

# Travel Time Reliability Estimation using GPS and GIS

The advent of GPS on small handheld devices such as mobile phones and handheld GPS loggers has made the collection of GPS data much easier and simpler than ever before. Geographical Information Systems (GIS) allow for the display and analysis of spatial data including GPS. However it is the application of this data and its analysis that will see the greatest benefits realised. One particular application is the determination of travel time reliability. When one undertakes a journey in a vehicle not only is it important to have an understanding of how long the journey will take, but it is also important to know what the reliability around that estimate is. There are many factors that affect travel time and the variability of travel time within a transport system. These can be usually broken down into two areas, recurrent congestion and incidents. Recurrent congestion usually has its biggest affect in the morning and evening peak periods, for example a twenty minute journey in off peak periods can increase to a 30 or 40 minute journey during these peak periods. However typically during these peak periods not only is the overall travel time increased but the variability of the travel time also increases, this could be due to waiting at intersections for multiple cycles throughout the journey. Traffic incidents are usually random occurrences that disrupt traffic for short periods of time, for example a vehicle accident could block 1-2 lanes of traffic increasing congestion for a few hours until the crash is removed. Road works are another form of incident that can disrupt traffic for longer periods of time depending on the nature of the works. Recurrent congestion and incidents make the estimation of travel time and travel time reliability difficult.

This project will see the students collect GPS positional information during peak and off peak period along selected routes in the Adelaide metropolitan area in order to develop models for travel time prediction and reliability estimation.