considered part of the cultural and creative industries.

Information for the units of analysis is obtained from the INEGI's Economic Censuses (2014), as this is the most complete source for data disaggregated by municipality. The data matrix was structured based on the information collected regarding the economic activities carried out in each Baja California municipality between January 1 and December 31, 2013. The municipality was taken as a unit of reference, since it is the smallest administrative division for which statistical data is available. Despite this, it is clear that each municipality represents a region—a portion of the state with its own character, where productive exchanges are carried out via social relations and economic activities are specialized or diversified to a degree—an articulated and constantly evolving historical space (Linares, 2012; Hernández, 2001).

The NAICS (INEGI, 2013) was used to compile economic activities, as its classifications make it possible to shape and group the data according to characteristics of the Mexican economy. The analysis of the structure and behavior of economic activity in the cultural and creative industries was carried out using a series of techniques that allow for an understanding of regional development processes.

Following Lira and Quiroga (2003), the nomenclature used for the analysis of regional behavior is as follows:

i	Sector
j	Region (municipal seat)
V	Analyzed variable (total employed personnel)
V_{ij}	Value of variable V corresponding to sector i and region j
$\sum_j V_{ij}$	Value of V corresponding to sector total (sector i)
$\sum_i V_{ij}$	Value of V corresponding to regional total (region j)
$\sum_i \sum_j V_{ij}$	Value of V corresponding to overall total (sum of sector and region)

Indicators were grouped into a double-entry matrix with two categories depending on the axis of analysis; on one side, the regions—Ensenada, Mexicali, Tecate, Tijuana and Playas de Rosarito (columns), and on the other data from the sector, sub-branch and type of economic activity (rows). First, information from the Economic Census was organized in the ordered data matrix for 2014, then a matrix was constructed for each unit of analysis.

The tools used for regional analysis make it possible to compare the distribution of activities that lead the regional economic process. For this study, a series of tools for regional economic analysis were selected, presented by Boisier (2001) and taken up in the work of Lira and Quiroga (2003). In the analysis, each cell contains information for the unit of analysis (TEP). These were the base matrices used to calculate percentages, which include intraregional sectors representing the percentage of regional activity (j) taken up by sector (i). Absolute specialization is also examined, as well as the percentage of region (j) within the activity of sector (i), as a way to observe the interregional distribution or absolute concentration. This is expressed in equation 1:

$$P_{ij} = 100 * \left[\frac{V_{ij}}{\sum_i V_{ij}} \right] \quad (1)$$

Furthermore, the location quotient tool (Q_{ij}) was applied

$$Q_{ij} = \left[\frac{\frac{V_{ij}}{\sum_i V_{ij}}}{\frac{\sum_j V_{ij}}{\sum_i \sum_j V_{ij}}} \right] \quad (2)$$

Equation (2) represents the relationship between the participation of sector (i) in region (j) and the participation of the same sector in the state as a whole; it is used as a measure of relative or interregional specialization. Specialization would be associated with a $Q_{ij} > 1$.

Another tool used was the specialization coefficient (Q_r)

$$Q_r = \frac{1}{2} * \sum_i \left\{ ABS \left[\left(\frac{V_{ij}}{\sum_i V_{ij}} \right) - \left(\frac{\sum_j V_{ij}}{\sum_i \sum_j V_{ij}} \right) \right] \right\} \quad (3)$$

The Q_r coefficient in equation (3) shows the degree of similarity between the regional economic structure and the benchmark economic structure—in this case, the state of Baja California. It is also used as a measure of regional specialization when the indicator approaches 1 (one), or regional diversification when it is 0 (zero) or close to 0 (zero).

Finally, the spatial concentration coefficient (Q_s) was used

$$Q_s = \frac{1}{2} * \sum_j \left\{ ABS \left[\left(\frac{V_{ij}}{\sum_j V_{ij}} \right) - \left(\frac{\sum_i V_{ij}}{\sum_i \sum_j V_{ij}} \right) \right] \right\} \quad (4)$$

Equation (4) represents the degree of similarity of a sector's interregional distribution with respect to the benchmark distribution, which in this case is the total economic activity of the state. This indicator is used as a measure of geographic concentration; the concentration range is associated with values between 0 – 1, while a coefficient close to 1 represents a high degree of relative concentration.

6. ANALYSIS OF RESULTS

Creative industries, which are associated with highly symbolic cultural content, contribute to the economic development of Baja California by increasing productivity and creating synergy between elements of production, especially human capital. According to INEGI (2014), the creative industries make up 5.4% of the total employed population in the state, which translates into more than 42,000 jobs; these generate 5.8% of the gross census added value, representing more than MXN\$7.6 billion annually and nearly MXN\$3 billion in remunerations.

The distribution of TEP across sectors, sub-branches and types of activities that—according to the NAICS (INEGI, 2013)—make up the cultural and creative industries are concentrated in Tijuana and Mexicali. Together, these regions make up 77.3% of such employment. Table 2 shows the percentage of workers employed by sector within each of the regions.

The concentration of employment in activities typical of the tertiary sector (trade and services) in the Tijuana region is notable. This finding is a response in large part to that municipality's accelerated urbanization process and its geographical border location, a strategic site as a receptive hub for migrants. Next, Mexicali stands out in terms of two activities in the professional, scientific and technical services area. Additionally, a group of outliers are identified in four of the five regions, where the employment concentration is equal to 100% for certain sub-branches or activities. Although this situation could be resolved by eliminating each of these elements, it was decided that they should remain, as they are activities which are historically identified with the socio-economic structure of the region—like in the case of Tecate's beer brewing or Ensenada's grape-based alcoholic beverages.

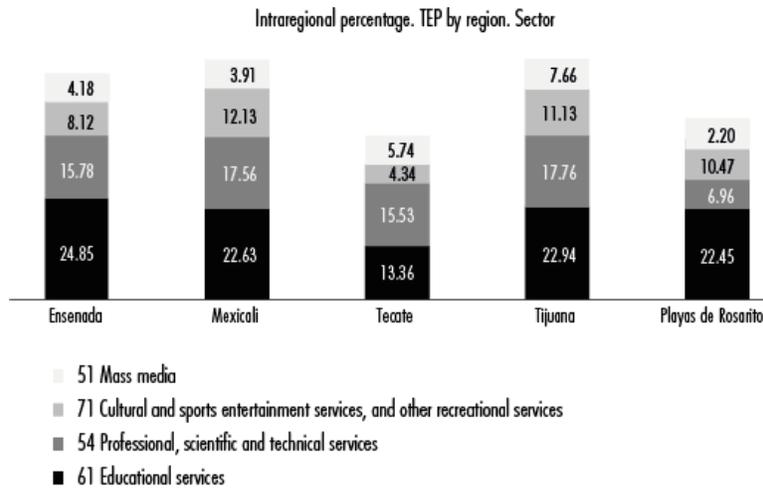
Table 2. Percentage of total personnel employed in creative industries by region, 2014

<i>Classification</i>	<i>Code</i>	<i>Economic activity/total employed personnel by region, 2014</i>	<i>Ensenada</i>	<i>Mexicali</i>	<i>Tecate</i>	<i>Tijuana</i>	<i>Playas de Rosarito</i>
type	312120	Beer brewing	0.0	0.0	100.0	0.0	0.0
type	312131	Manufacture of grape-based alcoholic beverages	100.0	0.0	0.0	0.0	0.0
type	466313	Retail trade of antiques and works of art	0.0	0.0	0.0	63.2	36.8
sector	51	Mass media	10.7	18.6	1.9	67.4	1.4
type	541310	Architectural services	7.6	69.2	0.0	23.2	0.0
type	541340	Drawing services	25.4	0.0	0.0	74.6	0.0
type	541430	Graphic design	0.0	82.4	17.6	0.0	0.0
type	541810	Marketing agencies	0.0	37.7	0.0	62.3	0.0
type	541840	Media representation agencies	0.0	0.0	0.0	100.0	0.0
type	541850	Advertising agencies	0.0	100.0	0.0	0.0	0.0
type	541890	Market research and public opinion survey services	0.0	0.0	0.0	100.0	0.0
sub-branch	61131	Higher education institutions	23.1	31.8	0.0	43.9	1.2
sub-branch	61142	Computer schools	0.0	0.0	0.0	100.0	0.0
sub-branch	61161	Art schools	18.4	20.5	2.3	56.7	2.1
sub-branch	71113	Singers and bands	0.0	100.0	0.0	0.0	0.0
type	711311	Private sector promoters of artistic, cultural, sporting or similar performances, that have facilities to present them	100.0	0.0	0.0	0.0	0.0
sub-branch	71151	Freelance artists, writers and technicians	0.0	0.0	0.0	100.0	0.0
sub-branch	71211	Museums	0.0	22.3	0.0	76.1	1.6
type	722511	Restaurants which serve food à la carte and comida corrida	15.4	26.4	2.0	51.5	4.6
type	722512	Restaurants which serve fish and seafood	15.7	23.5	1.6	41.1	18.2
type	722513	Restaurants which serve antojitos	17.2	28.3	2.2	45.9	6.3
type	722517	Restaurants which serve take-out pizza, hamburgers, hot dogs and roasted chicken	15.3	28.9	2.8	49.1	3.9
type	722518	Restaurants which serve any other kind of take-out food	9.6	29.2	4.0	54.0	3.2
type	722519	Preparation services for other food meant for immediate consumption	12.9	25.5	2.5	51.0	8.1

Source: prepared by the authors with data from the INEGI Economic Censuses, 2014.

An intraregional analysis reveals the absolute employment specialization within the productive structure of each region. Figure 1 shows absolute specialization percentages for four sectors linked to the cultural and creative industries, with a two-digit level of disaggregation. As can be observed, with the exception of Tecate the educational services sector is the one that indicates a specialization bias in the other four regions. Secondly, the graph highlights the absolute specialization of sector 54—professional, scientific and technical services—where, among other branches, scientific research and development services are located; such services are related to the work of Research Centers, and together with universities in the region (included in sector 61) produce information necessary to encourage creativity, innovation and technological development.

Figure 1. Absolute or intraregional specialization of total employed personnel, by sector



Source: prepared by the authors with data from the INEGI Economic Censuses, 2014.

Thirdly, this graph shows cultural and sports entertainment services, and economic activities linked to museums, concerts, sporting events and various other recreational offerings. Finally, on an intraregional scale, Tijuana stands out in terms of the mass media sector, which according to the NAICS includes:

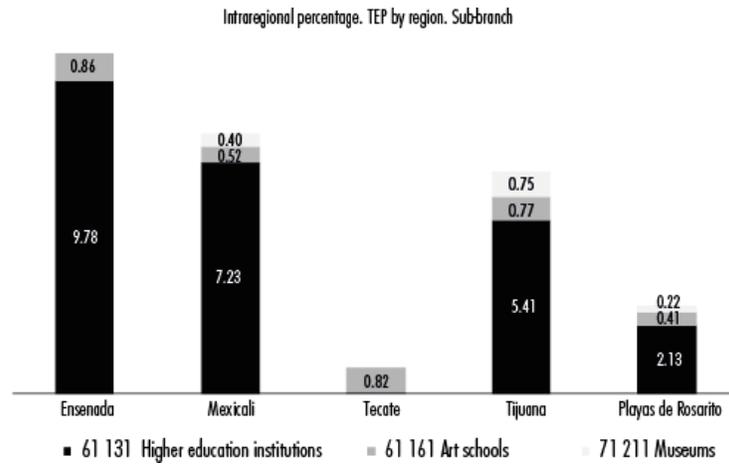
Economic units dedicated primarily to producing, managing, developing or distributing products protected by copyright law. Within this, three types of economic units are distinguished: 1) those dedicated to the production, management and distribution of information and cultural products (which are those that directly express attitudes, opinions, ideas, values and artistic creativity; they provide entertainment and information); 2) those that provide the means to transmit or distribute such products, information or communications, and 3) those that process information (INEGI, 2013, p. 357).

It is important to point out that in sector 54, corresponding to professional, technical and scientific services, the employment distribution is specialized in Tijuana and Mexicali, rather than in Ensenada and Tecate. To analyze this sector's composition, it is necessary to disaggregate the structure of services comprised of branches and sub-branches. However, it was only possible to analyze it on an aggregate level, since the information to four and six digits is non-existent in the INEGI Economic Census (2014) database. This fact is pertinent given that a disaggregated analysis of this sector would make it possible to understand the distribution of employment linked to Research and Development (R&D) activities, which are important in the composition of the cultural and creative industries.

When analyzing the economic sub-branches linked to the cultural and creative industries (higher education institutions, art schools and museums), an absolute employment specialization which is biased towards higher education institutions is observed, except in the case of Tecate. Ensenada is the region with the highest tendency towards this sub-branch with 9.8%, followed by Mexicali with 7.2% and Tijuana with 5.4%—these regions have the largest number of public and private universities at the state level. Tecate sees an absolute specialization of workers employed in art schools, although it has a slightly lower percentage than Ensenada. Meanwhile, the museum sub-branch has a presence in Mexicali (Sol del Niño Museum, UABC Cultural Research Institute) and Tijuana (CECUT, El Trompo Museum, Tijuana History Museum), as well as Rosarito (see figure 2).

To achieve a more detailed analysis of Baja California's creative industries, the six-digit structure was broken down to address types of activities. Figure 3 shows the employment bias in the five regions towards work related to food services; first are restaurants which serve à la carte or *comida corrida* food, with a very similar average across regions, although Playas de Rosarito stands out. Similarly, the Playas de Rosarito region shows an absolute employment specialization of 16.5% in fish and seafood preparation services, in line with its gastronomic and touristic history. Playas de Rosarito is a region that since the 1920s has stood out as a center of tourism development, with the construction of hotels and casinos. Furthermore, the region is distinguished by gastronomic creativity in the preparation of fish and seafood; a clear example is the community—of fishermen and currently restaurants—of more than 30 establishments which serve the typical dish of the region “Puerto Nuevo style lobster,” famous for being perfectly cooked and served with beans, rice and flour tortillas.

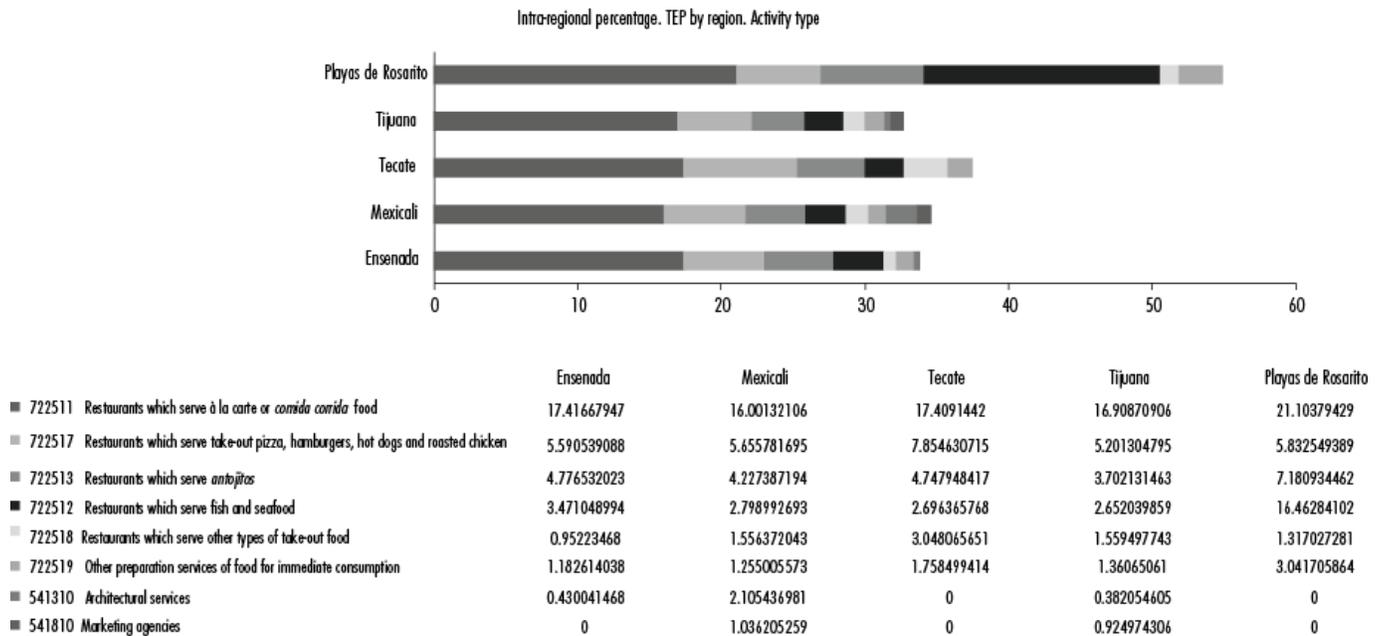
Figure 2. Absolute or intra-regional specialization of total employed personnel, by sub-branch



The location quotient, which measures relative or interregional specialization, was calculated using data obtained from sub-branches and activity types provided by INEGI (2014). Like for the absolute or intraregional specialization, the TEP variable was used.

The relative specialization index proposed by Lira and Quiroga (2003) was calculated at the intraregional level for each sub-branch and activity type in the cultural and creative industries, for every region in the state. For this calculation, formula 2 from the methodology section was applied. Values were obtained that indicate each economic activity's degree of specialization in each of the regions, compared to each economic activity's degree of specialization in the entire state. The higher the value of the quotient, the greater the relative specialization of the activity in that region.

Figure 3. Absolute or intra-regional specialization of total employed personnel, by type of activity



Values greater than 1 (one) mean that the participation of personnel employed in that sub-branch or activity type, within the productive structure of the cultural and creative industries of that region, is greater than that of the state as a whole. The closer the value is to 0 (zero), the less specialized the region will be. Results are shown in table 3; economic activities greater than 1 are shaded to facilitate their identification.

Table 3. Location quotient in the creative industries by region, 2014

<i>Economic Activity/total employed personnel by region, 2014</i>	<i>Ensenada</i>	<i>Mexicali</i>	<i>Tecate</i>	<i>Tijuana</i>	<i>Playas de Rosarito</i>
Beer brewing	0.00	0.00	37.61	0.00	0.00
Manufacture of grape-based alcoholic beverages	6.42	0.00	0.00	0.00	0.00
Retail trade of antiques and works of art	0.00	0.00	0.00	1.25	8.23
Mass media	0.69	0.69	0.72	1.34	0.31
Architectural services	0.49	2.57	0.00	0.46	0.00
Drawing services	1.63	0.00	0.00	1.48	0.00
Graphic design	0.00	3.05	6.64	0.00	0.00
Marketing agencies	0.00	1.40	0.00	1.24	0.00
Media representation agencies	0.00	0.00	0.00	1.99	0.00
Advertising agencies	0.00	3.71	0.00	0.00	0.00
Market research and public opinion polls services	0.00	0.00	0.00	1.99	0.00
Higher education institutions	1.48	1.18	0.00	0.87	0.28
Computer schools	0.00	0.00	0.00	1.99	0.00
Art schools	1.18	0.76	0.86	1.13	0.48
Singers and bands	0.00	3.71	0.00	0.00	0.00
Private sector promoters of artistic, cultural, sports and similar entertainment that have facilities to present them	6.42	0.00	0.00	0.00	0.00
Freelance artists, writers and technicians	0.00	0.00	0.00	1.99	0.00
Museums	0.00	0.83	0.00	1.51	0.36
Restaurants which serve à la carte or comida corrida food	0.99	0.98	0.76	1.02	1.02
Restaurants which serve fish and seafood	1.00	0.87	0.60	0.82	4.06
Restaurants which serve antojitos	1.11	1.05	0.84	0.91	1.42
Restaurants which serve take-out pizza, hamburgers, hot dogs and roasted chicken	0.98	1.07	1.06	0.97	0.88
Restaurants which serve other types of take-out food	0.62	1.08	1.51	1.07	0.73
Other preparation services of food for immediate consumption	0.83	0.94	0.95	1.01	1.82

Source: prepared by the authors with data from INEGI Economic Censuses, 2014.

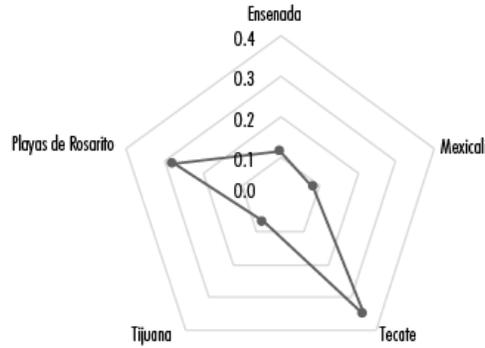
The information provided in table 3 shows that the regions with the most specialization in the cultural and creative industries are Playas de Rosarito, Tecate and Ensenada, with values in indices greater than 4; this is followed by Mexicali with values between 2 and 4; and finally, Tijuana with values between 1 and 2. In terms of the number of economic activities within the cultural and creative industries, Tijuana has the highest number among the regions—for 13 out of 24 industries their relative specialization indices are greater than 1, while in Tecate, only three activities show specialization (beer brewing is considered isolated data since it refers to the beer consortium).

As can be observed, for all activities related to restaurants with various types of food preparation services, there is a degree of relative specialization with values very close to 1 and up to 4, as is the case for fish and seafood preparation in the Playas de Rosarito region. These results can be related to a given region's higher absolute specialization in those same activities (see figure 3).

A useful indicator for the exploration of specialization patterns in each region—in this case, TEP in the cultural and creative industries—is the specialization coefficient. This indicator refers to the region's behavior in terms of specialization and demonstrates similarities between the region and economic structure of the state. To calculate it, formula 3 was applied. Values equal to or close to 1 (one) refer to regional specialization, while values close to or equal to 0 (zero) imply diversification.

Figure 4 lays out the specialization index. The highest level of employment specialization in the cultural and creative industries is seen in the make-up of the Tecate region with an index of 0.352; this is reinforced by the weight of agglomeration in beer brewing and higher education institutions. Playas de Rosarito has an index of 0.276, driven by restaurants which serve fish and seafood, an activity which holds greater weight in terms of specialization. This is followed, in descending order, by Ensenada with an index of 0.116 and the most diversification in the structure of the creative industries, and Mexicali and Tijuana with indices of 0.85 and 0.071, respectively.

Figure 4. Specialization coefficient of total employed personnel in the creative industries, by region

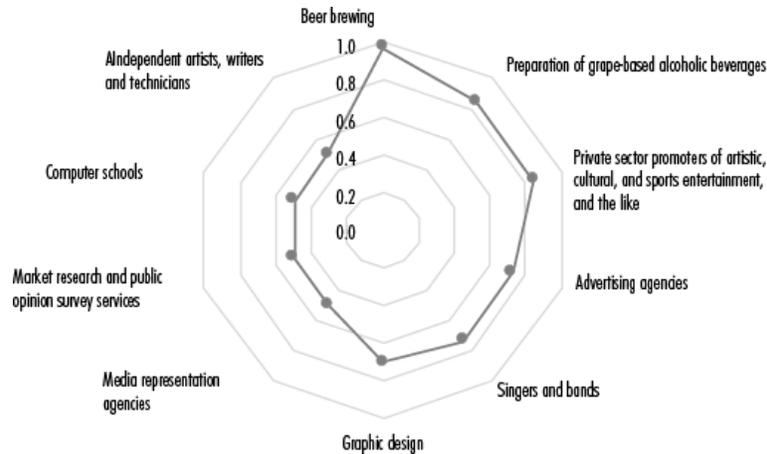


Source: prepared by the authors with data from INEGI Economic Censuses, 2014.

The spatial concentration coefficient (see formula 4) was used to examine which of the creative industry activities are found within a region. This coefficient corresponds to a category of indicators that focus on economic activities and their distribution throughout each region. As Callejón (1997, p. 11) points out, the tendency towards the concentration of economic activity in a region is analyzed “with the goal of taking advantage of economies of scale and externalities from different places”. In this sense, the location of economic activities is associated with factors that create locational advantages (Lira and Quiroga, 2003). These indicators imply geographic concentration in ranges equal to or close to 1 (one), which represents a regional distribution of economic activity different from that of the state-level pattern.

The state distribution shows a spatial concentration index of almost 1 for beer brewing, with an index of 0.97 (Tecate); grape-based alcoholic beverage production and private sector promoters of artistic, cultural, and sports entertainment with an index of 0.84 (Ensenada); singers and bands, and graphic design with indexes of 0.73 and 0.70, respectively (Mexicali); and others that are above 0.5 such as computer schools, artists, writers and independent technicians (Tijuana) (see figure 5).

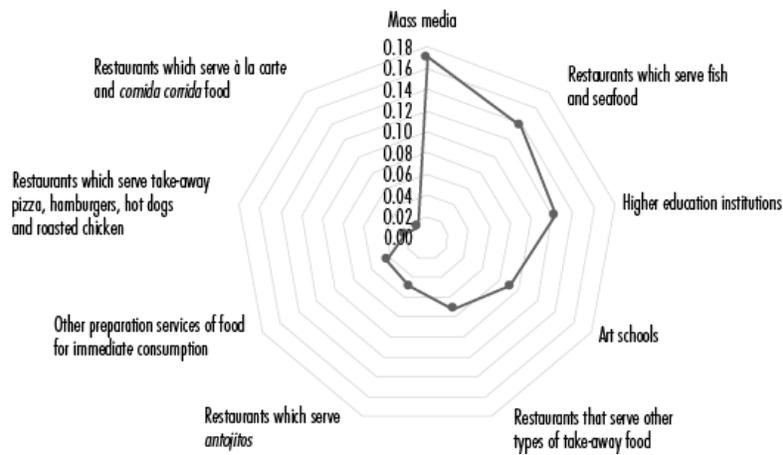
Figure 5. Spatial concentration coefficient, total employed personnel in the creative industries



Source: prepared by the authors with data from INEGI Economic Censuses, 2014.

On the other hand, the cultural and creative industries with the lowest spatial concentration indices—close to 0 (zero)—are located in the restaurant services sector, followed by art schools and higher education institutions, and finally by the mass media sector, suggesting their dispersion throughout the state and their disinclination to being located in a specific place (see figure 6).

Figure 6. Spatial concentration coefficient, total employed personnel in the creative industries



Source: prepared by the authors with data from INEGI Economic Censuses, 2014.

7. CONCLUSIONS

The main goal of this article is to provide an initial exploration of employment distribution as a factor that integrates creative LPS in the state of Baja California through the concentration, location and regional specialization of the cultural and creative industries. To this end, a series of indicators and measures of regional specialization and concentration were considered. The results obtained from the indices show an absolute regional specialization in higher education in Ensenada, as in Tecate with art schools, while in Playas de Rosarito restaurants which serve à la carte food and fish and seafood see the highest labor specialization rates.

Similarly, the regional location quotient demonstrates an intraregional specialization in restaurant services in the Playas de Rosarito region, while the Tijuana region has the highest number of activities with a location quotient greater than 1, indicating that specialization of employed personnel in the cultural and creative industries is well-distributed there.

It should be noted that the structures seen for employed personnel in the Mexicali and Tijuana regions are the most similar; the two cases are the most diversified in the state, while the employment structures in the Ensenada, Tecate and Playas de Rosarito regions are considered to be the most specialized.

On the other hand, the spatial concentration shows a dynamic which is differentiated by region. The creation of advantages for the concentration of certain activities within a territory corresponds to the ways economies of scale and externalities are exploited. In this sense, employment is located in places where historical attributes and specific characteristics lend more dynamism to the cultural and creative industries. This is why cultural, anthropological and historical analyses are a desirable supplement to the present type of study.

With the results obtained here, it is possible to speak of a certain regional polarization of employment in creative LPS. This is because the employed personnel of these industries which make up the regional economies of Baja California—such as the preparation of beer in Tecate or wine-based alcoholic beverages in Ensenada, and fish and seafood preparation services in Playas de Rosarito—gain relevance in these regions and relate to each one's history, as well as its economic factors and the possibility of generating economies of scale.

It is noteworthy that the economic activities which see a greater presence in the state are services and manufacturing related to the gastronomic sector, which in its various forms makes positive impacts on creative LPS, especially in job creation. This result is relevant because these activities are not identified in the taxonomy which was used until 2010 in the European Union. However, the sector's performance, as well as its link to tourism and the cultural and creative industries, qualify it to carry weight as a category in the regional analysis of those industries.

At the regional level, it can be observed that jobs related to higher education activities and those specialized in art, as well as employment in spaces dedicated to the preservation and diffusion of arts and culture, show elements of specialization within the sector. This is further evidence that supports a view of these activities as tied to the knowledge economy.

Additionally, the geographic distribution of personnel employed in the cultural and creative industries underpins the importance of the mass media sector in the state, highlighting the presence of digital technologies as a fundamental component of these industries. Considering the fact that ICT-related activities are more likely to generate added value, it is also pertinent to ask whether activities tied to culture and creativity become more profitable when they involve the usage of such technologies.

Finally, in future research it will be necessary to consider an analysis of economic units, since adding this to the workforce will allow for answers to questions such as: what is the degree of agglomeration of creative LPS in Baja California? Why do certain industries cluster together? Is it possible to speak about creative cities in Baja California within the framework of local economic development? Furthermore, focusing on studies of particular activities (such as the wine industry, gastronomy or craft beer brewing) will allow us to understand to what extent they generate employment and add value to the production chains of the industries in question and their LPS. In addition to regional analysis methodologies, these proposed lines of

research would be enriched by qualitative approaches that involve the study of economic production as linked to a sense of locality, within the framework of regional development.

BIBLIOGRAPHY

- Albuquerque, F. (2004), Sistemas productivos locales: una mirada desde la política económica local para la generación de empleo, *Seminario CEPAL*, Buenos Aires. Recovered from <<http://municipios.unq.edu.ar/modules/mislibros/archivos/albu-oit.pdf>>
- Boisier, S. (2001), "Desarrollo (Local): ¿De qué estamos hablando?", in O. Madoery and A. Vázquez Barquero (eds.), *Transformaciones globales, instituciones y políticas de desarrollo local*, Argentina, Homo Sapiens.
- BOP Consulting (2010), *Guía práctica para mapear las industrias creativas*, United Kingdom, British Council. Recovered from <<http://cerlalc.org/wp-content/uploads/2013/02/22.pdf>>
- Callejón, M. (1997), "Concentración geográfica de la industria y economías de aglomeración", *Economía industrial*, vol. 317. Recovered from <https://www.researchgate.net/prole/Callejon_Maria/publication/281406438_Concentracion_geogra_ca_de_la_industria_y_economias_de_aglomeracion/links/55e5a37e08aede0b57365be8.pdf>
- Consejo Nacional para la Cultura y las Artes (CONACULTA) (2003), *Atlas de infraestructura cultural de México*, Mexico, Consejo Nacional para la Cultura y las Artes.
- Cruz, E. (coord.) (2011), *Programa Sectorial de Cultura 2011-2016. Diversidad cultural y patrimonio para el desarrollo*, Mexico, Seculta.
- Cruz, E. and Lara, C. (coords.) (2012), *1988-2012 Cultura y transición*, Mexico, Universidad Autónoma de Nuevo León e Instituto de Cultura de Morelos.
- Cunningham, S. (2002), "From cultural to creative industries: Theory, industry and policy implications", *Media International Australia Incorporating Culture and Policy: Quarterly Journal of Media Research and Resources*, vol. 102, no. 1, DOI <<https://doi.org/10.1177/1329878X0210200107>>
- Department of Culture, Media and Sport (DCMS) (2001), *Mapping the creative industries*, London, DCMS.^{[1][SEP]}
- Department of Culture, Media and Sport (DCMS) (1998), *Creative industries mapping document 1998*, London, DCMS.
- Flew, T. and Cunningham, S. (2010), "Creative industries after the first decade of debate", *The Information Society*, vol. 26, no. 2, DOI <<https://doi.org/10.1080/01972240903562753>>^{[1][SEP]}
- García, N. and Piedras, E. (2006), *Las industrias culturales y el desarrollo en México*, Mexico, Siglo XXI Editores.^{[1][SEP]}
- Hernández, J. L. S. (2001), "La región y el enfoque regional en geografía económica", *Boletín de la Asociación de Geógrafos Españoles*, no. 32. Recovered from <<http://bage.age-geogra a.es/ojs/index.php/bage/article/download/404/375>>
- Higgs, P., Cunningham, S. and Bakhshi, H. (2008), *Beyond the creative industries. Mapping the creative economy in the United Kingdom*, United Kingdom, NESTA.
- Instituto Nacional de Estadística y Geografía (INEGI) (2013), *Sistema de Clasificación Industrial de América del Norte, SCIAN*. Available at <http://www.beta.inegi.org.mx/app/formatoopinion/doc/scian_2013.pdf>
- _____ (2014), *Censos Económicos 2014, Sistema Automatizado de Información Censal*. Recovered from <http://www3.inegi.org.mx/olap/olap.aspx?server=2&db=Serie_Censal_Economicos&cube=Censos%20Econ% C3%B3micos&fp=1>
- Lazzeretti, L., Boix, R. and Capone, F. (2008), "Do creative industries cluster? Mapping creative local production systems in Italy and Spain", *Industry & Innovation*, vol. 15, no. 5, DOI <<http://dx.doi.org/10.1080/13662710802374161>>
- _____, Capone, F. and Boix, R. (2012), "Reasons for clustering of creative industries in Italy and Spain", *European Planning Studies*, vol. 20, no. 8, DOI <<https://doi.org/10.1080/09654313.2012.680585>>
- Linares, J. (2012), "La importancia económica de los municipios en el Mexico del siglo XXI", *Región y sociedad*, vol. 24, no. 54. Recovered from <http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1870-39252012000200002&lng=es&nrm=iso>
- Lira, L. and Quiroga, B. (2003), *Técnicas de análisis regional*, Santiago de Chile, CEPAL, ILPES.
- Lombardi, M. (2000), "The cognitive approach to the study of local production systems", in F. Belussi and G. Gottardi (eds.), *Evolutionary patterns of local industrial systems*, Ashgate, Aldershot.
- _____ (2003), "The evolution of local production systems: the emergence of the 'invisible mind' and the evolutionary pressures towards more visible 'minds'", *Research Policy*, vol. 32, no. 8, DOI <[https://doi.org/10.1016/S0048-7333\(02\)00157-9](https://doi.org/10.1016/S0048-7333(02)00157-9)>
- Novoselov, A. and Seliverstov, V. (eds.) (2015), *Local production systems: Analysis and forecasting of regional economic development*, Novosibirsk, Sofia, Lodz, Banska Bystrica, Ternopil.
- Piedras, E. (s.f.), *Industrias culturales en México: una actualización de los cálculos al 2003*, Mexico, Sistema de Información Cultural. Recovered from <<http://sic.cultura.gob.mx/documentos/1248.pdf>>
- _____ (2004), *¿Cuánto vale la cultura? Contribución económica de las industrias protegidas por el derecho de autor en México*, Mexico, Conaculta.

ProMéxico (2013), *Mapa de Ruta de Industrias Creativas*. Recovered from <<http://www.promexico.gob.mx/documentos/mapas-de-ruta/MRT-Industrias-Creativas-2013.pdf>>

Stevens, Q. (2015), "Creative milieux: How urban design nurtures creative clusters", *Journal of Urban Design*, vol. 20, no. 1, DOI <<https://doi.org/10.1080/13574809.2015.981393>>

United Nations Conference on Trade and Development (UNCTAD) (2010), *Economía creativa: una opción factible de desarrollo*, Universidad Tecnológica de Chile (trad.), Geneva-New York, UNDP-UNCTAD.

United Nations Conference on Trade and Development (UNCTAD) (2010), *Creative Economy Report 1010*, Geneva-New York, UNDP-UNCTAD.

Villaseñor, C. (2018), "Industrias culturales y creativas en México", in J. J. Balaguer, S. Arroyo, J. F. Parra and A. J. Verdú (coords.), *Las industrias culturales y creativas en Iberoamérica. Evolución y perspectivas*, Alicante, Spain, Universidad Miguel Hernández de Elche.

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² Tony Blair's Labor government (1997-2007) established the Creative Industries Task Force (CITF) as a central part of its new DCMS.

³ In France, cultural industries have been considered "a set of economic activities that combine the functions of conception, creation and production of culture with more industrial functions in the large-scale manufacture and commercialization of cultural products" (UNCTAD, 2010, p. 5).

⁴ Since the late 1990s, the first steps have been taken to identify the economic contributions of the cultural industries in Latin America under the auspices of the Andrés Bello Agreement.