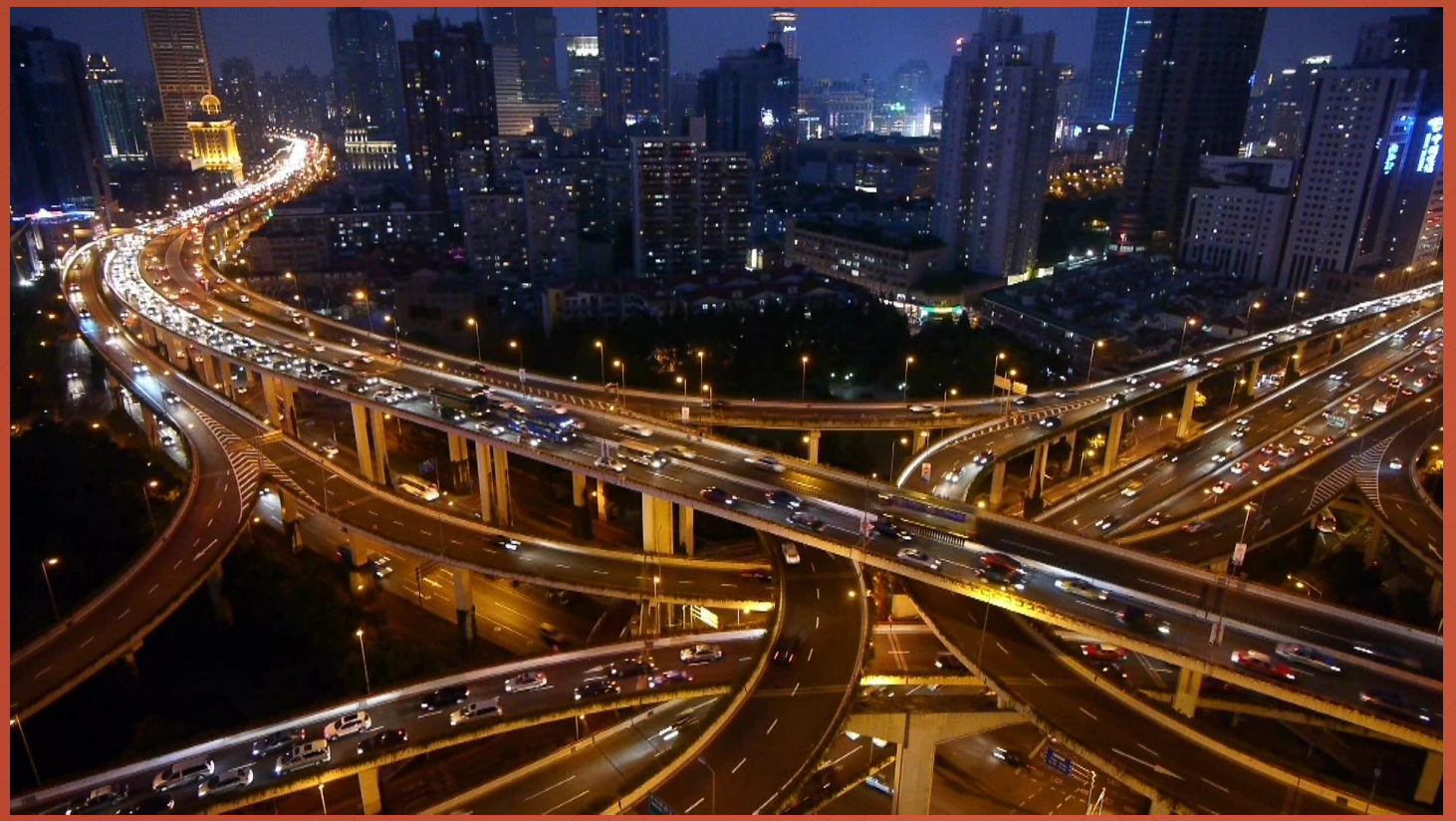
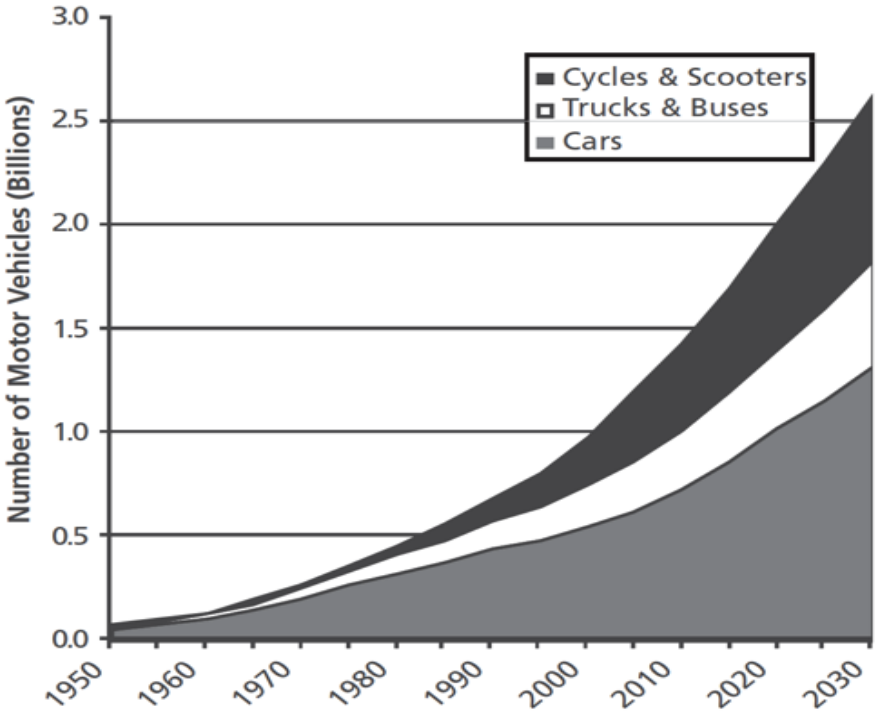


Intelligent Transportation Systems

Rolland Vida, BME TMIT

Is owning private cars sustainable?



In many cities they think about banning private cars…

Helsinki's ambitious plan to make car ownership pointless in 10 years

Finland's capital hopes a 'mobility on demand' system that integrates all forms of shared and public transport in a single payment network could essentially render private cars obsolete

- Should we ban cars in city centres?

Rosalind Readhead Wants To Be Mayor of London And Ban Private Cars

Will the next mayor of London ban private cars?

Mayoral candidate **Rosalind Readhead** wants to

Paris Aims to End Its Pollution Misery by Cutting Out Cars

To emerge from its toxic fug, Paris is enacting what could be the most drastic anti-pollution measures seen in any major world city.

FEARGUS O'SULLIVAN | @FeargusOSull | Dec 9, 2014 | 22 Comments

5.6k Shares | Share on Facebook | Tweet

OKOS VÁROS @ BME TMIT

Car sharing

- Sharing cars, shifted in time
  - Like car rental, but for much smaller time intervals (hours, minutes)
- Features
  - The client is driving the car, not a taxi service
  - „Occasional” rides
    - Not following a regular schedule
  - Random car allocation, not always the same car
  - Each sharing event is independent from the others
  - Flexible solution, although not as flexible as a taxi

Car sharing

- Habits are just being formed
  - Urban and suburban rides (shopping, city break)
  - Also for longer rides (e.g., a weekend)

- Usually few passengers in the same time, but this was not the goal
- On midterm, the usage of the car increases, although demand is not at all uniform throughout the day
  - „Everyone” needs the car in the morning and the afternoon, to go to work and back
  - During working hours „only retired elderly people” are traveling in the city

Car-sharing

- Cars are not used in 94% of the time, and occupy parking slots
  - If more people would share cars, we could decrease the number of cars considerably
- We have everything today for a very simple service
  - Reservation over the Internet, via a smartphone, immediately
  - Opening the car with the smartphone, using the NFC technology
  - Renting for short periods (e.g., an hour)
- If prices really decrease, it will not be worth owning a car

Would You Rent Your Car? You May Have No Choice

2015 CAR Management Briefing Seminars

Bill Visnic | *WardsAuto* *Aug 5, 2015*

EMAIL Tweet +1 Recommend 2 COMMENTS 0

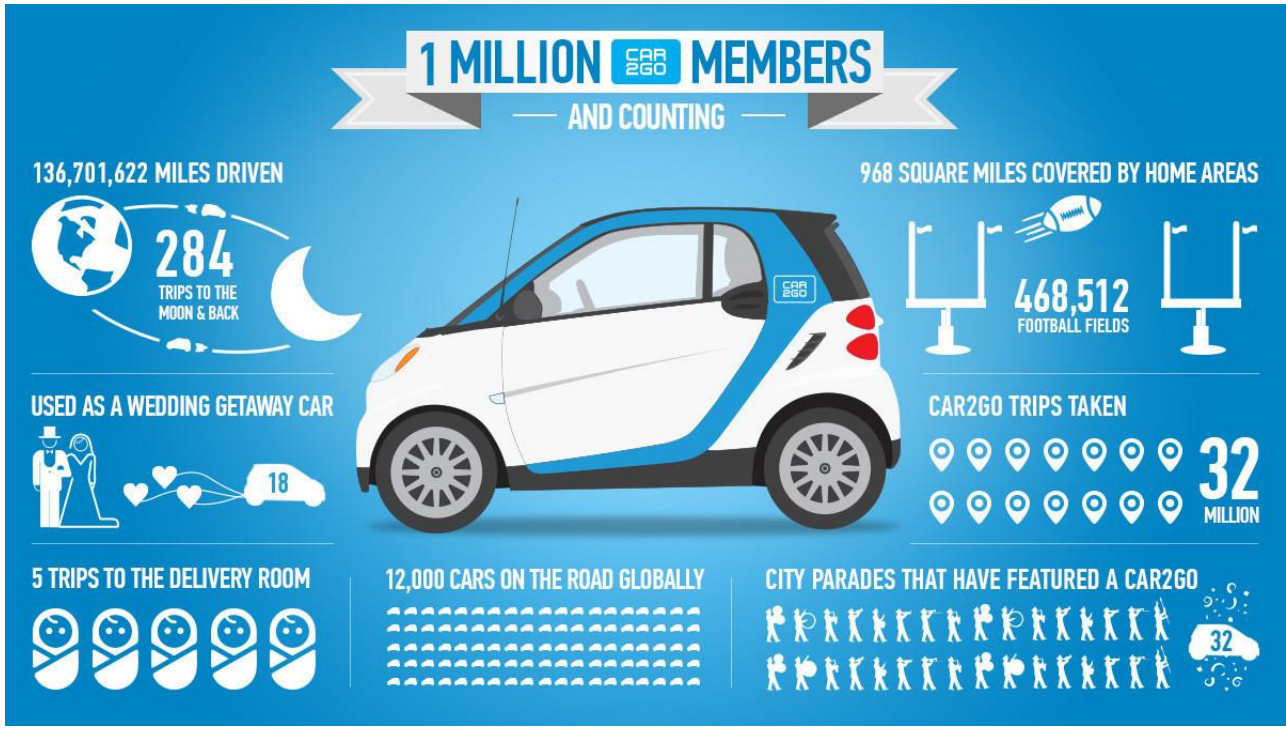
The growth in megacities and likely resulting restrictions on automobile access could force consumers into car sharing, a Ford official predicts.

Ford's Holland: Young buyers much more open to car sharing.

Full View Photography

Car-sharing modes

- Who owns the car?
  - **Centralized solution** – a renting company (ZipCar, Autolib, Car2Go)
  - **P2P car sharing** – people share their personal cars (Buzzcar, drivy, OuiCar, Koolicar)
- From where to where?
  - **One-way sharing** – Car2Go (EV)
  - **Round-trip sharing** – cars have to be returned to their original place (usual model for P2P sharing)



buzzcar drivy OuiCar Location de voitures entre particuliers

zipcar wheels when you want them autolib'

Car sharing support

- **Owner**: can be a private person, a community or a company
- **Client:** usually a private person
- **Service provider**: secures the operation, assumes the financial risk
  - The owner and the client are connected through the service
  - Many different models, depending on the ownership and the business model
  - Expensive investment from the owner, if a large pool of cars then usually the service provider is the owner as well

Analogy: MOL BUBI bike sharing

(1) MOL bubi operations center

(2) The module of the bike

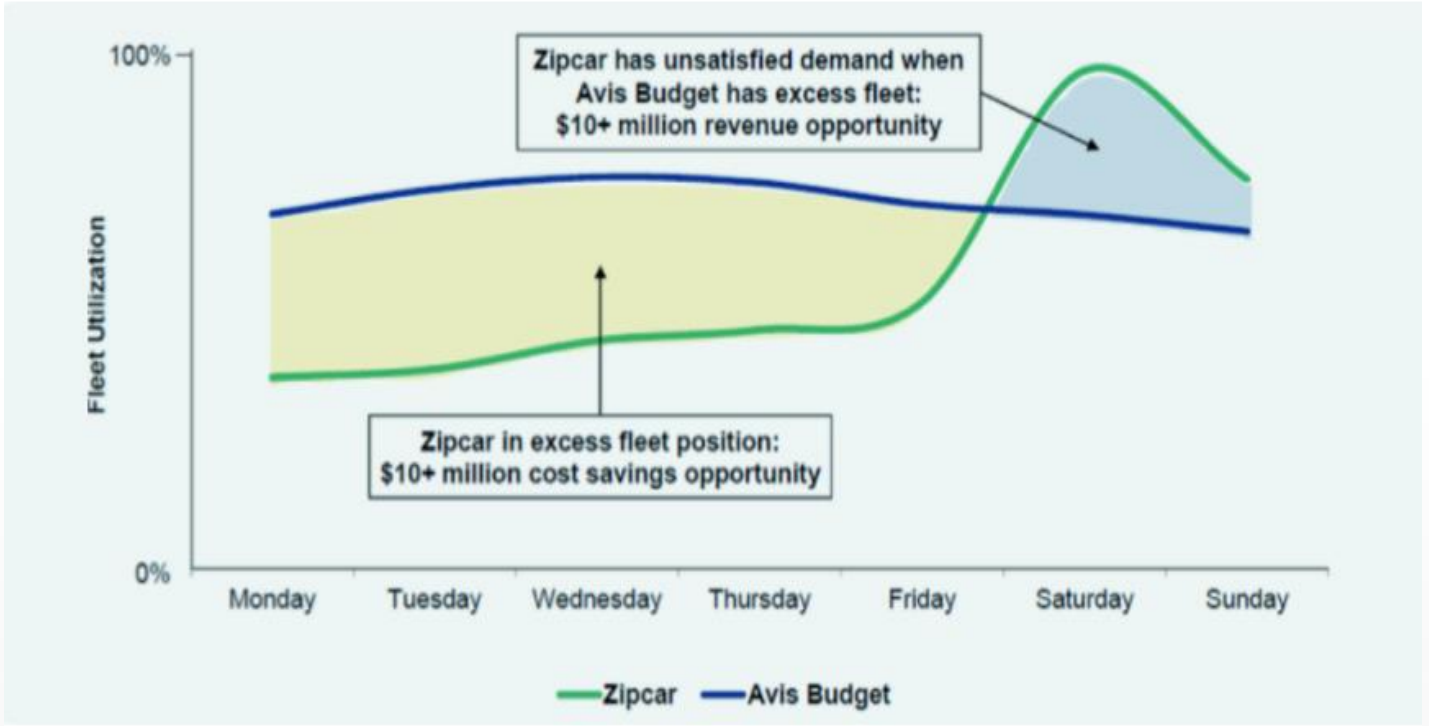
(3) Docking station

Car sharing vs. Car rental

- Car sharing + Car rental
  - Opposing cycles
  - Rent-a-car during the week
    - Business clients
  - Car-sharing during the weekend
    - Spare time activities
- Advantageous business model
  - For a car-rental company
  - Initial investment significantly lower
- Drawback: handicap for newcomers to the market

Figure 2 **$20 + Million Opportunity**

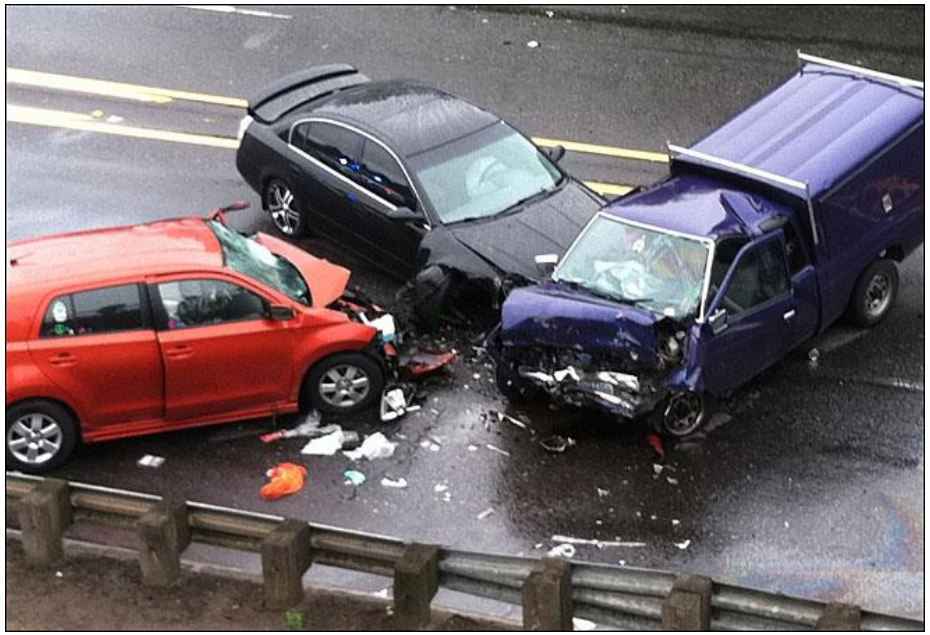
Zipcar's parent company Avis Budget Group indicates that fleet utilisation between its traditional car hire and round-trip-carsharing units is complementary, and has therefore begun to pool their fleets (Avis Budget Group Presentation to Investors, May 2014)



https://www.acea.be/uploads/publications/SAG_Report_-_Car_Sharing.pdf

Car sharing – responsibility and insurance

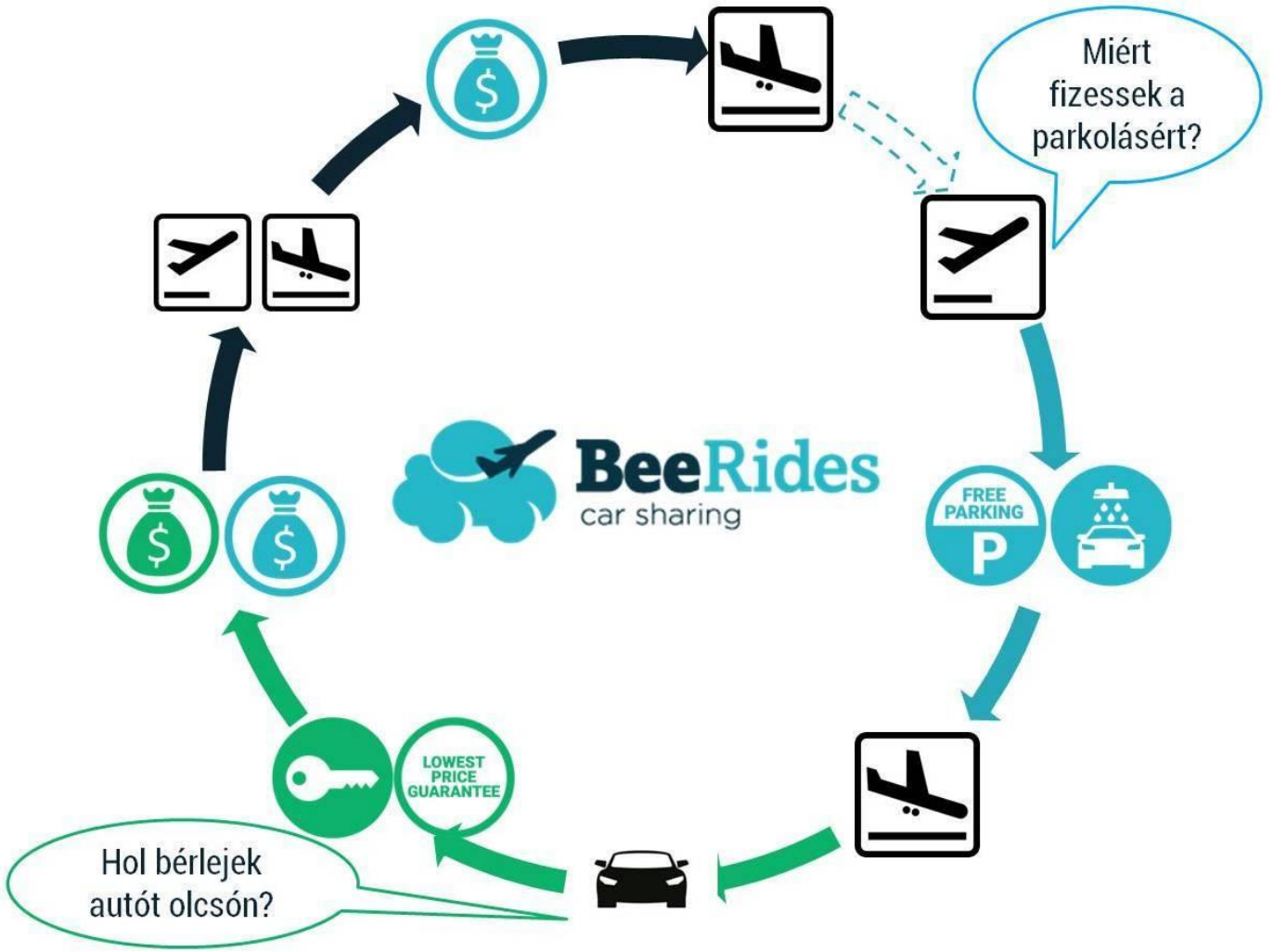
- Who is responsible in case of an accident?
  - In Hungary, „objective responsibility”
    - The owner of the car is responsible, unless the driver recognizes that he was driving the car
  - The owner pays the insurance
    - Does the insurance company allow car sharing?
      - The price of the insurance depends on the sex, the age, and the driving record of the owner
    - Insurance for the driver? Not usual in Hungary
    - Who pays the damages that exceed the typical threshold?



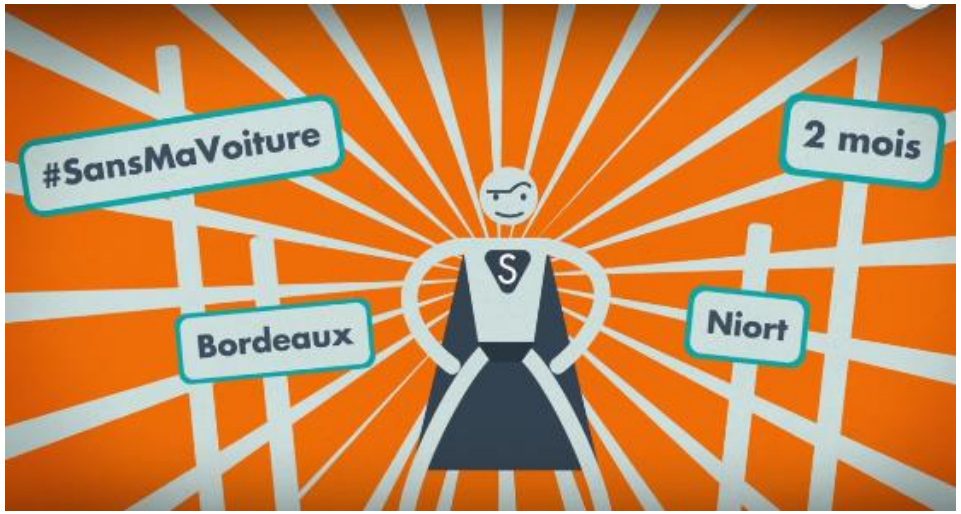
http://www.citylab.com/commute/2013/09/real-future-ride-sharing-may-all-come-down-insurance/6832/
http://www.nytimes.com/2012/04/14/your-money/relayrides-accident-raises-questions-on-liabilities-of-car-sharing.html?_r=0

P2P car sharing

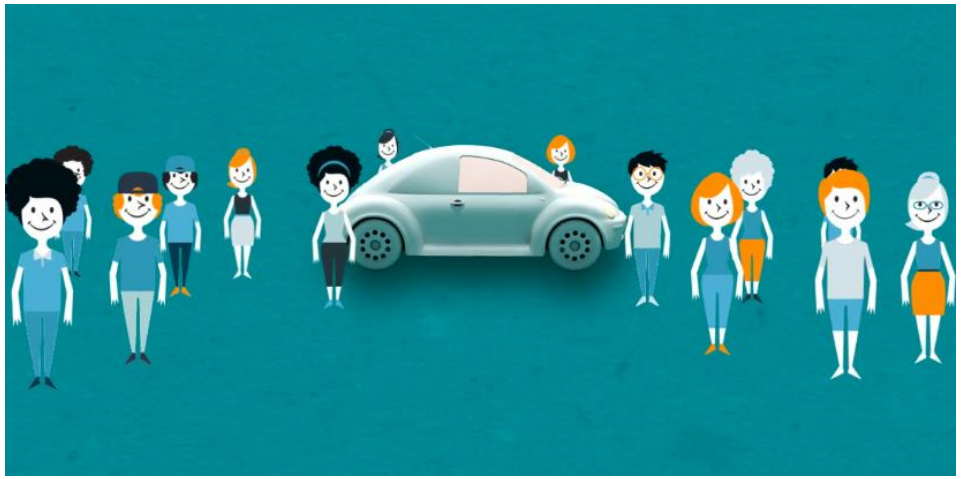
- **BeeRides** – Hungarian startup company
- Leave your car at the airport parking, let others use it while you are traveling
  - Free parking
  - Free cleaning of the car
  - … and you get some money as well…
- **Would you give your car?**



Marketing actions to increase popularity



Break free from your car
and save your city

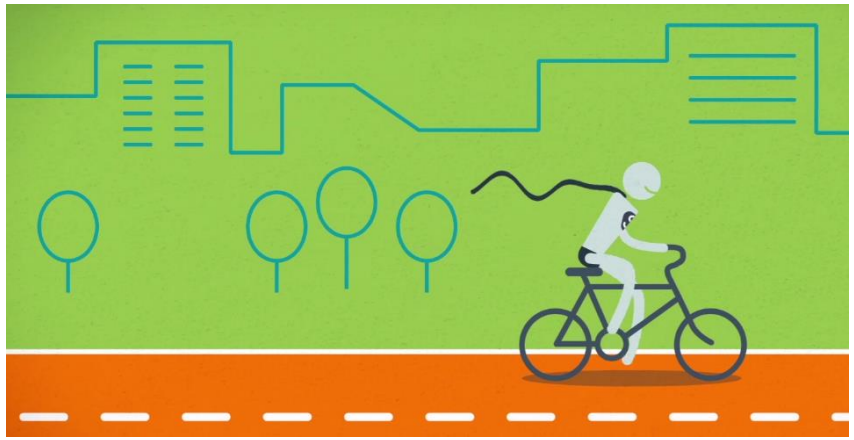


100 participants
give up their personal vehicle for 2 months

Marketing actions to increase popularity

No vehicle insurance

for 2 months



Bike sharing access

FREE Public Transport

Drive neighbourhood cars

Marketing actions to increase popularity

October 5th

Hand over your keys

Say good bye to your car

December 5th

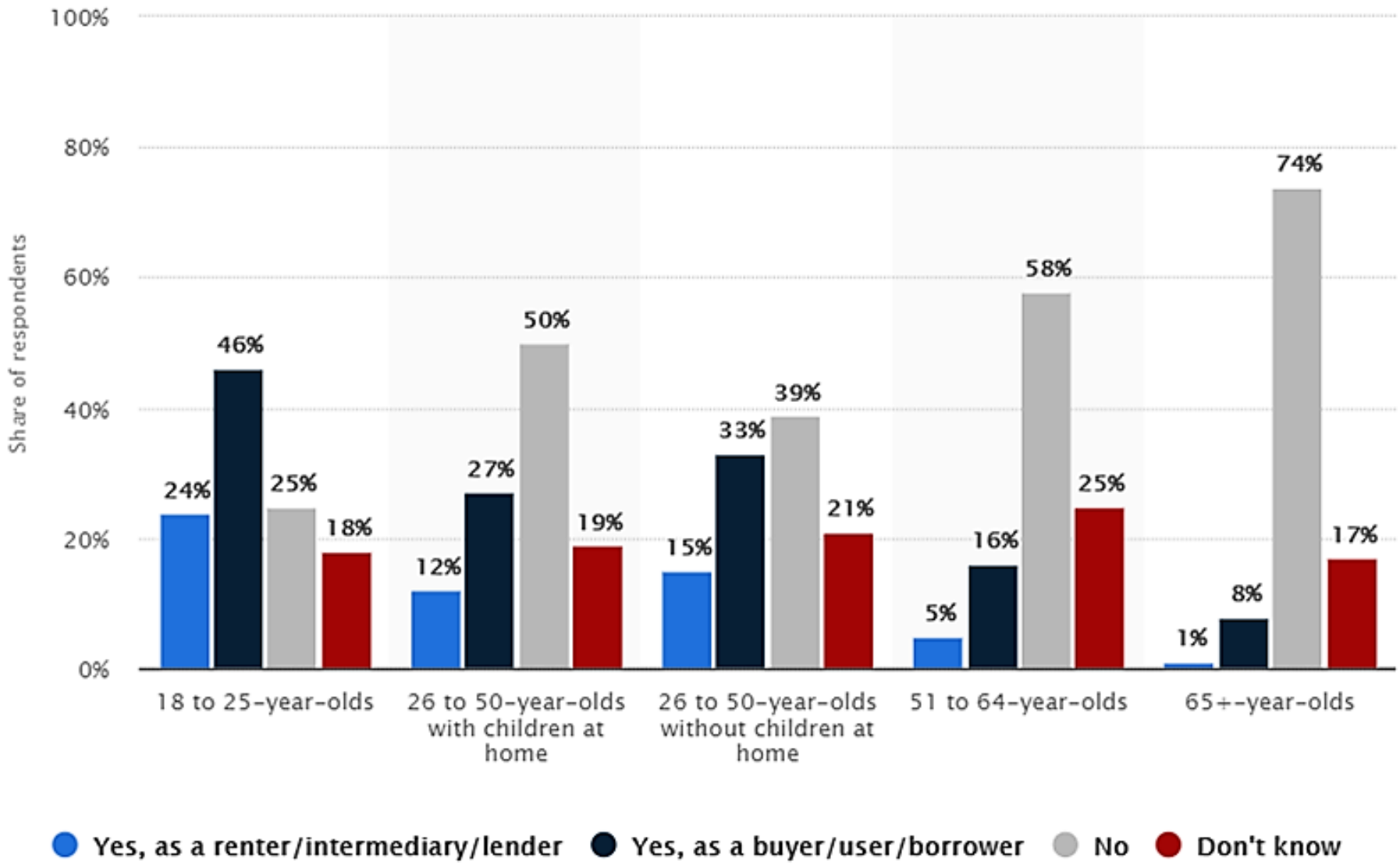
Take your car back

OR

we'll buy it from you

Willingness to use sharing economy by age

- Car sharing, AirBnB, etc.
- Study in Denmark, 2018



Willingness to use sharing aconomy by region

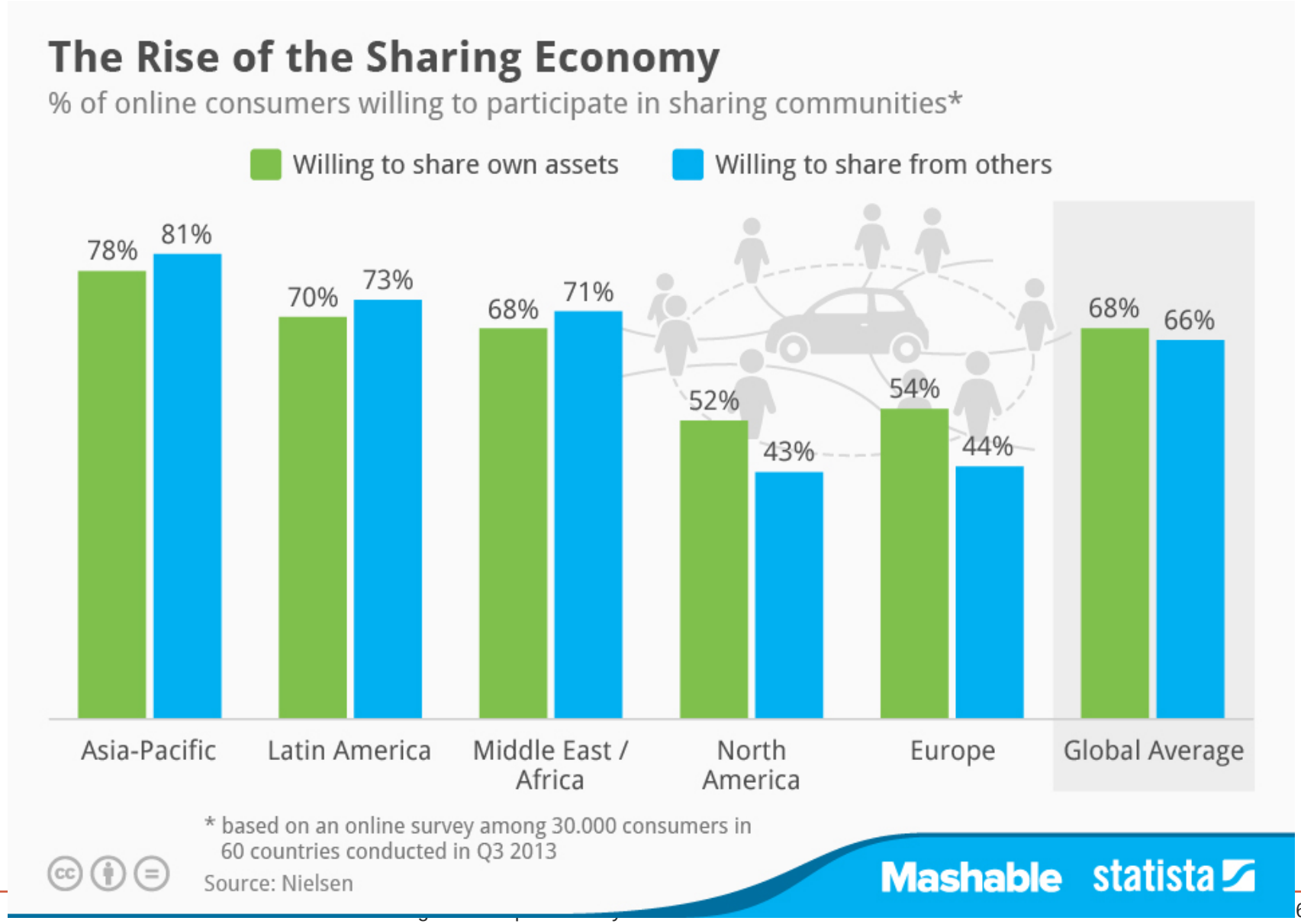
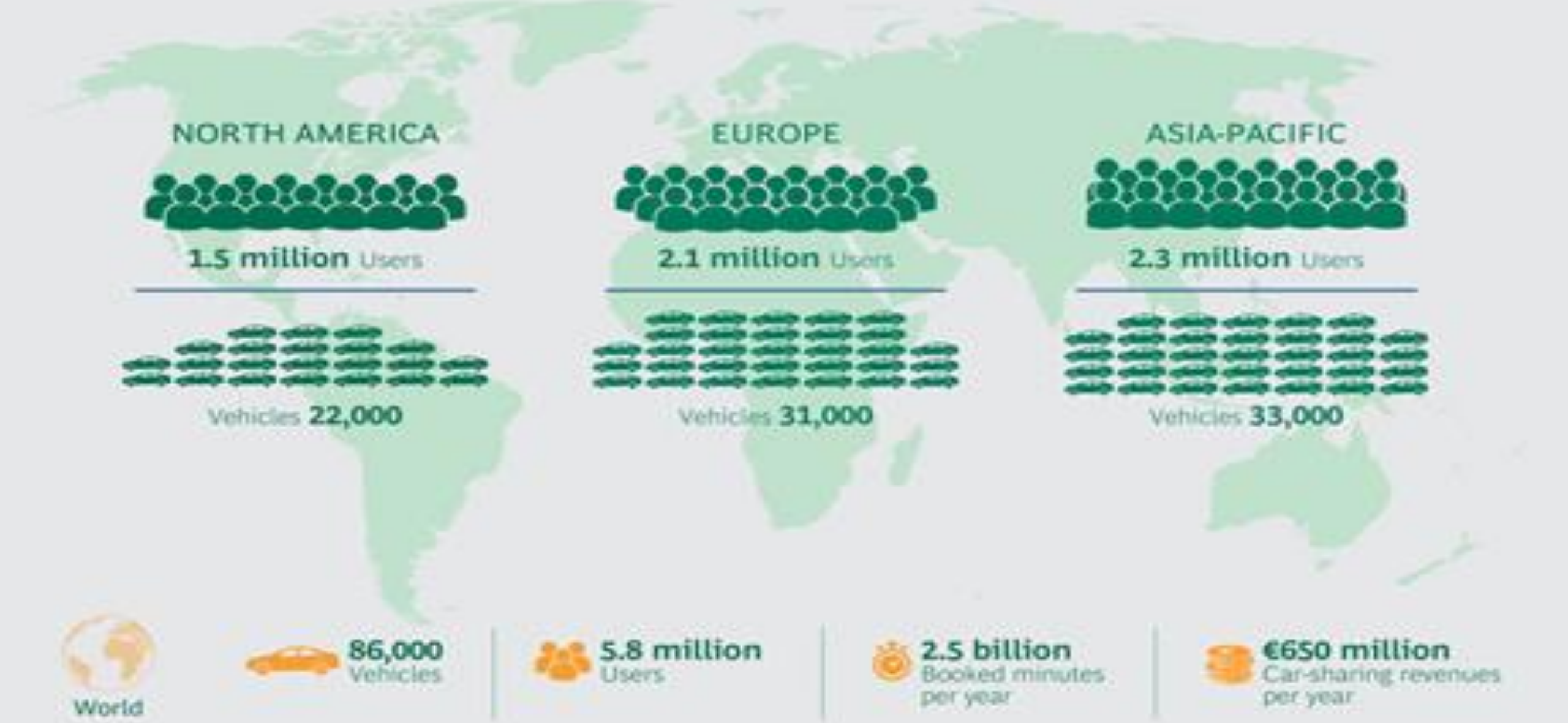


EXHIBIT 1 | More Than 80,000 Car-Sharing Vehicles Were in Operation in 2015

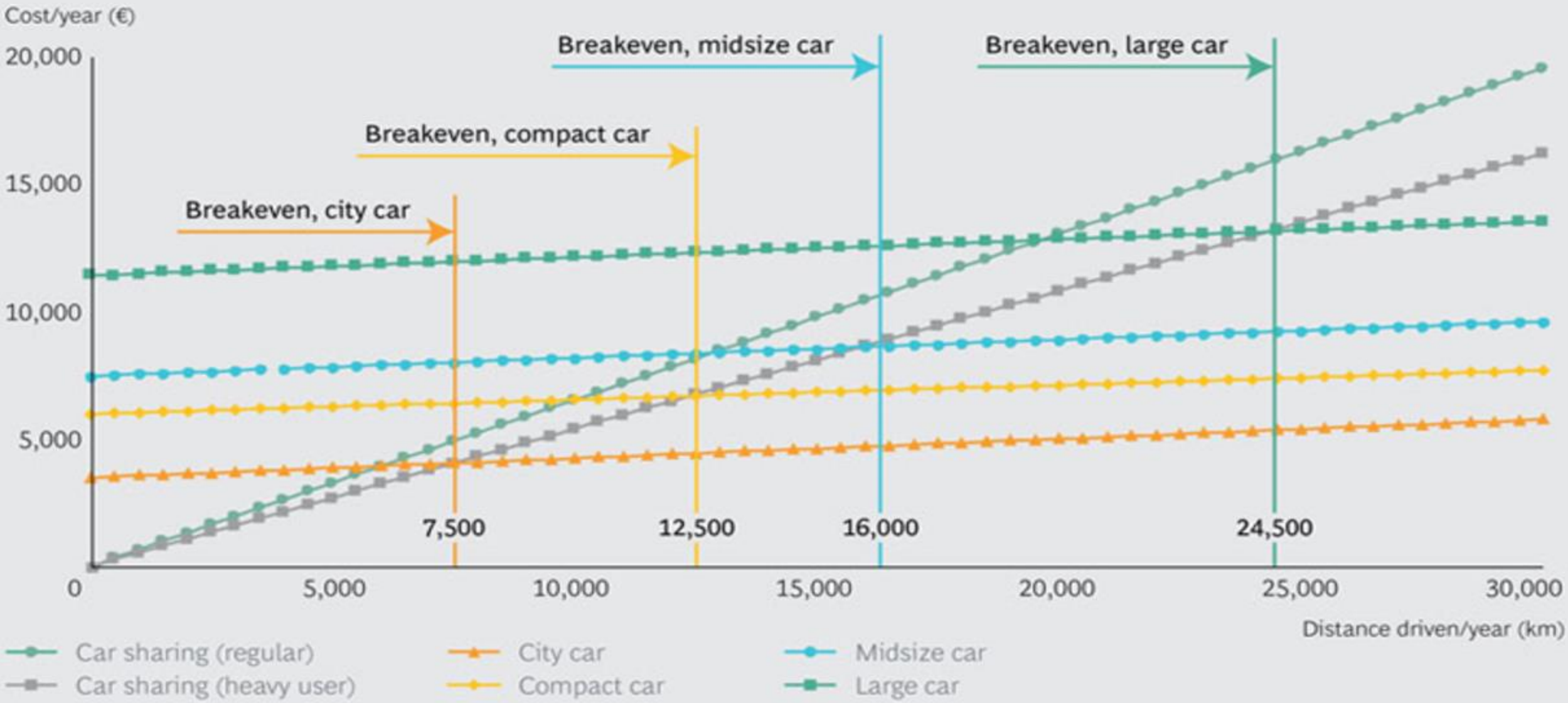


Sources: BCG research; press search.
Note: North America = Canada and the US; Europe includes Russia and Turkey; Asia-Pacific = Australia, China, Hong Kong, Japan, Malaysia, New Zealand, Singapore, South Korea, and Taiwan.

When is it worth using car sharing?

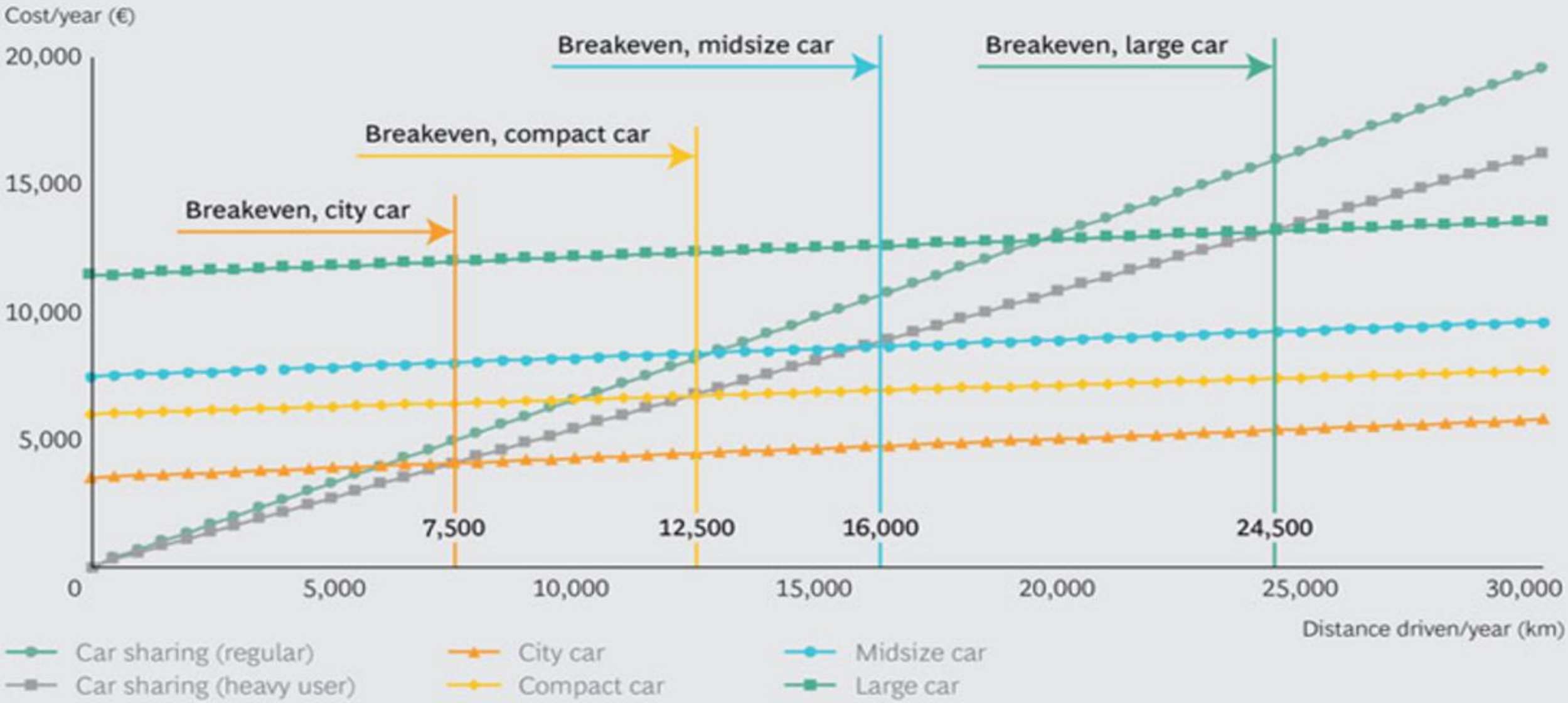
- **TCO – Total Cost of Ownership**
  - Devaluation (compared to the initial price, per year)
  - Insurance
  - Service fees
  - Parking fees or owning a garage
  - Fuel cost (depends on usage)
- Car sharing can be cheaper, if we do not use too much the car
- Average car-sharing ride for one trip - 7.5 km
  - 4.95 EUR car sharing (Berlin,, 2016)
  - 18.90 EUR with a taxi
  - 3.45 EUR with private car
  - 2.70 EUR with public transportation
- For the moment, not very deployed – only 0.1% of the rides were car sharing (Berlin, 2016)
  - 29.5% private cars, 12.5 % bikes

EXHIBIT 2 | Total Yearly Costs: Owned Versus Shared Cars



Sources: Allgemeiner Deutscher Automobil-Club; car-sharing companies; BCG analysis.
Note: Cost analysis for Europe.

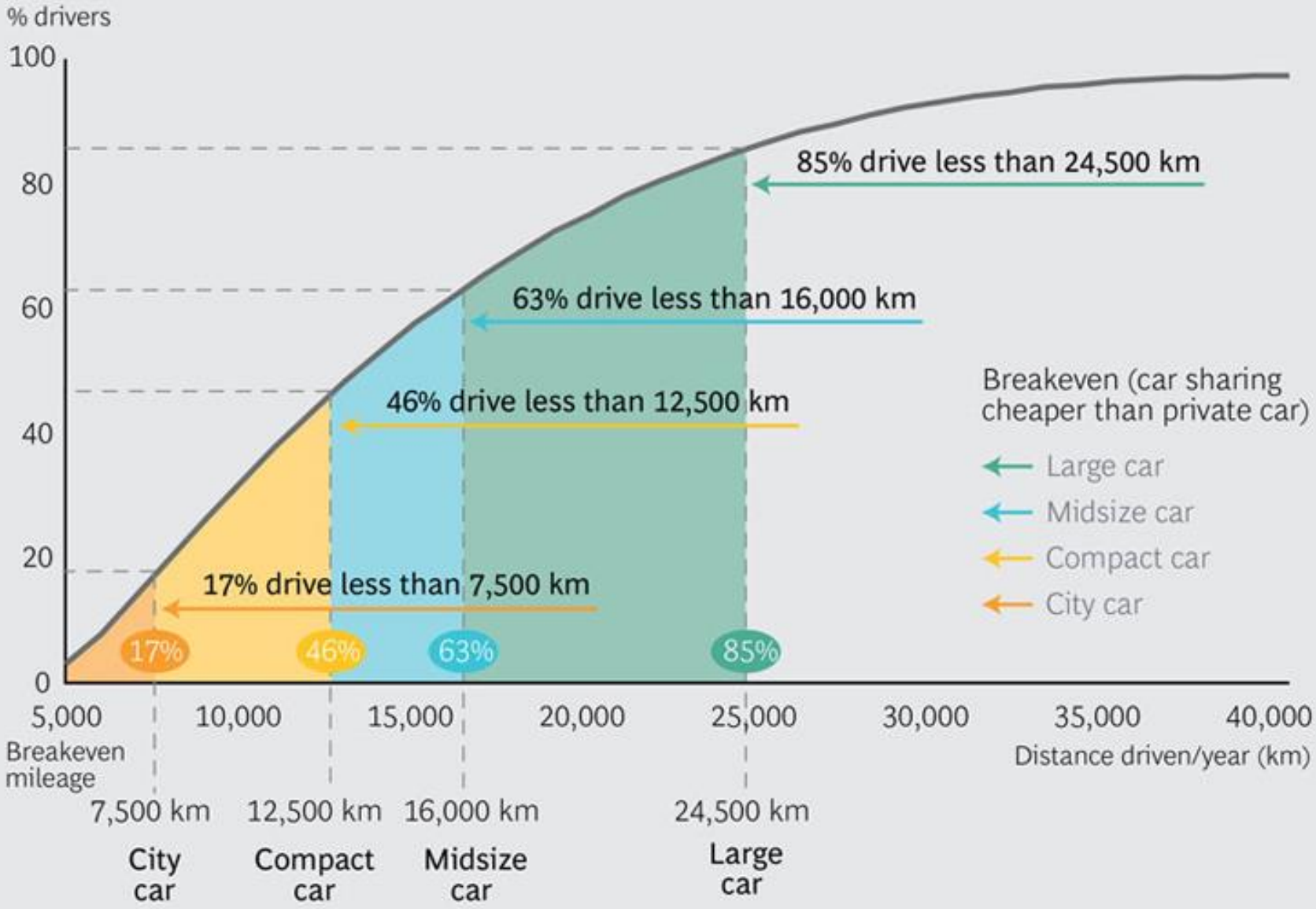
EXHIBIT 2 | Total Yearly Costs: Owned Versus Shared Cars



Sources: Allgemeiner Deutscher Automobil-Club; car-sharing companies; BCG analysis.
Note: Cost analysis for Europe.

When is it worth using car sharing?

EXHIBIT 3 | 46% of Compact Drivers Would Save with Car Sharing



Sources: Allgemeiner Deutscher Automobil-Club; DAT Report, 2015; BCG analysis.
Note: Cost analysis for Europe.