How much choice is enough?
Comparing the value of choice for different activities

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Outline

- Accessibility modeling
- Aims
- Method
- Results thus far
- Future work

Accessibility

- Ability to access opportunities
  - Capability
  - Mobility
  - Opportunity
- Modes
- Activities

\[ A_i = \sum_j A_{ij} \]

Origin
Destination
Abley & Holden (2013)

Accessibility

- Ability to access opportunities
  - Capability
  - Mobility
  - Opportunity
- Modes
- Activities

\[ A_i = \sum_j C_{ij} X_j \]

Origin
Destination
Impedance
Opportunities
Abley & Holden (2013)

Aims

- Develop saturation functions using NZ data:
  - New Zealand Household Travel Survey (NZHTS)
  - Destinations from zenbu.co.nz
    - Christchurch, Dunedin, Hamilton

Method overview

1. Extract trips from NZHTS
2. Analyse trip destination vs. potential destinations
3. Review travel characteristics by activity, develop models
Data description

- NZHTS:
  - Trips
  - Chains 30min
- Activities:
  - Education (Age)
  - Shopping
  - Employment
- Zenbu.co.nz destinations
  - Manually classified

Extraction & Analysis

- Home-Destination pairs
- Calculate destinations “forgone” - shorter travel time

Example Output

- Decay rate varies:
  - Destinations available
  - Substitutable...non-competing

Raw Results

- Employment (Opportunities)
  - Prechool
  - Primary/Intermediate School
  - Secondary School
  - Tertiary Education
  - Medical/dental
  - Personal business
  - Recreational
  - Shopping
  - Social visits

Results

- Employment (Opportunities)
  - Prechool
  - Primary/Intermediate School
  - Secondary School
  - Tertiary Education
  - Medical/dental
  - Personal business
  - Recreational
  - Shopping
  - Social visits

- Decisions available
- Substitutable...non-competing

Results

- Employment (Opportunities)
  - Prechool
  - Primary/Intermediate School
  - Secondary School
  - Tertiary Education
  - Medical/dental
  - Personal business
  - Recreational
  - Shopping
  - Social visits

- Decisions available
- Substitutable...non-competing
Results

Destinations:
- Sparse
- Specific

Preschool
- Primary/Intermediate School
- Secondary School
- Tertiary Education

Percentage of trips forgone (relative to 95th percentile trip)

Results

Destinations:
- Dense
- Substitutable

Preschool
- Primary/Intermediate School
- Secondary School
- Tertiary Education

Percentage of trips forgone (relative to 95th percentile trip)

Results

Supplied:
- Employment (Opportunities)
- Primary/Intermediate School
- Secondary School
- Tertiary Education
- Medical/dental
- Personal/business
- Recreational
- Shopping
- Social visits

Results

Consumed:
- Differentiated

Preschool
- Primary/Intermediate School
- Secondary School
- Tertiary Education
- Medical/dental
- Personal/business
- Recreational
- Shopping
- Social visits

Results

Consumed:
- Substitutable

Preschool
- Primary/Intermediate School
- Secondary School
- Tertiary Education
- Medical/dental
- Personal/business
- Recreational
- Shopping
- Social visits

What next?
- Lots of future work!
- Account for opportunities
- Disaggregate activity classifications
- Clustered destinations
- Urban form effects
- Travel basis
- Demography
- Travel mode
- Supply/demand literature
Conclusions

- Few people use their closest destination
- **But** half of all trips use closest 20% of destinations
- Value of choice varies:
  - Destinations where traveler is important
  - Differentiated destinations (non-competing)
  - Substitutable destinations
- Closer to developing saturation functions for NZ

To find out more

- Contact me: 
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- Read about the project in our newsletter
  www.abley.com/newsletters
- Learn more about us
  www.abley.com