Impacts of the Sharing Economy in Transportation

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All I really need to know I learned in Kindergarten

1. Share everything.
2. Play fair.
3. Don't hit people.
4. Put things back where you found them.
5. CLEAN UP YOUR OWN MESS.
6. Don't take things that aren't yours.
7. Say you're SORRY when you HURT somebody.
8. Wash your hands before you eat.
9. Flush.
10. Warm cookies and cold milk are good for you.
11. Live a balanced life - learn some and drink some and draw some and paint some and sing and dance and play and work everyday some.
12. Take a nap every afternoon.
13. When you go out into the world, watch out for traffic, hold hands, and stick together.
14. Be aware of wonder. Remember the little seed in the Styrofoam cup: The roots go down and the plant goes up and nobody really knows how or why, but we are all like that.
15. Goldfish and hamster and white mice and even the little seed in the Styrofoam cup - they all die. So do we.
16. And then remember the Dick-and-Jane books and the first word you learned - the biggest word of all – LOOK.

Sharing Economy

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-Wikipedia

Robin Chase

Source: CNN Money

- Zipcar
- Buzzcar
- Peers incorporated

→ Bedsharing

Source: Robin Chase


Source: Robin Chase

IHG InterContinental Hotels Group	60	645,000	4400	100
Hilton	93	610,000	3800	88
ACCOR	44	530,000	4452	92

Source: Robin Chase

airbnb	4	650,000		192
IHG InterContinental Hotels Group	60	645,000	4400	100
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Source: Robin Chase

My Research

- Overcome barriers to transit and cycling with better information
- Need a good source of data
  - Open data
  - Crowdsourced data
- A way to get the information to people
  - Usable apps
  - Multiple means of access

Shared transportation

ONEBUSAWAY

Why Shared Transportation?

Where is your bus?

Let's find out. We provide easy access to real-time transit information for the Atlanta region and beyond.

Our Goal

We want to make it easier to use public transit by providing easy access to schedule and real-time arrival information for the buses you ride every day.

We provide:

- Real-time arrival information for MARTA and other agencies.
- Arrival info for every bus stop.
- Easy access to information across a variety of devices.

Why? We're riders just like you and we don't like waiting for the bus any more than we have to.

Tools

Our tools are available across a number of interfaces:

Web Mobile Android

iPhone Windows 8

See our instructions for downloading and configuring the iPhone app.

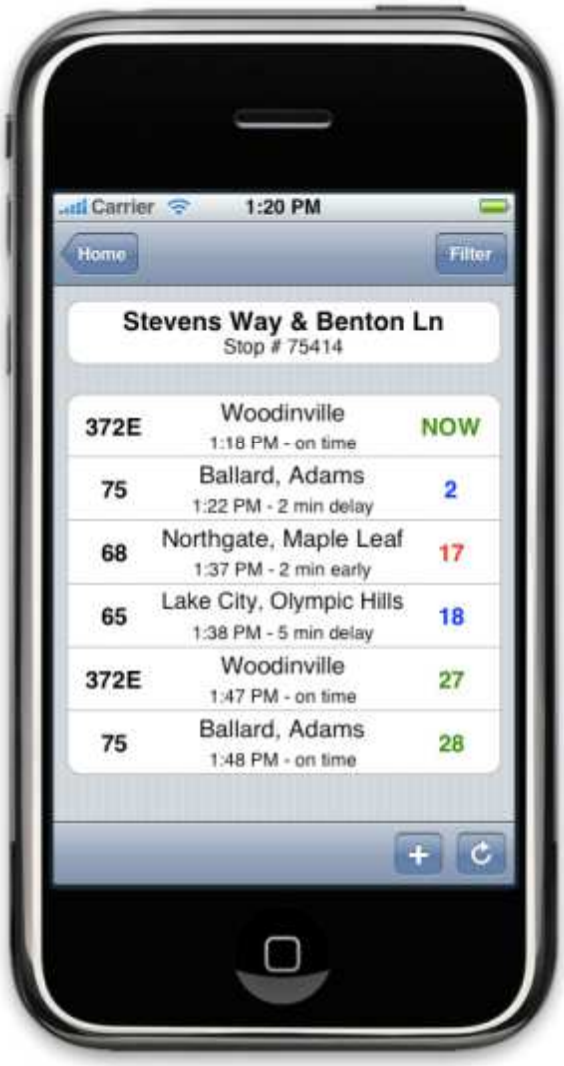
Research

OneBusAway was started by students at the University of Washington, and it has been deployed in Atlanta by Georgia Tech. Check out our research page for more information.

Our work is all open-source software, so that others may reuse and build upon our efforts. As a result, OneBusAway software has been deployed to many other communities as well.

OneBusAway

Home | Tools | Research | Blog | Contact Us



NW Market St & 17th Ave NW

Stop # 29214 - E bound

route	destination	minutes
44	Downtown via University District 10:33 - 2 min delay	NOW
44	Downtown via University District 10:46 - on time	15
44	Downtown via University District 11:00 - on time	29

Last Update: 10:31 PM

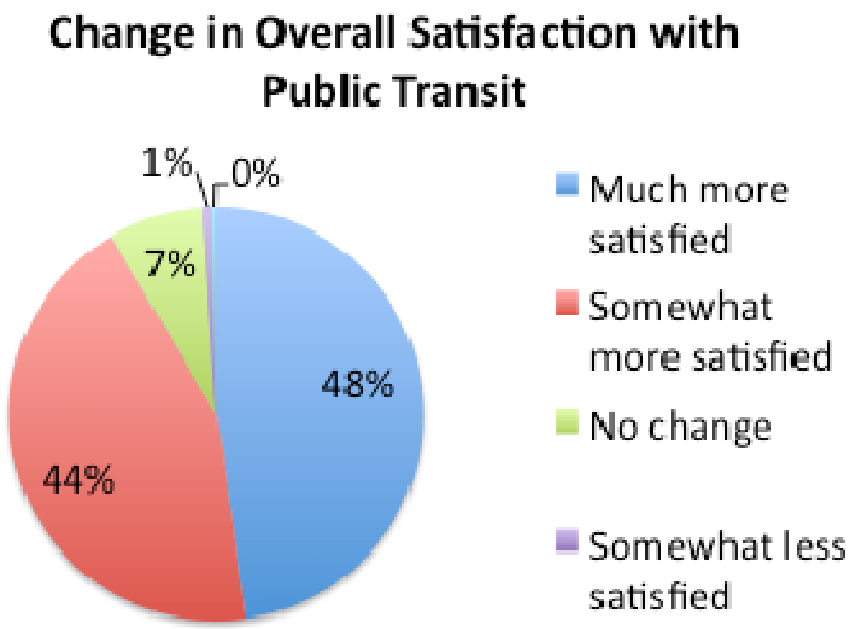
Nearby stops:

NW Market St & 17th Ave NW - W bound

See the full schedule for this stop (# 29214)

Search for another stop

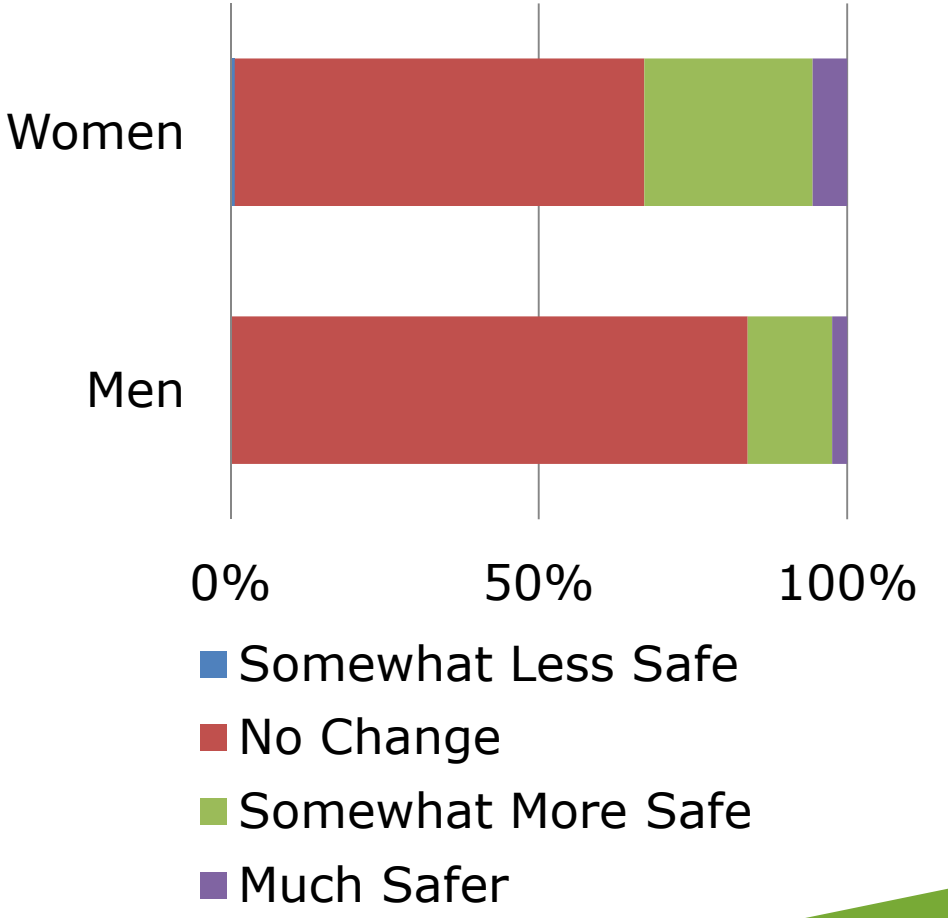
Change in Satisfaction



"I no longer sit with pitted stomach wondering where is the bus. It's less stressful simply knowing it's nine minutes away, or whatever the case."

Perception of Safety

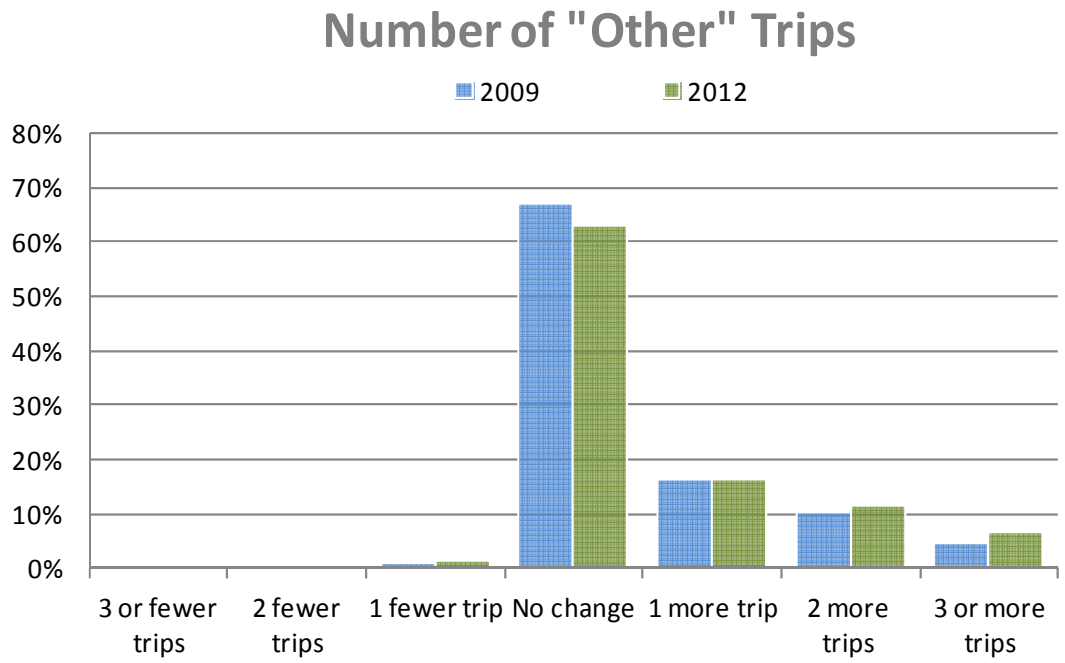
- Perception of Safety
  - 79% no change
  - 18% somewhat safer
  - 3% much safer
- Safety correlated with gender
  - χ^2=19.458
  - p-value=0.001

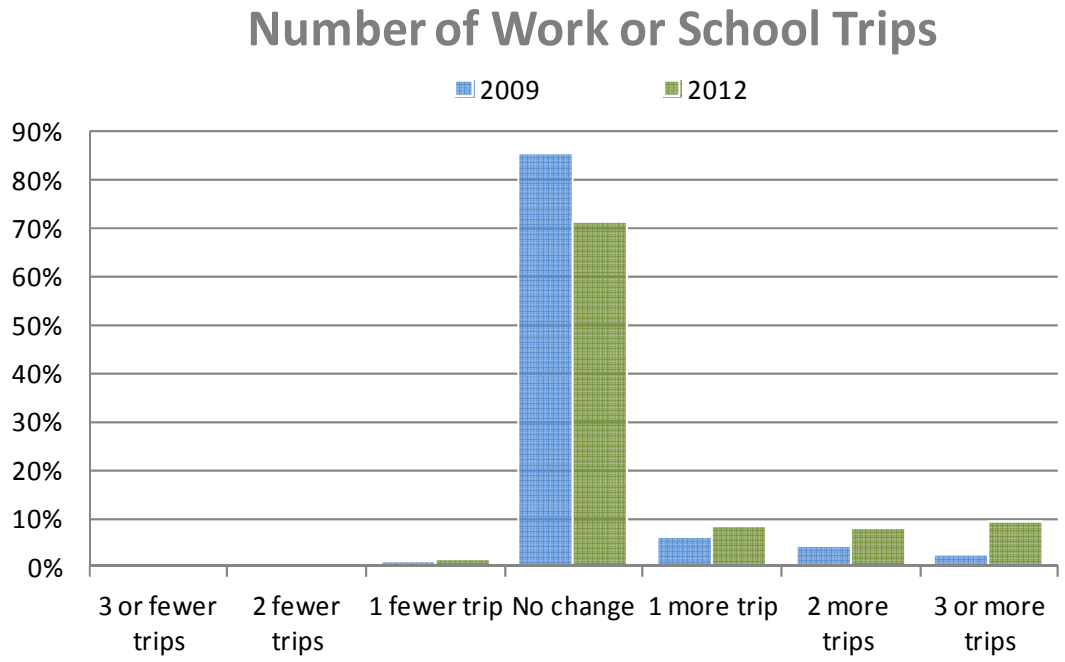


Perceived and Actual Wait Time

- Without real time, perceived wait > actual wait
- With real time, perceived wait = actual wait
- Value of real time >> more frequent service

Group	Real Time	Schedule	Difference	T-stat (p-value)
Mean Typical Wait	7.54	9.86	2.32	5.50 (0.00)
Aggravation Level	3.35	3.29	-0.05	-0.24 (0.81)
Actual Wait Time	9.23	11.21	1.98	2.17 (0.03)





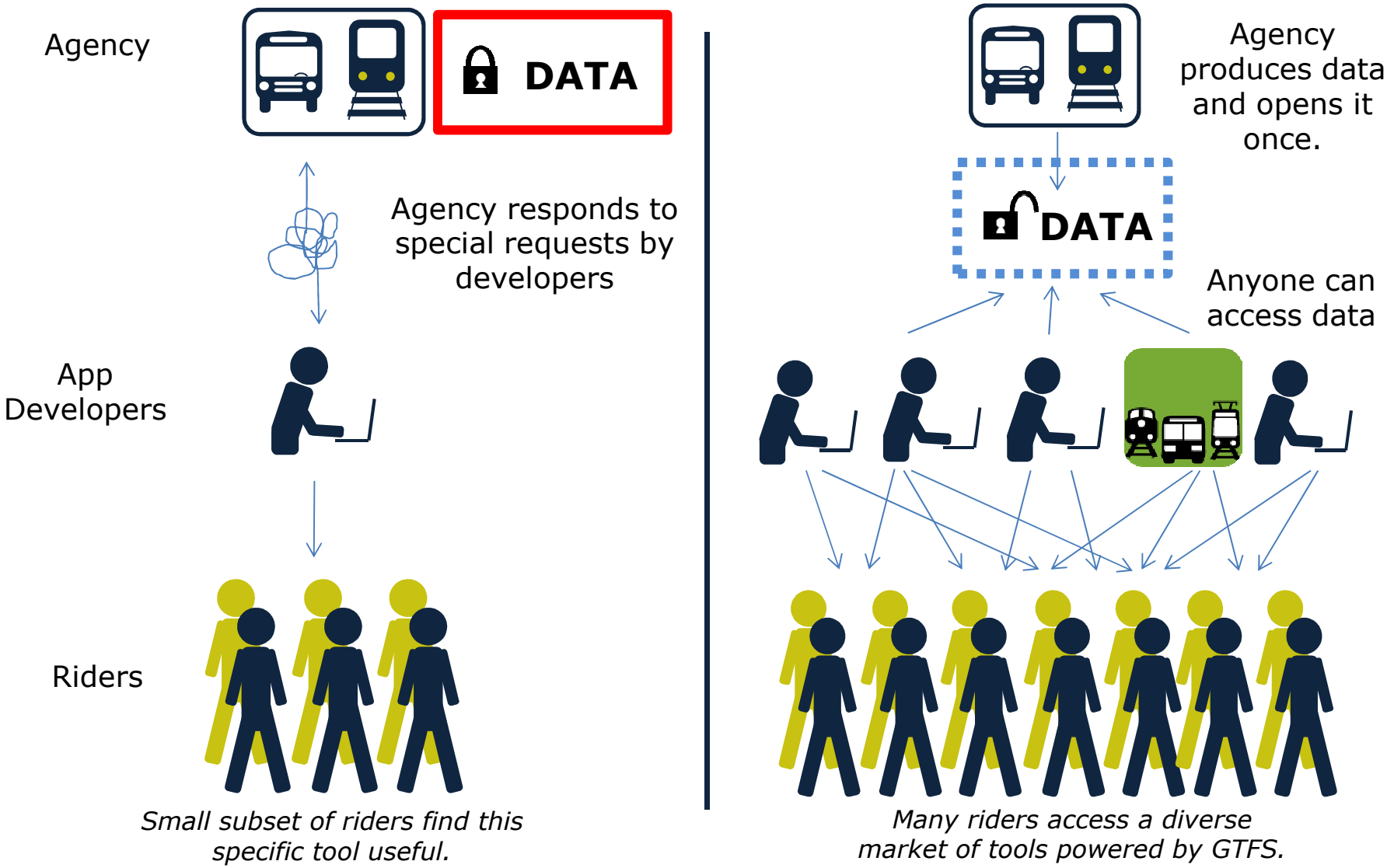
Change in Transit Usage

Ongoing Work

- OneBusAway Seattle
  - Continued deployment
  - Home of open source code
- OneBusAway Tampa
  - Spring 2013 Pilot Program
  - Pre-test Post-test control group design
- BusTime New York City
  - Borough by borough release of real-time information
  - Panel regression to control for external factors
- OneBusAway Atlanta
  - Recent deployment
  - Disaggregate analysis using smart card data

Image source: www.marta.com

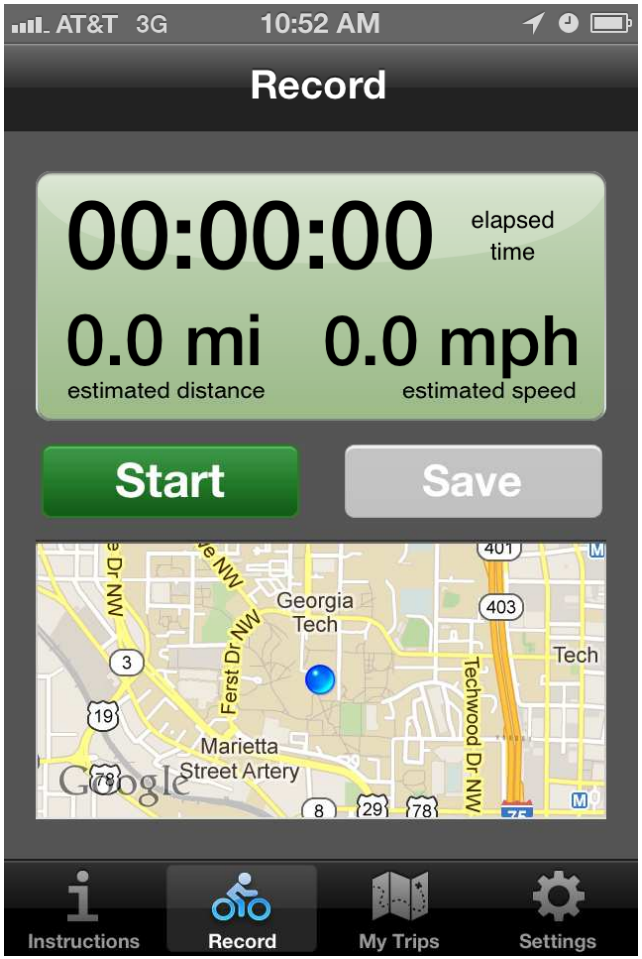
How does Open Data help?

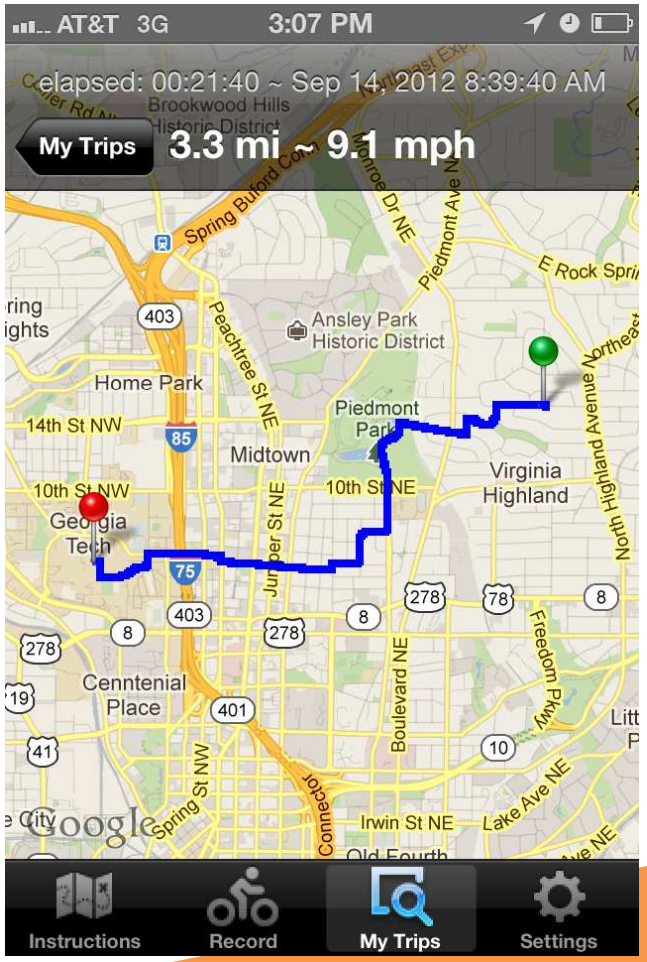


Using crowdsourced data to improve cycling

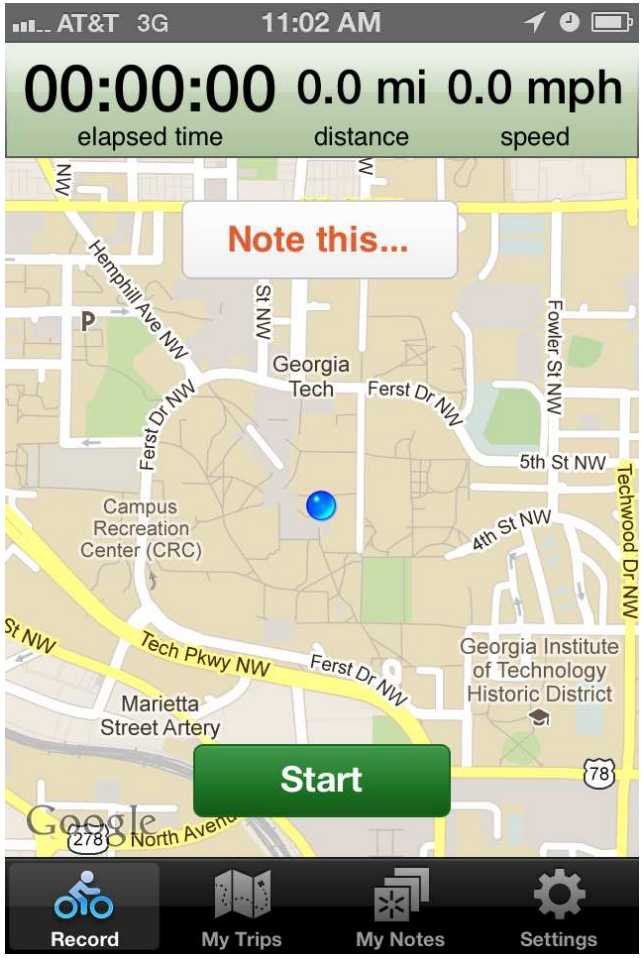
CYCLE ATLANTA

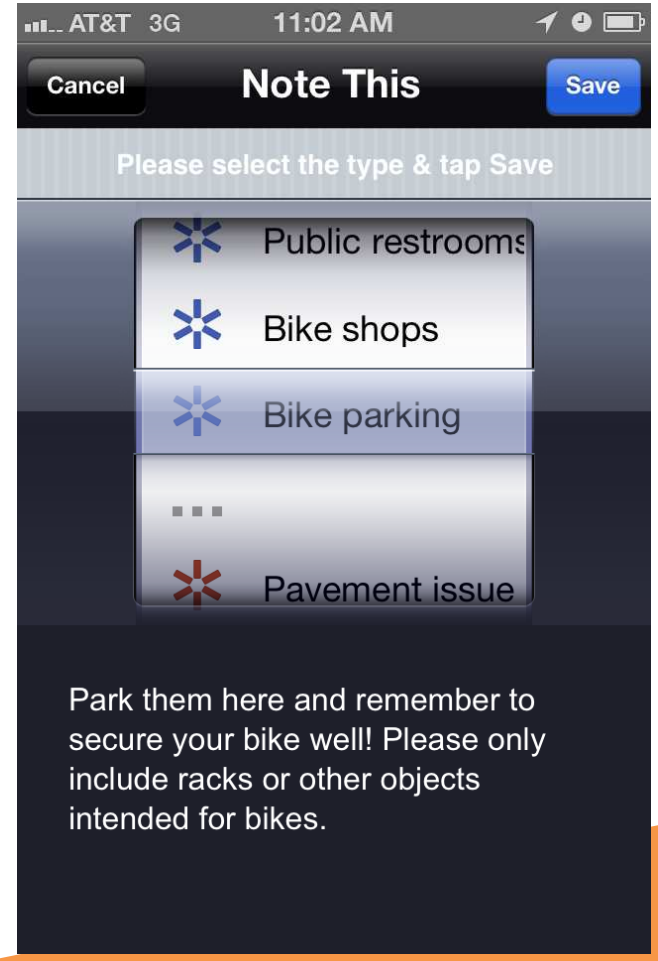
Records your bike trips



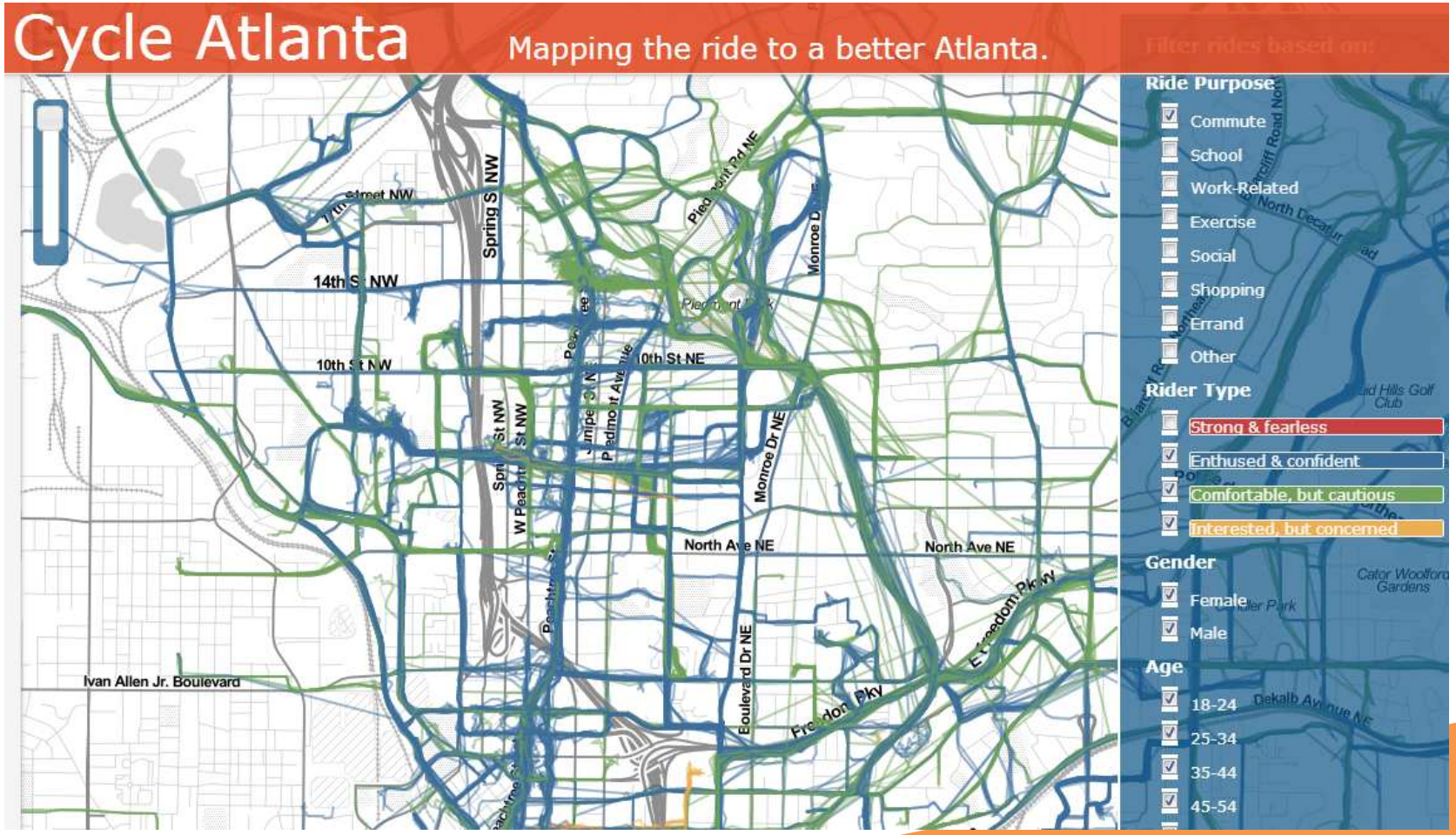


You build a community map of bike lanes and problems





The combined map shows routes cyclists ride



Without data, crowdsource

- City wanted to know where cyclists were riding
- Very little data about cyclists at all
- Went to the people to ask them
- Record trips is one level, assets and issues is another
- Easier to cycle if you know the route

Improved Transportation Info

- People can make better choices with better data
- Need reliable, relevant information
  - When is the next bus actually coming?
  - What route should I take to bike?
  - How do I navigate this new world?

- Need open data from agencies
- Without it, crowdsource our own

FUTURE IMPACTS OF THE SHARING ECONOMY

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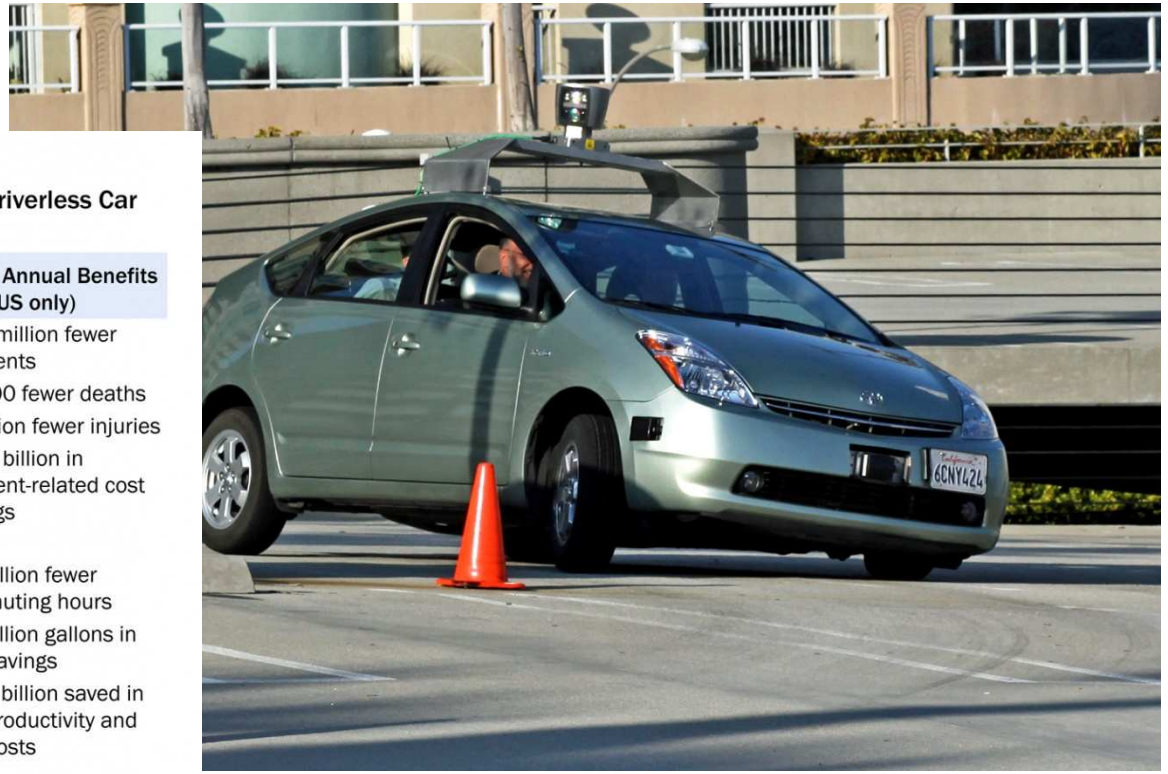
Autonomous Vehicles



Great Mileage

Some Benefits of the Driverless Car

Google's Aspiration	Potential Annual Benefits (US only)
• 90% reduction in accidents	• 4.95 million fewer accidents • 30,000 fewer deaths • 2 million fewer injuries • $400 billion in accident-related cost savings
• 90% reduction wasted commuting	• 4.8 billion fewer commuting hours • 1.9 billion gallons in fuel savings • $101 billion saved in lost productivity and fuel costs
• 90% reduction in cars	• Reduce cost per trip-mile by 80% or more • Increase car utilization from 5-10% to 75% or more • Better land use

Sources: Google, US NHTSA, AAA, Texas A&M Transportation Institute, Columbia University Earth Institute and Devil's Advocate Group's analysis

Summary

- Sharing economy impacts to date
  - Shared vehicles, shared ride
  - Collective transportation
  - Data sharing
  - Crowdsourcing

- Sharing + Autonomous
  = Vastly Different Transport System

Thank You!

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