Regional accessibility indicators: developments and perspectives

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• Treaty: « harmonious, balanced and sustainable development of economic activities »
• Objectives for Structural Funds intervention 2007-2013
  – convergence
  – competitiveness and employment
  – cooperation
• Accessibility of a region/territory
  – key concept related to the three S.F. objectives
  – accessibility problems of convergence regions
  – role in assessing regional competitiveness
  – cooperation: role in analysing the situation of cross-border regions
• Accessibility relates to
  – transport networks
  – telecom networks
  – availability of specific services of general interest

• Focus of this presentation:
  – role of transport infrastructure
• Different types of indicators:
  – different levels of data requirements
  – different degrees of complexity
• Main types include:
  – endowment indicators
  – travel time and travel cost
  – daily and potential accessibility
Endowment indicators

• Measure the presence of infrastructure in the regions
• Typically: network length and/or density, expressed by surface and/or population
• More refined description when using breakdown by category of infrastructure (gives some hints on network quality)
• Density of railway lines by population
- Time-stamped network information: evolution of motorway network
• Travel time from an area to the nearest location of a certain kind
• Travel cost (accumulated) to a set of certain activities
• Transportation richness index
  – buffers around network nodes to determine approximate travel time
  – index values for 10 km grid cells
  – combining different transport modes (e.g. relevant for passenger or freight transport)
• Transportation richness index for TEN freight network
• Average time to reach the 3 nearest cities of more than 100,000 inhabitants
• Connectivity indicators (ESPON)
  – Weighted travel time from regions or representative point locations
  – Evaluating accessibility to a set of transport network access points where a minimum level of services is provided
• Aspects of connectivity
  – Level of service provision of network nodes (e.g. rail stations, motorway entrances)
  – Availability of secondary networks enabling access to the nodes
• Daily accessibility: activities (or locations) accessible within a given time

• Potential accessibility: accessibility to accumulated activities, weighted by a function of travel time (or cost)
• Daily accessibility (by air) between MEGAs
Potential accessibility of NUTS3 regions

- Time-distance matrix of NUTS3 regions
- Impedances taken into account
- With respect to regional population (or GDP)
• The “best” or the “unique” accessibility indicator doesn’t exist
• Accessibility of regions / territories could be described by a core set of indicators, covering different aspects
• Special attention for the relationship between those indicators
Towards a set of indicators?

- Questions of model development (improved spatial analysis tools)
- Coherent indicator set
- Updateable (frequency?) and comparable over time
- Place of the accessibility concept in the future development of regional transport indicators by Eurostat?
• Pending issues:
  – Concept of quality of accessibility:
    • actual use of networks
    • question of congestion
    • seasonal differences
  – Suitable data sources?
  – Unit of analysis: NUTS regions, grid cells, MAUP problem...
• Current datasets OK for experimental work
• Mainstreaming accessibility indicators would increase requirements for basic geo-referenced data
• Different indicators should be derived from (ideally) the same set of core datasets (e.g. same transport networks)
• Transport networks:
  – compatible with other reference layers
  – decently time-stamped and updated
  – including attribute information on quality and characteristics of links and nodes (cf. level of services provided)
  – EU + neighbours
• Other data sets:
  – Land Cover:
    • interpretation of accessibility differences
    • disaggregation tool for e.g. population data
    • delimiting urban and rural areas
  – Digital Elevation Model:
    • consider physical constraints
  – Local administrative borders + related (census) data
• Typical example of need for synergy between geographical and statistical data
• Modelling rather extensively testing (e.g. see www.espon.lu)
• Reliable and meaningful indicators should play a role in the analysis of regional situation and trends