



Sharing Economy

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Various Definitions

- “A system of direct exchange of goods and services among individuals without an intermediary directly facilitating every transaction” (1)
- “People coordinating in acquisition and distribution of a resource for a fee or compensation” (2)
- “Central in the sharing economy is the sharing and selling of goods, services, space and money, usually on an online platform.” (3)
- “Making use of market intelligence to create a more collaborative and sustainable society” (4)

Outline

1. Introduction
 - Definition of the Sharing Economy
 - Close relatives of the Sharing Economy
2. Some sectors of the Sharing Economy
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 - Accommodation
 - Sharing between customers
 - Sharing between businesses
3. Governmental adoption of Sharing Economy
4. Conclusion
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Most concise definition













“Consumers granting each other **temporary access** to underutilized **physical assets** with idle capacity, possibly for money” (5)

- Consumer-to-consumer interaction (vs. Business-to-Consumer)
- Temporary access (ownership remains unchanged)
- Physical goods (as opposed to skills or time)

Close relatives of the Sharing Economy

- On-Demand Economy
 - Supply follows customer demand immediately
 - No supply if there is no demand
 - Example: Uber
- Second-Hand Economy
 - Customers sell used items to each other
 - Example: Ebay
- Product/Service Economy
 - Traditional renting/leasing by customers from businesses
 - Example: Hotel, Taxi, DVD rental

Examples

On-Demand Economy	Sharing Economy	Product/Service Economy	Second-Hand Economy
  	  	  	  

Importance of ICT to the Sharing Economy

- ICT = Information and Communication Technologies
- Digital platforms enable mass adoptions of products and services through the sharing economy (6)
- ICT enables connections between individuals to efficiently fulfill their needs

Some sectors of the Sharing Economy

- Transportation
- Accommodation
- Sharing between consumers
- Sharing between businesses

Transportation

- In 2018, 37.8% of Swiss energy use was in the transport sector (7)
 - Transportation is rather expensive energy-wise
- Car Sharing
 - Most common form of transportation sharing
 - True sharing: trip would have taken place anyway, but now there are more passengers
 - On-demand economy: often also considered to be “sharing”
- Bike Sharing
 - Often not differentiated from public bike rental
 - Has become more popular in recent years

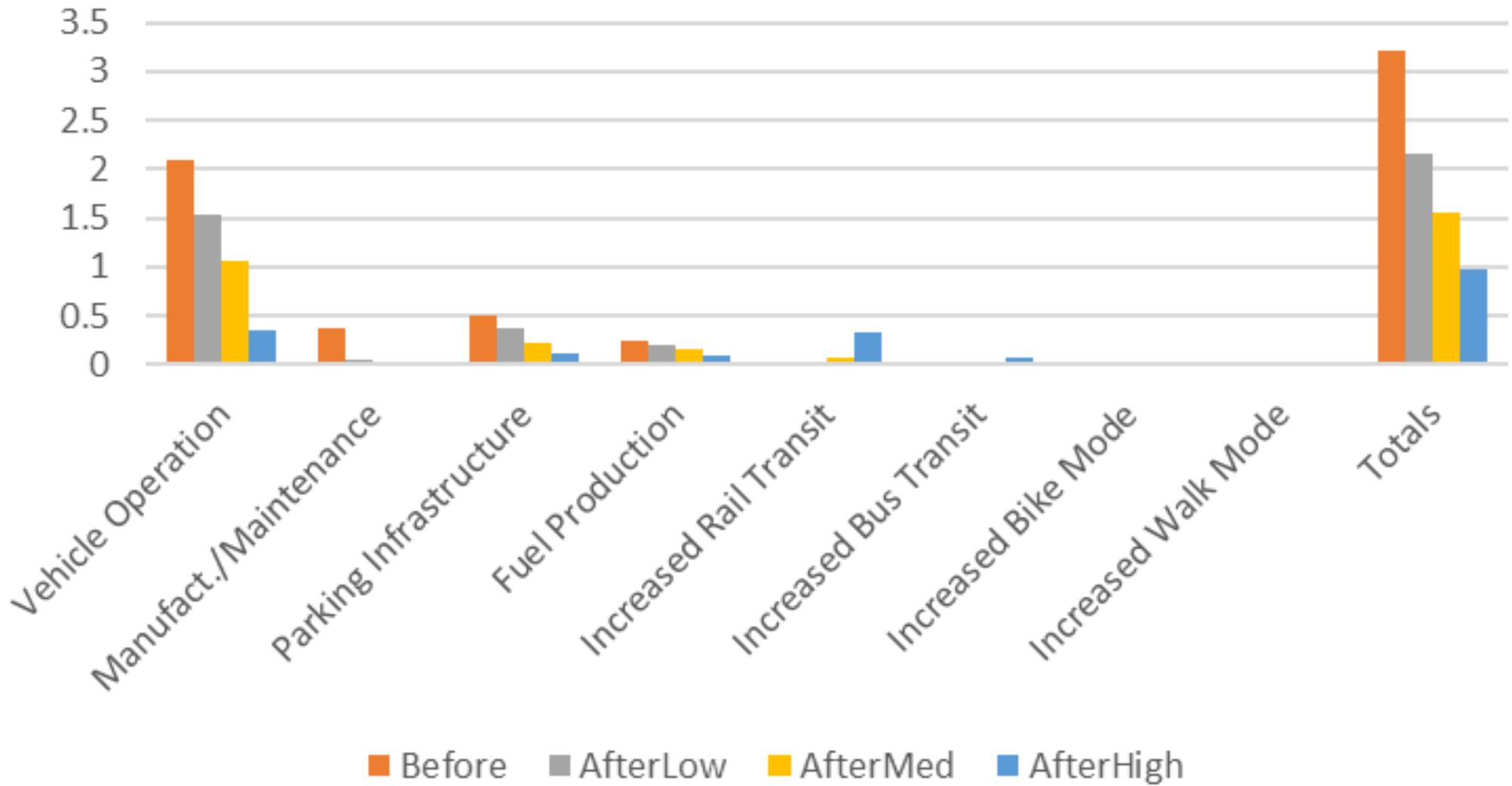
Car Sharing in the US -- Setup

- Research by Chen and Kockelman (8) on the life-cycle impacts of car sharing on energy use and greenhouse gas emissions (2015)
- Consider vehicle manufacture, fuel production, travel distances, fuel economy, parking demands and impact on user behavior
- Candidate households for carsharing: urban areas with high population density → 3-26% of US population
- Previous studies estimate market potential for car sharing at 10% of adults over 21

Car Sharing in the US -- Effects

- Vehicle ownership impact: 1 shared car replaces 9 -13 privately owned cars
- Vehicle-kilometers travelled usually decrease 30-70%, especially if cost of usage is visible by the minute
- Shared cars need to be replaced more frequently (every 2-3 years instead of 6-7 years)
 - but therefore shared cars will also on average be newer and more fuel efficient than private cars

Energy Use (MJ)



Car Sharing in the US -- Conclusion

- Most important contributor to carsharing's lowered impacts is avoided travel and travel shifted to non-car modes (8)
- Avoided travel probably due to need to plan ahead (making reservations) and immediate cost awareness
- Vehicle manufacture and maintenance has a comparably small impact on energy use and greenhouse gas emissions

Bike Sharing -- Setup

- Study about impact of bike share programs on motor vehicle use (12)
- Analyzed Melbourne, Brisbane, Washington D.C., London, Minneapolis/St.Paul
- Survey among users to establish which mode of transportation was substituted by the bike sharing program

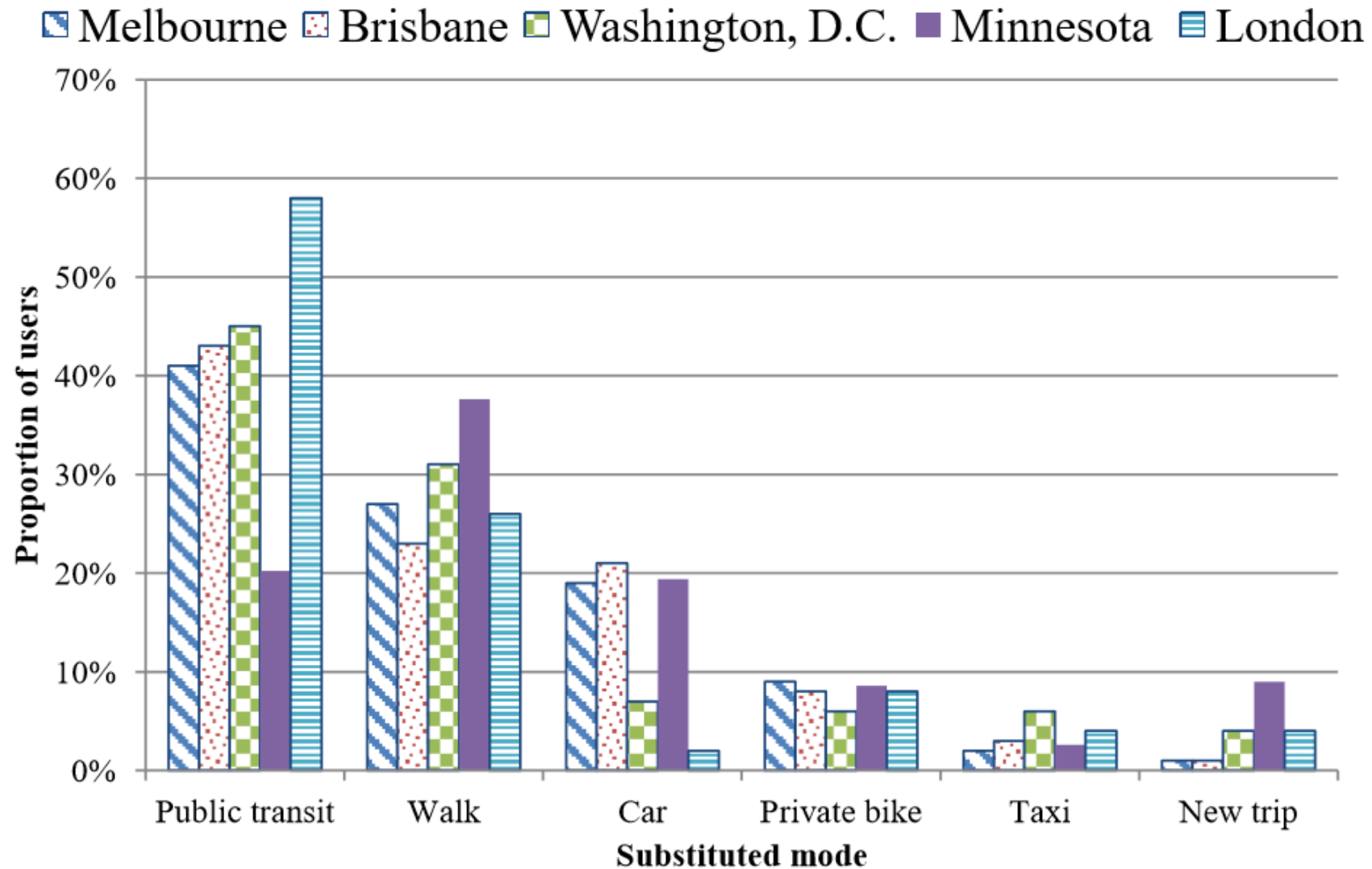
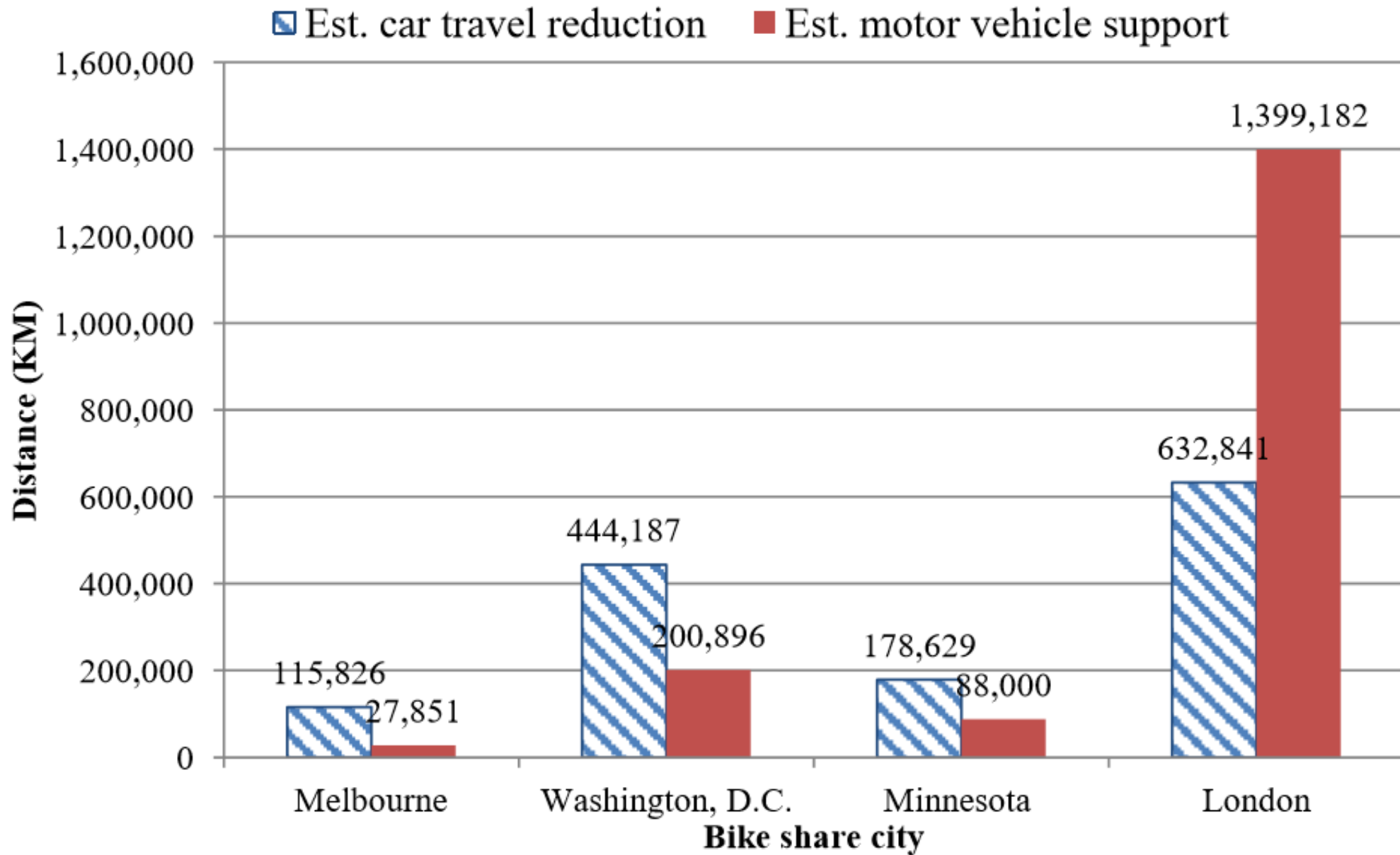


Figure 1 Mode substitution in selected cities.

Source: Melbourne and Brisbane (Fishman, Washington, & Haworth, 2013b), Washington, D.C. (LDA Consulting, 2012) Minnesota (Nice Ride Minnesota, 2010) London (Transport for London, 2011a)

Bike Sharing -- Results

- Reduction of 90000 vehicle-km/year in Minneapolis/St.Paul and Melbourne
- Reduction of 243000 vehicle-km/year in Washington D.C.
- But: 766000 km/year **increase** in motor vehicle use in London!
 - Mostly public transport substituted by bike use
 - Substantial truck use for rebalancing of bike distribution (12)



Accommodation as Sharing Economy

Positive Effects

- Existing infrastructure reused
→ land use efficiency
- Generally lower energy consumption than traditional hotels

Potential Rebound Effects

- Lower cost compared to hotels leads to savings which can lead to increased consumption
- Cheap accommodation encourages additional travel
- Larger share of market is served
→ overall use rate increased

Airbnb accommodation

- Airbnb self-reports 63-78% reduction in energy consumption and 61-89% reduction in greenhouse gas emissions per guest night compared to hotels (9)
- No access to underlying numbers or methodology due to concern about privacy and trade secrets

Sharing assets between consumers (1)

- ICT and digital platforms are central to sharing items
 - Encourage trust between strangers based on review and rating systems (10)
 - Provide matching service/coordination between people
- Swiss example: sharely.ch
 - Lending and sharing platform for rarely used items
 - Frequent items: machinery, electronics
 - But also clothes, art, plants, boats...

Sharing assets between consumers (2)

Positive Effects

- Increased utilization of durable assets (11)
- Less resource consumption for production of items

Potential Rebound effects

- Shared goods need to be transported
- Savings in this area might lead to increased consumption elsewhere

Sharing between businesses

- Business-to-Business (B2B) sector is growing (6)
- Sharing spare resources to operate at maximum efficiency:
 - Real estate, e.g. office space, warehouses, store fronts
 - Trucking capacity
 - Capital assets, e.g. one MRI machine for multiple hospitals
- Positive effects: less construction/production emissions
- Rebound Effects: money saved can be spent elsewhere

Governmental adoption of Sharing Economy

- Not strictly speaking Sharing Economy, since it is not Consumer-to-Consumer sharing, but it follows the same goal
- United Kingdom: promotes sharing in transportation, office space, accommodation and skills networks
- “Sharing Seoul”:
 - Project to promote sharing of goods and services in many areas
 - Co-working spaces, common rooms within housing blocks, bike sharing...

Conclusion

- Generally, sharing items leads to less items being produced and therefore fewer emissions during that phase
- Not enough empirical data, especially on the various rebound effects
- So far, transportation and accommodation seem to be the biggest sectors of the Sharing Economy, with the biggest reductions in emissions

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