

Peak Spreading - Temporal Changes In Travel Demand In The GTA

Ray Bacquie

and

Jin Wang

ABSTRACT

The temporal distribution of trip making in the Greater Toronto Area (GTA) has changed over the past couple of decades, exhibiting longer and less pronounced peak periods. This increase in travel beyond the traditional hour is known as "peak spreading" and noes in most major cities. Research to date has attributed the phenomenon of Peak spreading to the effects of congestion, however a literature search has not uncovered supportive empirical evidence.

The authors take a first step toward understanding peak spreading by quantifying temporal relationships of travel demand. The relationships between peak hour, peak three hour period and daily travel are examined. The ratio of Peak hour traffic to peak thee hour traffic was investigated over a eleven year period at screenlines and compared to the trend in traffic congestion at the screenlines. A functional relationship between peak spreading and congestion is calibrated using data from the GTA. Differences between urban, suburban and rural areas and between freeways and arterial roads arc discussed.

Peak spreading results in a more efficient use of the transportation system, since it reduces the concentration of travel during peak hours and increases travel during periods when there is reserve capacity. The effects of peak spreading are consistent with official plan policies and targets of municipalities in the GTA for reducing peak hour travel demand.

The paper will identify opportunities for encouraging peak spreading. For example, land use planning of mixed use development is shown to result in a less pronounced peak of travel demand, as illustrated with examples in the Greater Toronto Area. Research has been presented that attempts to quantify how social and technological changes such as alternate work schedules and telecommuting affect peak period demand.

The paper will conclude with a recommended strategy for the GTA to promote peak spreading through marketing and employer liaison.