



Intelligent Transportation Systems

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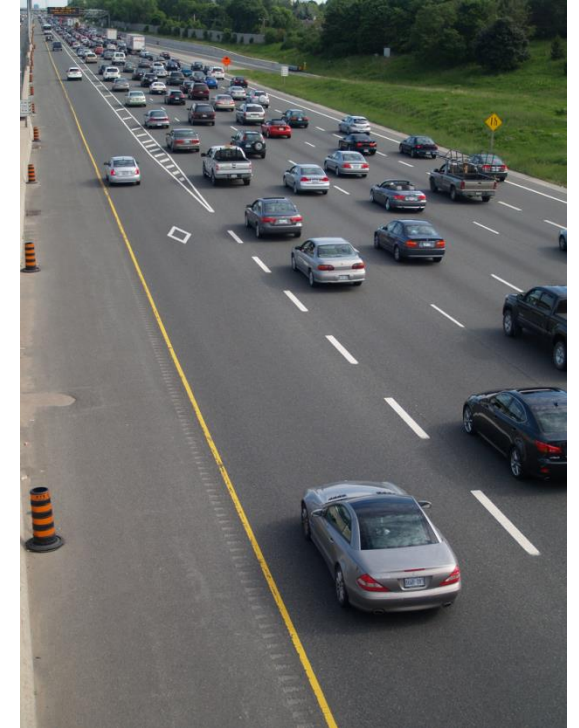
Car pooling

- The problem of public transportation is that it doesn't reach the individual homes
 - Especially in the agglomeration and the outskirts of the cities
 - You have to reach the first bus/metro stop, on foot or by car
- In the same time, most of the people commuting from the agglomeration ride alone in their car
- **Solution: car pooling**
 - More people in the same car, fewer cars, lower pollution, cheaper rides
 - Many solutions, but hard to do the matchmaking of drivers and passengers, questionable reliability, flexibility



Dedicated Lanes - HOV

- HOV – High Occupancy Vehicles
 - Can be used only if at least 1 passenger next to the driver
 - Sometimes its use is restricted to rush hours
 - Buses, electric vehicles, bikes can also use it
 - Even cars, with a single person, if he/she pays for it
 - HOT (High Occupancy Toll) Lane
 - Adaptive pricing, based on demand
- The goal is to motivate people for car pooling
 - Lower pollution, fuel saving
- First bus lane in the USA between Washington and its beltway (1969)
 - From 1973 HOV 3+
 - In 2005, during morning rush hours from 6.30 to 9.30, 31.700 people in 8.600 cars (3.7 ppl/car in average), 29 minutes
 - In traditional lanes 23.500 people in 21.300 cars (1.1 ppl/car in average), 64 minutes ride



Bus and CarPool lanes (HOV)

- Controlling the HOV lanes with cameras
 - Fooling the system with inflated dolls
 - Against the law



- **Drawback – lanes are often sparsely used**
- Trial system in Lisbon in 2007 already
 - Used as bus lane only if a bus is approaching (based on data from sensors, schedule or GPS)
 - The other cars are alerted with light and sound signals
- Some HOV lanes in Australia transformed back to normal lanes
 - **If few cars are using it, it increases pollution**
 - Fewer normal lanes, slower traffic, higher fuel consumption
 - **If many cars are using, it has the same effect...**
 - Fast traffic encourages more people to travel by cars



Not respecting dedicated lanes



Uber

- Mobile application for matchmaking between passengers and private drivers
 - Started in 2009, in San Francisco. Today present in more than 700 cities in 63 countries
 - **Not a peer-to-peer service**, but rather a traditional taxi service
 - I do not take you, because I am around, but because you pay me
 - **Surge pricing** – adaptive pricing, based on demand and offer
 - Many cases caused big scandals
 - 2011 New Year's Eve, 7x price
 - Hostage drama in Sydney, Westminster Bridge attack in London
- **Advantages**
 - Simple and fast to call a car (below 5 minutes)
 - Simple payment, with your credit card number
 - Usually cheaper than traditional taxi
 - Rating drivers and passengers



Uber

■ Critics

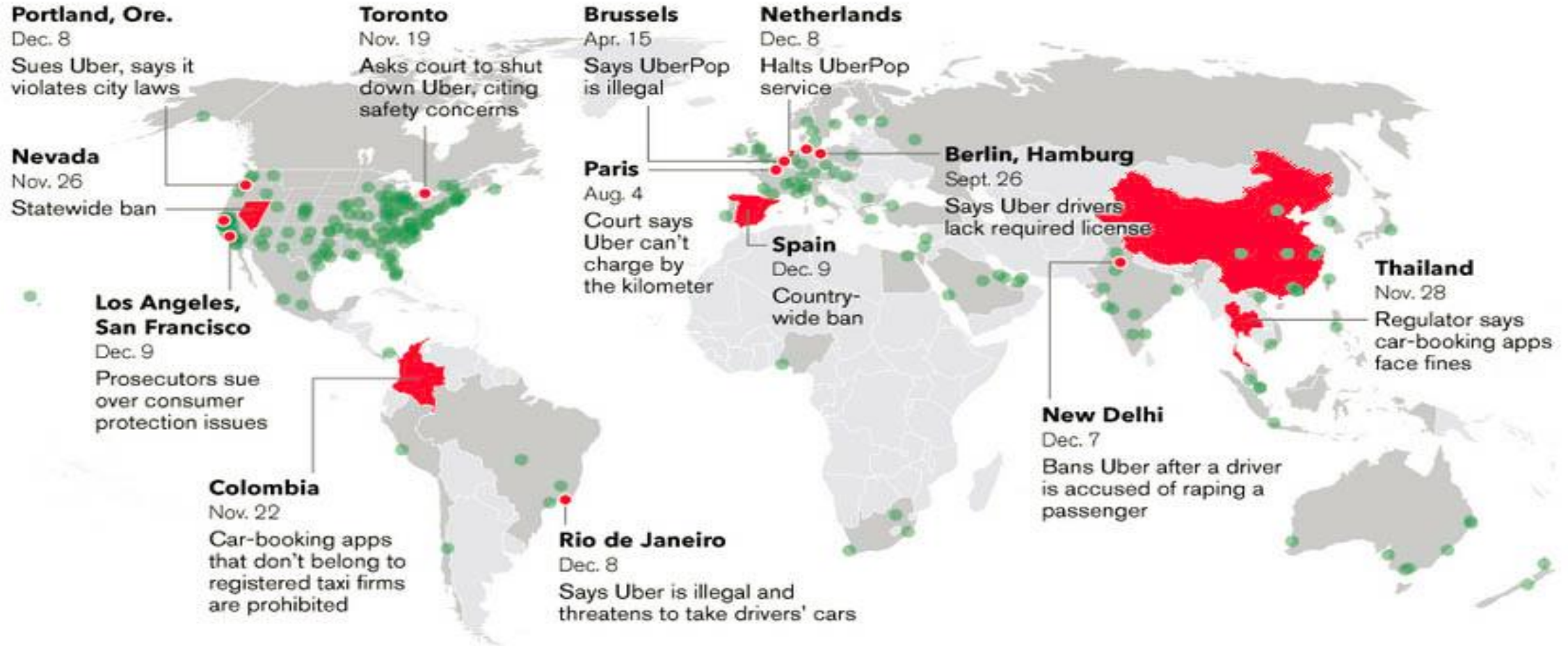
- Serious competition for traditional taxi companies
- For many, not a fair competitor
 - Does not respect the requirements for **car equipment**
 - Fears for passenger **safety**
 - Drivers do not pay **taxes**, insurance
- **Protests** in many cities (including Budapest)
 - Banned totally or partially in many cities/countries
- **Aggressive business and marketing policies**
 - Private investigators to dig into personal lives of journalists
 - Publishing the personal contact information of judges, asking users to harass them
 - Sabotage against competitors



Uber in the world

Where Uber operates, and where it's been shut down

● Cities where Uber operates ● Cities or countries where Uber is banned or is being challenged



Sources: Uber, Bloomberg reporting

GRAPHIC: ALEX TRIBOU / BLOOMBERG GRAPHICS



UberPool

- **Carpooling** service

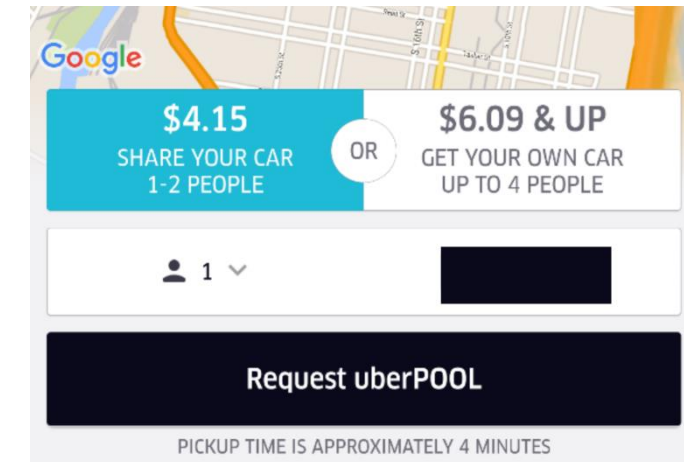
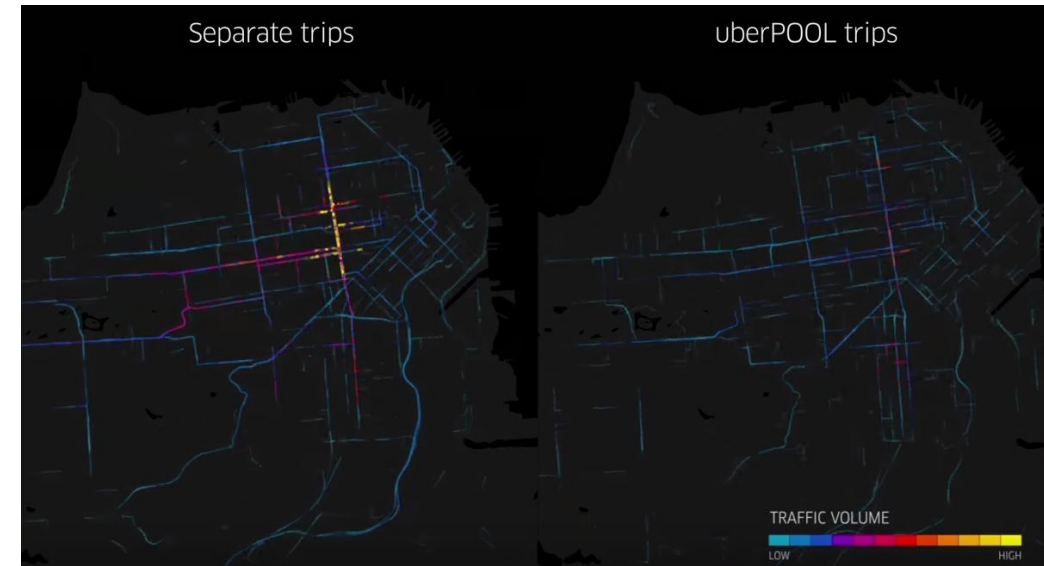
- If two rides start from roughly the same area, and go in roughly the same direction, pool them together

- **Advantages**

- Cheaper, decreases traffic, decreases pollution

- **Drawbacks**

- Drivers do not like it, as it generates lower income than two separate rides
 - Additional headache is the second passengers is late, or hard to find
- Passengers might not like it, as it is unpredictable
 - Another passenger can jump in during the ride
 - Look at it as a taxi service, for which this is not usual
 - In case of a pure car pooling service it would be acceptable



Waze Carpool

- A real P2P ride sharing app (unlike Uber)
- Brings together co-workers, or people really travelling in the same direction (unlike Uber)
- Does not increase the number of cars on the road (unlike Uber)
- Does not let the driver make more money out of it, than the cost of the ride (unlike Uber)
- Limited to two rides per day (unlike Uber)
- Started in 2018, operates now in USA, Canada, Brazil, Israel

