Left page top: *Cycling Accessibility of Cambridge and Usual Resident Population*
Left page middle: *Areas of Deprivation and Health Problems in Cambridge*
Left page bottom: *Density of Bus Stops in Cambridge and Service Frequency by Route*

The social dimension of transport planning: An introduction to the application of demographic and spatial data in transport consultancy.

For Transport Planners, GIS provides a tool which enables the exploration of an infinite number of spatial and temporal datasets to inform decision making (1 &2). Linked to this, demographics have a wide impact on the associated demand and geography of all journey purposes. Whether it's job availability and where people live and work, disposable income and access to leisure activities, social mobility or transport isolation, the analysis of demographic data allows transport planners to be sensitive and sustainable with the solutions recommended to clients. This article highlights some of the key uses of demographic data in transport planning which allow transport planners to plan and design with communities in mind.

Demographic analysis allows transport planners to form a detailed picture of the existing social context of a specific area. Often data extracted from the most recent census is used to provide population characteristics such as: resident population, journey to work attributes (3), prevalence of health problems, and much more. However, this is complemented by additional data sources to ensure that the understanding of an area is as timely as possible, using data obtained from the DfT, local authorities and independent surveys. When such data is overlaid on the transport and accessibility characteristics of an area, transport planners can start to identify areas which could benefit the most from investment and infrastructure improvements, in turn supporting communities to level up.

In addition to using GIS and demographic data to help evaluate the existing conditions of an area, their combined use also brings value to numerous other aspects of transport planning, such as:

• Transport Modelling – highlighting existing traffic flows on specific links and assessing how additional trips from a proposed development could be distributed on the highway network.

• Feasibility Studies – assessing the potential social and accessibility impacts of proposed strategic infrastructure projects, such as HS2 and East West Rail.

• Accident Analysis – using predictive software to consider how an increase in population and hence vehicle trips could influence future accident rates.

• Air Quality Assessments – using projected HGV traffic flows to estimate the air quality impacts of a proposed development and the potential consequences on the local population.

As illustrated on the map of Cambridge, cycling isochrones can be overlaid on population layers to calculate how many people could benefit from new active travel infrastructure in an area, and further highlight how improved connections could unlock the potential of a region. Health metrics can be projected on indices of deprivation to identify correlations and consider to what extent spatial inequalities could be challenged by improved access to amenities, goods and services. Bus stop densities and route frequencies can be mapped simultaneously to identify popular public transport corridors, and this can be compared with passenger demand to determine whether increases in certain services are warranted.

So, it's not just planning for vehicles? Ultimately, all projects are coupled with unique spatial characteristics and therefore require a well-informed approach to the assessment of potential transport interventions – ensuring they are sustainable for both present and future generations.

Jodie Welch

Transport Planner at Stantec
www.linkedin.com/in/jodiewelch/

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