

Changing Commercial and Goods Travel

Important Trends

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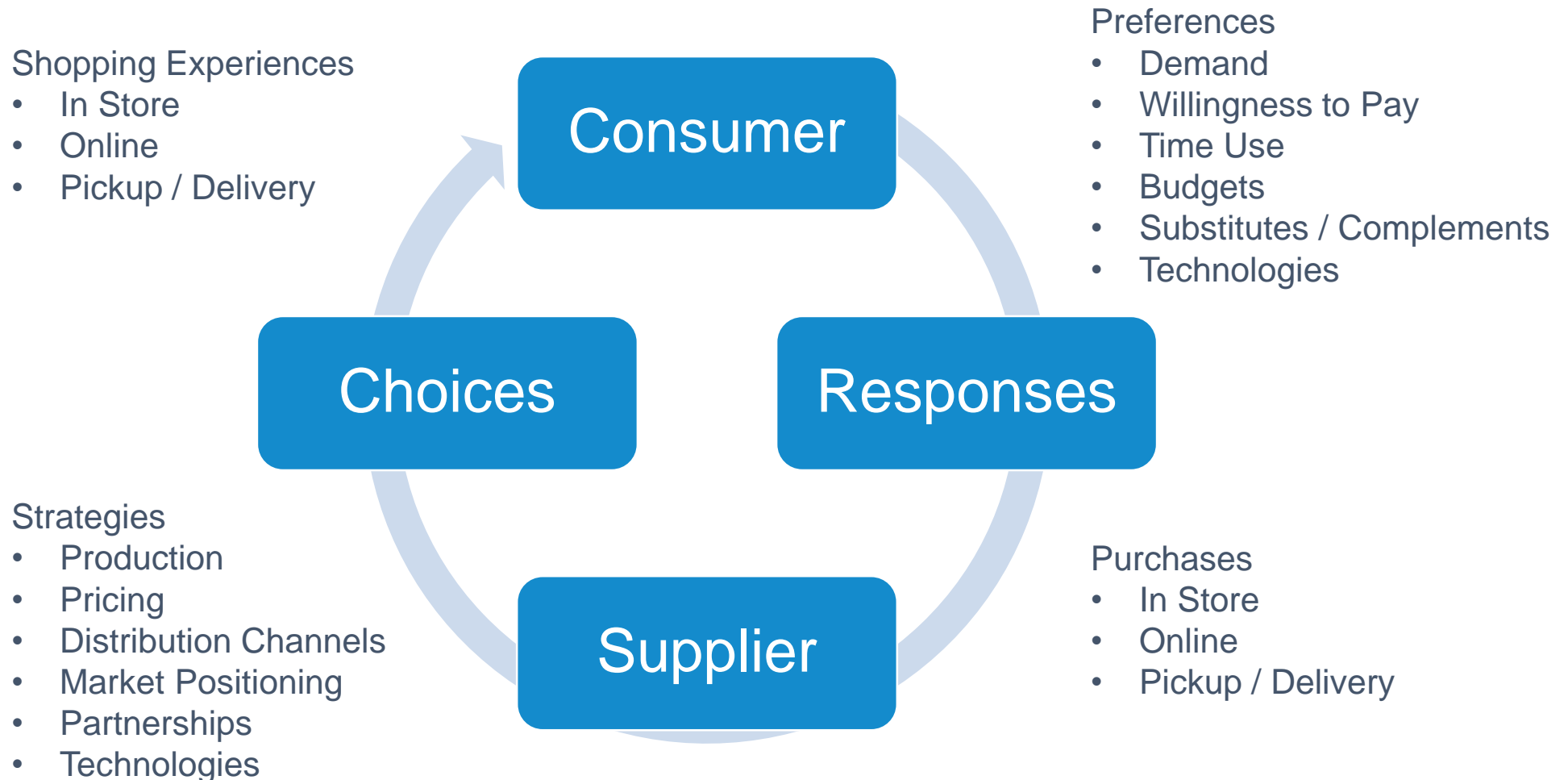
Alison -- Exploring the Household-Based Freight Demand - Travel Activity Nexus

- » Relationship between teleworking and shopping online
 - Do people shop online more when they telework?
 - Receive more deliveries when they telework?
- » Timing of deliveries
 - Attended deliveries (e.g., food deliveries)
 - Daily models do not capture deliveries made on another day, week, or month
- » Shop online + delivery vs. Shop instore + delivery.... Substitution for travel or complement? What about returns?
- » Built environment factors – security of delivery location
- » Demographic factors – income, ethnicity
- » Time use constraints
- » *How should we incorporate these factors into a model of household behavior?*

Monique -- Assessing the Stability of Company Strategies over Time

- » Method to generate measurement data – attitudinal from natural language processing of text, machine learning.
 - Use in behavioral model to predict fleet ownership and preferences for distribution centers--own and operate, mean size in portfolio
 - Strategies may be latent, identifiable via inference
 - Asset ownership, sourcing partners, sales markets, foreign trade
 - Extensions possible: longitudinal analysis for large companies which have change their strategies over time (e.g., fleet ownership).
- » *How should we plan for evolving firm strategies?*
- » *Are the analytical methods transferable to passenger analysis?*

Evolving feedback loop between what consumers want and what suppliers offer



Practitioner's Perspective: Household Tradeoffs

San Diego commercial vehicle model

- » ***Can we tie household service stops and deliveries to auto ownership or out-of-home travel by household members?***
- » Household days, percent of days food, service or package received at home (Weighted 2022 SANDAG Household Travel Survey)

Food	4.8%
Service	6.8%
Package at Home	40.8%
Package at Work	1.9%
Package at Locker	1.1%

Practitioner's Perspective: Household Tradeoffs

San Diego commercial vehicle model

- » ***Model probability of receiving food deliveries, package deliveries, or service stops***
- » Positive significant correlation between:
 - **Household size** and **package deliveries**
 - **Income levels** and **packages and services**, but not for food delivery
 - **Age of householders** and **services**
- » Non-significant travel effects of key policy variables
 - Auto ownership (zero-auto, insufficient autos positive but very weak)
 - Home-based tours of all types and as a whole
- » Reconsider results in the light of other possibilities
 - Daily timeframe may not be appropriate ... consider aggregate over multiple days for packages
 - Attended deliveries and service stops ... should see negative correlation with work tours
 - Test teleworking indicator... household level
 - Delivery location security (built form)

Practitioner's Perspective: Business Strategy

San Diego commercial vehicle model

- » Weighted 2022 SANDAG Establishment Survey
- » Establishment use of TNC package and food delivery services (travel diaries)
 - U.S. firms – Instacart, Doordash, UberEats, Postmates, Amazon, etc.
- » TNCs another form of low-cost for-hire goods movement
 - Offers flexibility to many smaller businesses
 - Some drivers switch between working for a delivery service and serving passengers
- » Size of the TNC delivery market in San Diego County
 - **Estimated to be about 60,000 daily trips made by 5,000 drivers using 2022 data. ~ 3.5% of all intra-regional commercial vehicle trips.**

Practitioner's Perspective: Business Strategy

San Diego commercial vehicle model

» Percent of Establishments Using TNCs for Deliveries

Restaurants	33.9%
Retail Stores	7.9%
Other Establishments	1.7%

» Consider

- Growth trajectory for this delivery model? Can we discover corporate strategies?

» Policy concerns about curb space management, congestion

- Geographic-based surcharges to manage congestion?
- Surcharges likely passed on to consumers? Response elasticity?

Group Discussion

Questions for Open Discussion: Consumers

- » How should we incorporate factors into a model of household behavior, such as:
 - Shopping vs. delivery choice sets
 - Asynchronous timing of shopping events and delivery timing
 - Time use constraints
 - Demographic biases in data
 - Built environment attributes
- » What are the real substitutions / tradeoffs?
- » Do we need more information on total household budgets and what they spend on goods, meals, etc.?

Questions for Open Discussion: Suppliers

- » How should we plan for evolving firm strategies?
- » Should we model consumer choice sets and technologies (e.g., delivery options)?
- » How important are supply factors such as asset ownership and operations (e.g., fleet ownership vs. for-hire trucking and TNCs, distribution centers)?
- » How can we better know which trends are ephemeral (e.g., micro-distribution centers, niche tech) and what types of strategies are meaningful?

Questions for Open Discussion: Cross Cutting

- » Are the natural language processing methods of discovering latent strategies and attitudes among firms transferable to passenger analysis?
- » Are there short- and long-term strategies or evolving preferences? Source material?
 - Household Traveler Perspective
 - Public Agency Perspective

Questions for Open Discussion: Cross Cutting

- » Is a co-evolutionary model of commercial travel behavior, integrating consumer preferences and supplier strategies a good idea?
 - Theoretical justification
 - Practical value
- » What properties should such a model have to be valuable for policy and planning analysis?