

CURRICULUM VITAE

Juan C. Duque Cardona
c.c. 75 080 915 (Manizales)

Department of Economics. EAFIT University
Carrera 49 7 Sur - 50. Medellín (Colombia)
(tel.) +574 2619354, (fax) +574 2619294
juanca.duque@gmail.com - jduquec1@eafit.edu.co

Education

- 2004 Ph.D. Management, University of Barcelona, Barcelona, Spain.
Dissertation: Design of homogeneous territorial units: A Methodological Proposal and Applications (*Cum Laude*).
Department of Econometrics, Statistics and Spanish Economy.
- 2000 MSc. Management and Economics, Pompeu Fabra University, Barcelona, Spain.
- 1998 B.A. Business Administration, National University of Colombia, Colombia.
-

Academic Appointments

- 2015- Chair in charge of the Department of Economics, EAFIT University, Medellín, Colombia.
- 2015- Academic Director of the Master in Applied Economics, Department of Economics, EAFIT University, Medellín, Colombia.
- 2012- Academic Director of the Master in Economics, Department of Economics, EAFIT University, Medellín, Colombia.
- 2007- Full Professor, Department of Economics, EAFIT University, Medellín, Colombia.
- 2005-07 Postdoctoral researcher. Department of Geography, San Diego State University, United States. (<http://geography.sdsu.edu>)
- 2004 Research Scholar. Department of Geography. University of California at Santa Barbara, United States. (<http://www.geog.ucsb.edu>)
-

Professional Appointments

- 1997-99 Director of Production Planning. Super de Alimentos. S.A. Manizales, Colombia.
-

Experience in Research Institutions

- 2007- Director, Research in Spatial Economics (RISE-group), Department of Economics, EAFIT University, Colombia. (<http://rise-group.org>).
- 2005-07 Member, Regional Analysis Laboratory (REGAL), Department of Geography, San Diego State University, United States. (<http://regionalanalysislab.org>).

- 2004- Member, Geographic Systems Analysis Lab (GSAL), Department of Geography, University of California, Santa Barbara. United States.
(<http://www.geog.ucsb.edu/~forest/RLC/Visitors.html>).
- 2000- Member, AQR Research Group (Regional Quantitative Analysis). Department of Econometrics, Statistics and Spanish Economy. University of Barcelona. And research unit in the Scientific Park of Barcelona (PCB), Barcelona, Spain.
(<http://www.pcb.ub.es/aqr>)
-

Research Interests

Operations Research: Spatially constrained clustering. Network-based industry clusters identification. Location modeling.

Spatial Analysis: Methods for spatio-temporal data analysis. Methods for the minimization of aggregation bias (ecological fallacy, modifiable areal unit problem). Open source software for spatial analysis.

Microeconometrics: Multivariate analysis.

Bibliometrics.

Editorial Appointments

- 2009- Editorial board member, *International Regional Science Review*.
- 2011- Editorial board member, *Papers in Regional Science*.
- 2012- Editorial board member, *Computers, Environment and Urban Systems*.
- 2015- Editorial board member, *Ecos de Economía*.
-

Fellowships and Honors

- 2013 Premio a la investigación Universidad EAFIT (EAFIT research award). EAFIT University, Medellín, Colombia.
- 2005 Premio extraordinario de doctorado 2003-2004 (Best dissertation award 2003-2004). University of Barcelona, Barcelona, Spain.
- 2001-04 Beca predoctoral per a la formació de personal investigador (research fellowship). Generalitat de Catalunya, Ph.D. Program, Barcelona, Spain.
- 2000 Beca de formació en la recerca i la docència (research fellowship). University of Barcelona, Ph.D. Program, Barcelona, Spain.
- 1999-00 Teaching Assistant Fellow. Pompeu Fabra University, MSc. Program, Barcelona, Spain.
-

Committee Member

Scientific Committee:

- 2011 51st European Congress of the Regional Association International. August 2011 Barcelona (Spain).
- 2008-09 First Conference of the Regional Science Association of the Americas: RSAmericas. 12-13 February 2009 Cartagena (Colombia).
- 2008-09 III World Conference of the Spatial Econometrics Association. 8-10 July 2009 Barcelona (Spain).
- Technical Committee:*
- 2010 XV Annual Meeting of the Latin American and Caribbean Economic Association. 11-13 November 2010 Medellín (Colombia)
- 2008-09 XIV Latin Ibero-American Congress on Operations Research (CLAIO 2008). 9-12 September 2008 Cartagena (Colombia).

Publications

Refereed Journal Articles

Spatial analysis and operations research

- forth Duque, J. C., Ye, X., and Folch, D.C. spMorph: An exploratory space-time analysis tool for describing processes of spatial redistribution. *Papers in Regional Science*, DOI: 10.1111/pirs.12088.
- 2015 Duque, J. C., Patino, J. E., Ruiz, L. A. and Pardo-Pascual, J. E. Measuring intra-urban poverty using land cover and texture metrics derived from remote sensing data *Landscape and Urban Planning*, 135:11–21.
- 2015 Duque, J. C., Jetter, M., and Sosa, S. UN Interventions: The Role of Geography. *Review of International Organizations*, 10(1):67-95.
- 2014 Patino, J. E., Duque, J. C., Pardo-Pascual, J. E., and Ruiz, L. A. Using remote sensing to assess the relationship between crime and the urban layout *Applied Geography*, 55:48-60.
- 2013 Patino, J. E., and Duque, J. C. A review of regional science applications of satellite remote sensing in urban settings. *Computers, Environment and Urban Systems*, 37(1):1-17.
- 2013 Royuela, V., and Duque, J. C. HouSI: A heuristic for the delimitation of housing submarkets and price homogeneous areas. *Computers, Environment and Urban Systems*, 37(1):59-69.
- 2012 Duque, J. C., García, J. R., and Surinach, J. Propuesta metodológica para la desagregación espacio-temporal de los indicadores de demografía empresarial. *Investigaciones Regionales*, 23:77-104.
- 2012 Duque, J. C., Anselin, L., and Rey, S. J. The Max-p-regions problem. *Journal of Regional Science*, 52(3):397–419.
- 2012 Duque, J. C., Velasquez, E., and Agudelo, J. Infraestructura pública y precios de vivienda: Una aplicación de regresión geográficamente ponderada en el contexto de precios hedónicos. *Ecos de Economía*, 33:95–122.

- 2011 Duque, J. C., Church, R. L., and Middleton, R. S. The p-regions problem. *Geographical Analysis*, 43(1):104-126.
- 2011 Duque, J. C., Aldstadt, J., Velasquez, E., Franco, J. L., Betancourt, A. A computationally efficient method for delineating irregularly shaped spatial clusters. *Journal of Geographical Systems*, 13(4):355-372.
- 2009 Duque, J. C., Rey, S. J., Gómez, D.A. Identifying Industry Clusters in Colombia Based on Graph Theory. *Ensayos Sobre Política Económica*, 27(59):14-45.
- 2007 Duque, J. C., Ramos, R., and Surinach, J. Supervised regionalization methods: A survey. *International Regional Science Review*, 30(3):195-220.
- 2006 Duque, J. C., Artís, M., and Ramos, R. The ecological fallacy in a time series context: Evidence from Spanish regional unemployment rates. *Journal of Geographical Systems*, 8(4):391-410.

Micro and macro econometrics

- 2012 Duque L. C., Duque J. C., and Surinach, J. Learning outcomes and dropout intentions: An analytical model for Spanish universities. *Educational Studies*, 39(3):261-284.
- 2010 Ramos, R., Duque J. C., and Surinach, J. Is the wage curve formal or informal? Evidence for Colombia. *Economics Letters*, 109(2):63-65.
- 2007 Clar, M., Duque, J. C., and Moreno, R. Forecasting business and consumer surveys indicators. A time series models competition. *Applied Economics*, 39(20):2565-2580.
- 2006 Duque, J. C., Ramos, R., and Surinach, J. Wages and productivity: The role of labour market institutions in OECD countries. *Empirica*, 33(4):231-243.
- 2005 Duque, J. C., Ramos, R., and Surinach, J. What have we learnt from the changeover to the euro? Lessons for accession countries from Catalanian firms. *Eastern European Economics*, 43(1):34-58.

Bibliometrics

- 2011 Duque, J. C., Ramos, R., and Royuela, V. Research networks and scientific production in Economics: The recent Spanish experience. *Ecos de Economía*, 32:121-132.
- 2008 Royuela, V., Duque, J. C., and Surinach, J. Regional and urban science in France: Rankings of authors and institutions & publication patterns during the nineties. *Région et Développement*, 28:207-232.
- 2007 Surinach, J., Duque, J. C., and Royuela, V. Patronos de publicación internacional (ssci) de los autores afiliados a universidades españolas, en el ámbito económico-empresarial (1994-2004). *Estudios de Economía Aplicada*, 25(1):1-29.
- 2006 Royuela, V., Ramos, R., and Duque, J. C. La producción científica en el ámbito de la economía y empresa en España: Rankings de las universidades españolas en términos de producción, productividad, calidad e impacto en el período 1994-2003. *Estudios de Economía Aplicada*, 24(2):105-126.

- 2006 Royuela, V., Duque, J. C., and Surinach, J. Regional science in Germany during the nineties - Are German publication patterns different? *Raumforschung und Raumordnung*, 64(2):77-92.
- 2005 Ramos, R., Royuela, V., and Duque, J. C. Regional science research in the Nordic countries in the light of some chosen international journals. *European Journal of Spatial Development*, 15:1-21.
- 2005 Ramos, R., Royuela, V., and Duque, J. C. Regional and urban research in Italy during the nineties: Evidence from publications in nine top international journals. *Italian Journal of Regional Science (Scienze Regionali)*, 4(3):117-143.
- 2004 Surinach, J., Duque, J. C., Ramos, R., and Royuela, V. La investigación regional en España. Rankings de países, instituciones y autores en ciencia regional y urbana para el período 1991-2000. *Investigaciones Regionales*, 5:173-197.
- 2003 Surinach, J., Duque, J. C., Ramos, R., and Royuela, V. Publication patterns in regional and urban analysis. Have topics, techniques and applications changed during the nineties? *Regional Studies*, 37(4):351-363.
- 2002 Surinach, J., Duque, J. C., Ramos, R., and Royuela, V. La investigación regional en España. Un análisis bibliométrico. *Investigaciones Regionales*, 1:107-137.

Book Chapters

- 2012 Duque, J. C., Royuela, V. and Noreña, M. A stepwise tool for spatial delineation of marginal areas. Medellín (Colombia) as a case study. In Fernández-Vazquez, E. and Rubiera-Morollón, F., editor, *Defining the Spatial Scale in Modern Regional Analysis. New Challenges from Data at Local Level*. Springer, Berlin Heidelberg, pp 237-254. ISBN: 978-3-642-31994-5.
- 2009 Villegas, L. C. and Duque, J. C. Diez años de atentados a la infraestructura de Colombia. In Echavarría, S. H., editor, *Seguridad pública: Tres aproximaciones*. Centro de Análisis Político, ISBN: 958-44-5928-2.
- 2008 Duque, J. C. and Rey, S. J. A network based approach towards industry clustering. In Blien, U. and Maier, G., editors, *The economics of regional clusters: Networks, technology and policy (New Horizons in Regional Science Series)*. Edward Elgar Publishing Ltd (1 Jun 2008), ISBN-10: 1847205151, ISBN-13: 978-1847205155.
- 2006 Duque, J. C. and Royuela, V. La investigación como motor de desarrollo. In Calderón, G. and Castaño, G. A, editors, *Investigación en Administración en América Latina: Evolución y resultados*. Universidad Nacional de Colombia, Manizales. ISBN: 958-8041-24-3.
- 2002 Surinach, J., Duque, J. C., Ramos, R., and Royuela, V. Topics, techniques and applications in urban and regional science in the nineties: A bibliometric analysis for selected international journals. In Márquez, J. M. M., editor, *Cambios regionales en la Unión Europea y nuevos retos territoriales*. Instituto de Estudios Fiscales, Madrid. ISBN: 84-8008-104-X.

Technical Reports

Spatial analysis and Operations research

- 2011 Ramirez, A., Duque, J. C., Betancourt, A., Londoño, D., and Patiño, J. Modelos para el pronóstico de la demanda de acueducto y alcantarillado en el Valle de Aburrá. Technical report, RiSE-group.
- 2011 Gómez, D. F., Duque, J. C., Aparicio, S., and Betancourt, A. Análisis y simulación dinámica de clusters para Medellín y su área metropolitana. Technical report, ECSIM & RiSE-group.
- 2009 Artís, M., Suriñach, J., Duque, J. C., and García, J. R. Construcció d'una eina que permeti el càlcul d'indicadors de demografia empresarial a Catalunya. Grup de Recerca AQR de la Universitat de Barcelona Technical report, : DOCT 09C35.
- 2005 Rey, S. J., Duque, J. C., Smirnov, O., Kim, Y. S., and Stephens, P. Identifying value added industry clusters in San Diego County. Technical report, Regional Analysis Laboratory Technical Report: REGAL 050615.
- 2005 Rey, S. J., Duque, J. C., Smirnov, O., Kim, Y. S., and Stephens, P. Geocoding the Connectory. Technical report, Regional Analysis Laboratory Technical Report: REGAL 050627.

Micro and Macro econometrics

- 2003 European Forecasting Network. Report on the euro-area outlook. Spring 2003. Technical report, European Commission, EFN project.
- 2003 André, M. E., Artís, M., Duque, J. C., Murillo, J., Ramos, R., Romaní, J., and Surinach, J. Estudi sobre l'impacte econòmic del turisme a la ciutat de Barcelona. Technical report, Ajuntament de Barcelona.
- 2003 Artís, M., Clar, M., Clavería, O., Duque, J. C., Moreno, R., Pons, E., and Surinach, J. Forecasting models currently applied to indicators computed on the basis of surveys results. Technical report, European Commission: ECFIN2002A3-01.
- 2002 Surinach, J., Duque, J. C., López, J., Mora, T., and Ramos, R. Convergence of labour costs and productivity in Europe: Evidence and policy issues. Technical report, European Commission, EFN project.
- 2002 European Forecasting Network. Report on the euro-area outlook. Autumn 2002. Technical report, European Commission, EFN project.
- 2002 European Forecasting Network. Report on the euro-area outlook. Spring 2002. Technical report, European Commission, EFN project.
- 2002 Artís, M., Surinach, J., Pon, E., Ollero, J. L., and Duque, J. C. Les economies locals a la província de Barcelona: Evolució a la dècada dels noranta. Technical report, Diputació de Barcelona.
- 2002 Artís, M., Surinach, J., Royuela, V., Reyes, M., and Duque, J. C. La qualitat de vida en l'àmbit local. El cas de la província de Barcelona. Base de dades. Technical report, Diputació de Barcelona.
- 2001 Artís, M., Surinach, J., Duque, J. C., Guillem, M., Ollero, J. L., and Ramos, R. L'adaptació de les empreses catalanes a l'euro. Technical report, Generalitat de Catalunya.

- 2001 Artís, M., Surinach, J., Duque, J. C., Guillem, M., Ollero, J. L., and Ramos, R. Enquesta sobre el grau d'introducció de l'euro a les empreses catalanes 2001. Technical report, Departament d'Economia i Finances, CIDEM-Departament d'Indústria, Comer i Turisme, Generalitat de Catalunya.
- 2000 Artís, M., Surinach, J., Duque, J. C., Guille, M., Llorente, F., Ollero, J. L., and Ramos, R. Enquesta sobre el grau d'introducció de l'euro a les empreses catalanes 2000. Technical report, Papers de Treball Departament d'Economia i Finances. Generalitat de Catalunya.

Bibliometrics

- 2005 Surinach, J., Duque, J. C., Ramos, R., and Royuela, V. El impacto de las publicaciones científicas españolas en economía y empresa: Un análisis bibliométrico. Technical report, Ministerio de Educación y Ciencia, Proyecto EA2005-0142.

Proceedings

- 2008 Bernábe, M.B., Duque, J. C., Ramirez, J., and Osorio, M.A. "Classification over geographical zones: A combinatorial optimization approach to the regional partitioning problem." XVIII International Conference on Electronics, Communications and Computers Proceedings (ISBN: 9781424442300), 70-74

Conference Participation and Presentations

- 2012 Duque, J. C.; Marin, F.; Betancourt, A. Stochastic differential equations, fractal geometry and geocomputation for simulating real maps. In *International Meetings of Mathematics and Physics, Florencia, Colombia*. September.
- 2012 Nieto, S.; Ramos, R.; Duque, J. C. Rural-urban differences in educational outcomes: Evidence for Colombia using PISA microdata. In *52nd European Congress of the Regional Science Association International, Bratislava, Slovakia*. August.
- 2012 Duque, J. C.; Ramírez, A.; Betancourt, A. Spatially disaggregated forecast of demand for piped water in the metropolitan area of Medellín-Colombia. In *VI World Conference Spatial Econometrics Association, Salvador, Brazil*. July.
- 2012 Ramos, R.; Duque, J. C.; Nieto, S. Decomposing the Rural-urban differences in student achievement in Colombia using PISA microdata. In *VI World Conference Spatial Econometrics Association, Salvador, Brazil*. July.
- 2012 Ramos, R.; Duque, J. C.; Nieto, S. Un análisis de las diferencias rurales y urbanas en el rendimiento educativo de los estudiantes colombianos a partir de los microdatos de PISA. In *XXI Jornadas de la Asociación de Economía de la Educación, Oporto, Portugal*. July.
- 2011 Middleton, R.; Duque, J. C. A million different solutions for a single covering problem: Why high resolution data is critical for optimizing early warning sirens. In *58th Annual North American Meetings of the Regional Science Association International, Miami, USA*. November.

- 2011 Betancourt, A.; Duque, J. C.; Marín, F. H. An algorithmic approach for simulating realistic irregular lattices. In *58th Annual North American Meetings of the Regional Science Association International, Miami, USA*. November.
- 2011 Duque, J. C.; Aparicio, S.; Betancourt, A.; Gómez D. F. Merging system dynamics and I-O analysis to forecast the role of industry clusters in Medellín Metropolitan Area. In *58th Annual North American Meetings of the Regional Science Association International, Miami, USA*. November.
- 2011 Duque, J. C.; Janikas, M. V.; Rosenshein, L.; Scott, L. New tools to create a W matrix that represents the socioeconomic reality of the study data. In *51st European Congress of the Regional Science Association International, Barcelona, Spain*. 30th August - 3rd September.
- 2011 Duque, J. C.; García, J. R.; Surinach, J. Propuesta metodológica para la desagregación espaciotemporal de los indicadores de demografía empresarial In *XIV Encuentros de Economía Aplicada, Huelva, Spain*. 2-3 June.
- 2011 Janikas, M. V.; Duque, J. C.; Scott, L.; Rosenshein, L. Space-Time Partitioning in ArcGIS 10.1. In *AAG Annual Meeting, Seattle, USA*. 27 April.
- 2010 Duque, J. C.; Royuela, V.; Noreña, M. A stepwise tool for spatial delimitation of poverty areas. Medellín (Colombia) as a case study. In *Seminar of Spatial Econometrics in honor of Doctor J.H.P. Paelinck, Oviedo, Spain*. 22 October.
- 2010 Royuela, V., and Duque, J. C. Housing submarkets and price homogeneous areas. In *50th ERSA conference, Jönköping, Sweden*. 19-23 August.
- 2010 Betancourt, A., Duque, J. C., and Franco, J. L. A variation of the Kohonen's Self Organizing Maps to guarantee spatial contiguity in zone design problems. In *Congreso Internacional de Matemáticas Aplicadas e Informática, San Andrés, Colombia*. November.
- 2010 Duque, J. C., Betancourt, A., and Dev, B. Geogrouper: Zone design software. In *Congreso Internacional de Matemáticas Aplicadas e Informática, San Andrés, Colombia*. November.
- 2009 Duque, J. C., and Dev, B. ClusterPy: Python library of spatial clustering algorithms. In *56th Annual North American Meetings of the Regional Science Association International, San Francisco, USA*. November.
- 2009 Duque, J. C., and Royuela, V. Housing submarkets and price homogeneous areas. In *3rd World Conference of the Spatial Econometrics Association, Barcelona, Spain*. July.
- 2009 Duque, J. C., Anselin, L., and Rey, S. J. The Max-p-region Problem. In *First Conference of the Regional Science Association of the Americas: RSAmericas, Cartagena, Colombia*. February.
- 2009 Duque, J. C., Velásquez, H., Franco, J.L., and Betancourt, A. computationally efficient formulation for the Aldstadt and Getis AMOEBA algorithm. In *First Conference of the Regional Science Association of the Americas: RSAmericas, Cartagena, Colombia*. February.

- 2009 Duque, J. C., and Gómez, D.A. Identifying Industry Clusters in Colombia Based on Graph Theory. In *First Conference of the Regional Science Association of the Americas: RSAmericas, Cartagena, Colombia*. February.
- 2008 Duque, J. C., Rey, S. J., and Schmidt, C. R. INCLUSIO: New ways to explore interindustry relationships. In *55th North American Meetings of the Regional Science Association International, New York, USA*. November.
- 2008 Duque, J. C., Church, R. L., and Middleton, R. S. The p-regions problem. In *XIV Latin-Ibero American Congress on Operations Research (CLAIO 2008), Cartagena, Colombia*. September.
- 2006 Bernábe, M.B., Duque, J. C., Ramirez, J., and Osorio, M.A. Classification over geographical zones: A combinatorial optimization approach to the regional partitioning problem. In *XVIII International Conference on Electronics, Communications and Computers (conielecomp 2008), Puebla, Mexico*. March.
- 2006 Smirnov, O. A., Duque, J. C., and Rey, S. J. Regional Capabilities and the Structure of the Californian Economy. In *North American Meeting of the Regional Science Association International, Toronto, Canada*. November.
- 2006 Rey, S. J., Anselin, L., Duque, J. C., and Li, X. Max p-region Based Estimation of Disease Rates. In *North American Meeting of the Regional Science Association International, Toronto, Canada*. November.
- 2006 Duque, J. C., and Ye, X. Identifying Temporal Lag in Analytical Regionalization Procedures. In *North American Meeting of the Regional Science Association International, Toronto, Canada*. November.
- 2006 Bernábe, M.B., Osorio, M.A., and Duque, J. C. Clasificacin Sobre Zonas Geogrificas: Un Enfoque de Optimizacin Combinatoria para el Problema de Regionalizacin. In *XIII Latin-Ibero American Congress on Operations Research (CLAIO 2006), Montevideo, Uruguay*. November.
- 2006 Smirnov, O., Duque, J. C., and Rey, S. J. Regional Capabilities and the Structure of California Economy. In *Western Economic Association International, San Diego, CA*. June-July.
- 2006 Smirnov, O., Duque, J. C., and Rey, S. J. Spatial Analysis of Industrial Clusters in California. In *Western Economic Association International, San Diego, CA*. June-July.
- 2006 Duque, J. C., and Middleton, R. S. Geography and gerrymandering. A location science approach. In *Association of American Geographers annual meeting, Chicago, IL*. March.
- 2006 Duque, J. C., Church, R. L., and Middleton, R. S. Exact models for the regionalisation problem. In *Western Regional Science Association anual meeting, Santa Fe, NM*. February.
- 2005 Rey, S. J., Duque, J. C., and Anselin, L. Clustering components in the Python Spatial Analysis Library (PySAL). In *North American Meeting of the Regional Science Association International, Las Vegas, NV*. November.

- 2005 Duque, J. C. and Rey, S. J. Network based approaches towards industrial clustering. In *North American Meeting of the Regional Science Association International, Las Vegas, NV*. November.
- 2005 Rey, S. J., Duque, J. C., Smirnov, O., Kim, Y. S., and Stephens, P. Regional analysis in support of economic development. In *North American Meeting of the Regional Science Association International, Las Vegas, NV*. November.
- 2005 Duque, J. C. and Royuela, V. La investigación como motor de desarrollo. In *Congreso Iberoamericano de Investigacin en Administracin, Manizales, Colombia*. May.
- 2004 Duque, J. C. and Church, R. L. A new heuristic model for designing analytical regions. In *North American Meeting of the Regional Science Association International, Seattle, WA*. November.
- 2004 Duque, J. C. and Ramos, R. Spanish unemployment: Normative versus analytical regionalization procedures. In *North American Meeting of the Regional Science Association International, Seattle, WA*. November.
- 2004 Duque, J. C. and Ramos, R. Design of homogenous territorial units: A methodological proposal. In *Congress of the European Regional Science Association, Porto, Portugal*. August.
- 2004 Duque, J. C. and Ramos, R. Spanish unemployment: Normative versus analytical regionalization procedures. In *Congress of the European Regional Science Association, Porto, Portugal*. August.
- 2004 Duque, J. C., Ramos, R., and Surinach, J. Diseño de unidades territoriales representativas del fenómeno a estudiar: Una propuesta metodológica. In *Encuentro de Economía Aplicada, Vigo, Spain*. June.
- 2004 Duque, J. C., Ramos, R., and Surinach, J. Spanish unemployment: Normative versus analytical regionalization procedures. In *Encuentro de Economía Aplicada, Vigo, Spain*. June.
- 2004 Surinach, J., Duque, J. C., Ramos, R., and Royuela, V. La investigación regional en España. Rankings de países, instituciones y autores en ciencia regional y urbana para el período 1991-2000. In *Reunión de Estudios Regionales, Barcelona, Spain*. November.
- 2004 Duque, J. C., Ramos, R., and Surinach, J. Spanish unemployment: Normative versus analytical regionalization procedures. In *Reunión de Estudios Regionales, Barcelona, Spain*. November.
- 2003 Duque, J. C., Ramos, R., and Surinach, J. Diseño de unidades territoriales representativas del fenómeno a estudiar: Una propuesta metodológica. In *Reunión de Estudios Regionales, Santander, Spain*. November.
- 2001 Royuela, V., Surinach, J., Duque, J. C., and Ramos, R. Topics, techniques and applications in urban and regional science in the nineties: A bibliometric analysis for selected international journals. In *Reunión de Estudios Regionales, Madrid, Spain*. November.
- 2001 Ramos, R., Duque, J. C., and Surinach, J. Las empresas catalanas frente al euro: Localización, tamaño empresarial y proceso de adaptación a la nueva moneda. In *Reunión de*

Estudios Regionales, Madrid, Spain. November.

- 2001 Duque, J. C., Ollero, J. L., Pons, E., and Surinach, J. El crecimiento económico en la provincia de Barcelona: Un análisis de las diferencias a nivel territorial. In *Reunión de Estudios Regionales, Madrid, Spain.* November.
-

Invited Lectures

- 2010 Duque, J. C. Space and Industrial Activity. In *Master in Economics (Univ. Barcelona).*
- 2009 Duque, J. C. Software para el análisis de la demografía empresarial en Cataluña. In *Seminarios del Grupo de Análisis Cuantitativo Regional (Univ. Barcelona).*
- 2009 Duque, J. C. Is the wage curve formal or informal? Evidence for Colombia. In *Seminarios del Grupo de Análisis Cuantitativo Regional (Univ. Barcelona).*
- 2009 Duque, J. C. Python: Una nueva alternativa de programación para el tratamiento de grandes volúmenes de datos estadísticos. In *Seminarios del Grupo de Análisis Cuantitativo Regional (Univ. Barcelona).*
- 2009 Duque, J. C. Max-p region problem In *Seminar of the Reference Network for Research in Applied Economics, Espai de Recerca en Economia, Facultat d'Economia i Empres. Universitat de Barcelona, España.*
- 2009 Duque, J. C. Models d'agregaci espacial In *Seminar of the Reference Network for Research in Applied Economics, Espai de Recerca en Economia, Facultat d'Economia i Empres. Universitat de Barcelona, España.*
- 2009 Duque, J. C. Eines informatiques per a l'exploració de dades geogràfiques In *Seminar of the Reference Network for Research in Applied Economics, Espai de Recerca en Economia, Facultat d'Economia i Empres. Universitat de Barcelona, España.*
- 2009 Duque, J. C, and Gómez, D.A. Identificación de Clusters Industriales en Colombia usando la Metodología Duque, Rey (2008). In *Seminario de Economía. Banco de la República, Medellín, Colombia.*
- 2008 Duque, J. C. Tópicos en análisis económico de datos espaciales: El caso del Problema de la Unidad Espacial Modificable (PUEM). In *Banco de la República, Medellín, Colombia.*
- 2008 Duque, J. C. Software para la investigación. In *Universidad Nacional de Colombia, Manizales, Colombia.*
- 2008 Duque, J. C. How to use a version control system (SVN) in collaborative projects. In *Research Institute of Applied Economics (IREA), Barcelona, Spain.*
- 2008 Duque, J. C. A new GIS-based methodology to analyze transitional economic patterns. In *Research Institute of Applied Economics (IREA), Barcelona, Spain.*
- 2008 Duque, J. C. Identification of network-based industry clusters using I-O tables. In *Regional Quantitative Analysis Research Group (AQR-IREA)., Barcelona, Spain.*
- 2005 Duque, J. C. Contiguity constrained clustering. In *Quantitative Methods in Geography Research. San Diego State University, San Diego, CA.*

- 2004 Duque, J. C. Analytical regionalization models: A methodological proposal and empirical links to the MAUP. In *Syllabus for Spatial Analysis. University of Wisconsin at Madison, Madison, WI.*
-

Research Grants and Contracts

- 2012 A multidisciplinary approach to the development of new quantitative methods in regional science (Una aproximación multidisciplinaria para el desarrollo de nuevos métodos cuantitativos en ciencia regional). Principal Investigator. Sponsor: EAFIT University (83.525 USD).
- 2011 New techniques for spatial data analysis (Nuevas técnicas para el análisis de datos espaciales). Principal Investigator. Sponsor: EAFIT University (31.500 USD).
- 2010 New methods for spatial data analysis: Combination of ESDA and heuristic techniques (Nuevos métodos para el análisis de datos espaciales: Combinación de técnicas ESDA y técnicas de optimización heurísticas). Principal Investigator. Sponsor: EAFIT University (37.800 USD).
- 2009 Aggregation on spatial data for economic analysis: New methods and applications (Agregación de datos espaciales para el análisis económico: Nuevos métodos y aplicaciones). Principal Investigator. Sponsor: EAFIT University (35.500 USD) .
- 2009 Research in topics of regional science within the colombian context (Investigaciones en ciencia regional dentro del contexto colombiano). Co-Principal Investigator. Sponsor: University of Barcelona and EAFIT University (59.200 USD).
-

Courses Taught

- Topics in Econometrics (EAFIT University).
 - Statistics (EAFIT University).
 - Research Methods (EAFIT University).
 - Mathematical Economics (EAFIT University).
 - T.A. Econometría (University of Barcelona).
 - T.A. Probability (Pompeu Fabra University).
-

Graduate Advising

Doctoral In Progress:

Jorge Eduardo Patiño. *Use of remotely sensed data to measure socioeconomic variables in urban areas.* Universidad Politécnica de Valencia (UPV). España.

Masters In Progress:

Alejandro Betancourt. *Algorithm for simulating of irregular lattices.* EAFIT University. Colombia.

Diana Catalina Gutiérrez. *Análisis de la distribución espacial de la reducción en la demanda de agua potable como efecto de políticas de ahorro en su consumo en el Área Metropolitana del Valle de Aburrá*. EAFIT University. Colombia.

Doctoral Completed:

2010 Bernábe Loranca María Beatriz. *Diseño y Desarrollo de un Modelo para la Determinación de Zonificación Óptima*. Universidad Nacional Autónoma de México (UNAM). México.

Masters Completed:

2011 Jorge Agudelo. *Incidencia de la estación del metro en San Javier en los precios de las viviendas de la zona*. EAFIT University. Colombia.

Journal Referee

Computers, Environment and Urban Systems.

Economic Modelling.

Ensayos Sobre Política Económica.

Environmental Engineering and Management Journal.

Geographical Analysis.

Investigaciones Económicas.

Investigaciones Regionales.

International Regional Science Review.

Journal of Geographical Information Science.

Journal of Geographical Systems.

Journal of Regional Science.

Journal of Stochastic Environmental Research & Risk Assessment.

Journal of the Operational Research Society.

Natural Resources Forum.

Papers in Regional Science.

Revista de la Escuela de Ingeniería de Antioquia.

Revista Ecos de Economía.

Revista Economía, Gestión y Desarrollo.

Socio-economic Planning Sciences.

Spatial Economic Analysis.

Participation in Research Contracts

- 2009-10 Construcció d'una eina que permeti el càlcul d'indicadors de demografia empresarial a Catalunya. Universitat de Barcelona: DOCT - 09C35. Co-Principal Investigator: Manuel Artís and Jordi Surinach.
- 2008 Estudio de las características individuales que determinan las tasas de abandono en la Universitat de Barcelona. Universitat de Barcelona: DOCT - 08C22. Co-Principal Investigator: Jordi Surinach.
- 2008 Estudi dels determinants de les taxes d'abandonament a la Universitat de Barcelona. Un estudi agregat. Universitat de Barcelona: DOCT - 08C21. Co-Principal Investigator: Manuel Artís Ortuño.
- 2008 Resultados del aprendizaje e intenciones de abandono/permanencia: Un modelo de análisis para la universidad española. Programa de Estudios y Análisis EA2007-0184. Ministerio de Educación (España). Co-Principal Investigator: Jordi Surinach.
- 2005-06 Regional socioeconomic modeling in support of economic development networks. Defense Logistics Agency: N66001-03-D-0042. Co-Principal Investigator: Sergio J. Rey.
- 2005 El impacto de las publicaciones científicas españolas en economía y empresa: Un análisis bibliométrico. Subdirección general de estudios y análisis. Secretaría de estado de educación y universidades MECD: EA2005-0142. Co-Principal Investigator: Jordi Surinach.
- 2000-04 European Forecasting Network. European Commission: 400317CCEE. Co-Principal Investigator: Jordi Surinach.
- 2002-03 Forecasting models currently applied to indicators computed on the basis of surveys results ECFIN 2002/A3-01. European Commission: 400356EUCO. Co-Principal Investigator: Jordi Surinach.
- 2001-02 Estudi sobre l'impacte econòmic del turisme a la ciutat de Barcelona. Ajuntament de Barcelona: 302072AJBA. Co-Principal Investigator: Manuel Artís.
- 1999-01 Elaboració d'una enquesta per conèixer el grau d'implantació de l'euro al llarg del període transitori que compren els anys 1999, 2000 i 2001 i identificar els problemes de la seva introducció en les empreses. Departament d'economia, finances i planificació de la Generalitat de Catalunya: 3601DECF. Co-Principal Investigator: Manuel Artís.

Professional Services

- 2012 Contractor. Defining strategic action criteria for the territorial development of the region of Uraba. Funded by Governorate of Antioquia.
- 2011-2012 Contractor. Spatial disaggregation of water demand in the Metropolitan Area of Medellín from 2010 to 2040. Funded by Medellín Public Enterprises (EPM).
- 2011 Contractor. Socioeconomic dynamics in the Metropolitan Area of Medellín. Funded by Plan Director 2030.
- 2011 Contractor. Analysis and dynamic simulation of industry clusters in Medellín. Funded by Chamber of Commerce of Medellín.

- 2009 Contractor. Formulation of an optimization model to reproduce the conditions of the sealed auction by the Guatemala's National Electric Energy Commission (CNEE). Funded by Deloitte & Touche.
- 2007 Contractor. Support San Diego East County Economic Development Council's work for the U.S. Defense Logistic Agency project research and Development for industrial capabilities in logistics, maintenance and manufacturing technologies. Funded by San Diego East County Economic Development Council.
- 2006-2008 Consultant. Intra-Urban Health Assessed by Remote Sensing and GIS. Funded by the U.S. National Institute of Child Health and Human Development. Principal Investigator: John R. Weeks.
-

Software Development

- 2009- **ClusterPy: Software for analytically defining regions based your key variables.**
Developers: Juan C. Duque and RiSE-group.
Description: Analytical regionalization is a scientific way to decide how to group of a large number of geographic areas or points into a smaller number of regions based on similarities in one or more variables (ie. income, ethnicity, or environmental condition) that the researcher believes are important for the topic at hand. Conventional conceptions of how areas should be grouped into regions may either not be relevant to the the information one is trying to illustrate (ie. using political regions to map air pollution) or may actually be designed in ways to bias aggregated results.
- 2007- **PLS-Py SAIA: PLS-Py System for dropout intentions analysis.**
Developers: Juan C. Duque and Lola C. Duque.
Description: PLS-Py SAIA is a software under development which is intended to provide a complete analysis to support decision makers in the formulation of policies to reduce dropout intentions in Spanish universities. This project is founded by the Ministry of Education and Culture of Spain.
- 2005- **STARS: Space-Time Analysis of Regional Systems.**
Developers: Regional Analysis Laboratory (REGAL)
Description: STARS is an open source package designed for the analysis of areal data measured over time. STARS brings together a number of recently developed methods of space-time analysis into a user-friendly graphical environment offering an array of dynamically linked graphical views. It is intended to be used as an exploratory data analysis tool. STARS can also be used from the command line to support more flexible and specialized types of analyses by advanced users. Written entirely in Python, STARS is crossplatform and easy to install (and expand).
- 2006- **INCLUSIO: Industry Clusters based on Input Output tables.**
Developers: Sergio J. Rey, Juan C. Duque, Charles Schmidt and Xuening Li
Description: INCLUSIO is an open source software that includes new methods to identify industrial clusters within a regional economy and integrates those methods together with spatial analysis techniques and interactive web based visualisation. This work is collaborative with the East County Economic Development Council who have developed the

Connectory.

Computing Skills

Languages: Python, GAUSS, R.

Optimization: CPLEX, Lingo.

Statistical: EViews, SPSS, Minitab, Stata.

Application: LATEX, Gvim, Microsoft Office, ArcGIS, Geoda, SpaceStat, Stars.

Operating Systems: UNIX, Windows.

Others: FreeMind, Graphviz, Concurrent Versions System (CVS).

References

Dr. Sergio J. Rey

School of Geographical Sciences

Arizona State University

Tempe, AZ 85287-5302

Office: COOR 5612

Phone: (480) 965-7533

Fax: (480) 965-8313

email: sergio.rey@asu.edu

Dr. Richard L. Church

Professor of Geography

Department of Geography

University of California at Santa Barbara

Santa Barbara, CA 93106-4060

Office: 5717 Ellison Hall

Phone: (805) 893-4217

Fax: (805) 893-3146

email: church@geog.ucsb.edu

Dr. Enrique Lopez Bazo

Catedrático

Department of Econometrics

University of Barcelona

Avda. Diagonal 690, 08034 Barcelona, Spain

Phone: (34) 93-403-7041

Fax: (34) 93-402-1821

email: elopez@ub.edu

Personal Information

Date of Birth: July 31, 1976.

Place of Birth: Manizales, Colombia.

February 9, 2015