

N5 – Research network ‘Life-Courses, Family, and Labour’

GIS in action

Space is next to time a crucial dimension in historical research. While historians have always had an eye for geographic aspects, we observe since the spatial turn in the 1980's an increased attention for place and space in historical research. This increased attention for the spatial dimension of historical processes and events goes hand in hand with technological innovations, and especially the rise of so-called Geographic Information Systems (GIS), that allow to store, describe and analyze complex geographic data in multiple ways. This session is devoted to three different GIS applications in historical research. One example deals with the rigidity of social-spatial structures in Antwerp and how they influenced the spatial dynamics of its urban inhabitants throughout the early modern period. Example two analyzes variations in ground water extraction and its effects on regional development in India in the past decades. And the third and last example is a study on inequalities in disease and mortality in nineteenth- and twentieth-century Belgium.

Iason Jongepier (UA)

GIStorical Antwerp: using a HISGIS ‘Laboratory’ to study the (un)changing nature of early modern urban environments (ca. 1580-1830)

Earlier research shows that socio-spatial patterns that emerged during the sixteenth and seventeenth century urban expansions could persist well into the nineteenth century. Political and economic elites were best placed to realize their housing preferences during urban expansion. The segregated living patterns that arose in this way were then unchangeable for a long time, not least because social groups used their influence and/or money out of self-interest to maintain the status quo, among other things to protect status, accessibility, living environment and the strongly related value of their possessions.

However, our Antwerp case questions this socio-spatial rigidity by turning to advanced spatial analysis. This paper is fully grasping the opportunities provided by the GIStorical Antwerp project, which was completed last year. GIStorical Antwerp created a historical ‘laboratory’ in which four centuries of socio-spatial information about the city of Antwerp was brought together on the level of individual households or houses. It allows us to investigate socio-spatial patterns throughout the entire early modern period (1584-1834) using the power of Geographical Information Systems (GIS) which is unleashed on tens of thousands of individual ‘spatialized’ historical records. Using spatial analysis in micro-level spatial data will move beyond earlier studies using aggregated social data (e.g. on ward level) and allow the detection of contrasts and shift on a (sub-) neighborhood scale, therefore truly revealing the internal spatial dynamics of an early modern city.

Maanik Nath & Vigyan D. Ratnoo (both UU)

Water and Regional Development in India: A GIS Analysis

This paper considers the allocation and management of scarce water resources in India over the last 50 years. The heterogeneous success of the Green Revolution that increased agricultural productivities and incomes was closely tied to the expansion of tubewell technology across rural India. We first illustrate this regional variation using long-run remote sensing satellite data (NDVI, EVI, VCI) at a 4x4 km gridded level to estimate changes in plant health, land cover and drought vulnerability from 1985 to 2022. Analyzing the relationship of these developmental patterns with groundwater extraction at the district-level, the paper shows that regions that over-exploited groundwater reserves developed rapidly in the 1980s and 1990s but obtain lower marginal benefits from groundwater extraction today. Regions with unextracted groundwater reserves reported low and stagnant productivity throughout the period. Groundwater extraction served as an insurance against rainfall shocks but has also allowed farmers to hedge risks across seasons. We investigate the importance of groundwater extraction vis-à-vis other factors in explaining changes in productivity and drought vulnerability. The paper predicts regionally-varied rates of change in economic outcomes with continued water-intensive cropping in India.

Isabelle Devos (GU), Yoann Doignon (CBNRS – UMR), Hilde Greefs, Sven Vrielinck, Torsten Wiedemann (all UA)

Challenges and opportunities of GIS for studying inequalities in disease and mortality

In the last decade, there has been a significant increase in the number of large-scale databases on mortality and causes of death, particularly for the nineteenth and early twentieth centuries. Quantitative and spatial methods have enriched the possibilities for analyzing such datasets. Methodological challenges however severely impede (comparative) research. For instance, small numbers at the municipal level can limit nationwide analyses, while the lack of data on the population at risk by street or neighbourhood can hinder the calculation of statistically reliable indicators at the city level. As a result, interpreting spatial data on mortality and causes of death can be problematic and requires careful consideration. Smoothing techniques, temporal and spatial aggregations can partially solve these issues. This presentation focuses on the challenges and opportunities offered by using GIS in mortality research, showcasing our studies on cholera, smallpox, Spanish flu, and cancer in nineteenth and twentieth-century Belgium, Antwerp and Brussels.