Improving the state of the practice for transport appraisal to accommodate the productive use of travel time

Conventionally, travel time has been perceived as a burden to be borne while moving people and goods from one place to another, in order to enable economic and leisure activities. This assumption has been recently put into question, in light of growing access to tools and a travel environment, including that of connected and autonomous vehicles, that facilitate participation in work or leisure tasks while travelling.

The most direct consequence of improved quality of in-vehicle time (IVT) in the context of transport appraisal concerns quantification of benefits due to policies and investments that affecting travel duration. If we recognise that some IVT is worthwhile, the transport appraisal framework should be able to reflect this and enable policies that improve the quality of IVT to be appraised using monetised evidence. This is not currently the case due to the lack of a practically implementable framework and data collection protocols that would guide suitable efforts to be consistent and comparable. Without such enhancements to methodologies and practices, appraisal of infrastructural projects and transport policies risk inaccurate outcomes, resulting in suboptimal effectiveness, inefficient (public) resource allocation and missed opportunities in driving transport sector sustainability.

The goal of this PhD project is to improve the transport appraisal practice, by proposing extensions to modelling framework and data collection practices to explicitly consider and monetise the impacts of the productive use of travel time. The expected outcomes should allow, amongst others, to account for different types of travel time use while also accommodating heterogeneity in behaviour. Towards this end, the research should be open to novel modelling paradigms, especially agent-based modelling, as well as emerging data collection approaches based on mobile devices that combine survey mechanisms and sensing technologies or sentiment analysis, for evidence gathering or validation.

The successful candidate should have a high level of motivation for econometrics, transport economics and data analysis. Applicants should have a strong background in a numerate discipline such as engineering, applied mathematics or quantitative geography with a 1st class honours degree at undergraduate level. The successful candidate will receive training in travel demand modelling methods, transport economics and planning, data analysis and coding. It is also expected that the successful candidate will have the opportunity to engage regularly with the UK Department of Transport, who will co-sponsor this studentship opportunity.

Funding to cover tuition fees at the level of Home students and a living stipend will be sought in open competition within Imperial College London – both through Civil Engineering departmental scholarships and through the LISS Doctoral Training Programme.

Interested candidates should contact Prof. Aruna Sivakumar (a.sivakumar@imperial.ac.uk) for further information.