Peer Effects in Electric Car Adoption: Evidence from Sweden

Sebastian Tebbe

NER Environmental & Energy Economics

July 25, 2023
Contributions

Primary contribution:
▶ I provide causal estimates of peer effects in electric car adoption
Contributions

Primary contribution:
► I provide causal estimates of peer effects in electric car adoption

Ancillary contributions:
1. Data & networks:
   → I merge multiple Swedish admin data sets, including all vehicle ownership data
   → I construct peer groups based on workplaces, families, and neighborhoods
Contributions

Primary contribution:

- I provide causal estimates of peer effects in electric car adoption

Ancillary contributions:

1. Data & networks:
   - I merge multiple Swedish admin data sets, including all vehicle ownership data
   - I construct peer groups based on workplaces, families, and neighborhoods

2. Identification:
   - I exploit the timing of leasing renewals using a Shift-share IV design
Contributions

Primary contribution:

▶ I provide causal estimates of peer effects in electric car adoption

Ancillary contributions:

1. Data & networks:
   → I merge multiple Swedish admin data sets, including all vehicle ownership data
   → I construct peer groups based on workplaces, families, and neighborhoods

2. Identification:
   → I exploit the timing of leasing renewals using a Shift-share IV design

3. Policy implication:
   → I document how peer effects alter the level and dynamics of optimal subsidies
Network Example

Exogenous variation:

- Quarter $q_0$
- Quarter $q_1$
Exogenous variation: *Timing of leasing renewal*
Exogenous variation: Timing of leasing renewal x Type of person at renewal
Network Example

**Exogenous variation:** *Timing of leasing renewal* × *Type of person at renewal*
Car Leasing Market

**Exogenous-component**: Exploit timing of peers’ car leasing renewals
Main Results

- One additional new peer EV triggers, in the next quarter:
  - 0.061 EVs in the workplace
  - 0.028 EVs in the family (0.0037 EVs per relative)
  - 0.287 EVs in the neighborhood (0.0011 EVs per neighbor)

Peer EVs crowd out diesel and petrol cars.
Main Results

One additional new peer EV triggers, in the next quarter:

- .061 EVs in the workplace (.0014 EVs per co-worker)
- .028 EVs in the family (.0037 EVs per relative)
- .287 EVs in the neighborhood (.0011 EVs per neighbor)
Main Results

▶ One additional new peer EV triggers, in the next quarter:
  → .061 EVs in the workplace (.0014 EVs per co-worker)
  → .028 EVs in the family (.0037 EVs per relative)
  → .287 EVs in the neighborhood (.0011 EVs per neighbor)

▶ Peer EVs crowd out diesel and petrol cars

![Box plots showing peer effects on vehicle adoption](chart.png)
Additional Results

Empirical findings:

1. **Dynamics**: Peer effects generate new additional demand for EVs
Additional Results

Empirical findings:

1. **Dynamics**: Peer effects generate new additional demand for EVs

2. **Mechanism**: Peer effects serve as a source of information about leasing EVs
Empirical findings:

1. **Dynamics**: Peer effects generate new additional demand for EVs

2. **Mechanism**: Peer effects serve as a source of information about leasing EVs

3. **Environment**: Peer effects influence transportation choices
Additional Results

Empirical findings:

1. **Dynamics**: Peer effects generate new additional demand for EVs

2. **Mechanism**: Peer effects serve as a source of information about leasing EVs

3. **Environment**: Peer effects influence transportation choices

4. **Robustness**: Peer effects are robust to various alternative specifications
Additional Results

Empirical findings:

1. **Dynamics**: Peer effects generate new additional demand for EVs

2. **Mechanism**: Peer effects serve as a source of information about leasing EVs

3. **Environment**: Peer effects influence transportation choices

4. **Robustness**: Peer effects are robust to various alternative specifications

Policy implications:

- Optimal subsidy shifts upward in the presence of peer effects, but decreases along adoption curve