AN APPROACH TO REFINE THE ANALYSIS RELATING TO THE TRANSIT ROUTE BUFFER PROBLEM

Abstract:
Planning new transit routes and refining existing routes often requires the calculation of the transit dependant socio-economic characteristics of potential passengers. The most common method used to derive the social profile for potential passengers is to create buffers around the transit routes and use Census data collected by the statistics bureau, which in this case is the Australian Bureau of Statistics Census of Population and Housing 1996. The census data are based upon the smallest spatial unit provided by the ABS, the census collection district (CD). However the CD boundary seldom matches the transit buffer boundary and this requires the development of methods for allocating partial CD populations to the transit buffers (Sekhar et al 2001). This research builds upon the earlier work of Sekhar et al 2001 and focuses upon the issues of applying statistical tests (both parametric and non parametric) to understand and solve the allocation of populations and socio-economic characteristics when CDs are only partially contained within the transit buffer area. The analysis is carried out by grouping the CDs according to the existing level of transit access of dwelling units, distance from the city centre and the direction (north, south east or west of the city) to understand the influence of these factors on the transit dependent socio-economic profile of dwelling units.

The results show that the transit buffer social economic profile of the partial CDs within 17 kilometres of the City Centre is not different to CDs wholly contained with the transit buffer. On this basis, the socio-economic characteristics of the wholly contained CDs can be used to characterise the partially contained CDs. Since the majority (90 per cent) of transit routes in the northern SSD do not extend beyond this distance the solution is straightforward. It is important to determine the distance within which the homogeneity of the transit dependent socio-economic characteristics wholly and partial transit access CDs is maintained. This research describes the methodology to determine the distance factor. However the distance is calculated for each direction as direction does play a significant role in characterising the social economic profile.

Keywords: Transit buffer problem, t-test, Mann- Whitney test, Gaussian distribution.