Understanding and Modeling Complex Travel Behaviors (Focus on Emerging Modes)

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Photo from iStock 1393960783

Evolution of Travel Alternatives

Modes that were there before I was born

Modes that came about after I was born

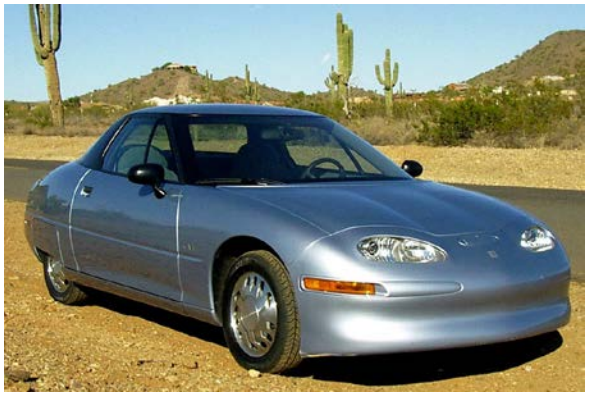
Modes that I might see in my lifetime…

Are These Modes Really New?

Photo from iStock 1170300735

Autopeds were introduced in the 1920s

Electric Vehicles (EVs) are more than a Century Old!



How about the Infrastructure to support them?

How do We Model these Modes?

Frameworks

- Coarse representation (travel flows)
- Fine representation (individual trips)

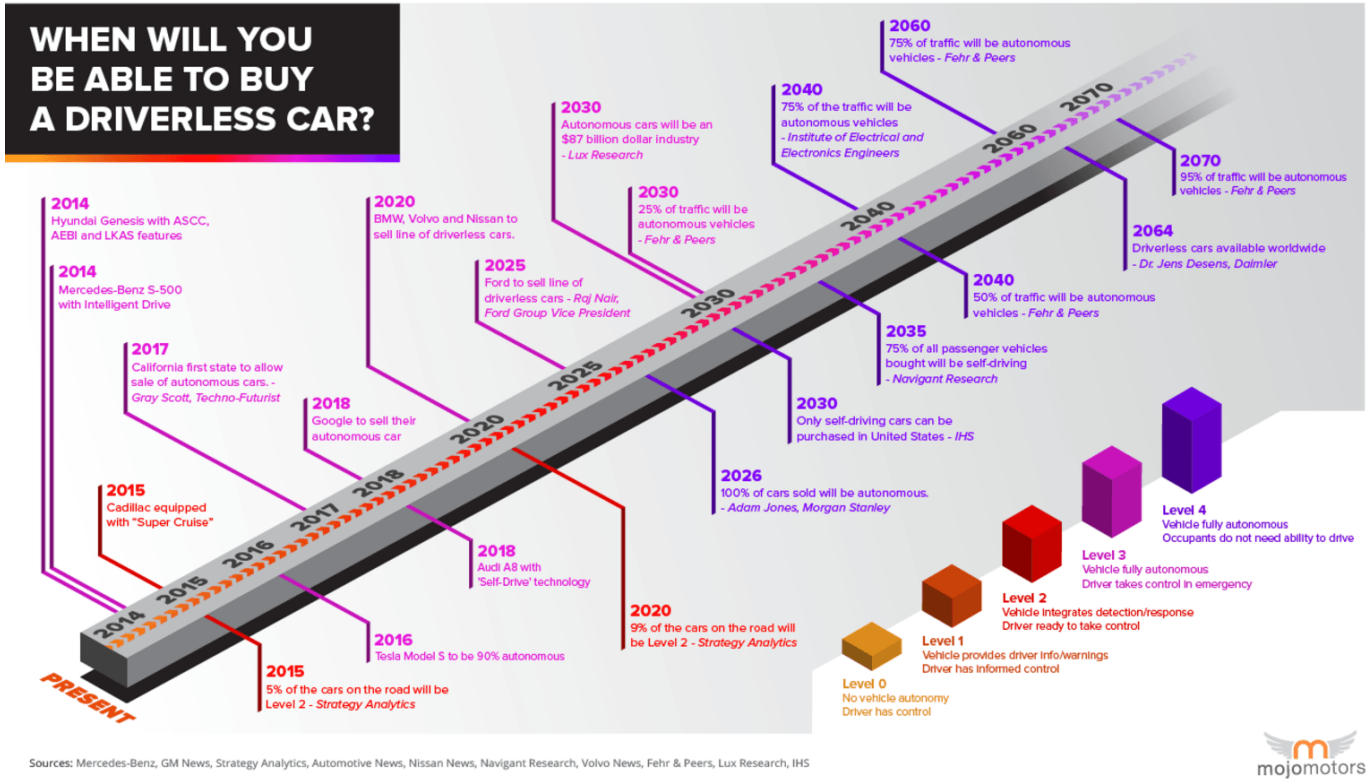
Components

- Transportation network
- Vehicles
- Land use
- People
- Goods

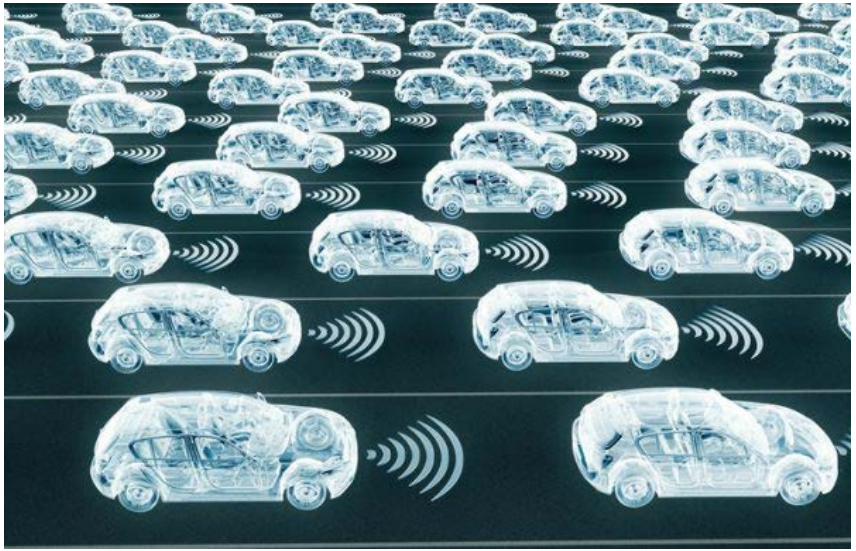
Data

- Collected (i.e., surveys)
- Inferred (location-based data)

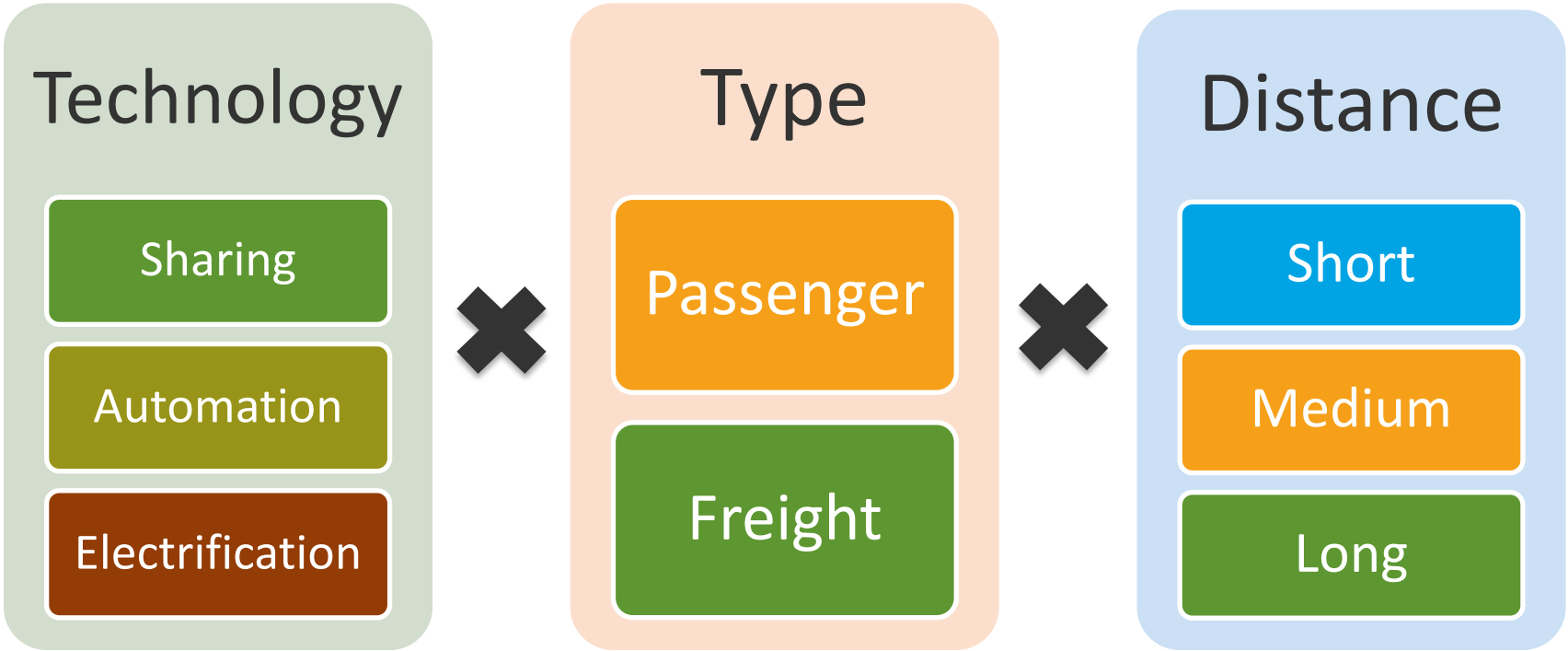
Timeline for Automation



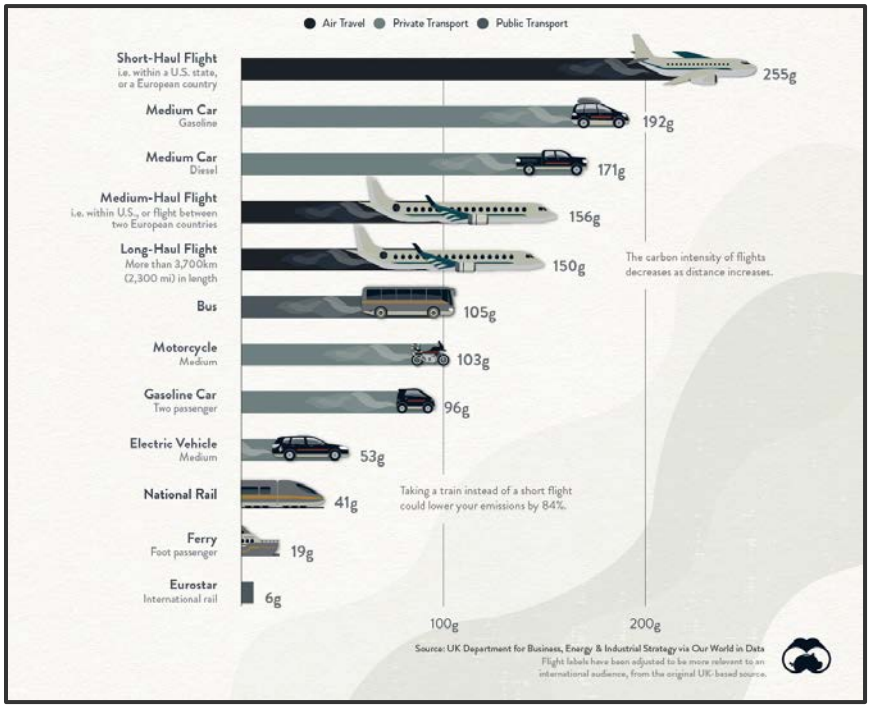
Utopian ⇔ Dystopian Future?

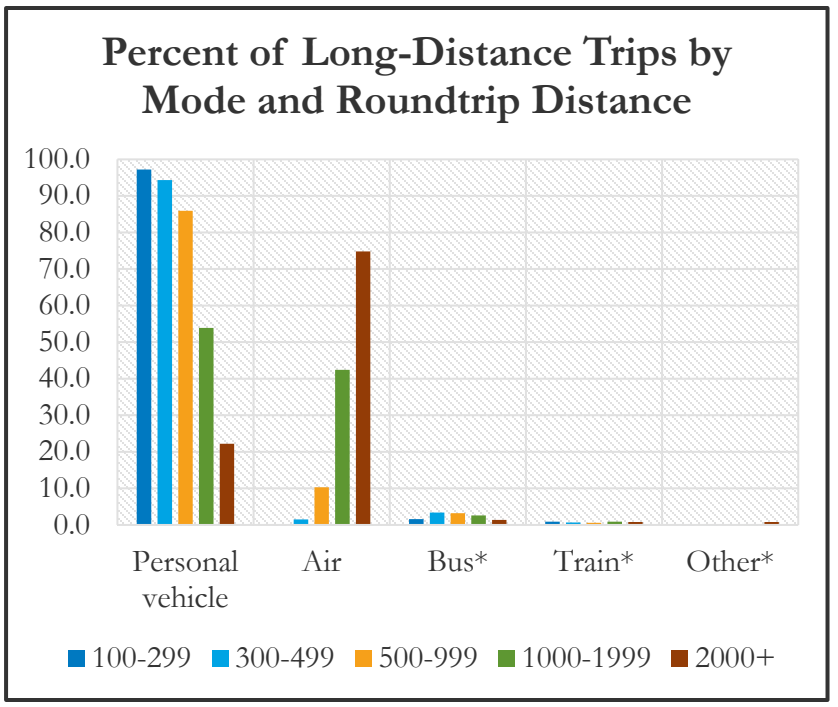


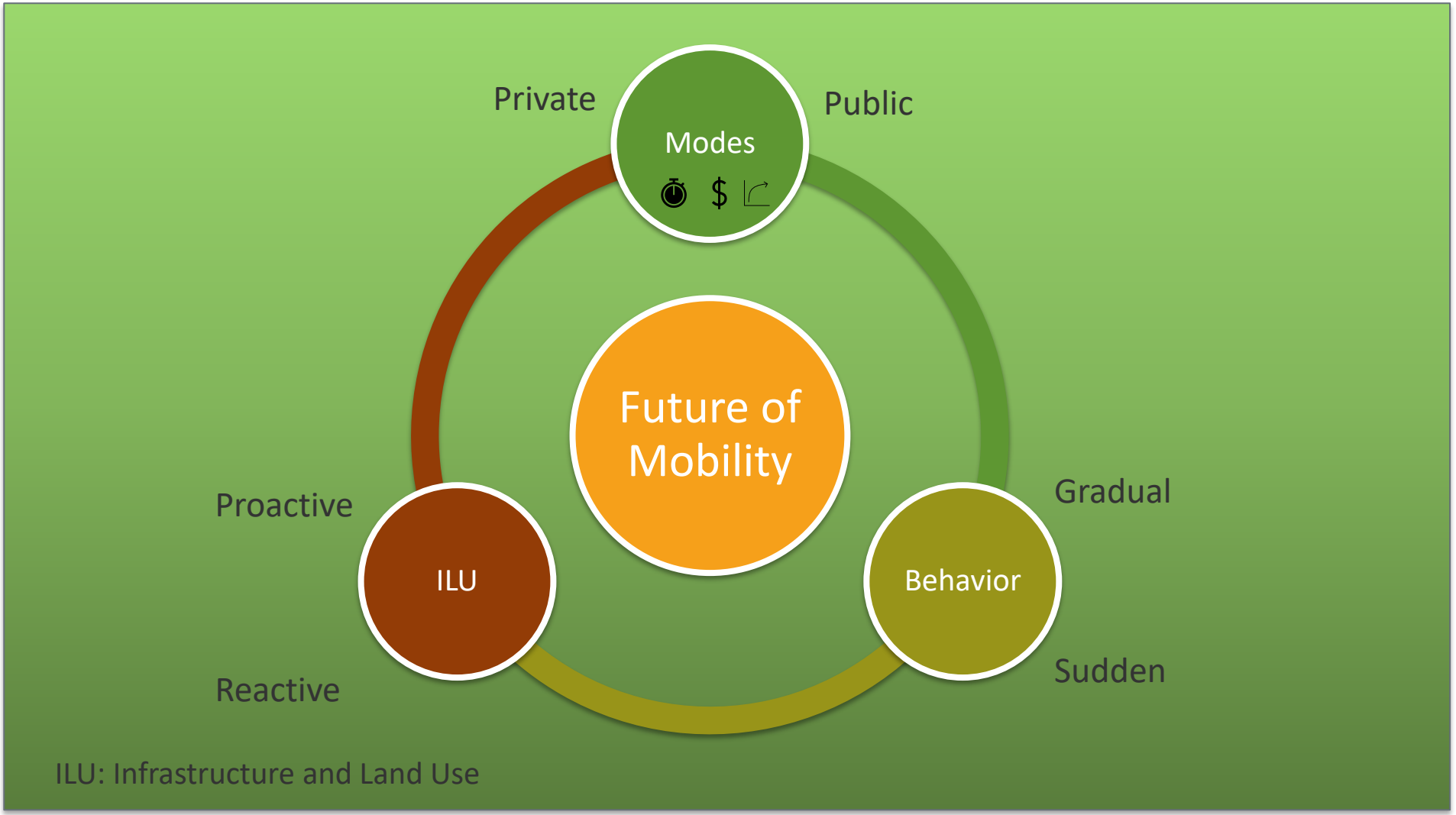
Themes to Focus on



Ideal Modes vs. the Most Used Modes

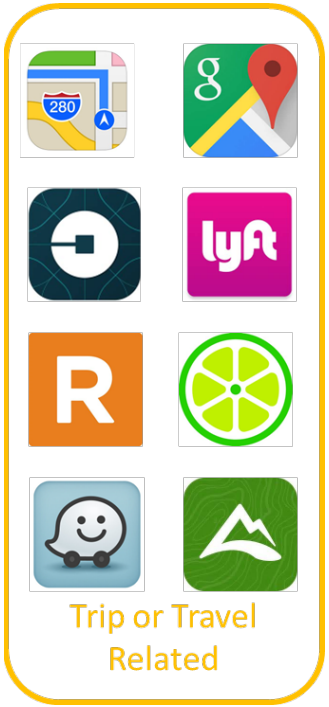


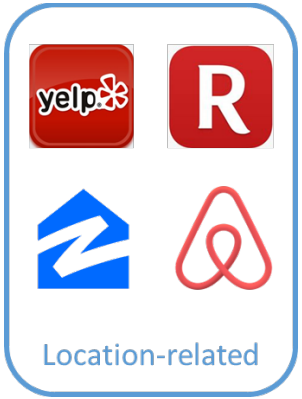




ILU: Infrastructure and Land Use

Data: Our Friend or Foe?





Thoughts on Research Directions

Advances in data and models (big data and rapid modeling)

Achieving true modal integration

Developing an equity-focused transportation system

Metrics to quantify the quality of mobility

Framing the Conversation

- Which modes show the greatest promise to reduce VMT and GHG consumption?
- What data exists (or doesn't exist) to study such modes?
- Are we missing any important research directions in understanding the importance of emerging transportation technologies?

Thank You

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