Drivers of social interaction: exploring the effect of modality styles on face-to-face contacts

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Research Background
- Importance of social interactions
- Car use: environmental vs. social sustainability
- Alternative to car dependent: multimodality

Research Question
- How individuals' social interactions with different companions are related to their modality styles in the context of a developing country, with a family oriented and collectivist culture (Beijing, China)?

Data
"Daily Activity and Travel Survey of Beijing, 2012", by Peking University
- 709 respondents
- Socio-economic characteristics
- One-week's activity diary data
- Spatial attributes: Points of Interest (POI) data

Dataset for this study
- 410 commuters
- 2063 out-of-base non-work activity episodes
- 2870 days (2020 commute days, 850 non-commute days)
- Solo activities and 3 types of social contacts: family members, friends, colleagues

Face-to-face interaction with different companions
Measurement: daily level, non-work activities, out-of-base, total duration (Figure 1)
- More solo activities and interactions with colleagues in commute days
- Interaction durations are longer in non-commute days

Activity type with different companions (Figure 2)
- Solo: personal, eating-out and shopping
- Family: eating-out/shopping/personal, more household affairs than other companions
- Friends: eating-out, social and recreational activities
- Colleagues: eating-out

Distribution of modality styles
- Modality: monomodality as exclusively using a single mode for more than 90% of trips in the week; multimodality as the use of at least two modes
- Habitual modes: most frequently used mode (car, public transport, active modes)
- 6 subgroups (Figure 4)

Model Results
- Rho Correlations between the interactions with different companions
  Commute Day: Family member ↔ Friends ↔ Family members
  Non-commute day: not significant
- Modality styles (Mono Car users as reference category)
  Commute Day: Mono PT ↔ family member (-), friends(-)
  Mono Act ↔ friends (-)
  Multi PT ↔ family member (-), friends(-)
  Multi Act ↔ family member (-), friends(-)
  Multi Car/solo, interaction with colleagues: no significant difference
  Non-commute day: Mono PT ↔ family members (-)
  Multi Car ↔ family members (+)
  Multi PT ↔ solo activities(+)
  Multi Act ↔ solo activities (+), friends (+)

Work and daily attributes
Day (Friday, Sunday), work durations

Personal and spatial factors
Commute day: Non-commute day:
Female: family members (+)
Male: friends (+)
Higher Educated: colleagues (+)
Married: family(+), friends(-)
Extended household: friends (-), Colleagues (-)
No. of restaurants around home: family (+)
No. of public recreational facilities around workplace: friends (+)

Conclusion
- The influence of modality styles differ across companion types, as well as between commute and non-commute days
- Advantages for car users in commute days, facilitating interactions with family members and friends
- Seemingly Unrelated Regression (SUR)
- Repeated observations for each individual

Further Research
- Trade-off between out-of-base and in-base interactions
- Exploring higher-level orientations or lifestyles: affecting both travel and activity (a latent-class approach)