

Specialization — Spatial Economics

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Overview I

In economics and related econometric methods, there is often the (implicit) assumption that units of observations are independent of each other. However:

- ▶ Economic theory also often suggests spillovers or other dependencies between units, how can we deal with them in empirical settings?
- ▶ Think about geographical units (e.g. counties in Austria) with links or individuals that are linked in some form (classroom, friendship)
- ▶ Peer effects are observable in everyday life, need to be addressed properly in empirical analyses
- ▶ Dependencies can take different forms across space/networks, e.g. clustering, non-random distribution – how can we address them?
- ▶ Wide range of issues: economic spillovers (e.g. innovation), environmental effects or hazards (e.g. pollution), social interaction (e.g. peer learning)

Overview II

In this specialization, we will...

- ▶ ...think about dependencies (spatial/network) in data in an economic context
- ▶ ...get an understanding of the underlying economic theory
- ▶ ...introduce econometric methods to deal with these dependencies (!)
- ▶ ...use **R** (!) and QGIS to handle, visualize, and analyze spatial data
- ▶ ...gain insights in contemporary issues, focus on environmental/development topics

Spatial data handling

A large portion of the course will be devoted on how to handle, manipulate, visualize and analyse the various forms of spatial data (raster, point, polygon)

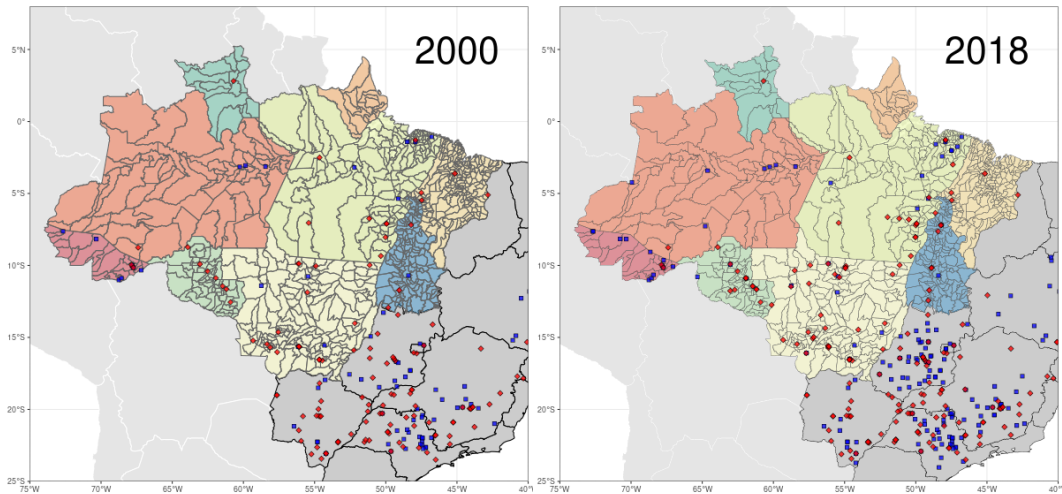


Chart: Slaughterhouse locations in the Brazilian Amazon.

Spatial data handling

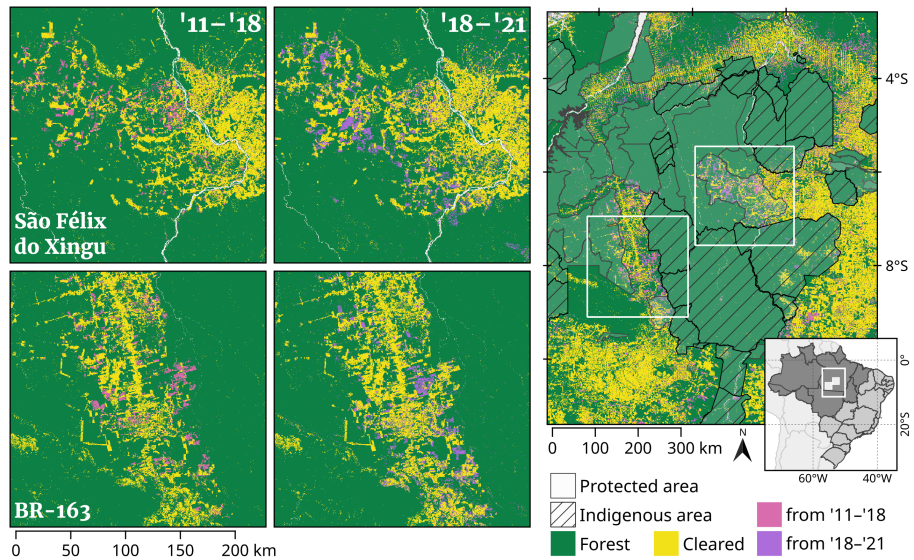


Chart: Land use in Brazilian Amazon.

Field Course outline

- ▶ Intro – Motivation; Recap on algebra, estimation techniques
 - ▶ Peer effects – Theory
 - ▶ Spatial data intricacies and properties
 - ▶ Dealing with dependencies in data – Spatial/network econometrics (!)
 - ▶ Discussion of spatial/network economic topics
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- ▶ Units will be accompanied by dedicated (R) coding sessions

Seminar outline

- ▶ Deep dive in spatial data, visualisation
- ▶ Reading of fundamental papers (theoretical and applied)
- ▶ Thorough reading and discussion of contemporary papers
 - ▶ Spatial economics
 - ▶ Network economics
- ▶ Project idea pitch (5–10 minute presentation)
- ▶ Further coding sessions and individual help
- ▶ Final presentation and assisted coding

- ▶ Project proposals due in July

Organizational — Grading

Field Course:

- ▶ Final exam (50%)
- ▶ 4–6 Assignments (40%) – both theoretical and applied
- ▶ Participation (10%) – e.g. presentation of assignments

Seminar:

- ▶ Presentation (20%) and written proposal (40%) of project
- ▶ Referee report (20%) of one of the papers to be discussed (2 pages)
- ▶ Participation, e.g. thorough discussion/critique of selected papers (20%)

Project organizational

Projects will not be full papers but rather proposals:

- ▶ Around 5–6 pages (text) with 2–3 supporting graphs/tables
- ▶ Written in the style of a paper proposal, with
 - ▶ Clear research question and motivation
 - ▶ Very brief embedding in the literature
 - ▶ Description of methodologies to be used
 - ▶ Brief description of main results
- ▶ Can be carried out in groups of 2–3 persons

Project topics

Generally, we are agnostic about project topics, so long as they have a spatial/network component and fit within the course. Proposals can be used as basis for master thesis.

A non-exhaustive list of possible topics:

- ▶ Malaria outbreaks and food prices in Sub-Saharan Africa
- ▶ Mining and regional development in the tropics
- ▶ Deforestation and its spillovers in Brazil
- ▶ Forest fires, their drivers and consequences around the globe
- ▶ Air pollution and its (health/economic) impacts