Voluntary Travel Behaviour Change programs in Australia – impacts, evaluations and predictions

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What is VTBC?

- Voluntary programs aimed at assisting individuals to reduce their use of the car
- May encourage mode shift, trip chaining, or other behaviours
- Needs to be tailored to fit characteristics of participants
- Meeting the needs of a sizeable minority of Australian urban households

What is VTBC?

- Voluntary programs aimed at assisting individuals to reduce their use of the car
- May er… behavi…
- Needs … particip…
- Meeting the needs of a sizeable minority of Australian urban households

General objective for today: reduce GHG emissions from transport:

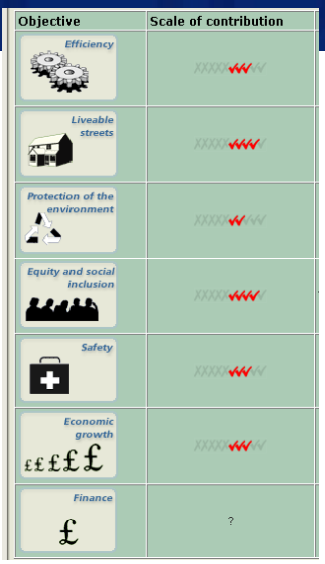
In practice: reduce VKT (or growth in VKT, i.e. reduce per capita VKT)

Sustainable (urban) transport (Leeds 2002)

- A sustainable transport and land use system
  - provides access to goods and services in an efficient way for all inhabitants of an urban area
  - protects the environment, cultural heritage and ecosystems for the present generation
  - does not endanger the opportunities for future generations to reach at least the same welfare level as that of the present generation
    - including the welfare derived from the natural environment and cultural heritage

Sustainable transport objectives (Leeds)

- economic efficiency
- liveable streets
- environmental protection
- equity, social inclusion and accessibility
- safety and security
- economic growth
- finance
- practicability
- intergenerational equity



www.konsult.leeds.ac.uk

Australian national initiative on VTBC

- VTBC as a part of Travel Demand Management

TDM is intervention (excluding provision of major infrastructure) to modify travel decisions so that more desirable transport, social, economic and/or environmental objectives can be achieved, and the adverse impacts of travel can be reduced (Austroads 2002)

Australian national initiative on VTBC

- National Travel Behaviour Change Program (NTBCP)
  - large-scale implementation of VTBC in Melbourne, Brisbane, Canberra and Adelaide
  - to achieve a substantial cut in GHG emissions
  - and lead to reductions in other impacts of car usage, e.g.
    - noise and air pollution
    - congestion
    - car operating costs
    - vehicle accidents
  - whilst also leading to a range of positive health benefits

Australian national initiative on VTBC

- NTBCP tools include
  - school travel planning guides
    - to encourage active travel by children on their ways to/from school
  - quality 'fit for purpose' information resources to support VTBC initiatives
  - 'TravelSmart' maps
    - highlighting public transport and cycling routes
  - business case software
    - help employers assess the costs of how their staff travel to, from & for work
  - pre-matching carpooling software
  - initiatives at the municipal level
    - such as the community 'TravelSmart' advisor

VTBC Evaluation: the consensus

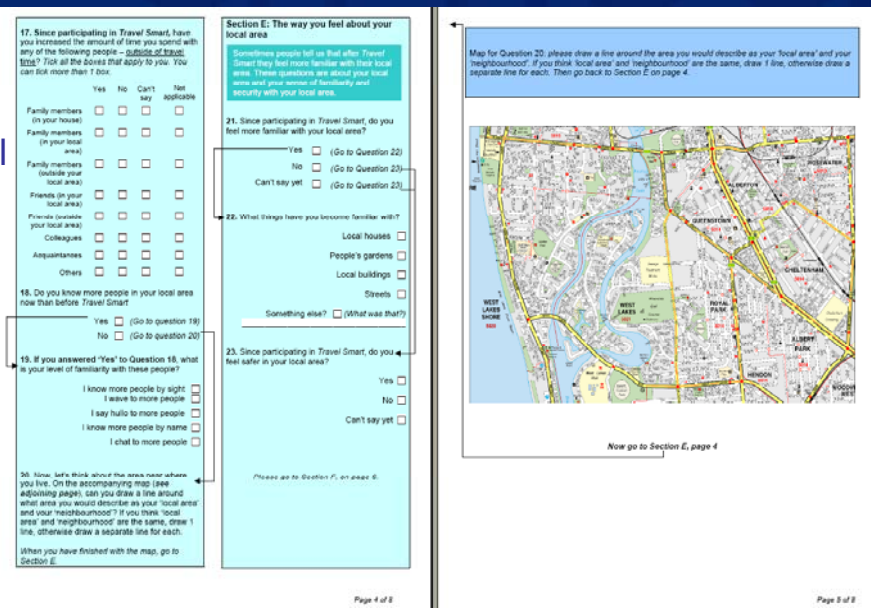
- proper evaluation of the behaviour change outcomes of VTBC projects is essential
- conduct *independently* of the VTBC program
- measure changes in travel behaviour
  - cover the target population, not just program participants
  - include a control group unaffected by the VTBC program
- parameters to be studied should include
  - trip rates, VKT, travel times by different modes, and choice of travel mode

VTBC Evaluation: developing methodologies

- Sydney (Stopher @ ITLS)
  - 'before and after' (panel) survey approach, to probe changes in travel behaviour
    - primary (but not sole) metric of change being VKT
  - suitable control groups
  - employ a range of survey instruments
  - randomly sample households from the participant and control groups
  - set the initial survey sample size
  - analyse results and report

VTBC Evaluation: developing methodologies

- Adelaide – 'non-travel' impacts
  - to *complement* travel impact studies
  - social, health, economic factors



17. Since participating in *Travel Smart*, have you increased the amount of time you spend with any of the following people – outside of travel time? *Tick all the boxes that apply to you. You can tick more than 1 box.*

	Yes	No	Can't say	Not applicable
Family members (in your house)	☐	☐	☐	☐
Family members (in your local area)	☐	☐	☐	☐
Family members (outside your local area)	☐	☐	☐	☐
Friends (in your local area)	☐	☐	☐	☐
Friends (outside your local area)	☐	☐	☐	☐
Colleagues	☐	☐	☐	☐
Acquaintances	☐	☐	☐	☐
Others	☐	☐	☐	☐

18. Do you know more people in your local area now than before *Travel Smart*

Yes ☐ *(Go to question 19)*
No ☐ *(Go to question 20)*

19. If you answered 'Yes' to Question 18, what is your level of familiarity with these people?

I know more people by sight ☐
I wave to more people ☐
I say hullo to more people ☐
I know more people by name ☐
I chat to more people ☐

20. Now, let's think about the area near where you live. On the accompanying map (see adjoining page), can you draw a line around what area you would describe as your 'local area' and your 'neighbourhood'? If you think 'local area' and 'neighbourhood' are the same, draw 1 line, otherwise draw a separate line for each.

When you have finished with the map, go to Section E

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Section E: The way you feel about your local area

Sometimes people tell us that after *Travel Smart* they feel more familiar with their local area. These questions are about your local area and your sense of familiarity and security with your local area.

21. Since participating in *Travel Smart*, do you feel more familiar with your local area?

Yes ☐ *(Go to Question 22)*
No ☐ *(Go to Question 23)*
Can't say yet ☐ *(Go to Question 23)*

22. What things have you become familiar with?

Local houses ☐
People's gardens ☐
Local buildings ☐
Streets ☐
Something else? ☐ *(What was that?)*

23. Since participating in *Travel Smart*, do you feel safer in your local area?

Yes ☐
No ☐
Can't say yet ☐

(Please go to Section E on page 6)

Map for Question 20: please draw a line around the area you would describe as your 'local area' and your 'neighbourhood'. If you think 'local area' and 'neighbourhood' are the same, draw 1 line, otherwise draw a separate line for each. Then go back to Section E on page 4.

Now go to Section E, page 4

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Predicting the impacts of new VTBC programs

- Need for modelling
- What form should (or could) a VTBC model take?
  - one approach, microsimulation modelling

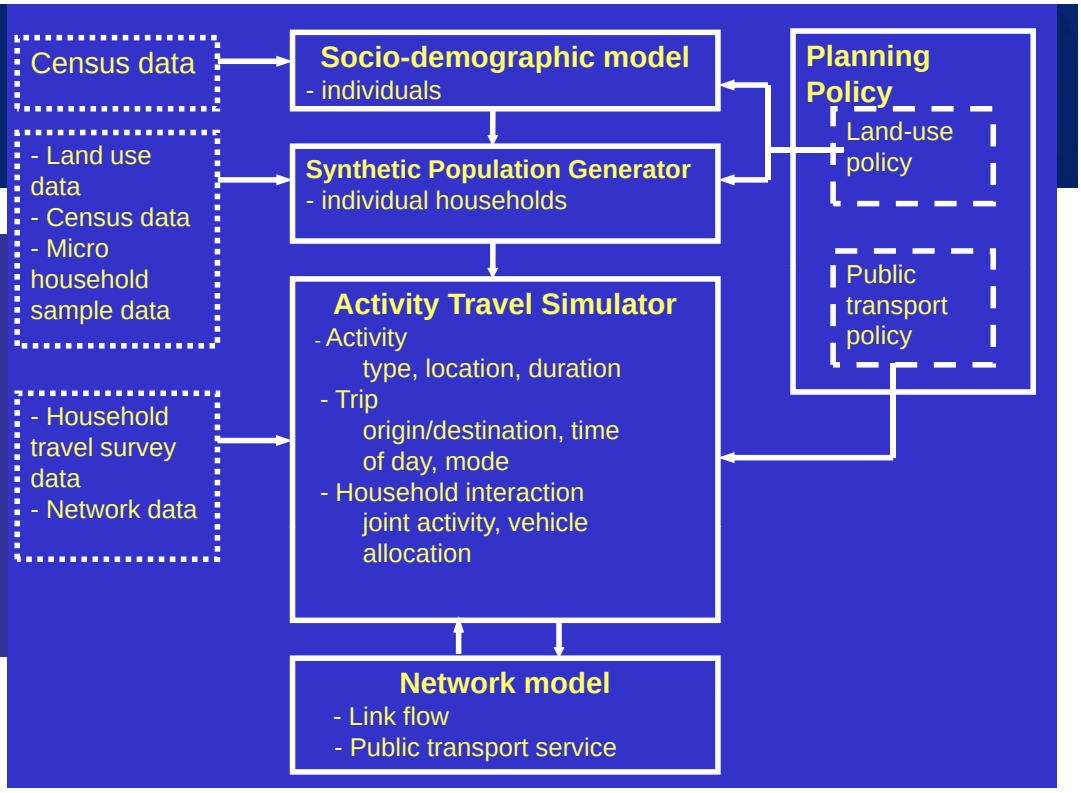
Microsimulation models of travel demand

- Travel behaviour is complex
  - TDM measures, transport-land use interaction are multi-faceted
  - may need ‘micro-level’ analysis
- Microsimulation models consider an individual’s travel behaviour
  - resulting from participation in sequence of activities
  - separated in space and time
  - interactions with others e.g. other household members
  - attempt to replicate ‘travel/activity’ survey data
  - may be used to build up ‘complex’ system behaviour from individuals’ behaviours

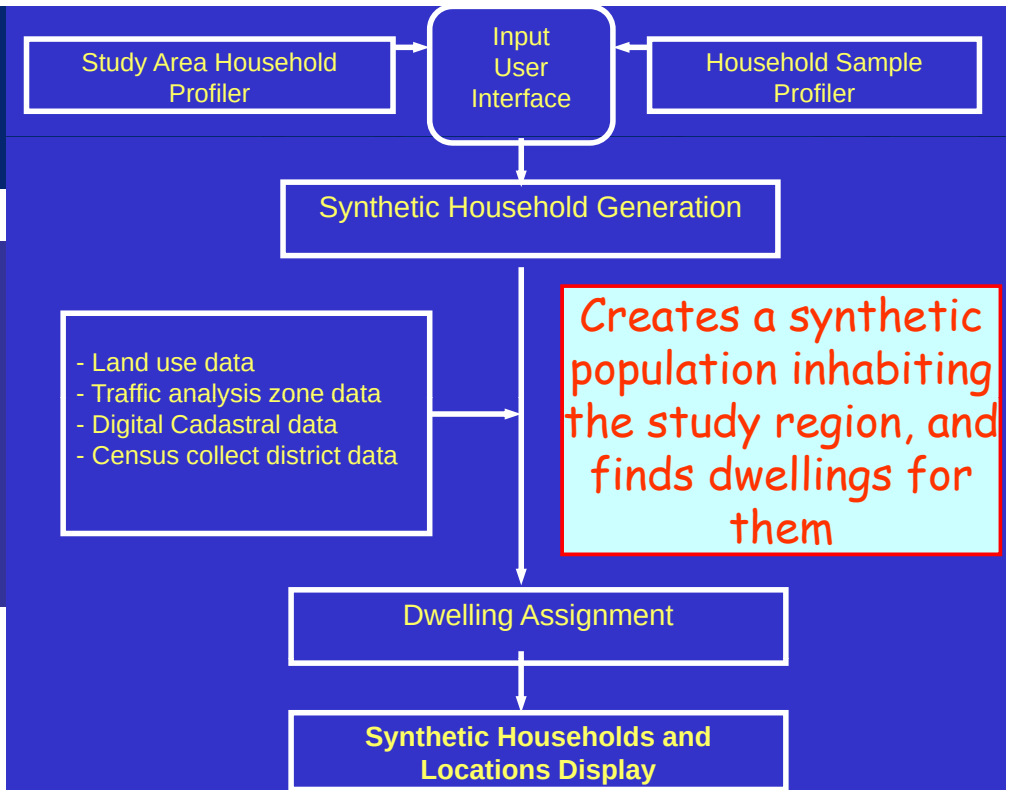
Microsimulation modelling approach

- Consider individuals in households
- Model responsive to
  - transport networks and systems
  - land use patterns and densities
  - socio-economic and demographic characteristics
- GIS framework underpins model
  - multiple spatial databases
- Monte Carlo simulation
  - modelling based on large number of ‘simple’ individual decisions that generate a complex system outcome

A general structure



Synthetic household generator



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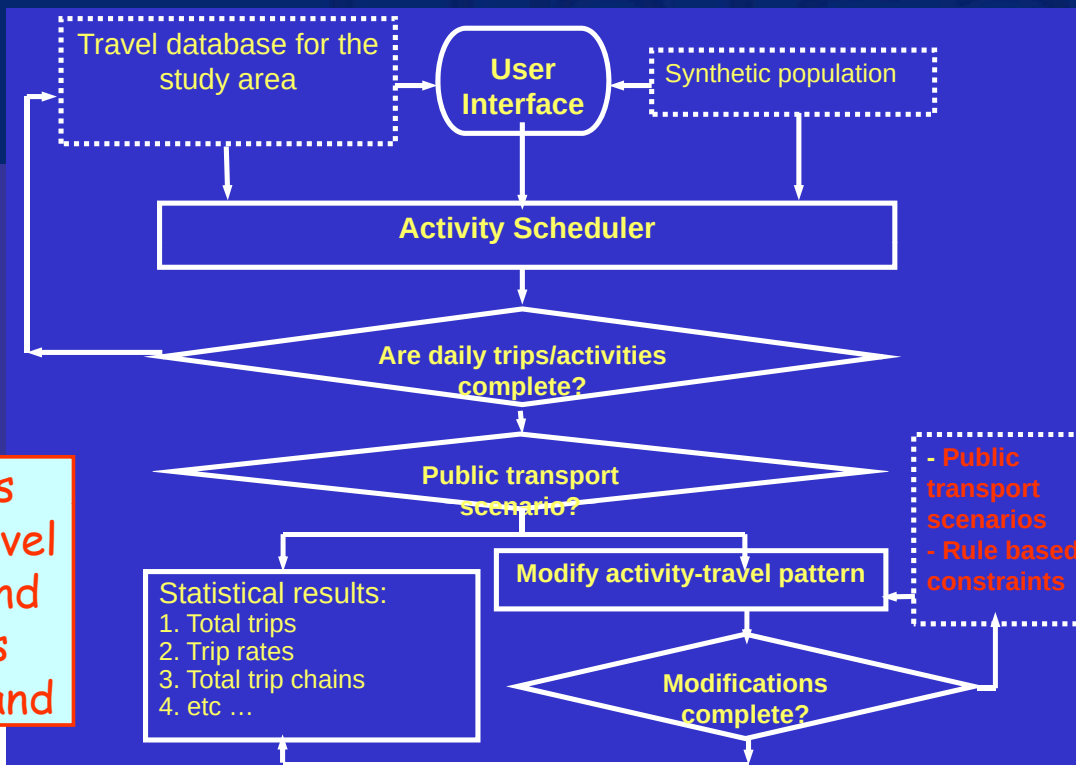
Travel-activity simulator

Generates activity-travel patterns and forecasts travel demand



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Discussion and conclusions

- Heightened expectations
  - some planners see VTBC as a panacea
- But evidence says ‘no’
  - voluntary participation
    - ‘3 in 10’
    - different personal characteristics and attitudes?
- Unreasonable to ‘scale up’ results to entire population

Discussion and conclusions

- Significant minority finding benefits from VTBC
  - not only or always related to transport!
    - local economy, environment, safety, health, personal well-being, education, social interaction, …
    - agencies other than transport departments becoming interested …
- 3 key research challenges
  - measurement tools for small scale changes in travel behaviour
  - assess and measure impacts beyond travel behaviour
  - models for estimating impacts of new VTBC programs