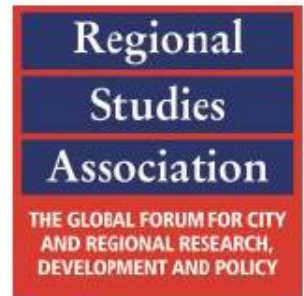


REGIONAL STUDIES ASSOCIATION WINTER CONFERENCE 2018
NEW HORIZONS FOR CITIES AND REGIONS IN A CHANGING WORLD
15TH-16TH NOVEMBER 2018, HOLIDAY INN BLOOMSBURY, LONDON, UK



Techniques of Analysis Applied to Local Labour Markets*

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Concept

Local Labor Markets (LLMs)

A local labor markets is a geographic area, in which most workers reside and work within the same.

(Coombes, Green and Openshaw, 1986; Casado, Martínez and Flórez, 2010; OECD, 2002, etc.)



Objectives

1. To check which geographic spaces are most suitable for the analysis and implementation of public policies.
2. To study the behaviour of labor indicators in functional areas.



Analysis and evaluation techniques

1. Analysis of variance (ANOVA)
2. Theil index
3. Cörvers, Hensens and Bogaerts method
4. Moran's I
5. Maurel and Sedillot index
6. Ellison and Glaeser index



1. Analysis of variance (ANOVA)

To determine the differences between the averages of groups by comparison of the variability within the groups and between the groups.

$$F = \frac{SS_B / df_{G-1}}{SS_W / df_{S-G}}$$

Being:

SS_B = sum of the squares between the regions

Df_{G-1} = degrees of freedom

G = number of groups

S = number of areas



2. Theil index

This concentration and dispersion measurement index is applied to check the homogeneity of the areas (Klapka et al., 2016).

$$Tw = \sum_i \frac{e_i}{e_m} \ln \left(\frac{e_i / p_i}{e_m / p_m} \right)$$

Being:

e_i = number of employees of municipality i

e_m = number of employees of the region or LLM m

p_i = total population of 16 to 64 years old of the municipality i

p_m = total population of 16 to 64 years old of the region or LLM m

$$T = \left(\sum_i \frac{e_m}{e_t} \ln \left(\frac{\frac{e_m}{p_m}}{\frac{e_t}{p_t}} \right) \right) + \left(\sum_i \frac{e_i}{e_t} \ln \left(\frac{\frac{e_m}{p_i}}{\frac{e_t}{p_t}} \right) \right) = Tb + Tw$$

e_t = number total employees

p_t = total population of 16 to 64 years old

Employment rates in the Counties and Local Labor Markets in the Comunidad Valenciana (Spain)

Table 2. Average of the Theil Index values within

Indicator	Counties	LLMs
Employment rates, 1991	0,007	0,008
male	0,006	0,007
female	0,045	0,041
Employment rates, 2001	0,004	0,005
male	0,003	0,004
female	0,016	0,018
Employment rates, 2011	0,006	0,008
male	0,009	0,010
female	0,012	0,012

Source: own elaboration

Table 3. Theil index Tb/T

Indicator	Counties	LLMs
Employment rates, 1991	0,274	0,275
male	0,275	0,276
female	0,317	0,313
Employment rates, 2001	0,273	0,274
male	0,271	0,272
female	0,286	0,288
Employment rates, 2011	0,259	0,261
male	0,264	0,265
female	0,267	0,267

Source: own elaboration

Manzanares, A. (2016). Local labor markets: four empirical tests of analysis and evaluation. University of Murcia, Murcia.



3. Cörvers, Hensens and Bogaerts method

Regression of least squares by estimating the following equation that reveals the differences in the occupancy rate between LLMs and Other types of areas

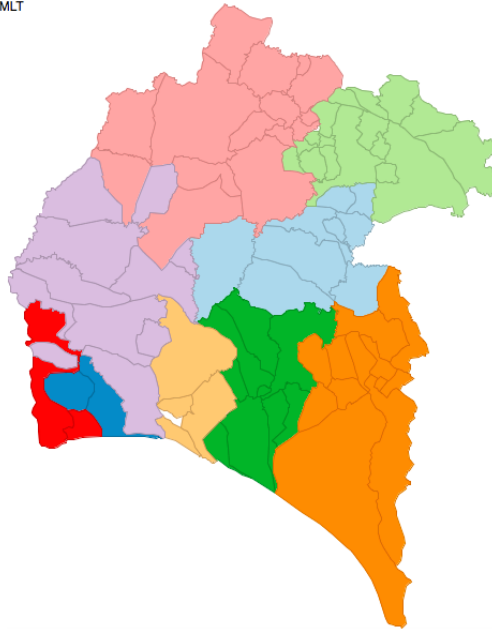
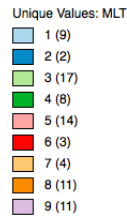
$$y_m = \beta_0 + \beta_{1,..k} * delimitación$$

Where m It represents the municipalities, k Is the number of regions minus 1, β_0 represents the average level of employment rate in the region of reference, $\beta_{1,..k}$ represent the differences between the average employment rate level of the other regions and the reference region, and *delimitation* are the fictitious variables (variables Dummy) that represent the membership or not of a MLT or a region.

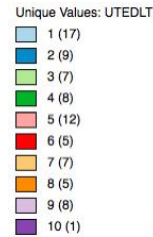


Functional units (LLMs) versus administrative units (UTEDLT) in the province of Huelva (Spain)

LLMs



UTEDLT



Manzanares, A; Sánchez, C. and Riquelme, P. J. (2016) "Analysis of coherence in the local labor markets of the province of Huelva. *Revista de Estudios Regionales* nº 107, pp 177-205.

Source: own elaboration



4. Moran's I

The indicator measures the trend of similar values to be grouped in space. That is, to what extent areas with high unemployment rates are surrounded by other high-rate areas while low-rate areas are also surrounded by similar

$$I = \frac{N}{\sum_i \sum_i w_{ij}} \frac{\sum_i \sum_i w_{ij} (y_i - \bar{y})(y_j - \bar{y})}{\sum_i (y_i - \bar{y})^2}$$

Being

W_{ij} = The matrix of space weights

N = the sample size

\bar{y} = The average or expected value of the variable y

Spatial analysis of unemployment in Spanish local labor markets

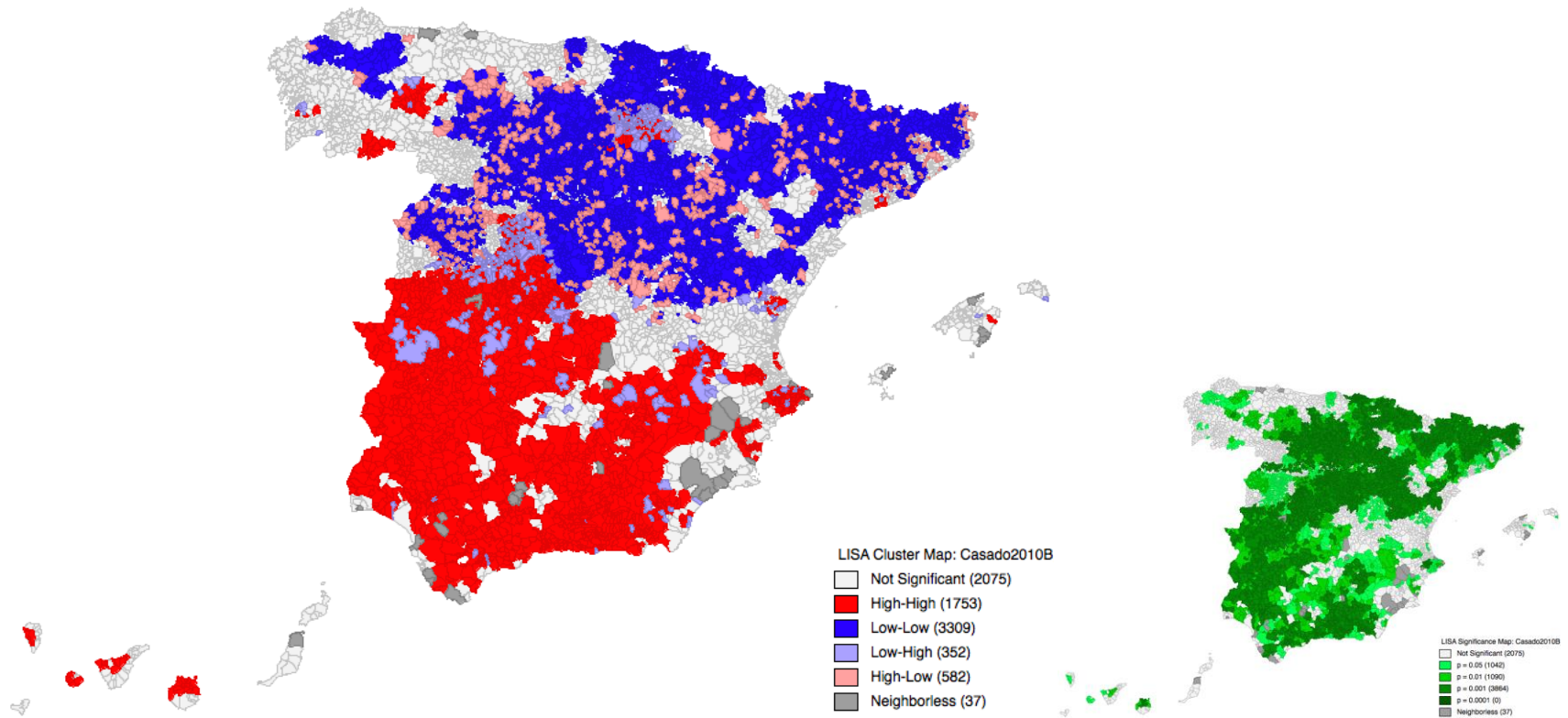


Figure 1. Local spatial autocorrelation and significance rates for Spanish LLMs, 2011
Source: Population and Housing Census 2011.

Manzanares, A. and Riquelme, P.J. (2017): Spatial analysis of unemployment in Spanish local labor markets. *Revista Galega de Economía*, Vol. 26-2, pp. 29-47



5. Maurel and Sedillot index

It is an estimate of the correlation between the decisions of localization of two companies that belong to the same sector and that allows to deepen in the geographical and sectorial area of the spillovers generated.

$$Y_{M-S} = \frac{\frac{\sum_I S_I^2 - \sum_I X_I^2}{1 - \sum_I X_I^2} - H}{1 - H}$$

Being:

S_I = Percentage of workers in the sector that contains the territory I

X_I = Percentage of the number of workers in the same territory

H = Index of Herfindahl-Hirschman



6. Ellison and Glaeser index

The index measures to what extent the economies of agglomeration contribute in the decision of the location of the companies (Alley, 1997).

$$Y_{E-G} = \frac{\frac{\sum (S_I - X_I)^2}{1 - \sum X^2} - H}{1 - H}$$

Being:

S_I = Percentage of workers in the sector that contains the territory I

X_I = Percentage of the number of workers in the same territory

H = Index of Herfindahl-Hirschman

Being:

Z = Relationship between the number of employees companies and the number of employees sector K

K = Company Number of the sector.

The industrial concentration of companies in the LLMs of the Region of Murcia

CUADRO 3

RESULTADOS DE LOS INDICADORES SEGÚN LAS DIVISIONES DE LA CNAE-2009

División	Concentración de la industria manufacturera	H	Municipio		Comarca		MLT	
			Y _{E-G}	Y _{M-S}	Y _{E-G}	Y _{M-S}	Y _{E-G}	Y _{M-S}
10	Industria de la alimentación.....	0,066	0,000	0,012	0,009	0,008	0,007	0,018
11	Fabricación de bebidas	0,058	0,012	0,004	0,011	0,011	0,012	0,012
12	Industria del tabaco	0,000	0,000	0,000	0,000	0,000	0,000	0,000
13	Industria textil	0,034	0,014	0,000	0,014	0,014	0,014	0,014
14	Confección de prendas de vestir.....	0,476	0,010	0,005	0,010	0,010	0,010	0,009
15	Industria del cuero y del calzado.....	0,016	0,027	0,003	0,026	0,024	0,027	0,024
16	Industria de la madera y del corcho, excepto muebles; cestería y espartería.....	0,013	0,031	-0,003	0,043	0,042	0,040	0,054
17	Industria del papel	0,102	0,011	0,001	0,011	0,011	0,011	0,011
	Media.....	-	0,003	0,010	0,018	0,019	0,018	0,019
	Mínimo.....	-	-0,212	-0,003	-0,028	-0,019	-0,026	-0,038
	Máximo.....	-	0,039	0,123	0,153	0,151	0,145	0,173

FUENTE: Elaboración propia.

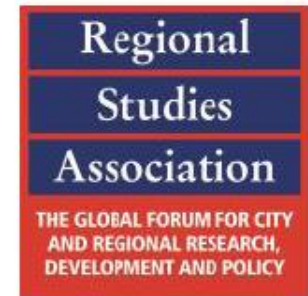
Manzanares, A. and Riquelme, P.J. (2017). The industrial concentration of companies in the local labor markets of the Region of Murcia. *Revista de Economía ICE* nº 895, pp.127-141



Conclusions

- The use of functional regions can provide additional and useful information for the analysis between employment and territory.
- These techniques allow to obtain interesting results that serve to know more of the Spanish labor market in relevant territorial areas and to contrast the suitability of the territorial areas.
- The analyses show that it is necessary to consider the local dimension in the analyses referred to the labor market.

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