**New report: 80% cut in CO2 emissions if cities embrace 3 revolutions in vehicle technology: automation, electrification, and, most importantly, ride sharing**

***Analysis from ITDP and UC Davis shows 3R synergy provides 40% reduction in urban vehicle transportation costs globally by 2050, sharing and renewable energy sources critical to success***

NEW YORK, NY (3 May, 2017)—As the transportation trends of passenger vehicle automation and electrification continue, new research concludes that adding extensive ride sharing to the mix could reduce CO2 emissions from all transportation sources around the globe by more than 80 percent. The report, “[Three Revolutions in Urban Transportation](https://www.itdp.org/3rs/),” examined these three revolutions in urban transportation and found all three together could cut the cost of vehicles, infrastructure and transportation system operation by more than 40 percent.

“When it comes to cars, what we learned early in life still holds true—sharing makes everything better,” said Lewis Fulton, a Co-director at the Institute of Transportation Studies at UC Davis, and lead author of the report. “All the futuristic automotive technology being developed could make our cities more livable and the air more breathable—but only if we take ride sharing seriously.”

“The idea that every city resident needs his or her own car for every trip is a disaster for cities,” said Jacob Mason, Transport Research and Evaluation Manager at ITDP. “If passenger vehicles do not become predominantly shared with other people making similar trips by 2050, our cities will be choked by congestion and defined by sprawling land development and the massive emissions this system generates. But, with policies encouraging trip sharing, public transportation, cycling, and walking, the future can be cleaner and less expensive.”

The new report was produced by the University of California, Davis, and the Institute for Transportation and Development Policy. Released the week before an [international climate change meeting](http://unfccc.int/meetings/bonn_may_2017/meeting/10076.php) begins in Bonn, Germany, it compares the environmental and fiscal impacts of three scenarios involving new transportation technology:

* Business-as-usual (BAU) scenario—Through 2050, we continue to use vehicles with internal combustion engines at an increased rate, and use transit and shared vehicles at the current rate, as population and income grow over time.
* 2 Revolutions (2R) scenario—We embrace more technology. Electric vehicles become common by 2030, and automated electric vehicles become dominant by 2040. However, we continue our current embrace of single-occupancy vehicles, with even more car travel than in the BAU.
* 3 Revolutions (3R) scenario—We take the embrace of technology in the 2R scenario and then maximize the use of shared vehicle trips. By 2050, cities have ubiquitous private car sharing, increased transit performance—with on-demand availability—and strengthened infrastructure for walking and cycling, allowing maximum shared trip efficiency.

**Sharing reduces carbon emissions**

As long as electric vehicles are mostly powered from low-carbon electricity sources and not carbon-intensive sources like coal or other fossil fuels—an underlying assumption motivating the electrification revolution—the 3R scenario would generate 0.7 gigatons of CO2 emissions worldwide annually by 2050, as opposed to 4.6 gigatons in the BAU scenario emissions and 1.7 gigatons in the emissions in the 2R scenario. Transportation costs would plummet, costing about $8 trillion annually in the 3R scenario, as opposed to $13 trillion in business as usual or $14 trillion in the 2R scenario.

The upcoming Bonn climate talks focus on the implementation of the 2015 Paris Agreement, which targets a 2°C cap to an overall temperature change from global warming. To achieve this target, all nations must cut their CO2 emissions in half by 2050. The 3R scenario will meet this benchmark and possibly go further; researchers saw potential for this scenario to provide a cut in emissions reduction large enough for only a 1.5°C increase.

For some of the world’s leading polluters, the projected carbon emissions reduction by 2050 under the 3R scenario would be significant:

* U.S.:
  + BAU: 664 megatonnes (MT) CO2 emission
  + 2R: 156 MT
  + 3R: 72 MT
* Europe (European members of the Organization for Economic Co-operation and Development):
  + BAU: 483 MT
  + 2R: 67 MT
  + 3R: 32 MT
* China:
  + BAU: 778 MT
  + 2R: 254 MT
  + 3R: 115 MTT
* India:
  + BAU: 479 MT
  + 2R: 259 MT
  + 3R: 108 MT

“If our cities support electric, automated and shared transportation, the future will be cleaner, healthier, and more affordable for everyone,” added Jacob Mason. “It’s essential that we prioritize clean air transportation policies now, or we risk fully experiencing the consequences of climate change by 2050.”

The 3R scenario would also dramatically reduce the number of passenger vehicles on the road by almost one third, from 764 million currently to approximately 535 million in 2050. This is only one quarter of the business-as-usual and 2R scenarios which both result in 2.1 billion vehicles by 2050. Fewer vehicles, coupled with less vehicle travel, lessens the need for roadways, parking garages, and related infrastructure, opening up cities for more infrastructure that supports pedestrians and bicyclists.

**On the street, the revolutions have already begun**

Oslo, Norway’s capital, has embraced the importance of zero-emission vehicles. [More than 30 percent](https://www.oslo.kommune.no/english/politics-and-administration/green-oslo/best-practices/the-electric-vehicle-capital-of-the-world/) of all new cars sold in the city are electric, a direct result of the government’s policies. There is no sales tax on electric vehicles, free parking, free tolls, bus lane access, and free transport on ferries. The government has also built more than 2,000 charging points within the city limits.

Oslo has led Norway’s national embrace of electrification--by the end of 2016, [more than 100,000 electric vehicles](https://cleantechnica.com/2016/12/19/now-100000-electric-cars-norways-roads/) traveled Norwegian roads. And while [sharing is moving steadily forward](http://www.eltis.org/discover/news/worlds-first-all-electric-public-car-sharing-scheme-norway-0) in Oslo, the government is also working towards removing [all passenger vehicles](http://www.curbed.com/2017/4/14/15301558/transportation-oslo-bike-lanes-cars-streetfilms) from its city center.

“Electric cars and automation are important, but they will not change much about how we move about our cities and could even make traffic congestion worse,” added Lewis Fulton. “The progress we see both in Norway and on the West Coast of North America is heartening. With a major increase in ride sharing in both taxi-like vehicles and micro-transit, we could cut traffic by at least 50%. Electrification and sharing will also be critical for cutting CO2 emissions.”

Vancouver BC, Canada, is the largest market in the world for car sharing. Nearly one in four Vancouver residents are members of one of the four car share companies in the region, with nearly 150,000 residents [sharing about 2,000 cars](http://www.vancouversun.com/vancouver+density+helps+reach+sharing+milestone/11752762/story.html). Vancouver has also integrated sharing into a number of functions of the city. Many city agencies are using car-share to replace government vehicles and car-sharing is replacing parking requirements, saving money and freeing up more street space for people.

Another North American city leading in ride sharing is Los Angeles, which has a goal [to remove 100,000 cars](http://la.curbed.com/2016/9/15/12920818/vehicle-reduction-plan-cars-traffic-bikes) from its roadways over streets over the next 5 years. The city also plans to add 10,000 new bike share bikes, attract 34,000 new public transit users, and add 8,400 vehicles to various car sharing programs. Advocates are proposing public-private microtransit systems integrated with public transit—like [Kansas City](http://www.citylab.com/cityfixer/2016/02/kansas-city-bridj-microtransit/462615/) has done—and developers are already planning new, people-centered uses for the city’s vast [car parking infrastructure](http://www.latimes.com/business/la-fi-car-future-real-estate-20170405-story.html).

“By 2050, two out of every three people on the planet will live in cities,” said Lewis Fulton. “We need to make sure that these cities of the future accommodate everybody, and the key is how the 3Rs reduce the number of cars and their smog.”