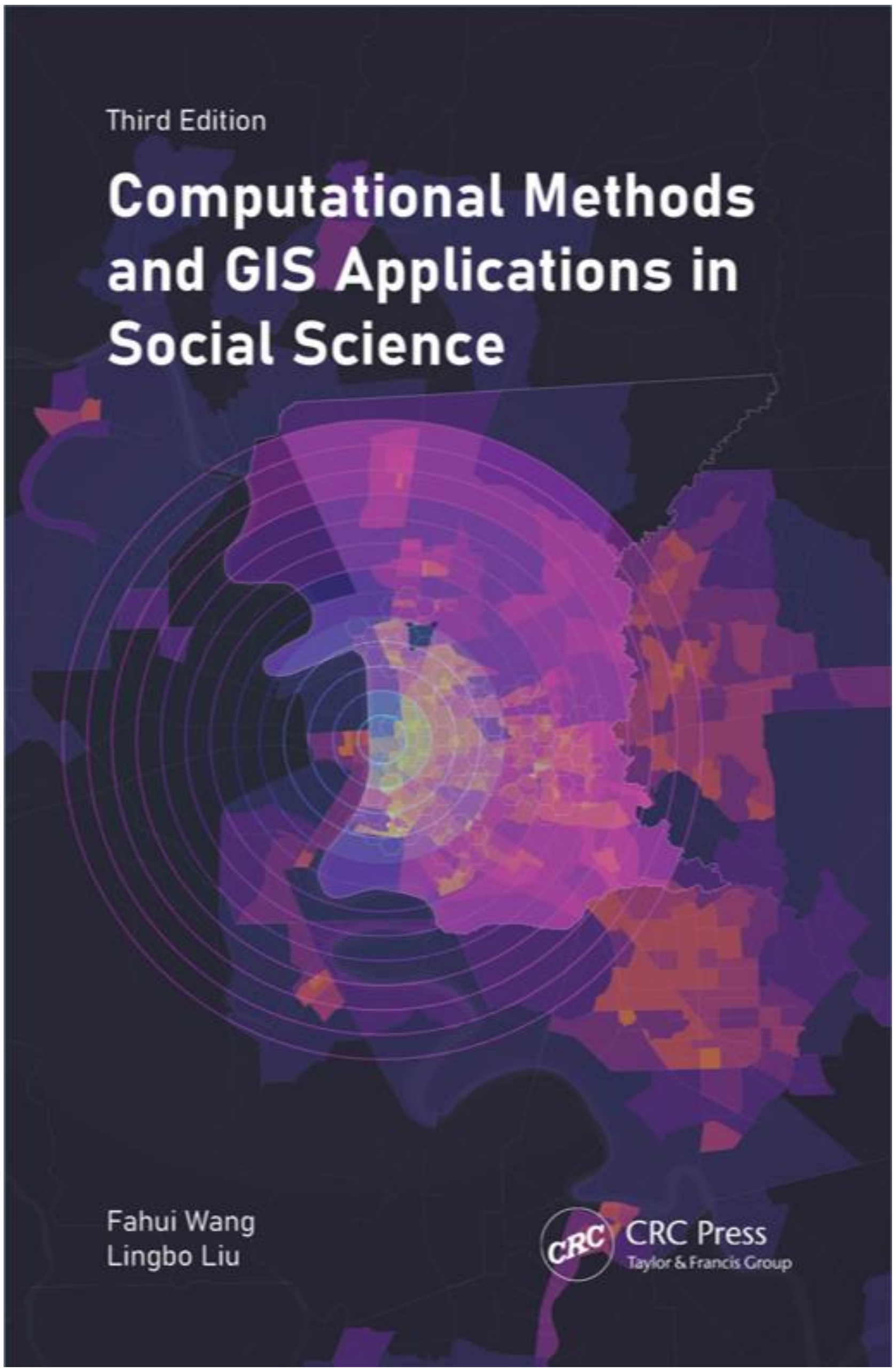
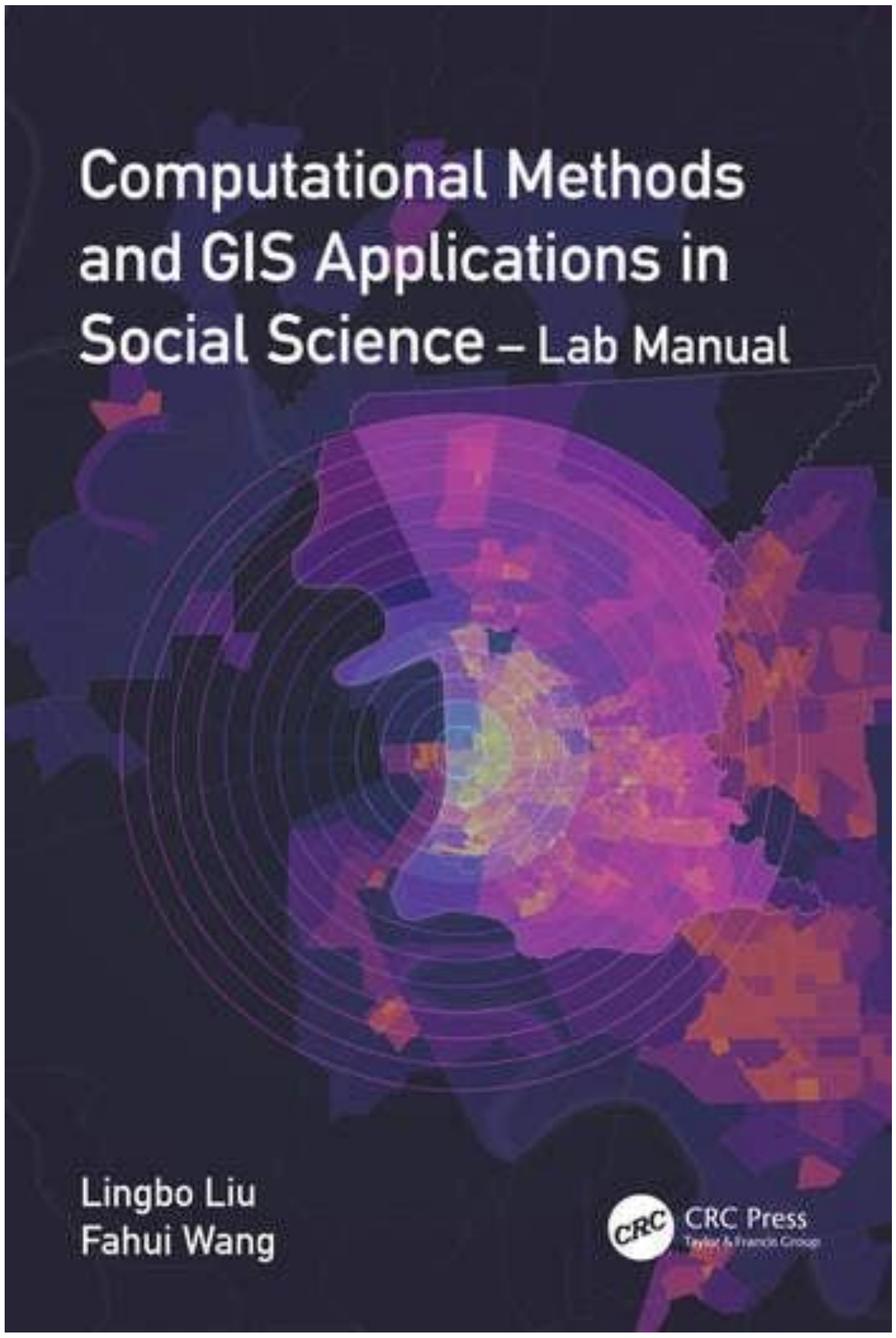


Main book: available **8/15/2023** all case studies in ArcGIS Pro 3.1

ArcGIS Pro
Version 3.1



Lab manual in KNIME:
available 10/15/2023

Open for Innovation
KNIME
Version 5.1

Book Features

Computational Methods and GIS Applications in Social Science

Third Edition

GIS与计算方法在社会科学研究中的应用 （英文 第三版）

Fahui Wang, Lingbo Liu

This textbook integrates GIS, spatial analysis, and computational methods for solving real-world problems in various policy-relevant social science applications. Thoroughly updated, the third edition showcases the best practices of computational spatial social science and includes numerous case studies with step-by-step instructions in ArcGIS Pro and open-source platform KNIME.

Michael Batty
Centre for Advanced Spatial Analysis (CASA),
University College London
London, UK

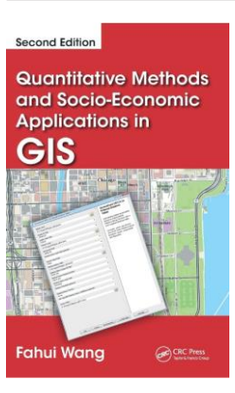
Recommendation

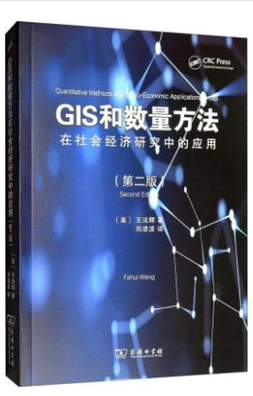
it is now very much a book that is a “**must-read**” for any social scientist who wishes to get a rapid but thorough exposure to GIS and the desktop software that makes it work.

Wang and Liu develop a very well-written operational guide to **the most important GIS techniques available**, and one of the great strengths of the book is that **any potential user** can pick it up and quickly adapt the techniques therein to their own problems.

This is an **important resource** for computational social science, as well as for **urban science** itself and **social physics**.

From the Foreword of
Computational Methods and GIS Applications in Social Science



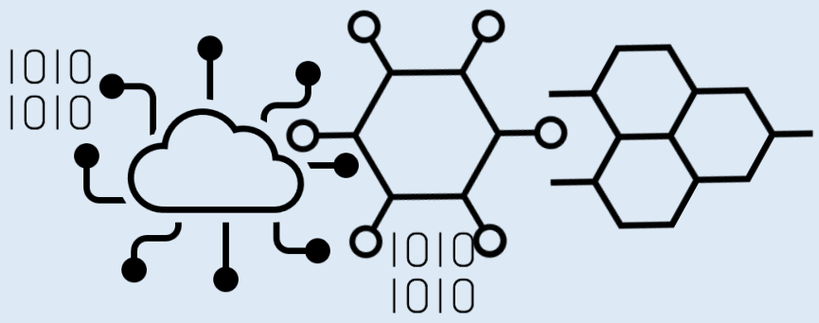


At 60% new materials from 2nd Edition
Quantitative Methods and Socio-economic Applications in GIS
Fahui Wang

GIS与数量方法GIS在社会科学研究中的应用（第二版），商务印书馆

New Chapters on Agent-based Modeling and Big data analytics

Agent-based Modeling



Big Data Analytics

Newly Automated tools in ArcGIS Pro

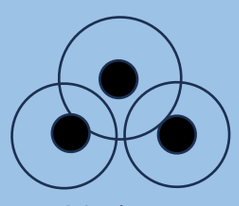
Google Maps API for OD drive/transit times, Spatiotemporal KDE, 2SFCA/i2SFCA, 2SVCA, Garin-Lowry model, Waste Commute, Minimax, … and

ArcGIS Toolbox

Regionalization: REDCAP & MLR

Functional region delineation

Functional region delineation



Maximum Accessibility Equality Problem

Agent-based crime simulation

Real-world case studies in social science, planning and public policy

Baton Rouge

Chicago

Urban Planning

Yunnan

Social Science

Public policy

Florida

Louisiana

Beijing

Hubei

Jiangsu

Data and Tool Support for implementing all case studies

Provides a website for downloading data and programs for implementing all case studies included in the book and the KNIME lab manual

Data Support

Datasets for Computational Methods and GIS Applications in Social Science

https://doi.org/10.7910/DVN/4CM7V4

Tool Support

Geospatial Analytics Extension For KNIME

https://github.com/spatial-data-lab/knime-geospatial-extension

GitHub for Issue support

https://github.com/UrbanGISer/Computational-Methods-and-GIS-Applications-in-Social-Science

KNIME Hub Support

Open for Innovation
KNIME Hub

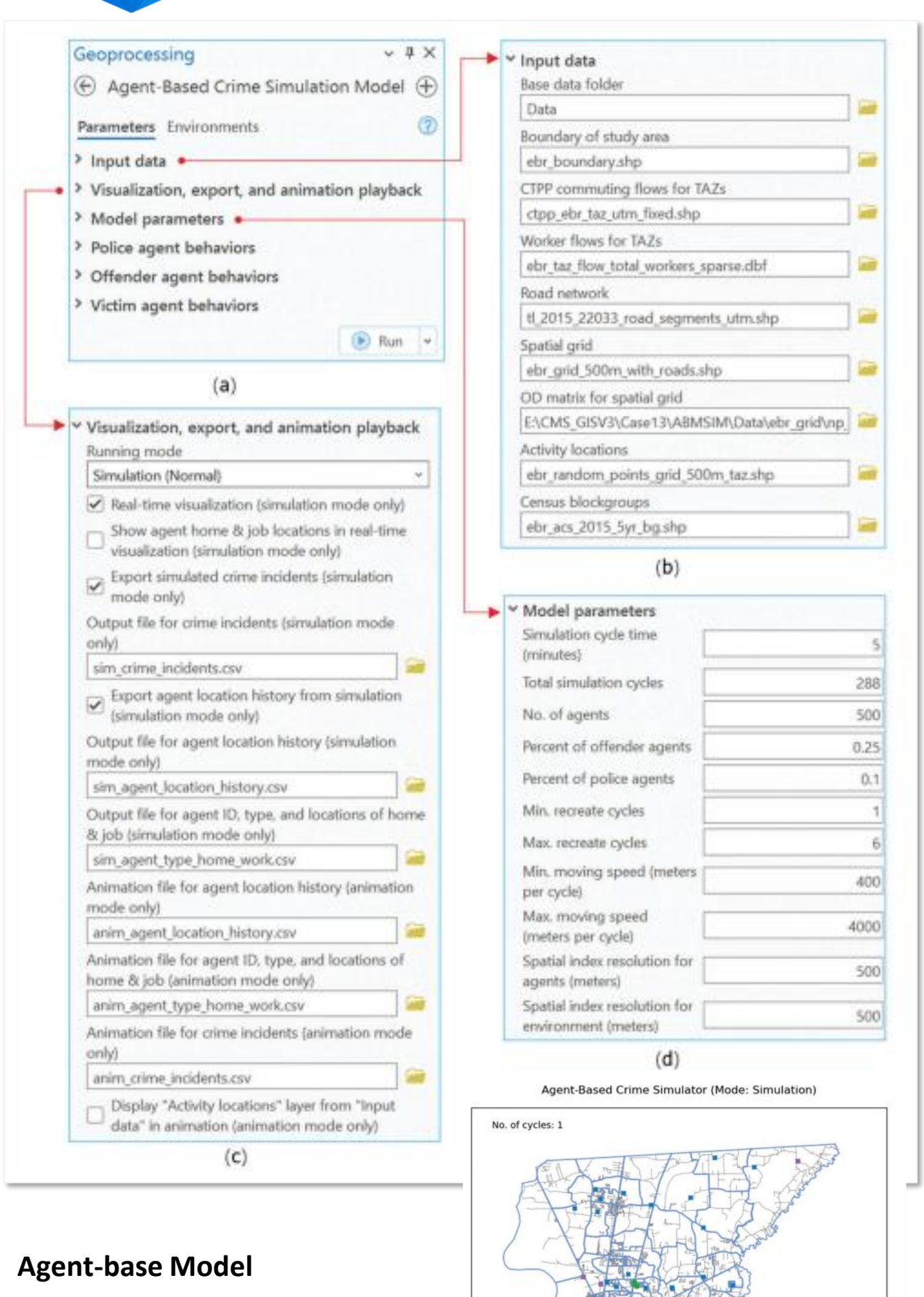
Center for Geographic Analysis
Harvard University

https://hub.knime.com/center%20for%20geographic%20analysis%20at%20harvard%20university

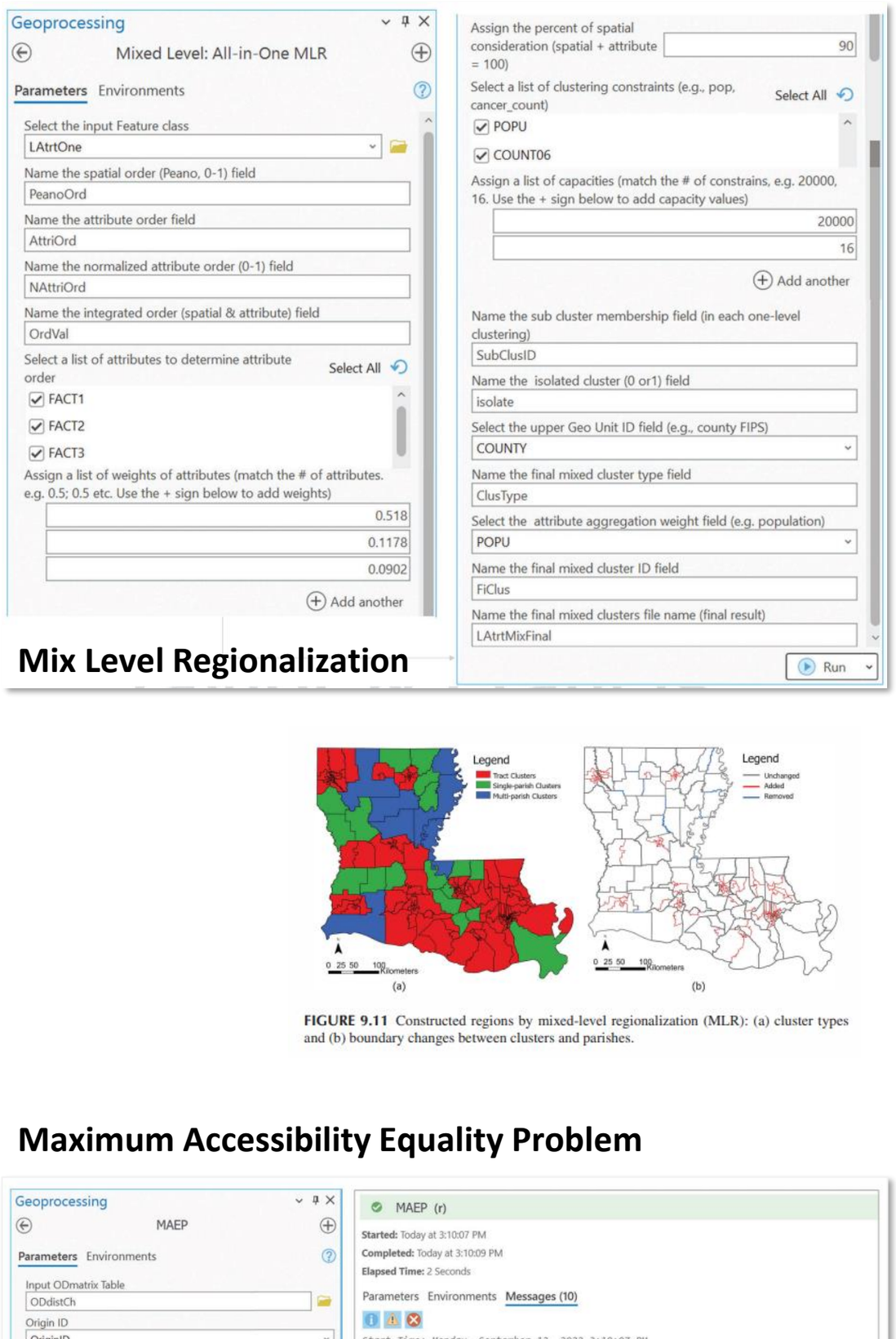
Intended for students taking upper-level undergraduate and graduate-level courses in quantitative geography, spatial analysis, and GIS applications, as well as researchers and professionals in fields such as geography, city and regional planning, crime analysis, public health, and public administration.

Word Cloud of Book Features

Handy Tools in ArcGIS Pro



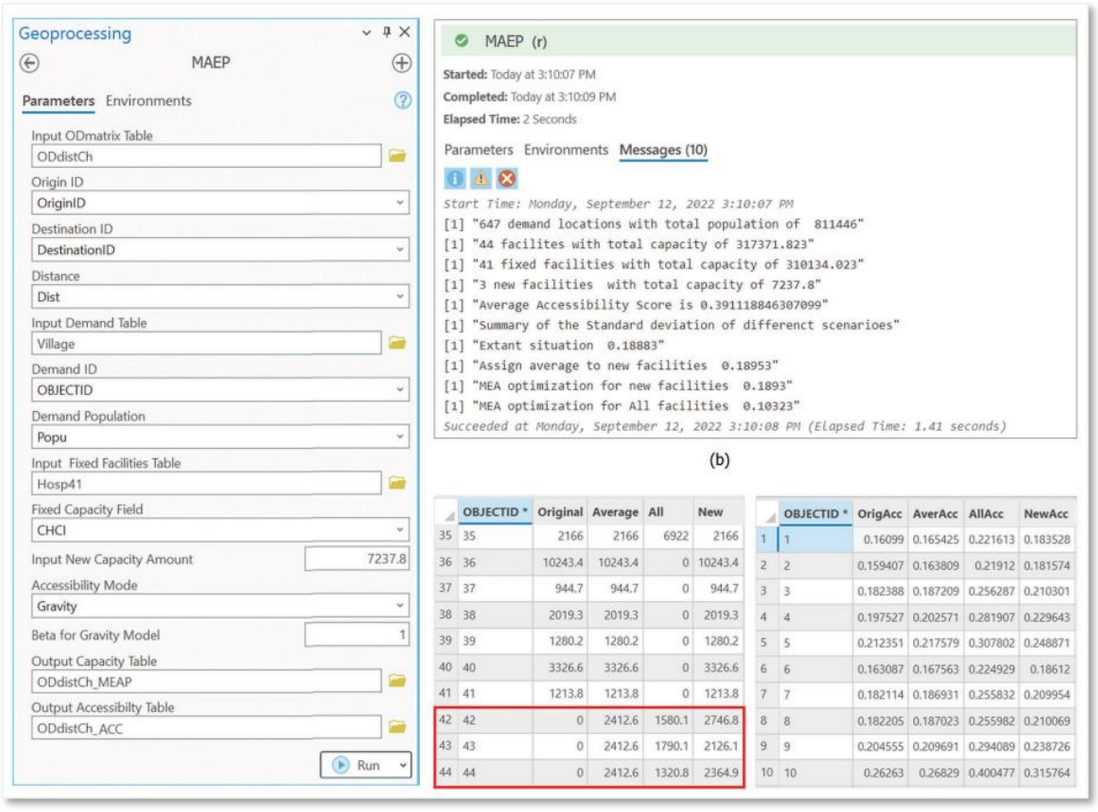
Agent-base Model



Mix Level Regionalization

FIGURE 9.11 Constructed regions by mixed-level regionalization (MLR): (a) cluster types and (b) boundary changes between clusters and parishes.

Maximum Accessibility Equality Problem



	OBJECTID *	Original	Average	All	New
35	35	2166	2166	6922	2166
36	36	10243.4	10243.4	0	10243.4
37	37	944.7	944.7	0	944.7
38	38	2019.3	2019.3	0	2019.3
39	39	1280.2	1280.2	0	1280.2
40	40	3326.6	3326.6	0	3326.6
41	41	1213.8	1213.8	0	1213.8
42	42	0	2412.6	1580.1	2746.8
43	43	0	2412.6	1790.1	2126.1
44	44	0	2412.6	1320.8	2364.9

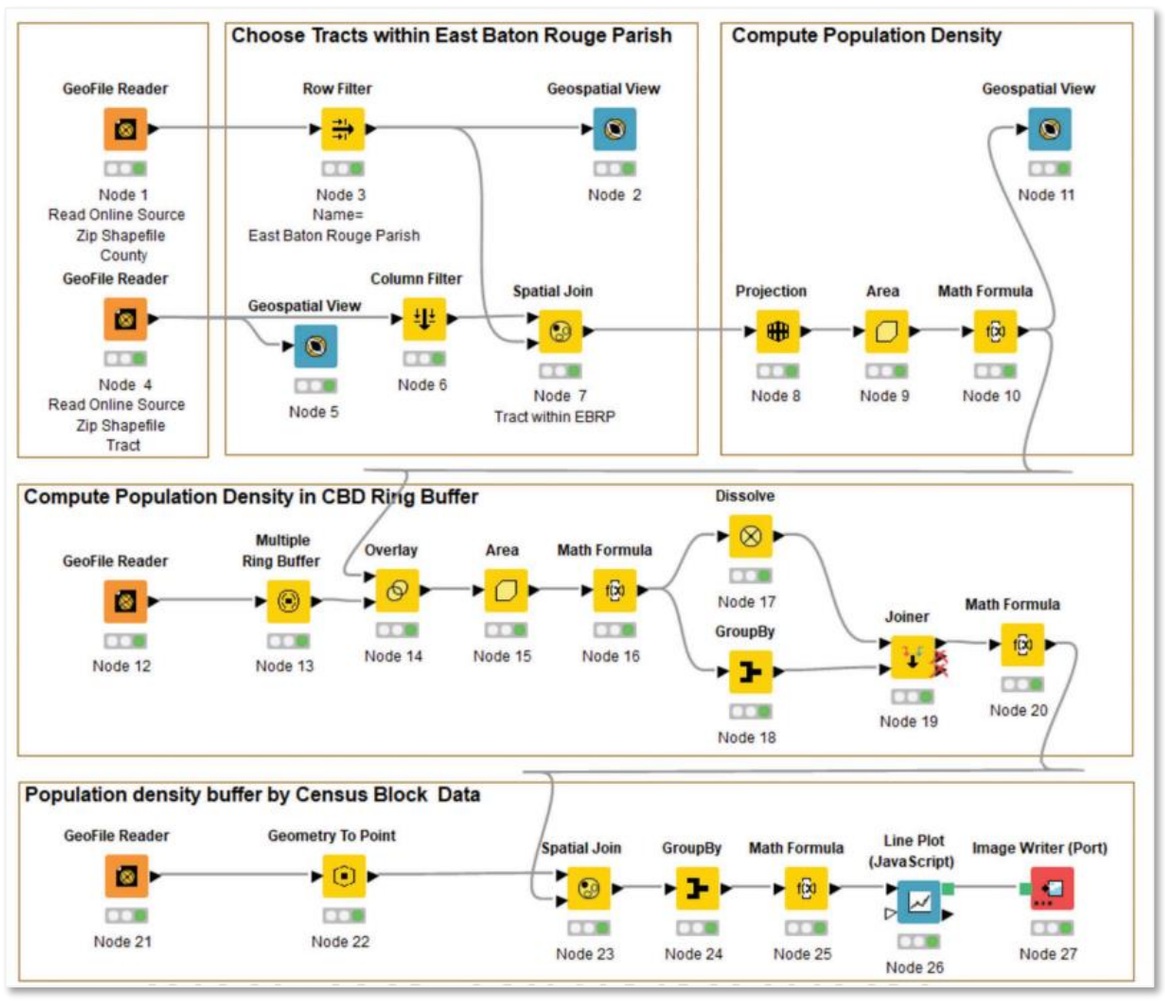
	OBJECTID *	OrigAcc	AverAcc	AllAcc	NewAcc
1	1	0.16099	0.165425	0.221613	0.183528
2	2	0.159407	0.163809	0.21912	0.181574
3	3	0.182388	0.187209	0.256287	0.210301
4	4	0.197527	0.202571	0.281907	0.229643
5	5	0.212351	0.217579	0.307802	0.248871
6	6	0.163087	0.167563	0.224929	0.18612
7	7	0.182114	0.186931	0.255832	0.209954
8	8	0.182205	0.187023	0.255982	0.210069
9	9	0.204555	0.209691	0.294089	0.238726
10	10	0.26263	0.26829	0.400477	0.315764

Open for Innovation
KNIME

Geospatial Analytics Extension for KNIME

Developed by Harvard CGA and KNIME

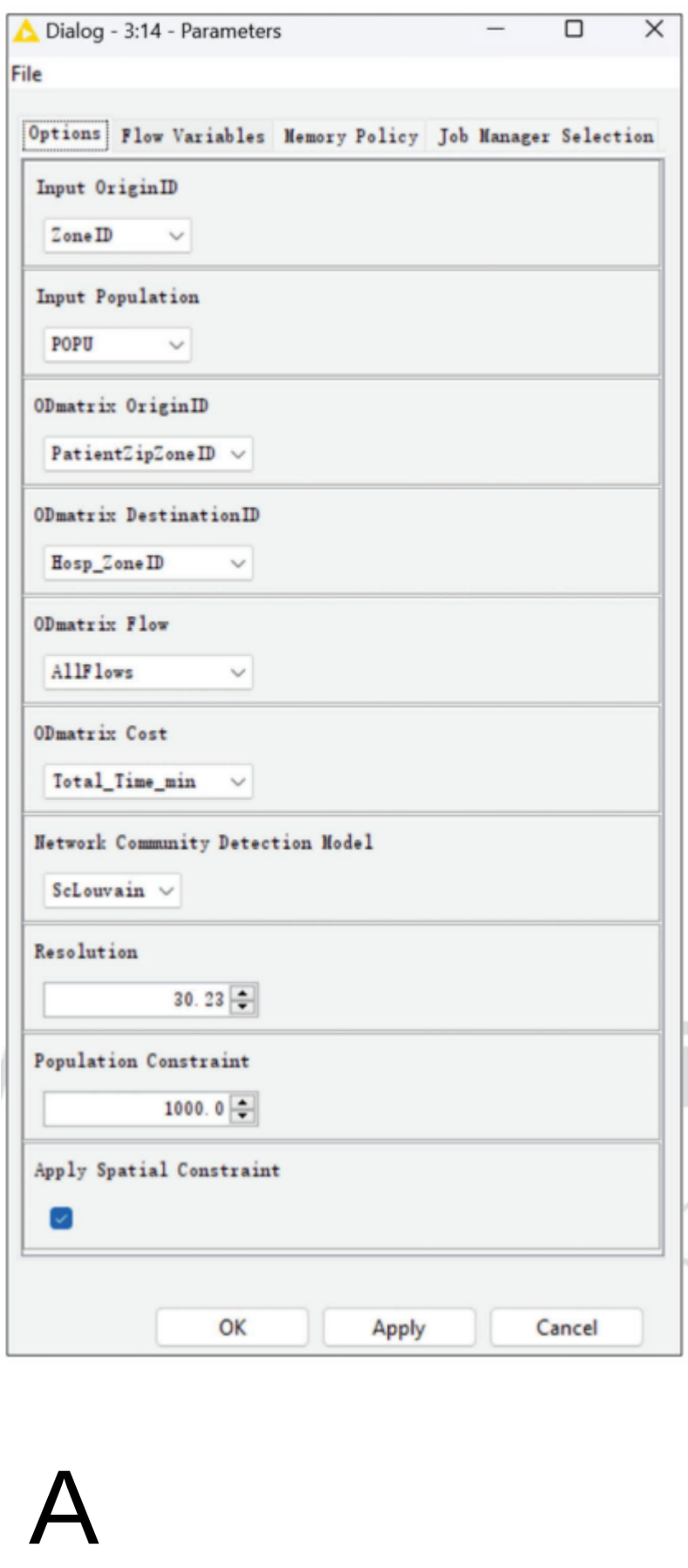
KNIME workflow as Open Visual Programming Platform



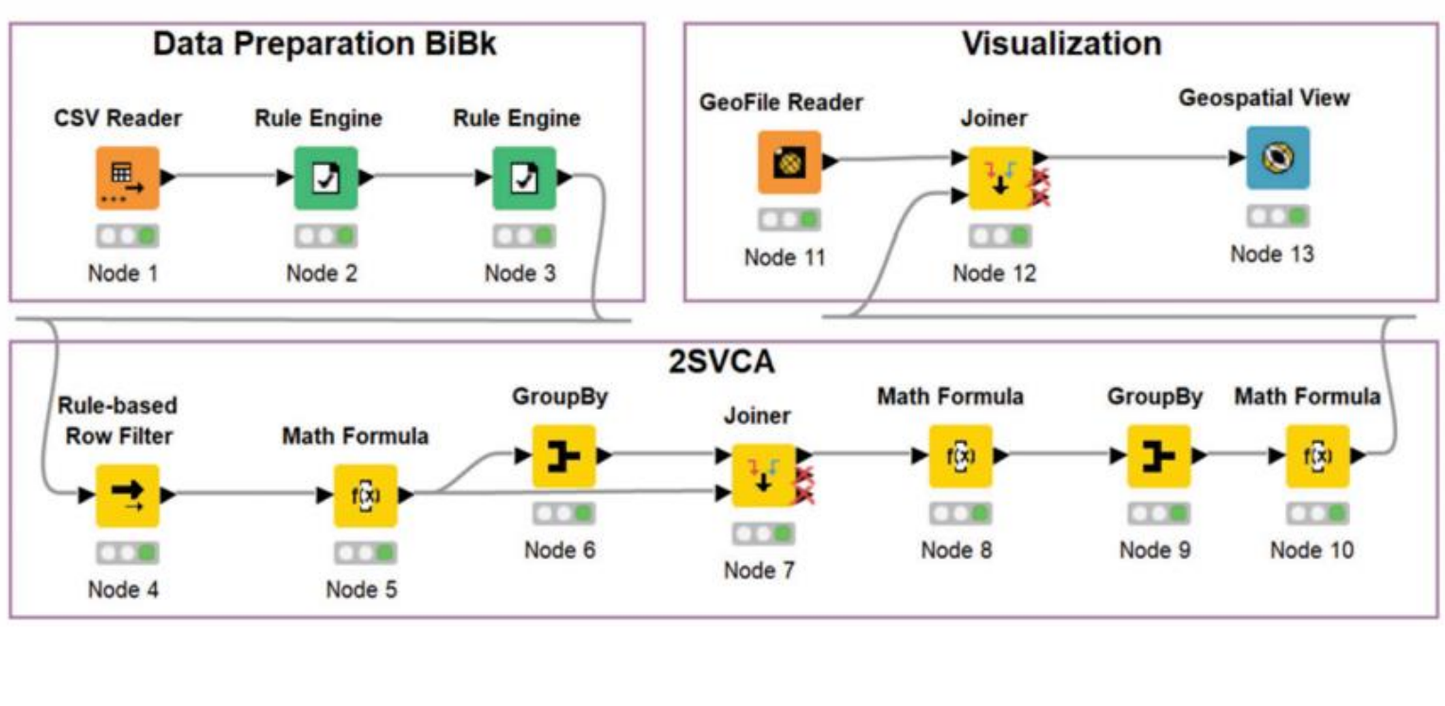
Visualization

FIGURE 4.6 Visualization of OD flow between residential areas and hospitals: (a) Parameter pane, (b) 2D Map, and (c) 3D Map

User Interface Created by KNIME Component



2SVCA Model nodes



Colocation Model nodes

A Replicable Reproducible Extendable Framework GIS