On-demand cars: carshare and ride services

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Carshare and ride services

Carshare

- Short-term rental; pay by the unit of time or distance (usually time)
- Membership based; driven by member (license required)
- Fixed stations or floating car location
- Examples: Zipcar, Car2go, Cityhop?

Ride services (when is a cab not a cab?)

- Car comes with driver
- Different (emerging) regulations than cabs
- Dynamic pricing
- Examples: Uber, Lyft, Sidecar

Carshare and ride services cont. . .

Common

- Technologically mediated transactions (no hailing, no cash)

From the user's perspective – carshare

Getting started / Enrollment

1. Sign up for membership account
2. Pay membership fee
3. Submit drivers license
4. (Select a PIN)
5. Provide credit card details to keep on file

From the user's perspective – carshare cont. . .

Using carshare, Car2go style

1. Find, reserve nearby floating car from computer or smartphone (or be lucky and find an unreserved car on-street) >= 30 minutes prior to trip.
2. Unlock car with smart card / smartphone + PIN
3. Drive car to destination(s), end trip in the parking zone
4. System calculates the usage, bills credit card

From the user's perspective – carshare cont. . .

Carshare, Zipcar style

1. Reserve car at fixed station location, can be well in advance, estimate time usage
2. Unlock car with smart card
3. Use car for allotted time period, end trip at trip origin.
4. System calculates usage, bills credit card

Formulation rental arrangement has ramifications for use patterns

From the user's perspective – ride service

Uber / Lyft

1. Sign up for membership account, provide credit card
2. ~~Hail car~~ Set pickup location from smartphone app
3. Ride to destination, rate driver via smartphone

Note: nowhere in any of these examples did we pay a driver or swipe a credit card at the time of service

Supporting infrastructure of carshare and ride service

Traditional infrastructure:

- Roads, parking, ITS, etc.

Technological infrastructure:

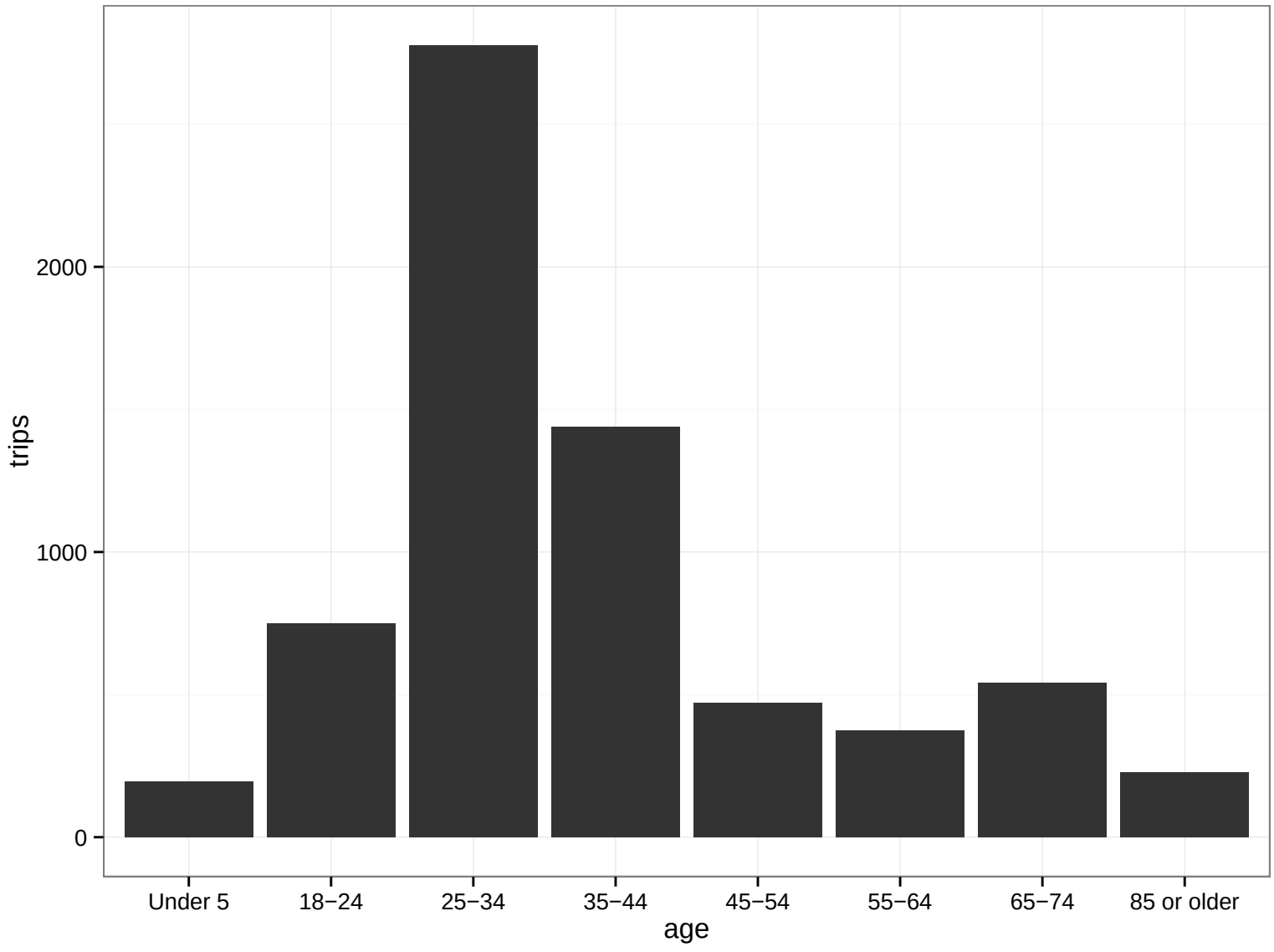
- Networks—Wireless, car and user
- GPS to track cars, you
- Smartphones—most convenient package containing network hardware, GPS, interactive interface, contact lists
- Computer servers
- Payment card processors / financial networks

Current status of carshare / ride service in Puget Sound - Travel Survey (PSRC 2014)

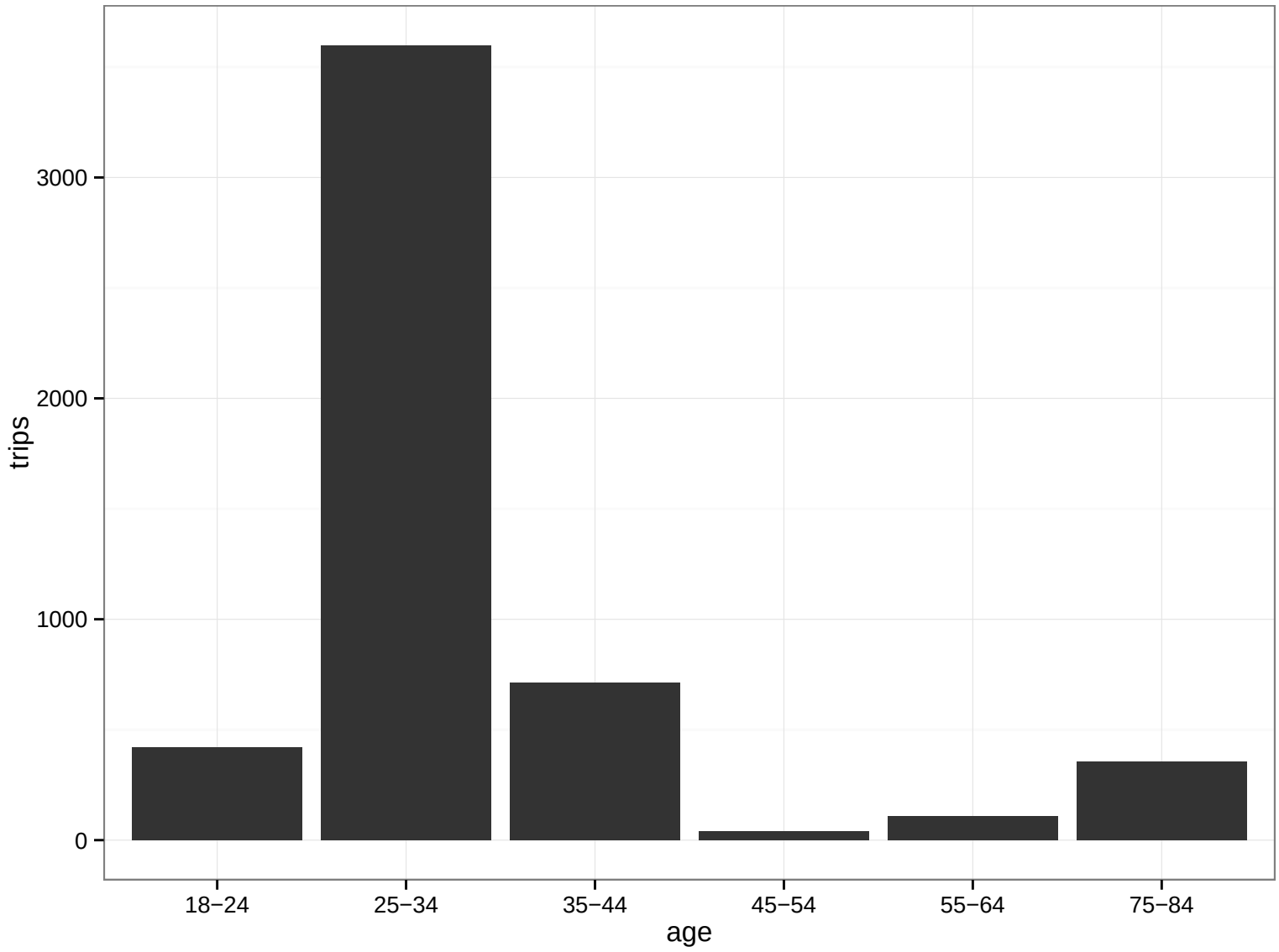
- 50,856 total trips observed in the survey[1]
- 56 car share vehicle trips
- 58 Uber or Lyft trips
- 2 transit access trips with car share vehicle
- 5234 Taxi share - estimated daily person trips
- 6773 Car share - estimated daily person trips
- ~ 0.5% car share mode split (however, many in region don't necessarily have access)
- Car share and Taxi share highest in 25–34 age bracket, next highest 35-44 bracket.

1. Special thanks to Suzanne Childress at PSRC for summaries of the survey statistics

Travel Survey - Car share by age



Travel Survey - Taxi share by age



Implications for transportation system

Resource utilization / Transportation Demand Management (TDM)

Civil society, privacy

Resource utilization / TDM

TDM premises

- Traditional solution to too many cars was to build more roads
- Demand (and latent demand) is larger than models assume, and outstrips roadway development
- Road building also not environmentally friendly

TDM thus tries to do more with less

- Shift travel behavior from SOV to carpool, transit, bike, walk, telecommute, shift work schedules... carshare / ride service?
- Ensure alternatives to driving alone exist
- Try to make those alternatives competitive (money, time)
- Promote those alternatives

Resource utilization / TDM cont. . .

What exactly is being conserved?

- Cars! An underutilized asset.
- Land, for parking (Shoup, Association, et al. 2005). (The average car sits parked 95% of the time)
- Roadway capacity? Maybe. . . though beware the latent demand

More importantly restructures mode choice

Civil society – upsides

- Economic opportunity for ride service drivers; low barrier of entry compared to traditional taxi
- Saves money for occasional drivers
- Uber claims fewer drunk driving incidents where Uber has launched(Uber 2015)
- All the aforementioned TDM benefits

Civil society – upsides cont. . .

Civil society – challenges

- How are drivers treated by their corporate... bosses? Partners?
  - Are drivers entrepreneurs or employees?
  - Who controls pricing?
  - "Subcontractor piecemeal economy" (Stallman 2014)?
- Who is liable when something bad happens?
- Cheap, on demand transportation; must have smartphone
- Privacy

Civil society – challenges cont. . .

Privacy

On bike or foot

- Pretty anonymous, modulo stray pictures and facial recognition, or tracking devices

In a private car

- license plate scanning identifies individual cars at various point locations.

Privacy cont. . .

Carshare / ride service

- Name, Billing address, Credit card number
- Location (continuous during trip); origin destination
- Time, combined with location could be used to build a profile of travel patterns.
- Info from smartphone? Watch those app permissions. . .
  - Contacts / address book
  - Wifi? Phone calls? Camera!?

Privacy cont. . .

Uber has been in the news a little lately. . .

- God mode
  - Stalking journalists (Hern 2014)
  - Stalking executives for launch party entertainment (Hill 2014)
- Rides of glory (Uber 2012)
- Giving access to rides database access to interview candidates (Timberg 2014)
- Not just privacy of riders (Taylor 2015)

The impending future

- Self-driving cars

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Colophon

`https://github.com/pschmied/carsharing-presentation`