

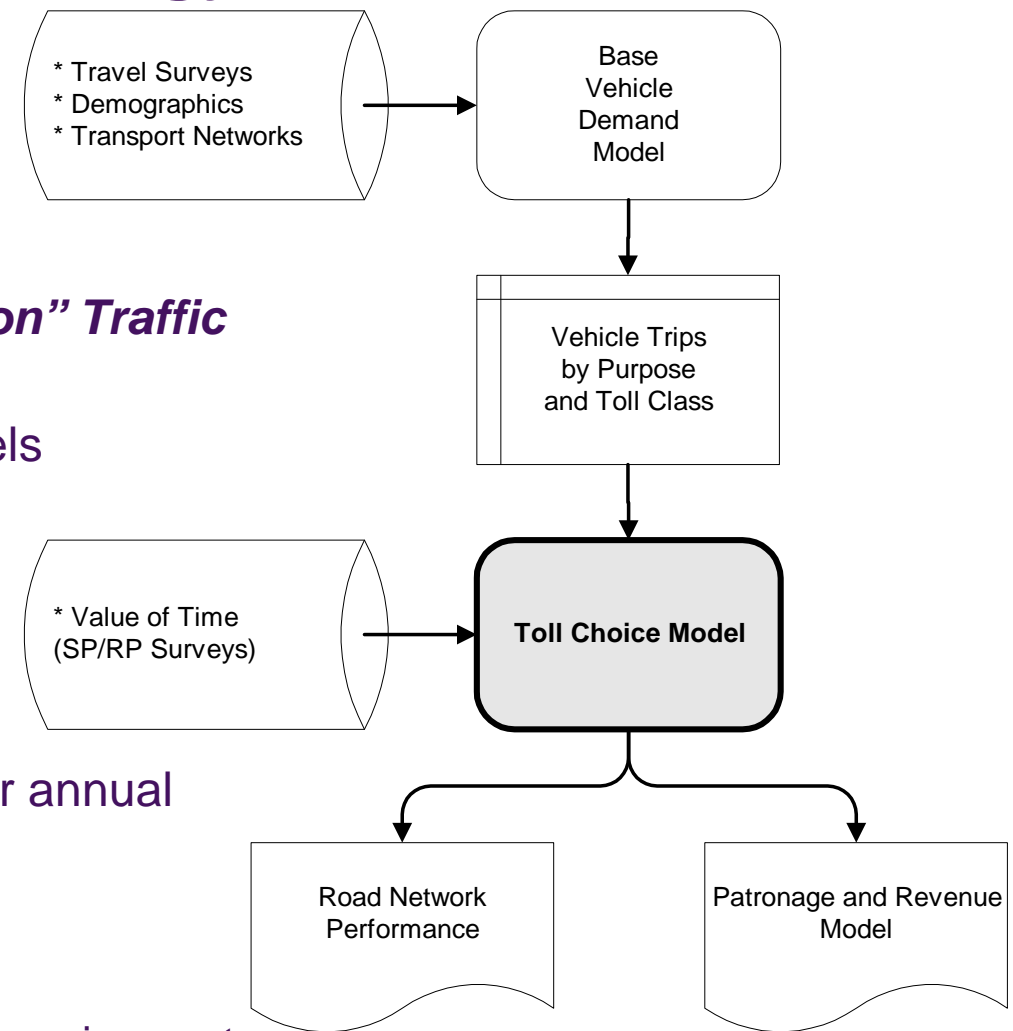


EMME Users' Group Meeting

Recent toll patronage forecasting using EMME

27 May 2011






General Modelling Methodology

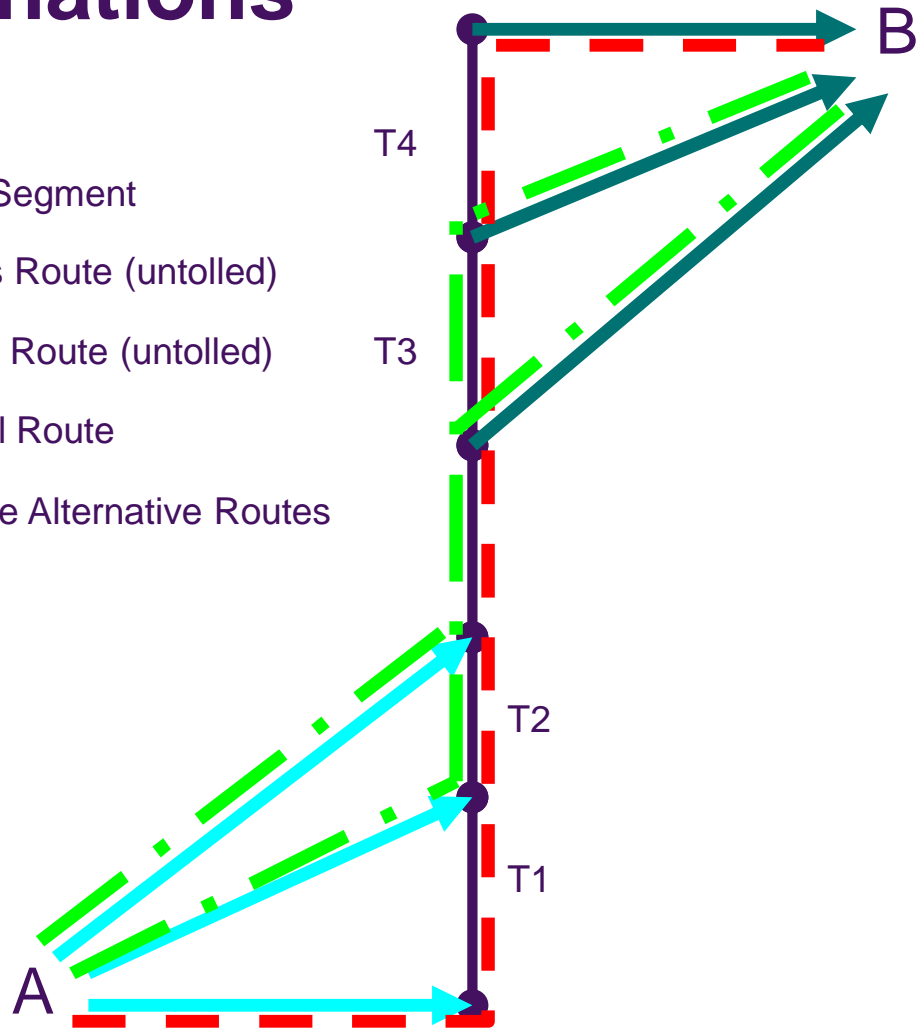


Toll choice model is typically an “add-on” Traffic Assignment :

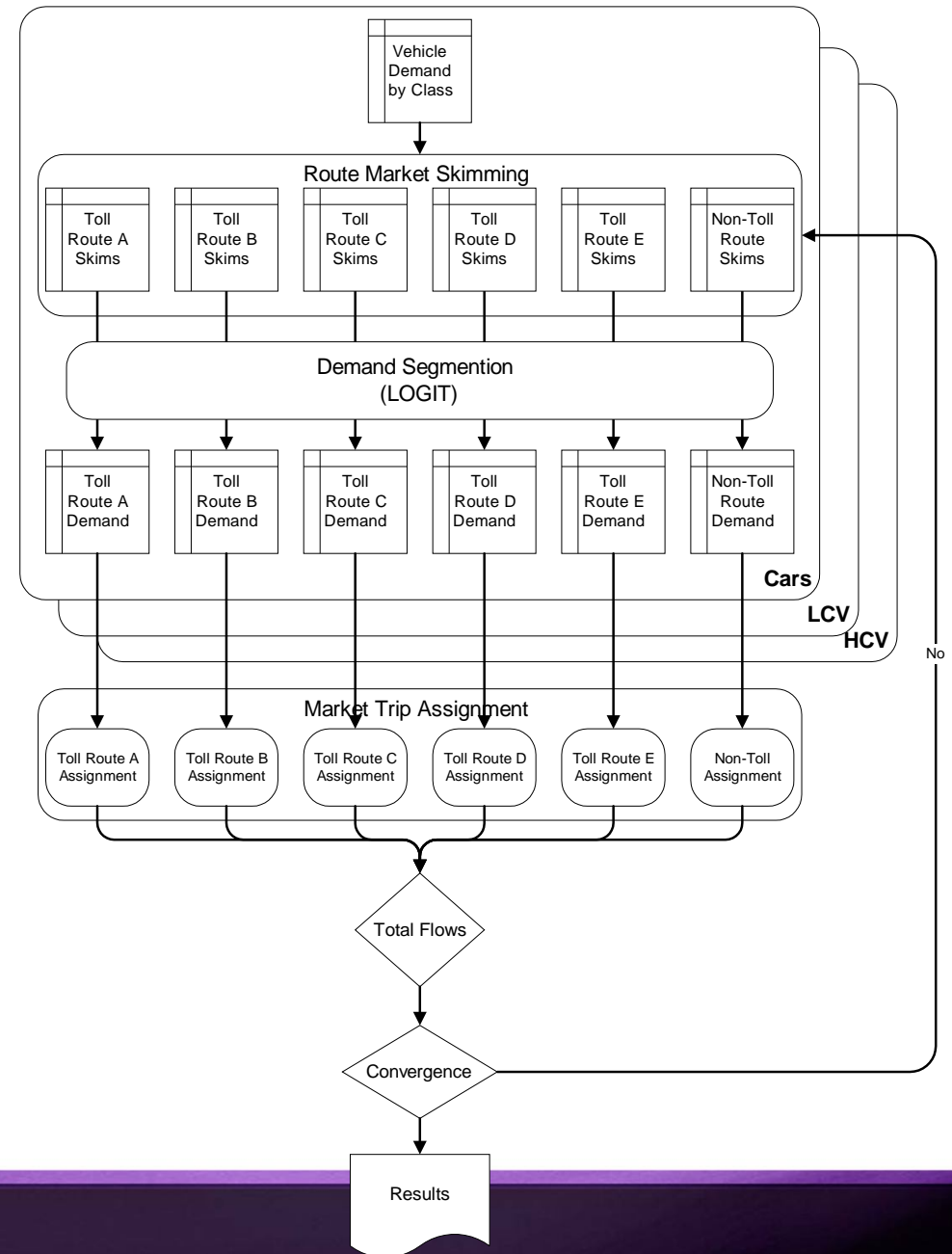
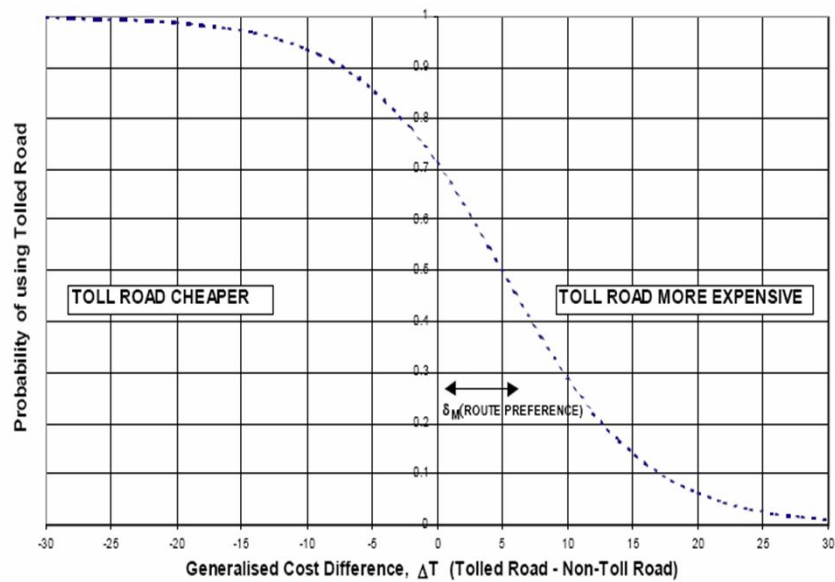
- ➔ Vehicle demand from other models
- ➔ More detailed route assessment
- ➔ One or more toll facilities
- ➔ Can be project specific
- ➔ Projections for average weekday
- ➔ Demands expanded externally for annual revenue and patronage
- ➔ Two general approaches:
 - Logit demand segmentation
 - Distributed VOT MC equilibrium assignment

Route combinations

-  T3 Tolled Segment
-  Access Route (untolled)
-  Egress Route (untolled)
-  Full Toll Route
-  Possible Alternative Routes



Logit-based demand segmentation model



Logit based demand segmentation

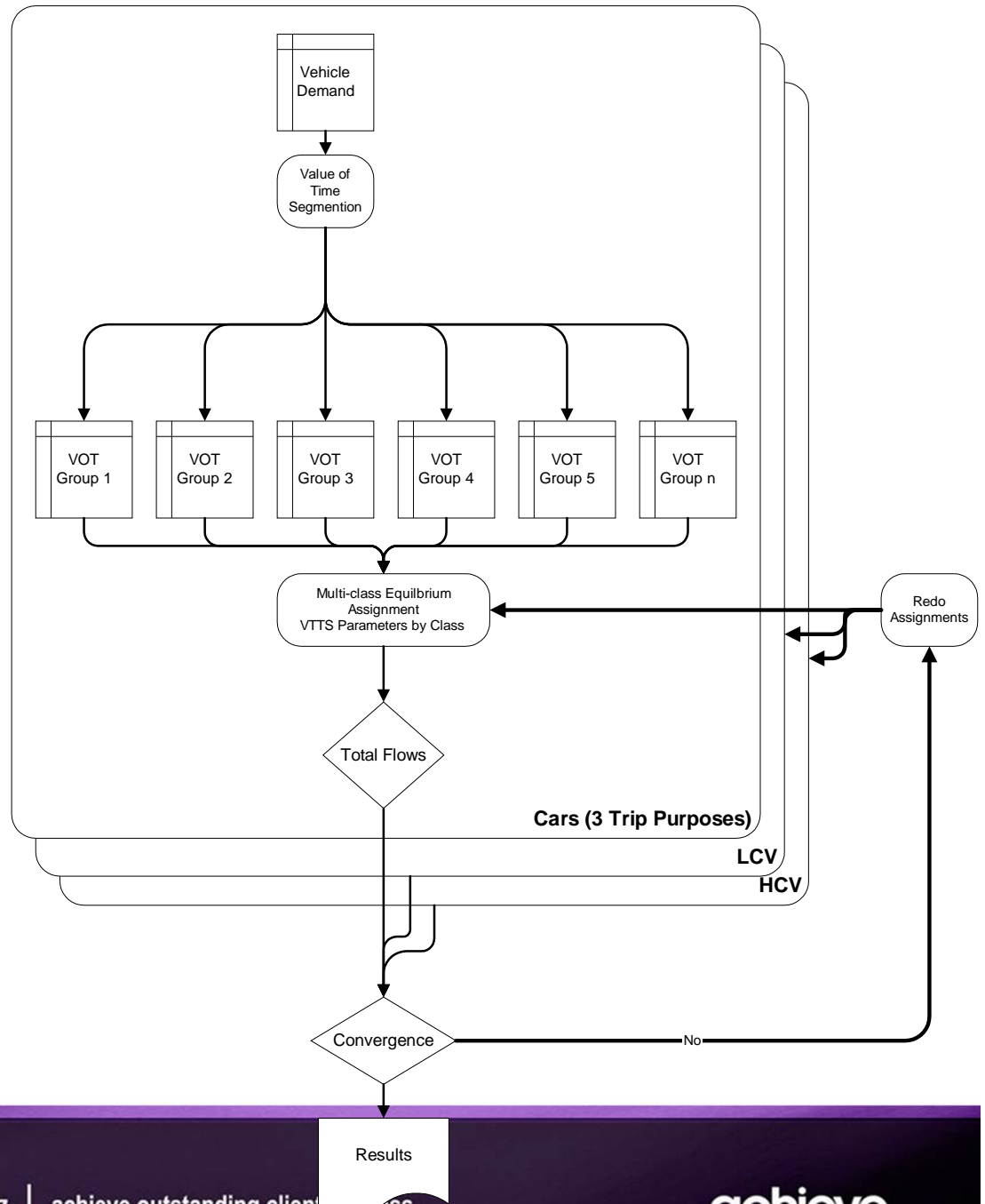
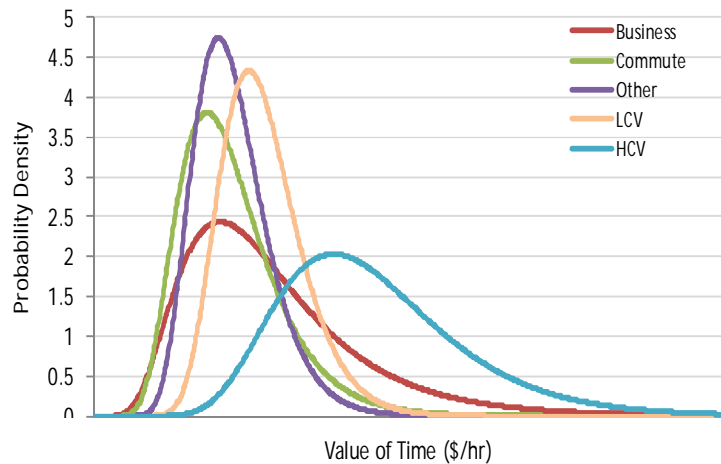
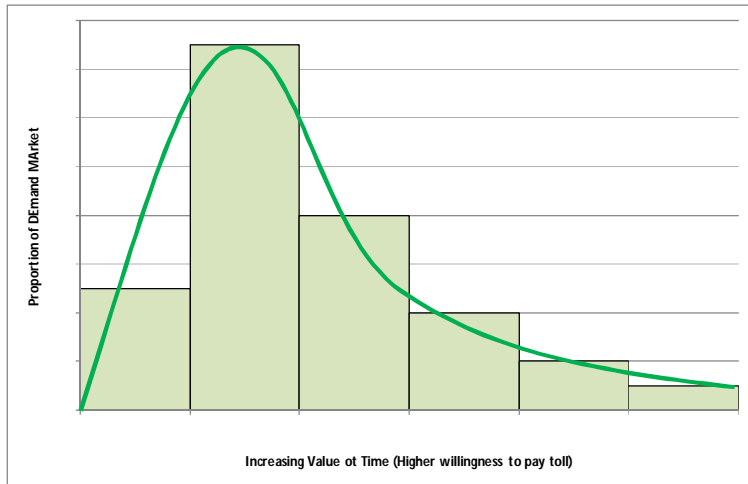
Benefits of logit based demand segmentation assignment:

- Most common method in Australian context
- Strong financial market acceptability
- Can address toll capping or user budget limits

Disbenefits of the logit based demand segmentation assignment:

- Skimming and assignment to toll routes can be complex and error prone
- Limitations on toll route and vehicle class markets combinations
- Often used project specific application
- Difficult to adopt for general city wide use or use for many toll facilities

Distributed VOT MC Assignment



Distributed VoT multi-class assignment

Benefits of Distributed VOT multi-class equilibrium assignment approach:

- All possible toll route combinations are assessed at similar level of detail.
- Use of transport software built-in equilibrium assignment algorithms
- Potential for reduced model run times and more stable outputs
- Can address many toll roads together
- Model could be applicable for general planning use
- Less potential for user specification error

Disbenefits of Distributed VOT multi-class equilibrium assignment approach:

- Less commonly used and possibly not as well accepted
- Cannot handle toll capping easily
- Number of classes may limit VOT segmentation
- Requires more innovative SP/RP survey analysis

Conclusions

- Toll roads are an increasing feature of large Australian city road networks
- Methods for patronage forecasting (i.e. for bid teams) have been complex and unwieldy
- Distributed VOT MC assignment techniques may be adaptable for general planning agency use