TRINITY COLLEGE DUBLIN
COLÁISTE NA TRÍONÓIDE, BAILE ÁTHA CLIATH
THE UNIVERSITY OF DUBLIN

Centre for Transport Research and Innovation for People

Department of Civil, Structural and Environmental Engineering School of Engineering

Examining the potential impacts of introducing a cap-and-share scheme in Ireland

David McNamara and Brian Caulfield

Research Objectives

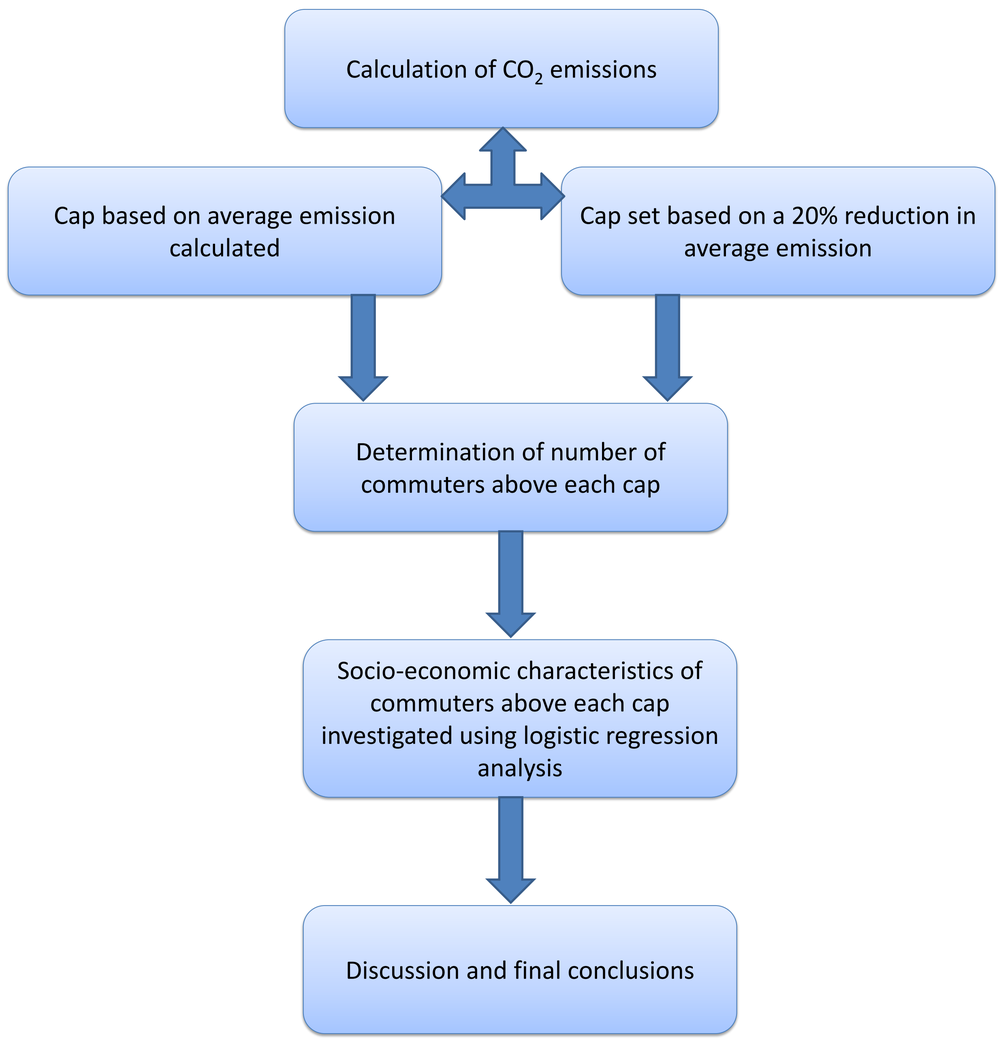
This paper examines some of the potential impacts of introducing a cap and share scheme in Ireland, whereby a cap or limit is placed on national CO_2 emissions and individuals are allocated an annual CO_2 allowance. The research presented in this paper focuses on travel-to-work trips specifically. CO_2 emissions for these annual work trips are calculated and a cap is determined based on these results. The objective is to determine the socio-economic characteristics of individuals who would fall above a potential cap on emissions due to their travel behaviour.

What is cap-and-share?

Cap-and-share schemes set a limit on the quantity of GHG's which can be emitted in an economy annually. This cap is enforced by issuing permits to GHG emitters in the economy. If an entity exceeds their allowance they can purchase permits from entities that have a surplus. This creates a market for GHG's which is operated and regulated by government or an independent authority. A cap can be set upstream enforcing a limit on the importers or CO_2 such as oil refineries or fuel importers or downstream on the end users of CO2. This research studies the effects of enforcing a downstream cap on an important group of end users of CO_2 – commuters.

Methodological Approach

The flow chart below describes the stages used to complete the project.



Results

The analysis yielded a number of interesting results:

- The majority of commuters who travel less than 10km regardless of the mode of transport used would be under a cap based on average emissions and a cap lowered by 20%. These individuals account for over 50% of trips
- The age profile of the largest group above the cap is 25-34 year olds.
- Males are more likely to fall above the cap than females across all four models estimated in the paper, particularly in Dublin
- Largest group above the cap are commuters who own two vehicles
- The largest group likely to be above the cap in all four models are couples with dependent children both in Dublin and nationally
- A national cap based on average emissions finds that only three categories of employment would be below a cap. These are higher professionals, lower professionals and non-manual workers are likely to be below a cap
- Number of commuters above the cap across each mode is

Figure 1: Annual trips above cap in Dublin city

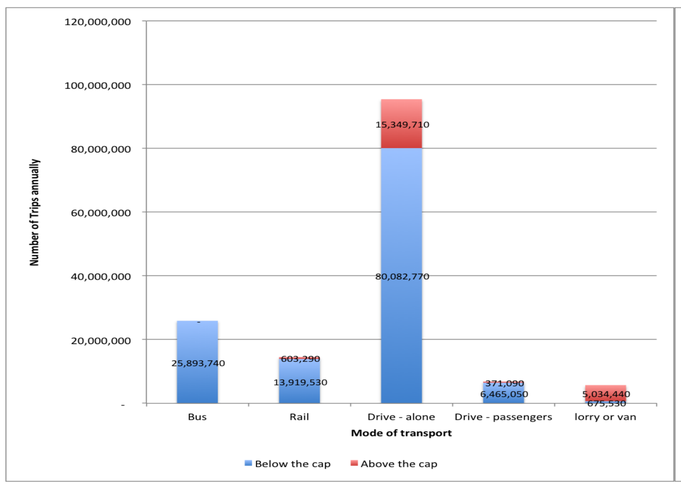
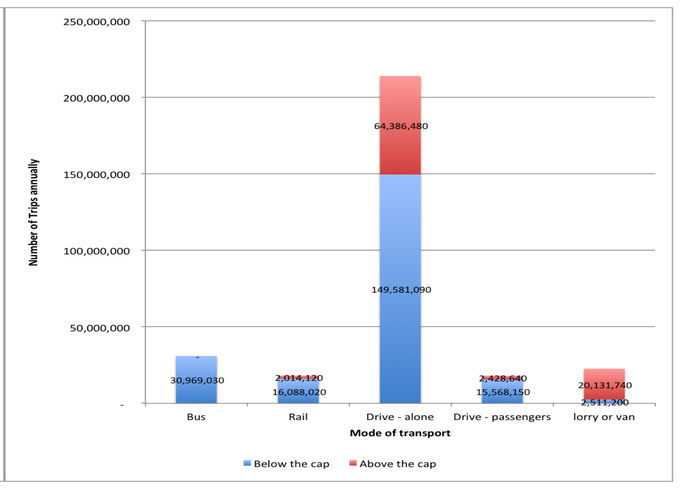


Figure 2: Annual trips above cap nationally



Conclusions and Recommendations

- One of the benefits that a downstream cap and share scheme policy, as presented in this paper, has over these other policies is that at the it uses tangible and financial benefits and costs to encourage behavioural change
- Larger families and those constrained to using a car as their primary mode of transport are the socio-economic groups most significantly affected by the introduction of a cap, particularly in rural areas les well served by public transport
- Implementing a cap and share scheme like the one proposed in this paper has a number of obstacles and further research needs to be conducted in this area. One of the main technical barriers to implementing this scheme is to obtain a reliable, accurate and cost effective method of collecting information on individuals' trips to measure the emissions per individual.
- With this in mind future research will need to determine the potential equity effects of the transfer of wealth created by a cap and share scheme and the merits of introducing a Dublin only cap as opposed to a national cap based on the above findings

Contact details:

Centre for Transport Research and Innovation for People (TRIP), Department of Civil, Structural and Environmental Engineering, Trinity College Dublin, Dublin 2, Ireland

David McNamara, PhD Researcher Phone: 353 1 896 2537 Email: mcnamadg@tcd.ie