ANALYSIS OF REGIONAL IMBALANCE OF QUALITY OF BUS SERVICE
WITHIN A CITY

Abstract: According to the Transit Capacity and Quality of Service Manual (TCQSM, 1999) prepared by the US Transportation Research Board, transit service quality measures can be used to evaluate users’ perceptions of comfort and convenience of their transit experiences. TCQSM (1999) divides each quality of service measure into six levels of service representing ranges of values for a particular measure using an A-F scale. Using the Level of Service (LOS) concept, the quality and variation in bus service is analysed for the four Statistical Sub Divisions (SSD) of metropolitan Adelaide. The research also identifies the regions, which require bus service improvements. Results clearly show that there is a considerable difference in the quality of bus service supplied to each SSD. However it is important to examine whether the quality of service received by each SSD is commensurate with the potential clientele for public transport in that region. In the other words, if the quality of bus service is directly related with the density of potential clientele then it is justified; else there is a need to correct this imbalance. To address this problem, three important characteristics in the bus route catchment area are examined which act as proxy variables for the potential clientele of public transport. The characteristics examined here are:

- Density of dwelling units in the region
- Density of dwelling units with low income in the region
- Density of dwelling units with no motor vehicle in the region.

An analysis of the data using advanced GIS techniques clearly demonstrates that the western SSD is deficient in bus service quality compared to the rest of the metropolitan area, requiring very significant improvements with respect to LOS (frequency) and LOS (hours of bus service).

With regards to the transit coverage LOS this analysis indicates that there are differences between the SSDs with regard to both service level and socio-economic measures, especially income levels. It is also observed that the SSDs with higher incomes have better transit coverage while the western SSD with the lowest average weekly income has the lowest transit coverage. The analysis suggests that Level of Service (transit coverage) is not the major factor for poor transit patronage levels in Adelaide, since the LOS (transit coverage) in all the SSDs is highly satisfactory. The paper finally identifies the level of bus service improvements required for the various regions of Adelaide.

Key Words: Bus frequency Level of Service (LOS), Bus hours of service LOS, Dwelling Unit density, Low-income dwelling unit density