Spatial Data Analysis

Seminar 2018/19
Monday 17:15 - 18:45
Room 57 - 315

Chair of Methods of Empirical Social Research
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Office Hours: Tuesday 14:00 - 15:00

Nr.	Date	Topic
0	22.10.	Outline / Introduction to R
1	29.10.	Spatial research questions
		Data Handling
2	05.11.	Spatial objects and classes in R
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3	tba	Spatial maps in R
4	26.11.	Importing spatial data from other GIS
5	03.12.	Combining different data sources
		Data Analysis
6	10.12.	Spatial measures (segregation, distances)
7	17.12.	Spatial autocorrelation I: Spatial weights
8	07.01.	Spatial autocorrelation II: Detection
9	14.01.	Spatial regression models: Theory
10	21.01.	Spatial regression models: Application I
11	28.01.	Spatial regression models: Application II
12	04.02.	Conclusions

Literature:

Theory:

Elhorst, J. P. (2014). *Spatial Econometrics: From Cross-Sectional Data to Spatial Panels.* SpringerBriefs in Regional Science. Berlin and Heidelberg: Springer.

Fotheringham, A. S. & Rogerson, P., Eds. (2009). *The Sage Handbook of Spatial Analysis.* Los Angeles and London: Sage.

LeSage, J. P. & Pace, R. K. (2009). *Introduction to Spatial Econometrics.* Statistics, Textbooks and Monographs. Boca Raton: CRC Press.

Application:

Bivand, R. S., Pebesma, E., & Gómez-Rubio, V. (2013). *Applied Spatial Data Analysis with R.* New York: Springer.

Brunsdon, C. & Comber, L. (2015). *An Introduction to R for Spatial Analysis and Mapping.* Los Angeles, London, New Delhi, Singapore and Washington DC: Sage.

Lansley, G. & Cheshire, J. (2016). An Introduction to Spatial Data Analysis and Visualisation in R.

Ward, M. D. & Gleditsch, K. S. (2008). *Spatial Regression Models*, volume 155 of *Quantitative Applications in the Social Sciences.* Thousand Oaks: Sage.

1 Outline / Introduction to R

Brunsdon, C. & Comber, L. (2015). *An Introduction to R for Spatial Analysis and Mapping.* Los Angeles, London, New Delhi, Singapore and Washington DC: Sage, Chp. 2, 10-49.

Brunsdon, C. & Comber, L. (2015). *An Introduction to R for Spatial Analysis and Mapping.* Los Angeles, London, New Delhi, Singapore and Washington DC: Sage, Chp. 4.1-4.4, 98-116.

2 Spatial research questions

Logan, J. R. (2012). Making a Place for Space: Spatial Thinking in Social Science. *Annual Review of Sociology*, 38, 507–524.

Examples:

Baum-Snow, N. (2007). Did Highways Cause Suburbanization? *The Quarterly Journal of Economics*, 122(2), 775–805.

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Downey, L. (2005). The Unintended Significance of Race: Environmental Racial Inequality in Detroit. *Social Forces*, 83(3), 971–1007.

Elliott, J. R. & Frickel, S. (2013). The Historical Nature of Cities: A Study of Urbanization and Hazardous Waste Accumulation. *American Sociological Review*, 78(4), 521–543.

Gleditsch, K. S. & Ward, M. D. (2006). Diffusion and the International Context of Democratization. *International Organization*, 60(4), 911–933.

Hwang, J. & Sampson, R. J. (2014). Divergent Pathways of Gentrification: Racial Inequality and the Social Order of Renewal in Chicago Neighborhoods. *American Sociological Review*, 79(4), 726–751.

Kern, H. L. & Hainmueller, J. (2009). Opium for the Masses: How Foreign Media Can Stabilize Authoritarian Regimes. *Political Analysis*, 17(04), 377–399.

Legewie, J. & Schaeffer, M. (2016). Contested Boundaries: Explaining where Ethnoracial Diversity Provokes Neighborhood Conflict. *American Journal of Sociology*, 122(1), 125–161.

Lichter, D. T., Parisi, D., & Taquino, M. C. (2015). Toward a New Macro-Segregation? Decomposing Segregation within and between Metropolitan Cities and Suburbs. *American Sociological Review*, 80(4), 843–873.

Logan, J. R., Zhang, W., & Alba, R. D. (2002). Immigrant Enclaves and Ethnic Communities in New York and Los Angeles. *American Sociological Review*, 67(2), 299–322.

Müller, T. S., Grund, T. U., & Koskinen, J. H. (2018). Residential Segregation and 'Ethnic Flight' vs. 'Ethnic Avoidance' in Sweden. *European Sociological Review*, 34(3), 268–285.

Rokem, J. & Vaughan, L. (2018). Geographies of ethnic segregation in Stockholm: The role of mobility and co-presence in shaping the 'diverse' city. *Urban Studies*, 14(5), 004209801879556.

Schuetz, J. (2015). Do Rail Transit Stations Encourage Neighbourhood Retail Activity? *Urban Studies*, 52(14), 2699–2723.

3 Spatial objects and classes in R

Bivand, R. S., Pebesma, E., & Gómez-Rubio, V. (2013). *Applied Spatial Data Analysis with R.* New York: Springer, Chp. 2, 21-58.

4 Spatial maps in R

Bivand, R. S., Pebesma, E., & Gómez-Rubio, V. (2013). *Applied Spatial Data Analysis with R.* New York: Springer, Chp. 3, 59-82.

Brunsdon, C. & Comber, L. (2015). *An Introduction to R for Spatial Analysis and Mapping.* Los Angeles, London, New Delhi, Singapore and Washington DC: Sage, Chp. 3, 50-97.

5 Importing spatial data from other GIS

Bivand, R. S., Pebesma, E., & Gómez-Rubio, V. (2013). *Applied Spatial Data Analysis with R.* New York: Springer, Chp. 4, 83-126.

6 Combining different data sources

Bivand, R. S., Pebesma, E., & Gómez-Rubio, V. (2013). *Applied Spatial Data Analysis with R.* New York: Springer, Chp. 5, 127-150.

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7   Spatial measures (segregation, distances)

Hong, S.-Y., O'Sullivan, D., & Sadahiro, Y. (2014). Implementing Spatial Segregation Measures in R. *PloS one*, 9(11), e113767.

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8   Spatial autocorrelation I: Spatial weights

Bivand, R. S., Pebesma, E., & Gómez-Rubio, V. (2013). *Applied Spatial Data Analysis with R*. New York: Springer, Chp. 9.1-9.2, 263-275.

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9   Spatial autocorrelation II: Detection

Bivand, R. S., Pebesma, E., & Gómez-Rubio, V. (2013). *Applied Spatial Data Analysis with R*. New York: Springer, Chp. 9.3, 263-275.

Brunsdon, C. & Comber, L. (2015). *An Introduction to R for Spatial Analysis and Mapping*. Los Angeles, London, New Delhi, Singapore and Washington DC: Sage, Chp. 7.1-7.4, 218-235.

10   Spatial regression models: Theory

Anselin, L. & Bera, A. K. (1998). Spatial Dependence in Linear Regression Models with an Introduction to Spatial Econometrics. In A. Ullah & D. E. A. Giles (Eds.), *Handbook of Applied Economic Statistics* (pp. 237–289). New York: Dekker.

Elhorst, J. P. (2014). *Spatial Econometrics: From Cross-Sectional Data to Spatial Panels*. SpringerBriefs in Regional Science. Berlin and Heidelberg: Springer, Chp. 2, 5-36.

Halleck Vega, S. & Elhorst, J. P. (2015). The SLX Model. *Journal of Regional Science*, 55(3), 339–363.

LeSage, J. P. & Pace, R. K. (2009). *Introduction to Spatial Econometrics*. Statistics, Textbooks and Monographs. Boca Raton: CRC Press, Chp. 2, 25-44.

Pace, R. K. & LeSage, J. P. (2010). Omitted Variable Biases of OLS and Spatial Lag Models. In A. Páez, J. Gallo, R. N. Buliung, & S. Dall'erba (Eds.), *Progress in Spatial Analysis* (pp. 17–28). Berlin and Heidelberg: Springer.

11   Spatial regression models: Application I

Bivand, R. S., Pebesma, E., & Gómez-Rubio, V. (2013). *Applied Spatial Data Analysis with R*. New York: Springer, Chp. 9.4, 288-318.

12   Spatial regression models: Application II

Exercise