S-Curve: Adoption rates of new transport technology

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**Project Framework**

Interaction of people & goods, infrastructure, transport modes and technology make up the transport sector.

- **People & Goods**: Move around for business, leisure, consumption, etc.
- **Modes**: Many different modes available.
- **Infrastructure**: The ‘plumbing’ of the transport system.
- **Technology**: Changing the way transport is used and delivered.

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Part 1

Technology focus on the transport sector
Technology + Modes

- Standard cars and trucks have an increasing level of technology being added to them
  - Telematics, park assist, etc
- But there are significant changes in the pipeline to the current fleet of vehicles
  - Autonomous and electric cars, E-bikes
- Determined by entrepreneurs or innovators
- Influenced by policy

Technology + Infrastructure

- Technology can increase efficiency and safety of infrastructure
- However, much of the system is largely fixed
- Costly to increase capacity, and make alterations
- Determined by authorities on best available information

Technology + People

- Technology is affecting human interactions with the transport system
- Changing the way transport services are delivered in the commercial sector
- Mapping software, real time traffic updates, ridesharing for personal travel
- Determined by technology companies, transport companies, individuals and government (as user)

Part 2

Question: How quickly will new technologies be adopted?
**Bass diffusion models to explain adoption**

S-Curve: Bass diffusion

\[
\frac{f(t)}{1 - F(t)} = p + qF(t)
\]

Where:
- \(f(t)\) is the change of the installed base fraction
- \(F(t)\) is the installed base fraction
- \(p\) is the coefficient of innovation
- \(q\) is the coefficient of imitation


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Adoption depends on technology characteristics

01 Relative advantage

02 Compatibility

03 Complexity

04 Trialability

05 Observability

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Using our Bass diffusion model
Example: parameters from the literature to compare hybrid vehicles

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Next step: Think about technology diffusion and impacts on transport system

**Back to the system level**

**People & Goods**
Move around for business, leisure, consumption, etc

**Modes**
Many different modes available

**Infrastructure**
The ‘plumbing’ of the transport system

**Technology**
Changing the way transport is used and delivered

**Transport**

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Thanks!
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