

Introduction to Regional Science

(Original Introduction to Regional Science by Scott Loveridge Director Regional Research Institute, West Virginia University, August, 2000)

To introduce the Web Book of Regional Science it is first necessary to explain the basics of the field of Regional Science. For regional scientists, a **region** is in most instances a geographical area smaller than the nation in which it is found. So a region might be a city, a county, a group of counties or a state. Regions often defy governmental boundaries, as when the issue under study relates to a labor market area or a watershed. Social scientists have studied regions for hundreds of years, but it wasn't until the 1954 formation of the Regional Science Association that Regional Science became formally recognized as an interdisciplinary field of scholarly endeavor. The existence of RSA (now [Regional Science Association International](#)) and its progeny (several "regional" and "superregional" regional science associations) fosters better codification of methods and exchange of frontier ideas from such fields as geography, sociology, planning, statistics, and economics. The Web Book of Regional Science continues the process of codification and exchange by bringing together on one web site comprehensive descriptions of many of the basic concepts, analytical tools and policy issues important to regional science.

Regional scientists are usually preoccupied with the social and economic aspects of regions. Classic regional science questions include:

- determinants of industrial location (both within the nation and within the region)
- regional economic impact of the arrival or departure of a firm
- determinants of internal migration patterns and land use change
- regional specialization and exchange
- environmental impacts of social and economic change
- geographic association of economic and social conditions

The holistic approach of regional science means that models of social and economic behavior must not only adapt national-scale concepts and models to the regional context, but must also incorporate physical features of the landscape. For example, a fundamental principle of industrial location is that industries tend to locate at points where a change in the mode of transport is necessary (say from land to sea). So, for example, one observes manufacturing firms locating at ports to reduce the costs of loading the product (or its inputs). The physical characteristics of the land (in this case, proximity to a body of water) influence the economic development of the region.



Figure 1: Elements of Regional Science

Regional Science as a field of study is still young when compared with more traditional fields of study. So one seldom finds a university with a Department of Regional Science offering degree programs. An exception is Cornell University, which boasts both a Master's and Ph.D. in Regional Science (<http://aap.cornell.edu/crp/programs/regsci/>). More typically, Regional Science is organized as a subfield within a traditional department. Regional Science has some aliases depending on the department offering the "regional" subfield. Look at the syllabi of courses with titles words such as economic geography, regional impact analysis, demography, regional economics, community development or regional development policy and you will likely find concepts commonly discussed in regional science journals.

While the multi-disciplinary nature of Regional Science is a real strength in terms of enhancing its ability to incorporate a wide variety of analytical approaches, the all-encompassing and diverse nature of the field also presents a challenge in writing Regional Science textbooks. A text written by a geographer will not likely be appropriate for an economics student. An economist will not write a book that is satisfactory for a geography course, etc. A question that dogs traditional paper texts in all disciplines is the issue of the level at which to write the material. What is considered introductory at one institution may be advanced at another institution. The question of level is particularly acute in Regional Science because institutional differences are compounded by disciplinary differences. Explaining an indifference curve would be too elementary for an advanced economics text, but the same concept might be entirely new for advanced students of geography or planning.

The Web Book of Regional Science overcomes the challenges of producing a text appropriate to the field. The material presented in the Web Book of Regional Science is equivalent to well over a thousand pages of traditional text. The intent in bringing together such a large array of material is to make it possible for instructors to choose from a menu to design courses that are appropriate for their students. Just as one would never order everything on the menu for one meal at most restaurants, it is not expected that anyone would ever put all the contributions to the Web Book into a single syllabus! The electronic medium makes appropriate choices easy. The flexibility of electronic publishing also makes it easier to update or supplement the material once it is posted.

A further advantage of the hypertext version of each Web Book contribution is the live links that quickly provide the reader with access to glossary definitions, data sources, or related web sites. Finally, the Web Book is fully searchable, so users can quickly identify the material that interests them the most. What is currently available in the Web Book of Regional Science? The contributions fall into two broad categories, one oriented towards methods or empirical issues, and the other more topical or policy oriented.

A. Methods or Empirical Oriented Contributions

[An Introduction to Regional Economics](#). Edgar M. Hoover and Frank Giarratani (University of Pittsburgh). [Unless otherwise noted, author institutions are located in the United States.] The Regional Research Institute has permission to provide in full this classic introduction to the field. (The RRI thanks Frank Giarratani for his initiative in suggesting this reprint of his book and in facilitating copyright permission.) The book includes basic discussions of location theory, land rents, and urban structure. The graphs from the original are now colorized. 1999.

[Migration and Local Labor Markets](#). 1999. Stephan Goetz (The Pennsylvania State University) discusses contemporary migration patterns, theories of migration, applied migration studies using various econometric methods, practical issues facing regional scientists examining migration, and applications to regional labor markets.

[An Introduction to State and Local Public Finance](#). 2000. Thomas Garrett and John Leatherman (Kansas State University) present trends in growth of state and local government, funding mechanisms, and the principles of tax analysis, cost-benefit analysis, and fiscal impact analysis.

[Spatial Econometrics](#). 1999. James LeSage (University of Toledo) provides a basic discussion of measures of spatial association, and various kinds of spatial regression models. There is discussion of spatial time series and analysis of space-time relationships. All methods are illustrated with applied data sets.

[Regional Impact Models](#). 1999. William Schaffer (Georgia Institute of Technology) presents economic base models, regional input-output modeling, and data sources.

[Computable General Equilibrium Modeling for Regional Analysis](#). 1999. Dean Schreiner (Oklahoma State University), David Marcouiller (University of Wisconsin), Gelson Tembo (Oklahoma State University) and Eliecer Vargas (Oklahoma State University) discuss regional CGEs versus alternative methods, basics of a competitive regional CGE model, SAMs, data sources, model validation and GAMS, modeling imperfect markets with CGEs, and policy applications.

[Industrial and Regional Clusters](#). 1999. Edward Bergman (Vienna University of Economics and Business, Austria) and Edward Feser (U. North Carolina-Chapel Hill) review the literature on clusters, present methods to identify clusters, discuss using clusters in regional analysis, and make applications to regional development policy.

[Keystone Sector Identification: A Graph Theory-Social Network Analysis Approach](#). 2000. Maureen Kilkenny (Iowa State University) and Laura Nalbarte (University of the Republic, Uruguay) present quantitative methods for distinguishing the importance of a particular business sector to social capital in the local economy.

[Regions in Changing Economic Environment](#). 1999. Gennadi Kazakevitch and Sharn Enzinger (Monash University, Australia) use a two region, two-sector theoretical model to provide an ex ante analysis of how regions respond to macro-economic change and fiscal federalism, and how regions respond to utility deregulation.

[Analysis of Land Use Change: Theoretical and Modeling Approaches](#). 2000. Helen Briassoulis, (University of the Aegean, Greece) provides information on basic concepts and trends in land use change, and then reviews the state of the art in land use theory and empirical modeling.

B. Policy or Practice Oriented Contributions

[The Geography of the New Economy](#). 1999, 2000. R.D. Norton (Bryant College) presents three conceptualizations of the new economy (macro, micro, and digital), a case study of the regional revolution in information technology (including discussion of micro-computers, venture capital, and the effects on urban form), and metaphors and evolution of regional science.

[Regional Governance, Institutions, and Development](#). 1999. Mike Danson and Geoff Whittam (University of Paisley, Scotland, United Kingdom) discuss decentralization, micro-level, meso-level, and macro-level relationships between governmental economic development actors and the private sector. The principles are illustrated with a focus is on the Scottish experience.

[Key Concepts in Sustainable Development](#). 1999. Myra Moss and William Grunkemeyer (The Ohio State University) present an introduction to sustainable development, a brief history of the movement, compare sustainable and traditional development practice, and provide examples of community level sustainable projects and agencies with sustainable practice.

[Site Planning and Design](#). 1999. Steven McBride (West Virginia University) discusses land use issues, the design and planning process, design implementation, and environmental implications of planning and design. Principles site planning and design are richly illustrated with appropriate graphics.

[Community Preparedness for Site Development](#). 1999. Jerold Thomas, William Grunkemeyer, and Myra Moss (The Ohio State University) take the practitioner's perspective in a discussion of definitions of a site, a philosophy of site development, steps to developing a site, financing a site's development, and site construction. Their contribution helps explain the preponderance of empty industrial parks that litter the American countryside.

While the Web Book of Regional Science covers many of the basic methods and concepts of the field, it should be considered a work in progress. Some gaps remain to be filled, and researchers are actively working to enhance our understanding of the social and economic aspects of regions. I hope users of the Web Book of Regional Science will be inspired to add to the body of

knowledge it currently offers. New contributions to the Web Book of Regional Science can also bridge from the existing material to take advantage of the opportunities for new channels of synthesis that fuse proven regional science methods. Isard (Isard, Walter, "New Channels of Synthesis: the Fusion of Regional Science Methods" in Isard, Walter, Iwan Azis, Matthew Drennen, Ronald Miller, Sidney Saltzman and Erik Thorbecke, *Methods of Interregional and Regional Analysis*. Regional Science Studies Series. Ashgate Publishing Ltd., Hampshire, U.K. 1998) lists several avenues for fusing regional science methods (summarized below).

1. Location analysis with input-output, econometrics, and programming.
2. Social accounting analysis with applied general interregional equilibrium analysis.
3. Metropolitan development processes with gravity-type spatial interaction models and the analysis of urban complexes.
4. Techniques of regional analysis with conflict resolution.

Technical progress in marrying regional models with data, combined with the increasing popular understanding of the complexity of systems that govern regional change mean that the skills of Regional Scientists will be in great demand in the new millennium. An indicator of demand for regional science is usage of the Web Book of Regional Science. The activity on the Regional Research Institute web site went from less than 4,000 external hits per year to over 870,000 external hits per year since the Web Book was added to the site. This dramatic increase was achieved in less than eighteen months. The future of Regional Science is bright.

Scott Loveridge
Director
Regional Research Institute
West Virginia University
August, 2000