

**PLEASE
SIT
ANYWHERE**

SO WE CAN GET MOVING.....

A solid orange horizontal bar at the bottom of the slide.

Tech 330 – Technology and the Global Society

“Mobility Options”

OCTOBER 22, 2019



Closing fast!

	Thurs – Oct 24	Human Trafficking – Chad Laux and Kate Seigfried -Spellar		
11	Tues – Oct 29	Review of Global Challenges Using SDG – Andreas Dewald		
	Thurs – Oct 31	Sustainable Development Guidebook – Andreas Dewald		In-Class Activity
12	Tues – Nov 5	Current Global Events	Current Event Major Assignment	In-class Exercise
	Thurs – Nov 7	Current Global Events	Current Event Major Assignment	In-class Exercise
13	Tues – Nov 12	Current Global Events	Current Event Major Assignment	In-class Exercise
	Thurs – Nov 14	Cyber Security on a Global Scale By Ida Ngambeki, Assistant professor of CNIT		
14	Tues – Nov 19	TBD		
	Nov 21	TEST #2 - – Via Blackboard		

Mobility Options??

- *The Garden City*, Ebenezer Howard (1898)
- Mobility in 2088 - Video
- America's Growing Dependency on the Car - Videos
- Invasion of the Small Car
- THE NEW Practicality of Electric Cars
- Mass Transit and High Speed Rail System (Time permitting)
- Group Activity
- Greta Thunberg.... "Paying The Bill" - Videos

TO-MORROW:
A Peaceful Path to Real Reform.
By
E. HOWARD.

By Ebenezer Howard - To-morrow: A Peaceful
Path to Real Reform, London: Swan
Sonnenschein & Co., Ltd., 1898., Public Domain,
<https://commons.wikimedia.org/w/index.php?curid=48718453>

THE THREE MAGNETS.

Nº 1.

TOWN.
CLOSING OUT OF NATURE, SOCIAL OPPORTUNITY,
ISOLATION OF CROWDS, PLACES OF AMUSEMENT.
DISTANCE FROM WORK, HIGH MONEY WAGES.
HIGH RENTS & PRICES, CHANCES OF EMPLOYMENT.
EXCESSIVE HOURS, ARMY OF UNEMPLOYED.
FOGS & DROUGHTS, COSTLY DRAINAGE.
FOUL AIR, MURKY SKY, WELL-LIT STREETS.
SLUMS & PALACES, PALATIAL EDIFICES, CROWDED WELLS, DESERTED VILLAGES.

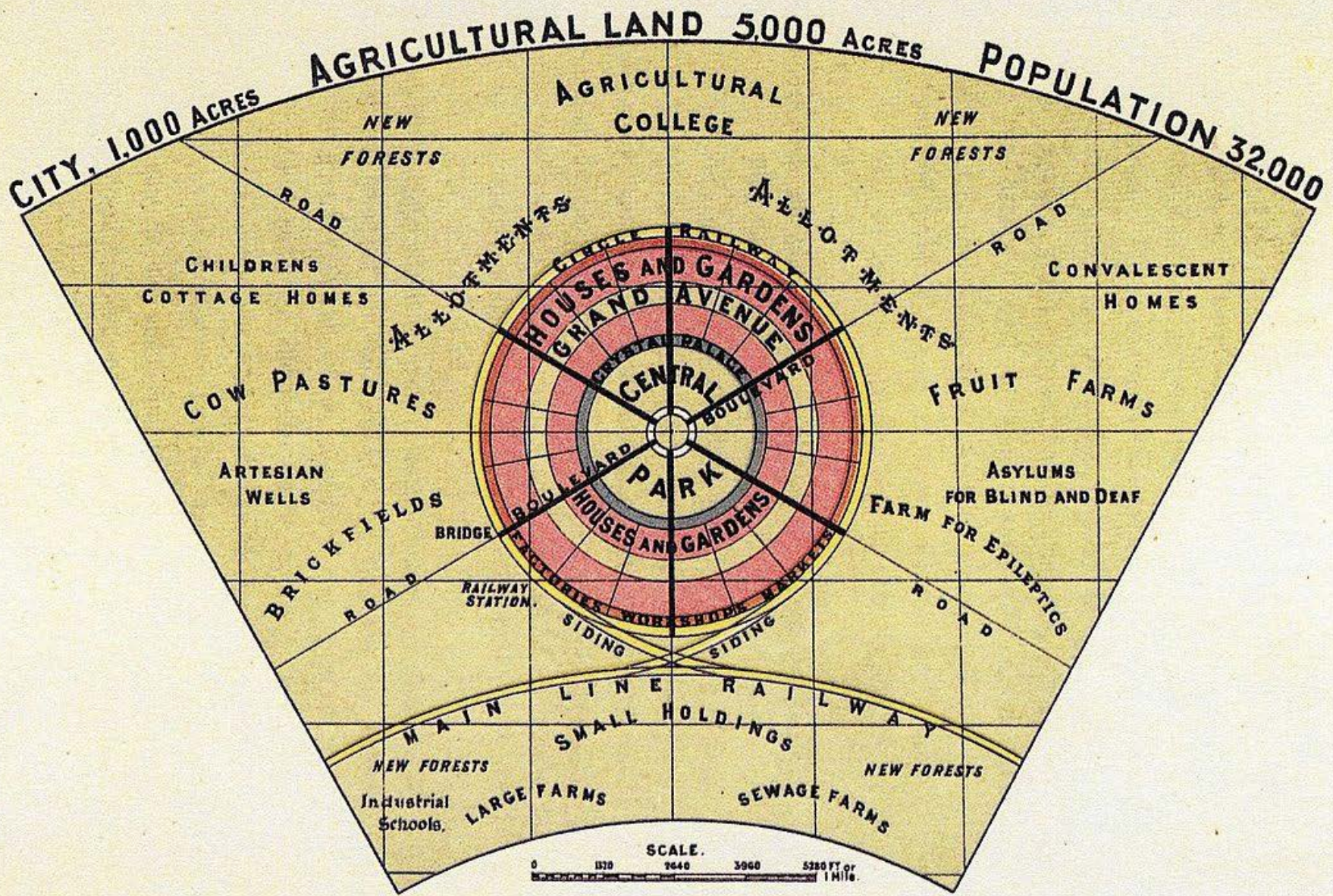
COUNTRY.
LACK OF SOCIETY, BEAUTY OF NATURE.
HANDS OUT OF WORK, LAND LYING IDLE.
TRESPASSERS, BEWARE WOOD, MADON FOREST.
LONG-HOURS-LOW-WAGES, FRESH AIR, LOW RENTS.
LACK OF DRAINAGE, ABUNDANCE OF WATER.
LACK OF AMUSEMENT, BRIGHT SUNSHINE.
SPIRIT, NEED FOR REFORM.

THE PEOPLE

WHERE WILL THEY GO?

TOWN-COUNTRY.
BEAUTY OF NATURE, SOCIAL OPPORTUNITY.
FIELDS AND PARKS OF EASY ACCESS.
LOW RENTS, HIGH WAGES.
LOW RATES, PLENTY TO DO.
LOW PRICES, NO SWEATING.
FIELD FOR ENTERPRISE, FLOW OF CAPITAL.
PURE AIR AND WATER, GOOD DRAINAGE.
BRIGHT HOMES & GARDENS, NO SMOKE, NO SLUMS.
FREEDOM, CO-OPERATION.

GARDEN - CITY

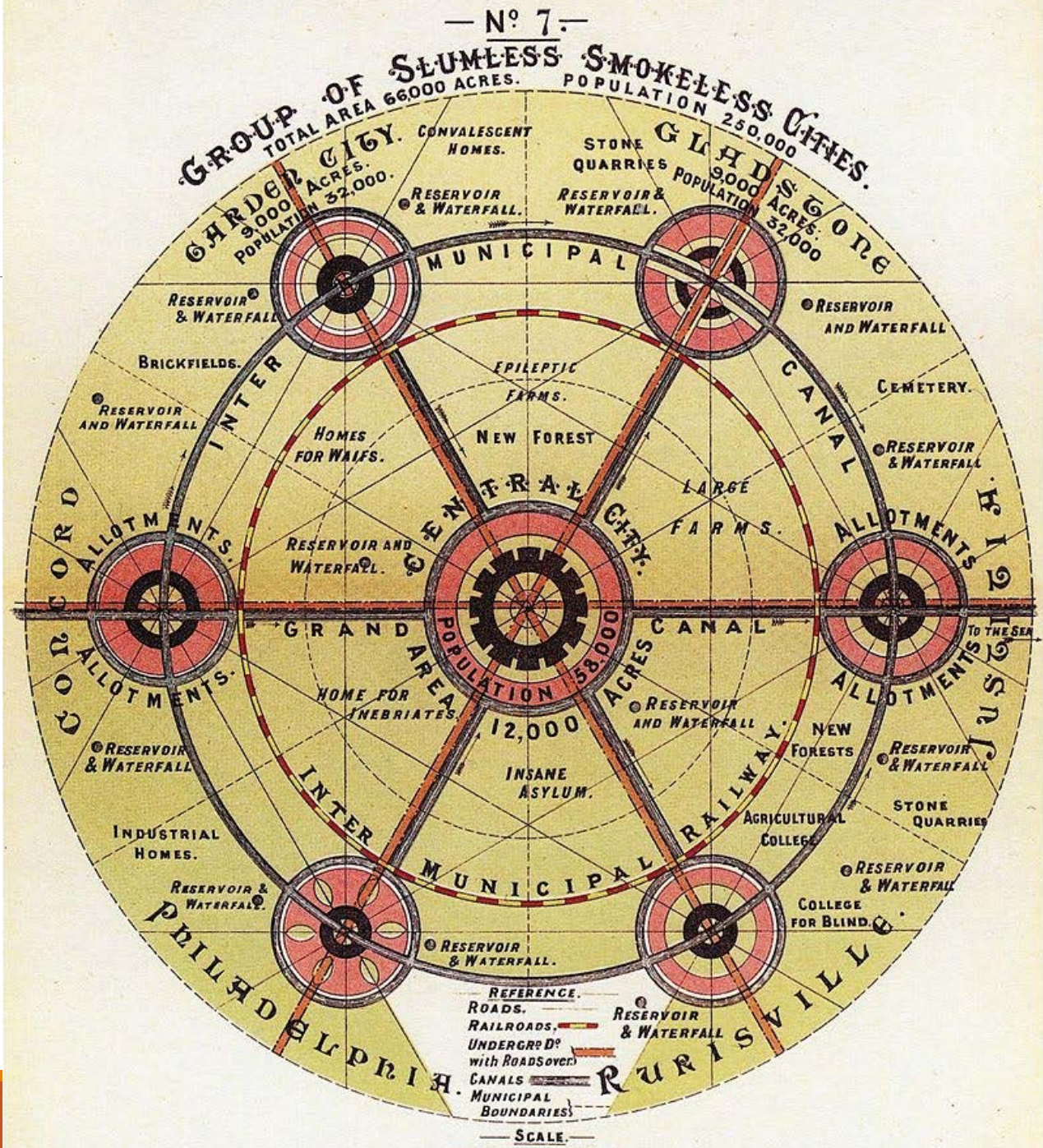


SCALE.
 0 1320 2640 3960 5280 FT or 1 MILE.

Garden City Utopia

by
Ebenezer Howard

<https://www.uh.edu/engineering/epi2648.htm>



How do/will we move about?

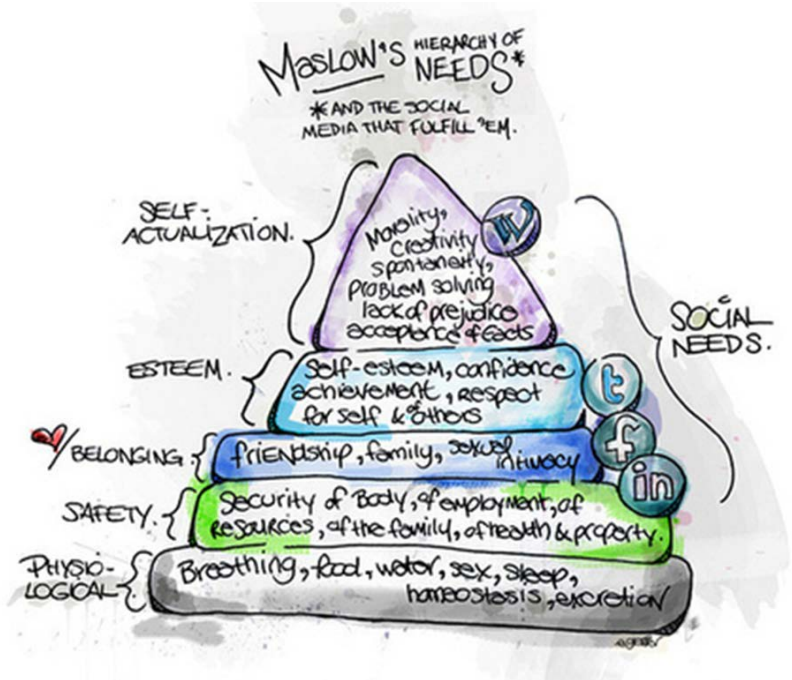
- Walk
- Bike
- Skate board
- Rollerblades
- Bus
- Train
- Personal vehicles
- Air craft



Mobility = A $\xrightarrow{\text{fast and flexible}}$ B

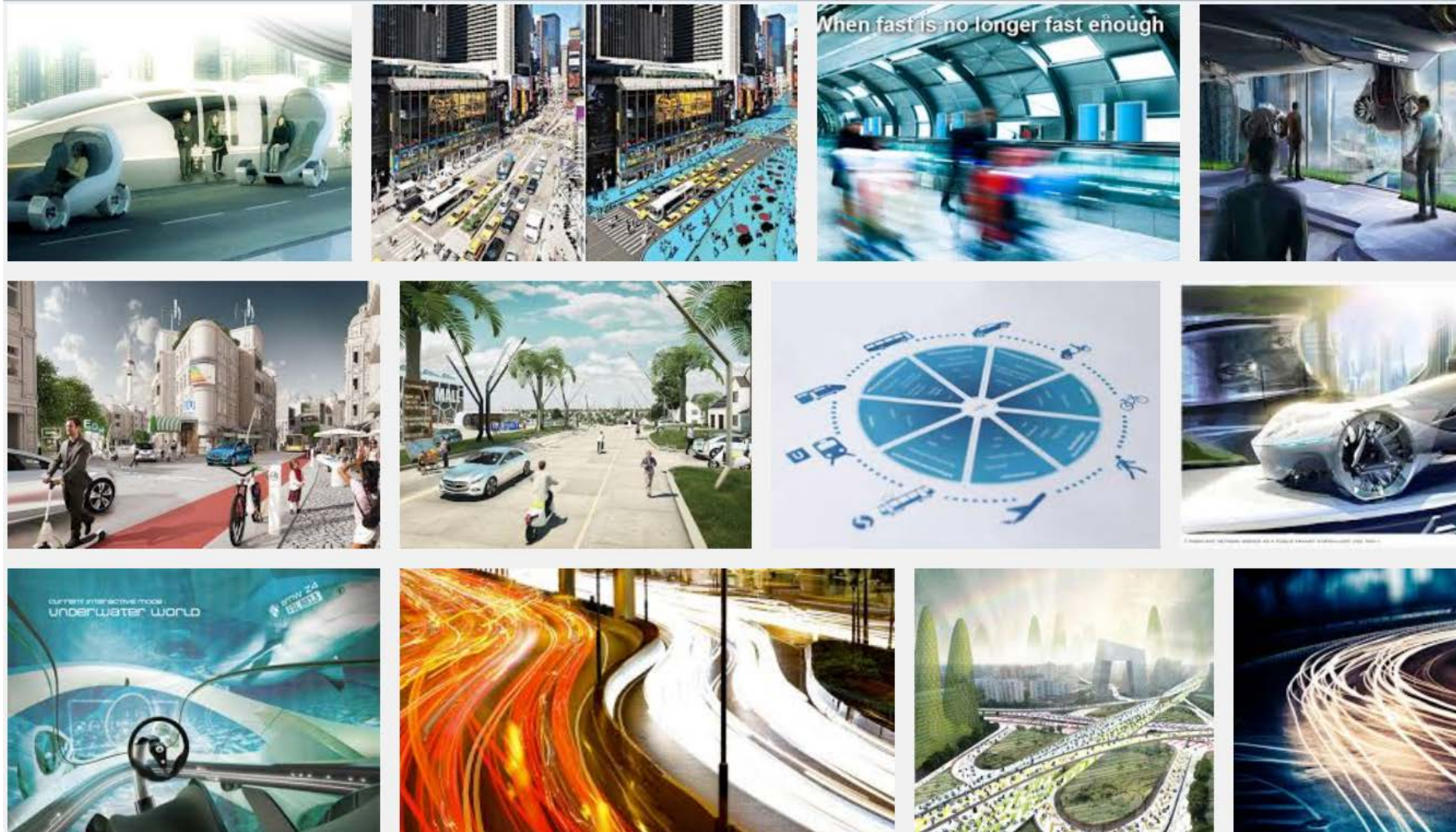
Why do we need to travel from “Point A to Point B”

- Obtain things(food, etc...)
- Work / Get Paid / make a living
- Experience things / Society
 - Classes
 - Sight seeing
 - Getting outdoors

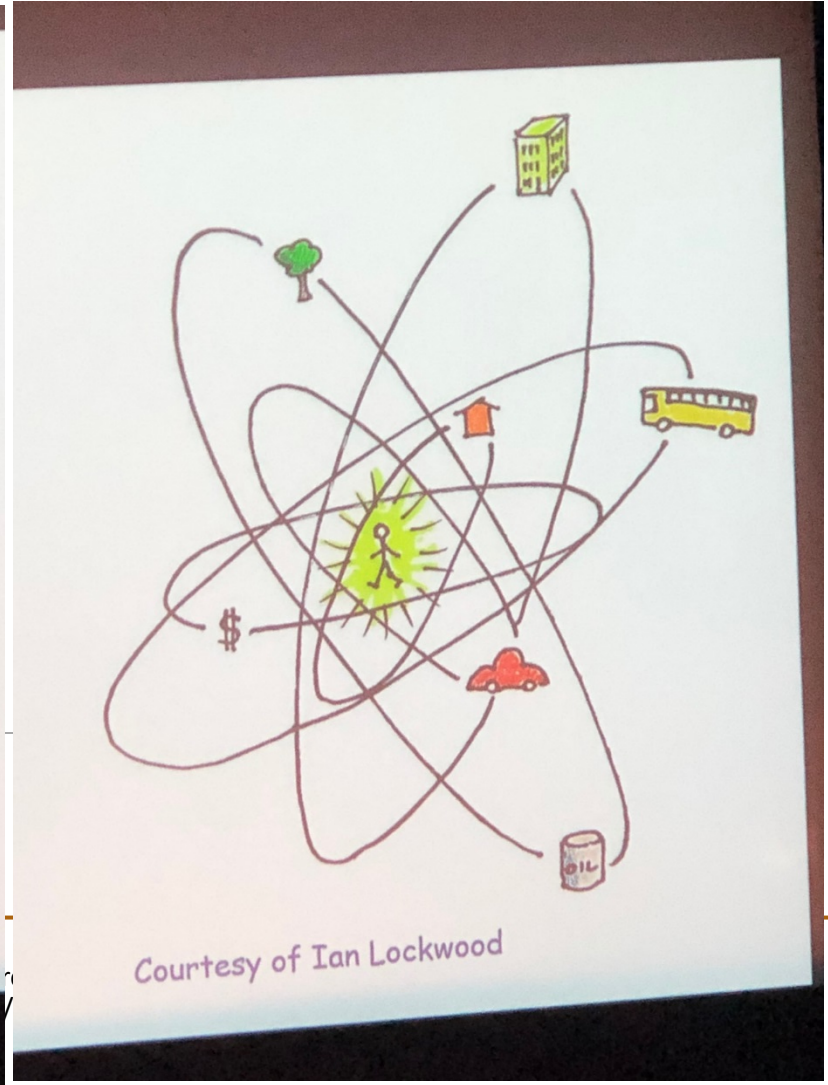
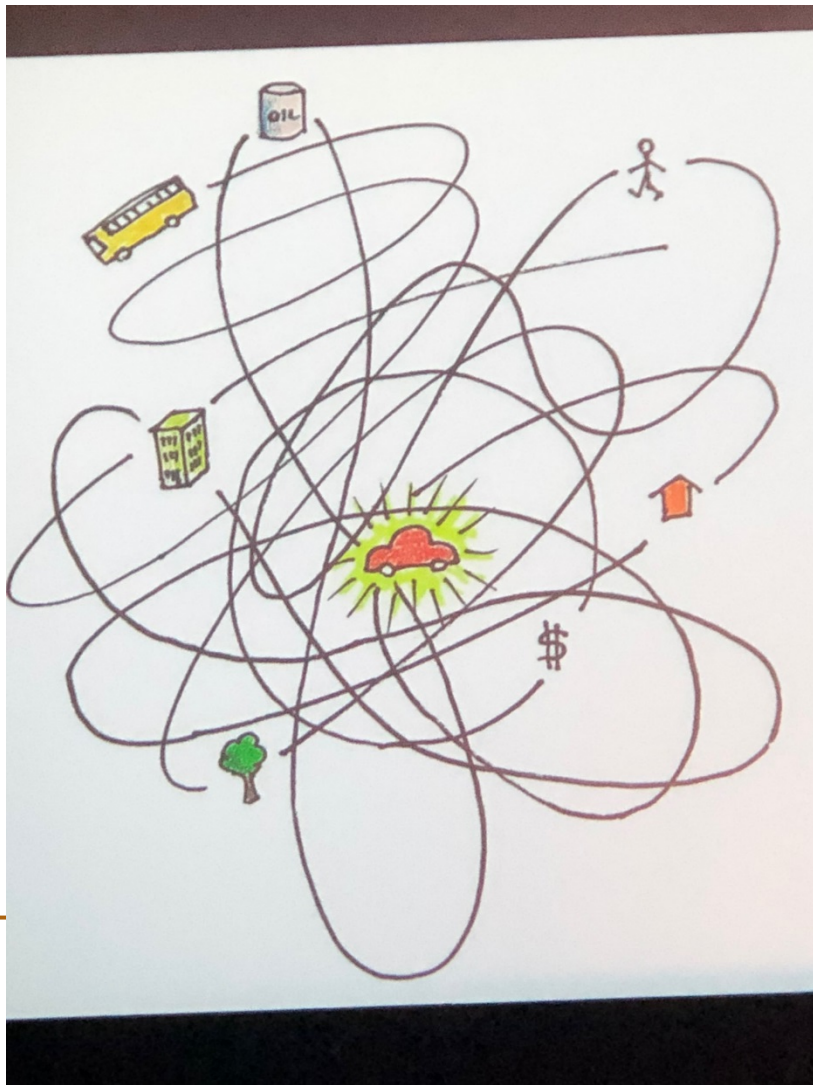


- Which of these experiences can we accomplish with out actually going anywhere?

Mobility 2088



<https://www.youtube.com/watch?v=qMZfJWnt2ug>



Highlights of US Transportation History

Source: *Encyclopedia of urban mass transit in the US*

1830's – Horse drawn Omnibuses

1850's – Horse drawn Rail cars

1870's – Elevated Trains

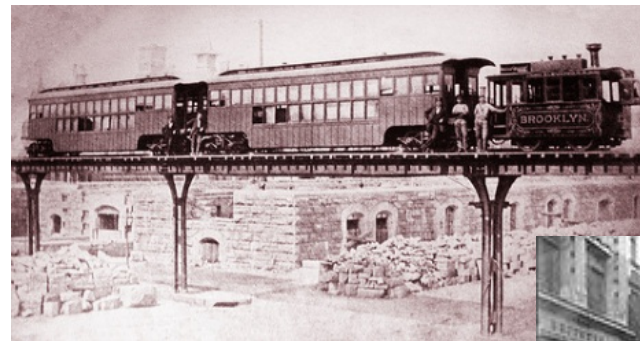
1889 – Electric Street Cars

1902 – 94% of street car mileage was powered by electricity

- “Street cars” were used as *loss leaders* for Real Estate development

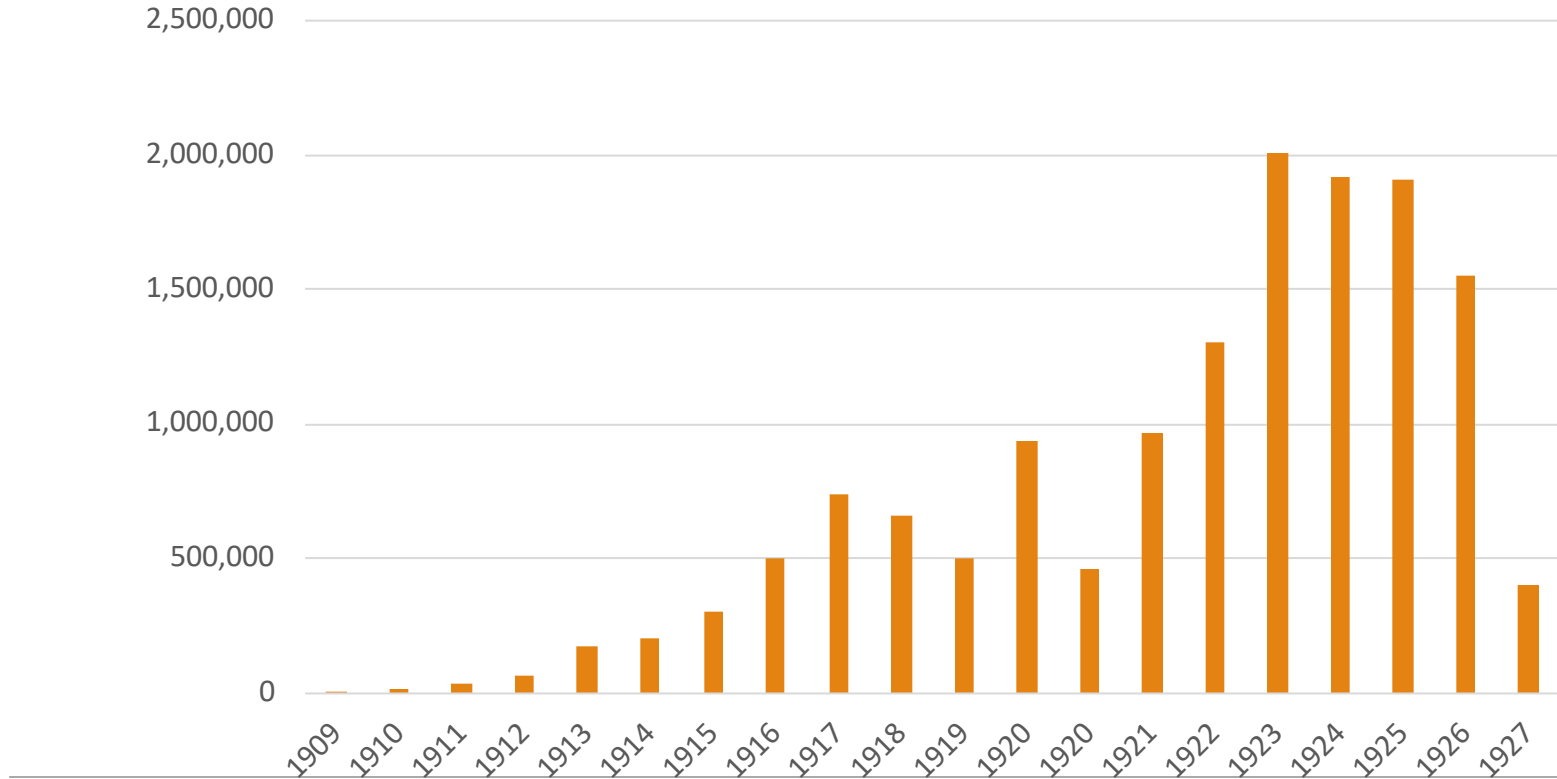
1904 – 21 miles of subway in NYC

1913 – additional 123 miles of subway in NYC was contracted



Sales Numbers of Ford Model T

<http://mtfca.com/encyclo/fdprod.htm>



- Till the end of 1912 about 130.000 cars were sold (worldwide)
- Mass production started in 1913

The incredible success of the Model T



Wikimedia commons

Highlights of US Transportation History

Source: *Encyclopedia of urban mass transit in the US*

1915 – Automobiles on the scene (1 car for every 61 people in Chicago)

1920's – Mass transit declined from a peak of 17.2 billion riders per year in 1926

1925 – 1 automobile for every 11 people nationwide

1942 – US Automobile makers suspend production to support war efforts

1950's – POST WAR – Happy Days

1960's – Urban Mass Transportation Act (1964)

1970s – Highway Act of 1973

TODAY there is 0.86 cars for every person in the USA

YEAR	AUTOs
	Source: Census.gov
1900	8,000
1920	9,239,000
1940	32,453,000
1950	49,162,000
1960	73,858,000
1970	108,418,000
1980	155,796,000
1990	188,798,000
2000	225,821,240
2010	250,070,050

The U.S. National Highway Transportation Safety Administration (NHTSA, 2012)

Infrastructure Location:

- 46% of the US population live within a quarter mile of a bike path
- 39% of the US population live within a quarter mile of a bike lane
- 32% of the US population have no neighbourhood sidewalks
- 15% of the US population have sidewalks only on some streets

Challenges for Increased Active Transportation

- **Costly changes to existing infrastructure**
- **Time consuming effort**
- **Increased commuter times**
- **Paradigm shift in selected modes of transportation**
- **Long term cycle for return-on-investment**
- **Ensured / Increased safety requires “separation” of automotive and active transportation**

Cox Factoid...

TRUE OR FALSE....

Dr Cox's first car was a "Vette"!



IT'S TRUE!

• **40 MPG highway**
 • **28 MPG city - EPA**
Chevette

That's right. 40 mpg highway, 28 mpg city, based on EPA test results with standard 1.4-litre engine and 4-speed manual transmission. (Remember: These mileage figures are estimates. The actual mileage you get will vary depending on the type of driving you do, your driving habits, your car's condition, and available equipment.)
 Chevette is international in design and heritage, with engineering

concepts proved around the world. Its wheelbase is about the same as the VW Rabbit's. It has more front-seat head room than a Datsun B-210 Hatchback and more front-seat leg room than a Toyota Corolla 2-door sedan. It has one of the shortest turning circles in the world, making it very easy to maneuver. It is protected by 17 anti-

corrosion methods. At \$2899*, the two-seat Scooter model is priced \$600† below the lowest priced 1976 VW Rabbit. The four-seat Chevette Coupe, at \$3098*, is priced \$401† below the 1976 Rabbit.†† In short, it's a new kind of American car. Sold and serviced by all 6,030 Chevrolet dealers from sea to shining sea.

Prices start at \$2899*

2-Seat Scooter (shown)	\$2899*
Chevette Coupe (not shown)	\$3098*
The Sport (not shown)	\$3175*
The Rally (not shown)	\$3349*
The Woody (not shown)	\$3404*



Chevrolet's new kind of American car.

In California, see your Chevrolet dealer for EPA mileage figures and engine/transmission combinations available on California emission-equipped cars.
 *Manufacturer's Suggested Retail Price including dealer new vehicle preparation charge. Destination charge, available equipment, state and local taxes are additional.
 †Not including dealer new vehicle preparation charge additional on VW Rabbit.
 ††Based on a comparison of Manufacturer's Suggested Retail Prices.

RANKING	COUNTRY	Vehicles per persons
1	San Marino	1.263
2	Monaco	0.899
3	Liechtenstein	0.826
4	United States	0.860
5	Iceland	0.820
12	Canada	0.662
15	Germany / Norway	0.561
16	France	0.478
31	United Kingdom	0.519
19	Czech Republic	0.530
53	Saudi Arabia	0.209
58	Iran	0.179
58	China	0.179
130	Iraq	0.50
152	Kenya	0.24
187	Somalia	0.03

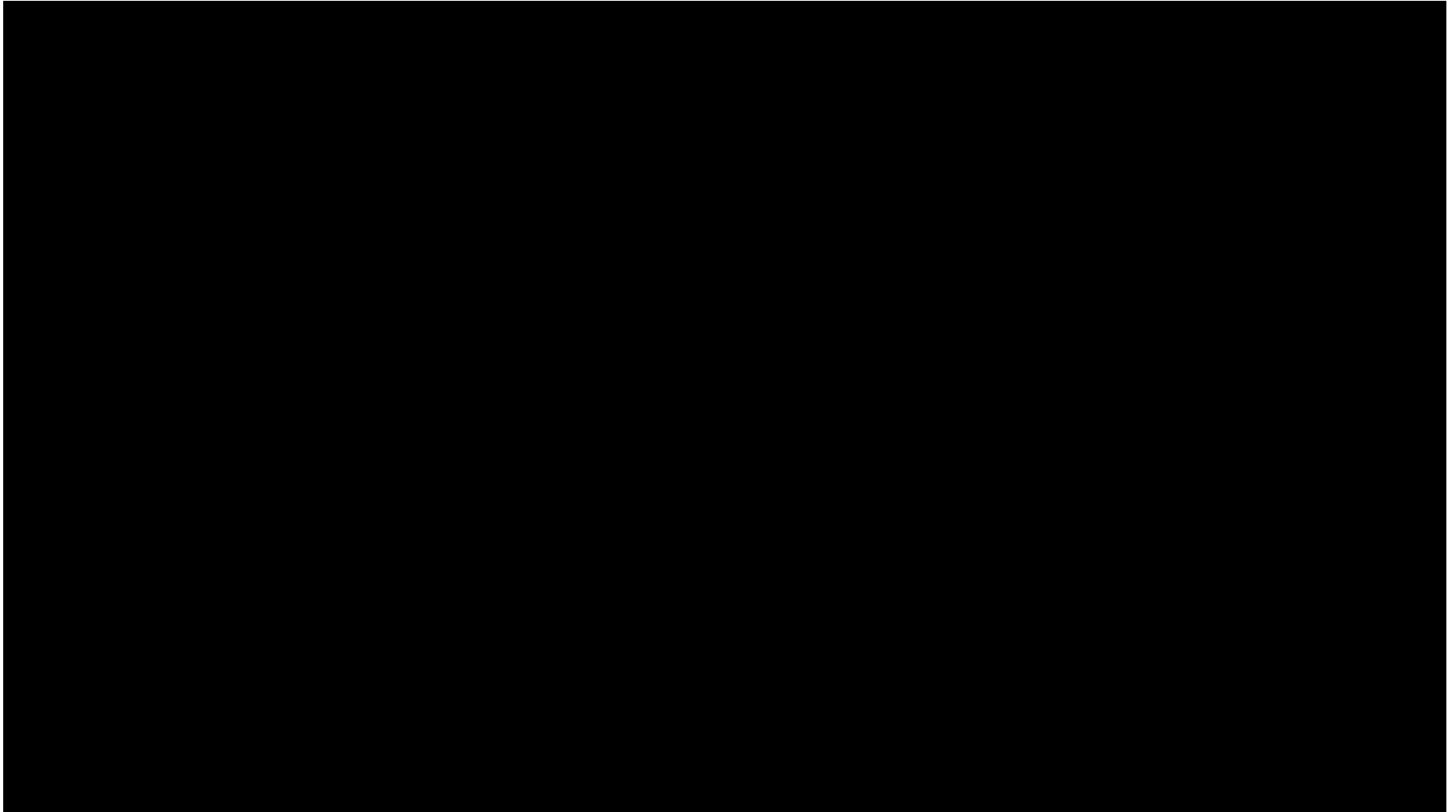
https://www.wikiwand.com/en/List_of_countries_by_vehicles_per_capita

Own the Experience...

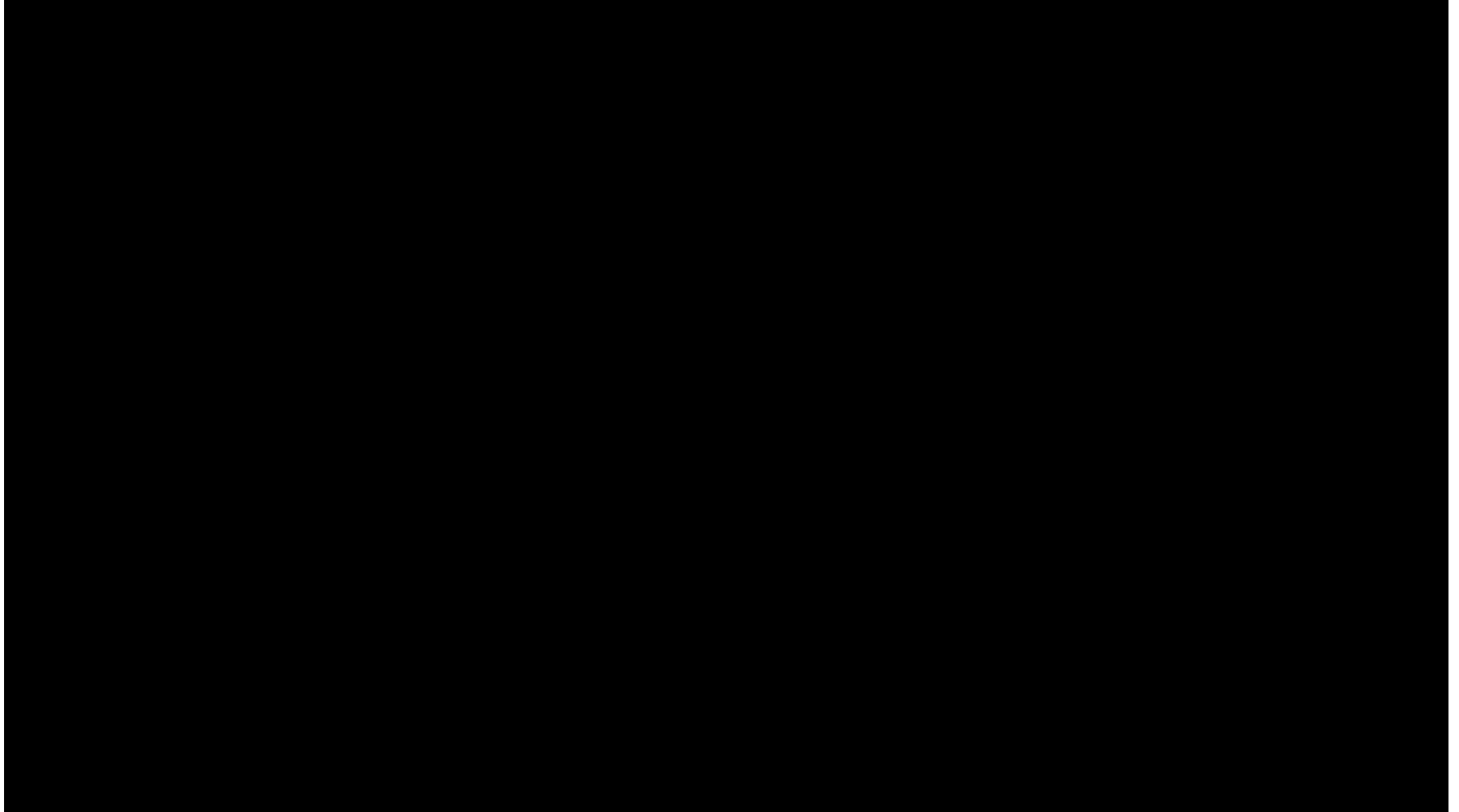
...Not the Car!

<https://vimeo.com/256587030>

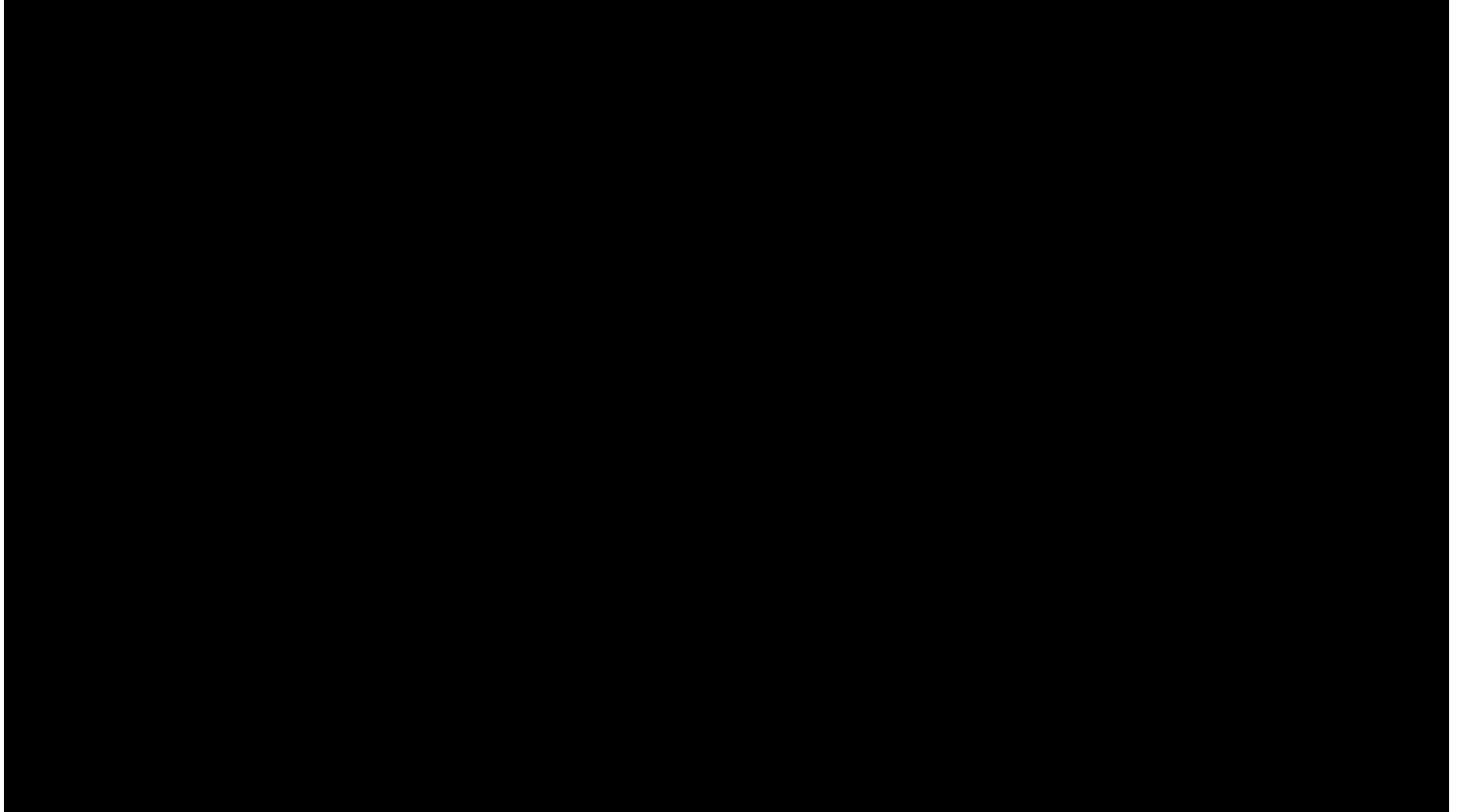
Why have Americans become so dependent upon their cars?



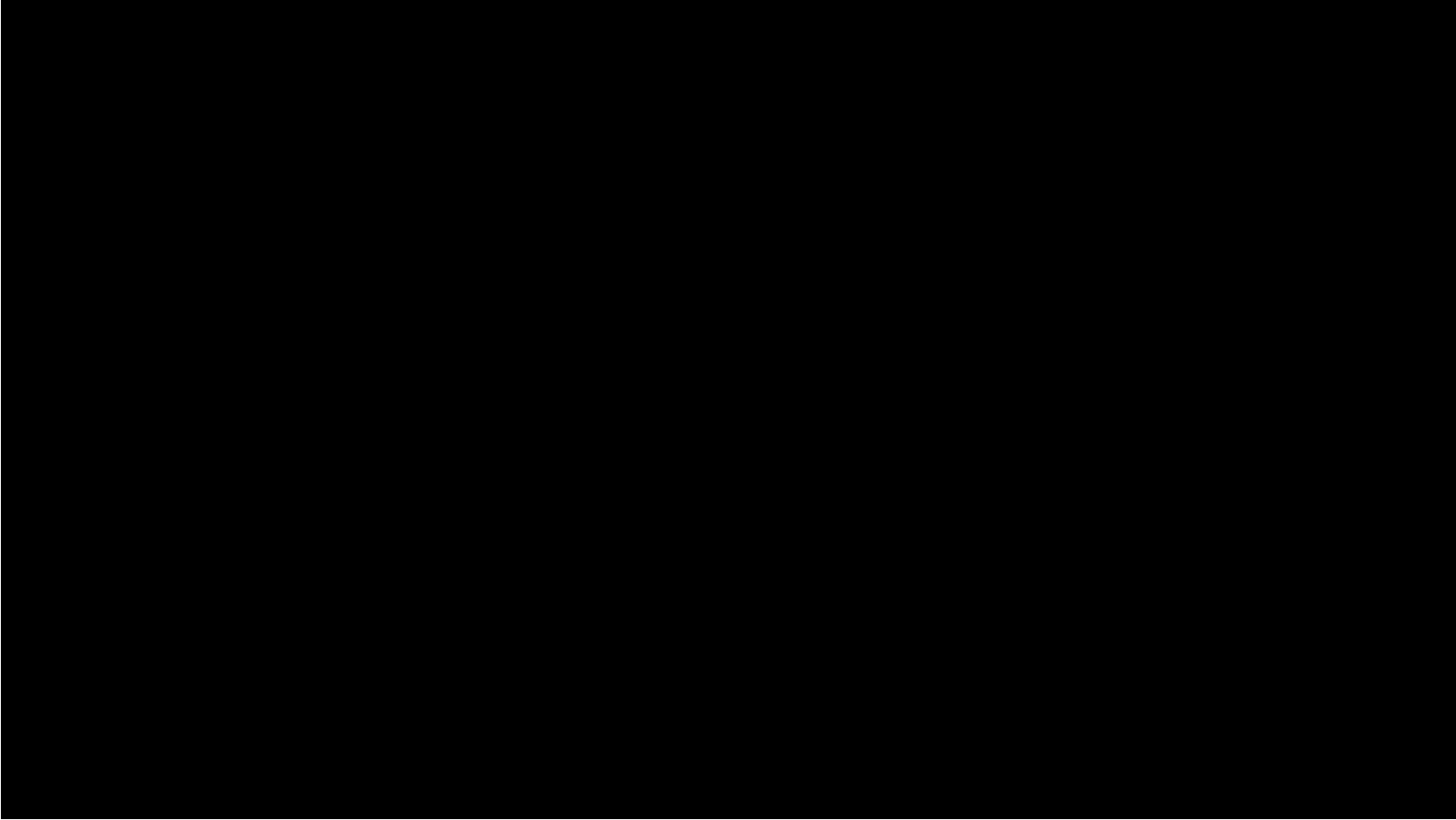
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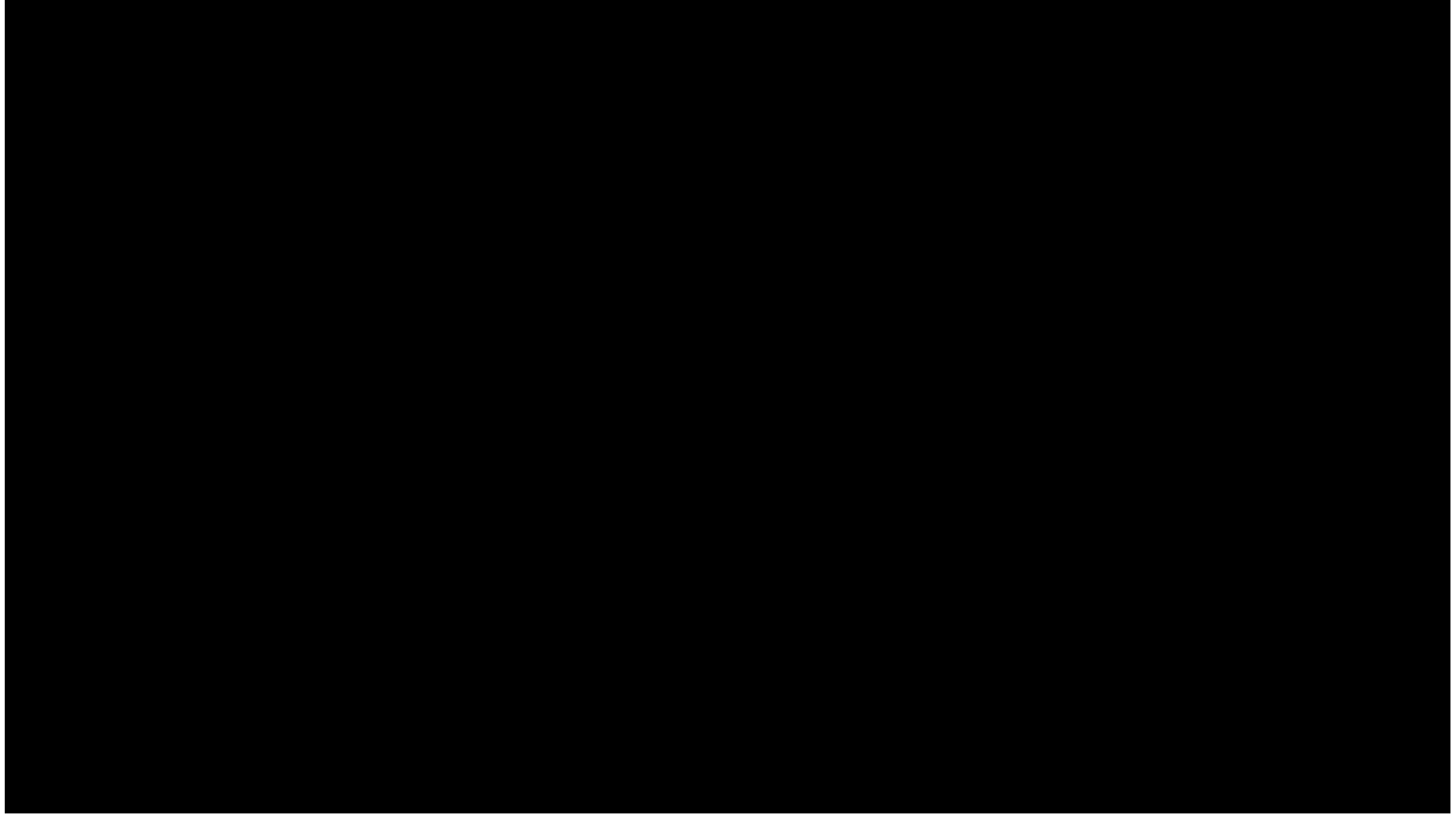
Why have Americans become so dependent upon their cars?



American's and Smaller Cars



Peel P50 - "world's Smallest car"





HAS OBAMA SOLD OUT TO THE BANKS?

Newsweek

When I Grow Up, I'm Going to Weigh 300 Lbs. Help!

MELINDA GARDY'S BIRTHDAY...
THE LAMMER...
THE NEW...
CANDICE...
THE NEW...
CANDICE...

NATIONAL GEOGRAPHIC

THE HEAVY COST OF fat

The Real Man From Snowy Mountain...
Eight Masters of Disguise...
Looking for the Perfect...
Wild on the Street...
Land of the Surfing...
DUSTON...
Disease and the Olympics, Past and Present

TIME

JACK...
WHO'S GETTING IT...
WHY IT'S STRIKING SO MANY...
WHAT YOU CAN DO TO FIGHT IT

DIABETES
ARE YOU AT RISK?

How Long Can a Woman Wait to Have a Baby?

IDEAS OF THE YEAR

The Atlantic

The Cure for Obesity

How Science Is Engineering Healthier Junk Food

Starting...
NPR's...
Black...
P...
P...

TIME

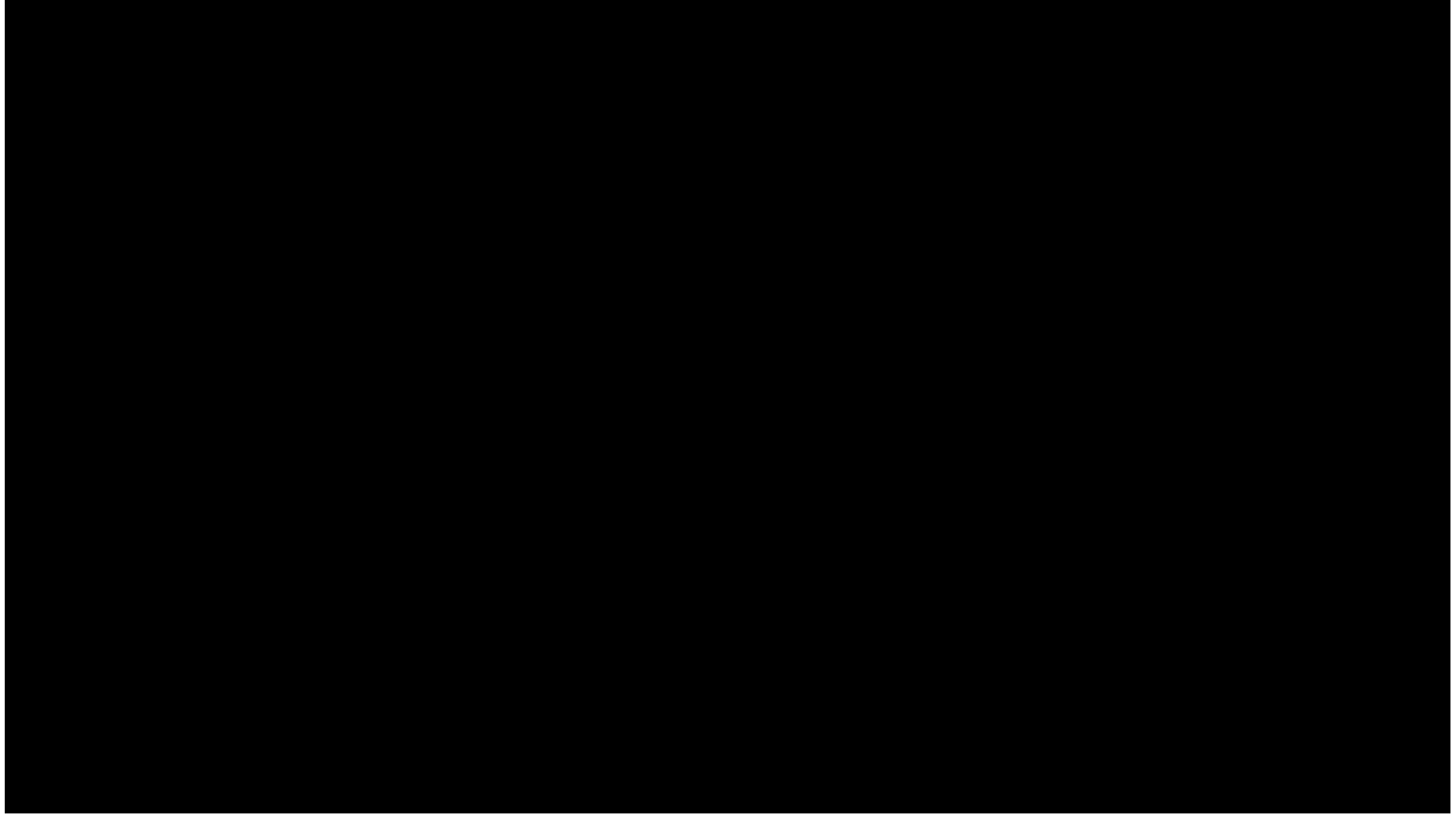
The Obesity Epidemic in America

Reframing Key Transportation Concepts
DESIGN TRAFFIC - Interpreting the R

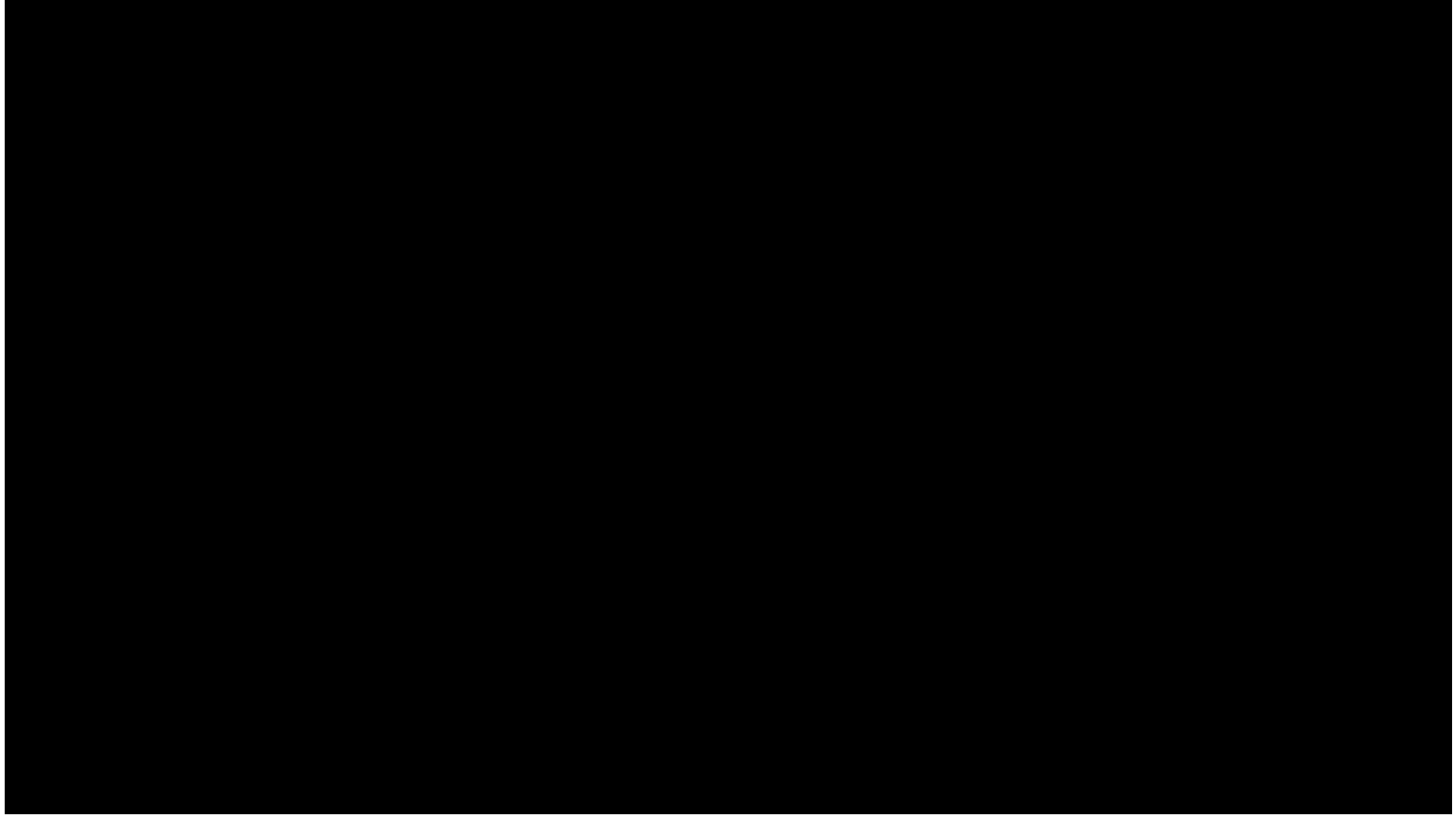


Capacity of Streets

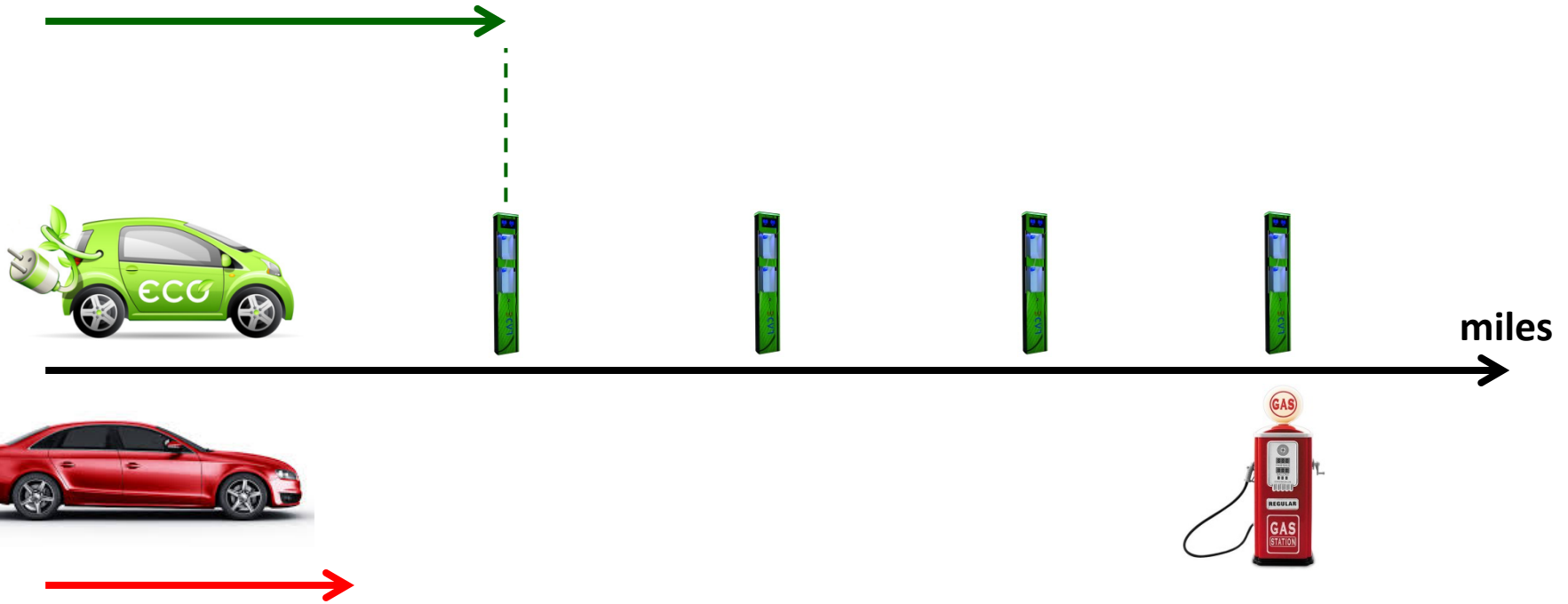
A few moments...Electric Cars?



A few moments...Electric Cars?



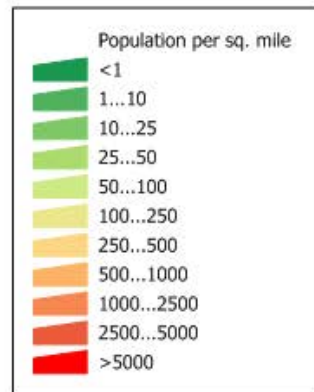
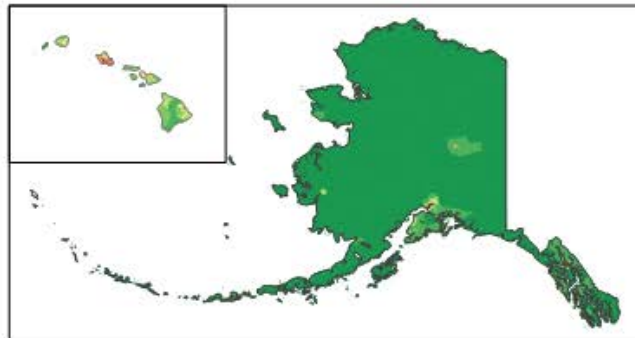
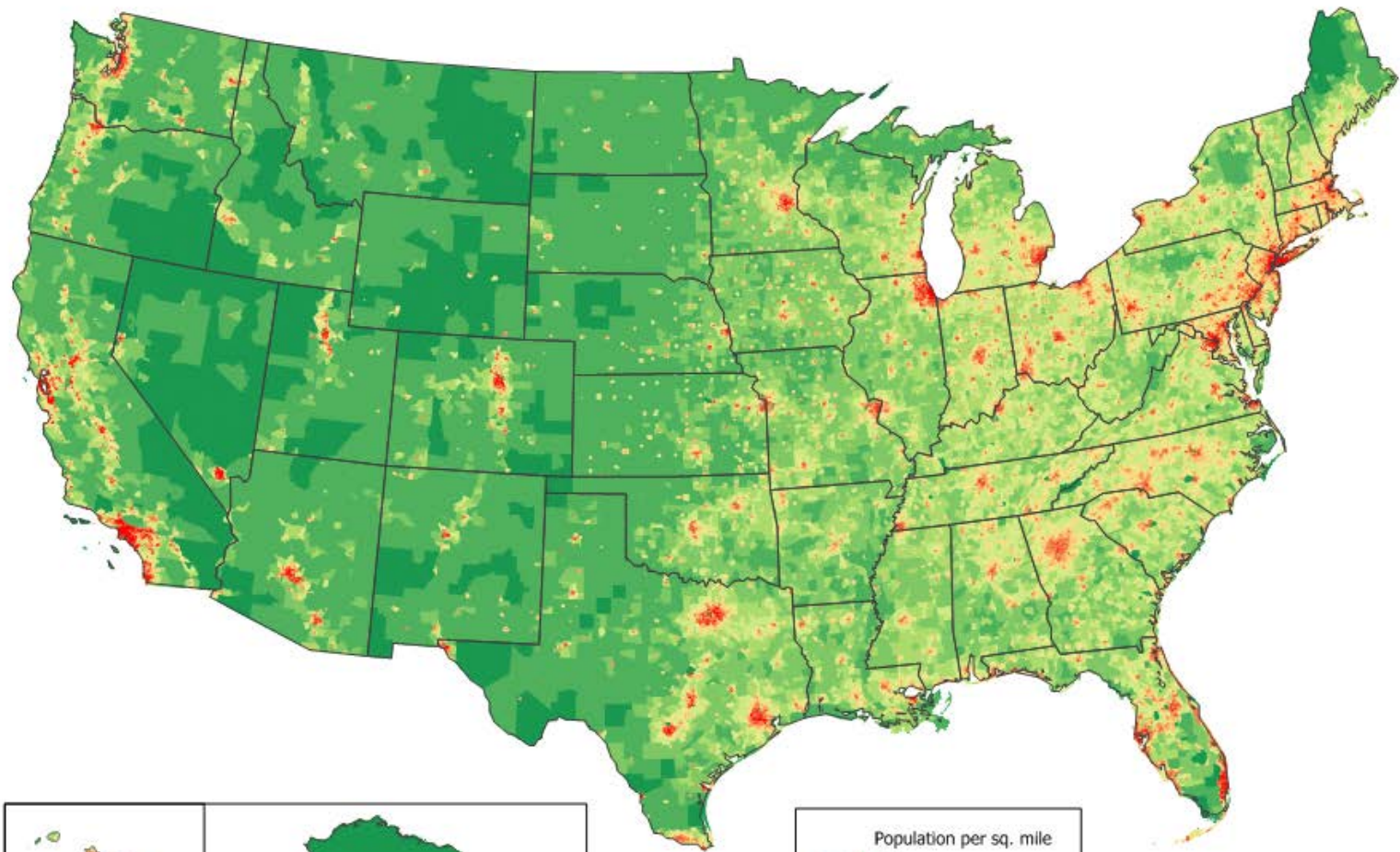
This range covers 90 to 95% of all trips in the US and in the EU



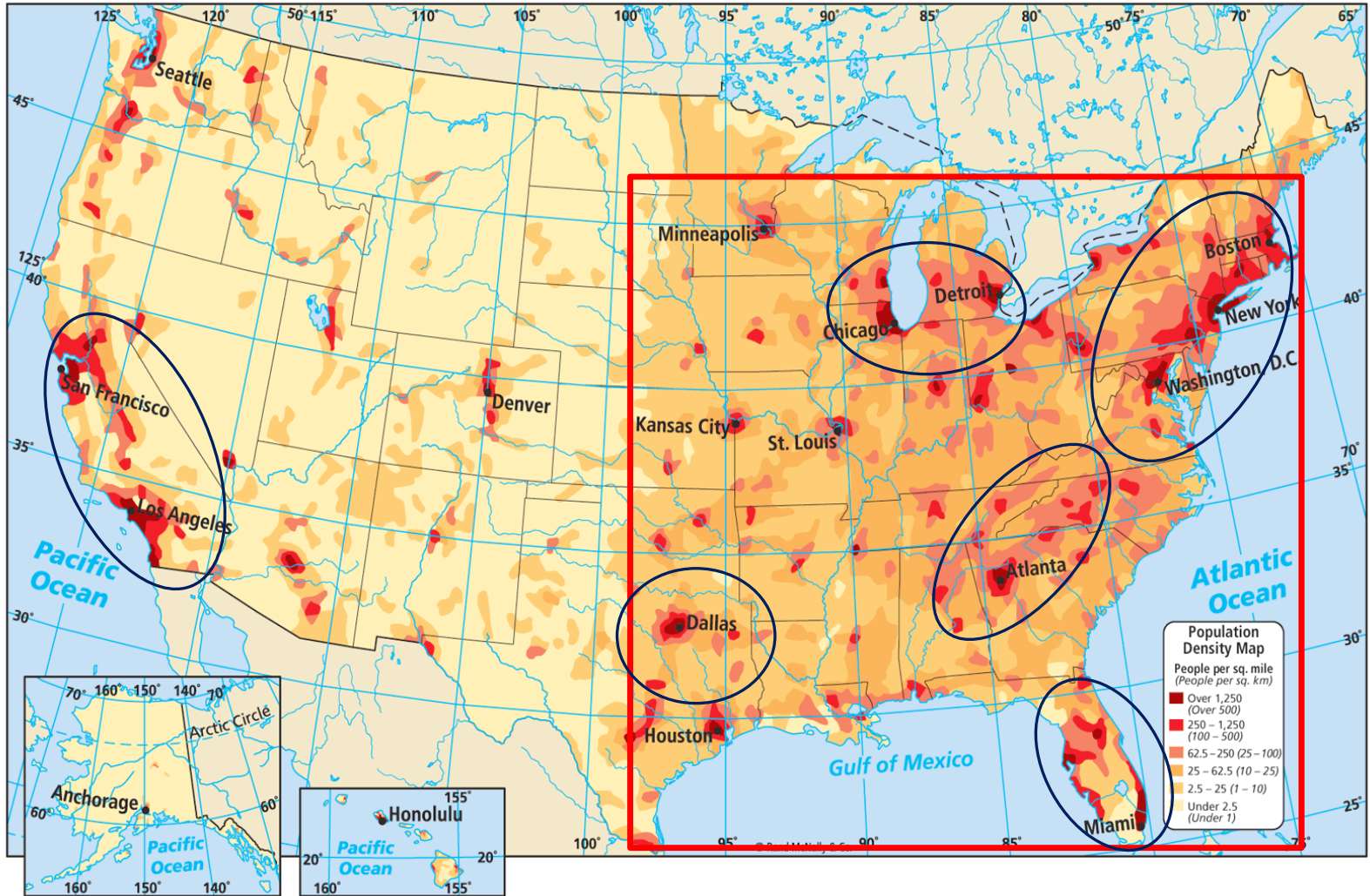
Average distance travelled per day in the US and in the EU
WHAT IS ADEQUATE RANGE FOR ELECTRIC VEHICLES? (80-120 MILES PER DAY)

How is our 7.2 B + population commuting?





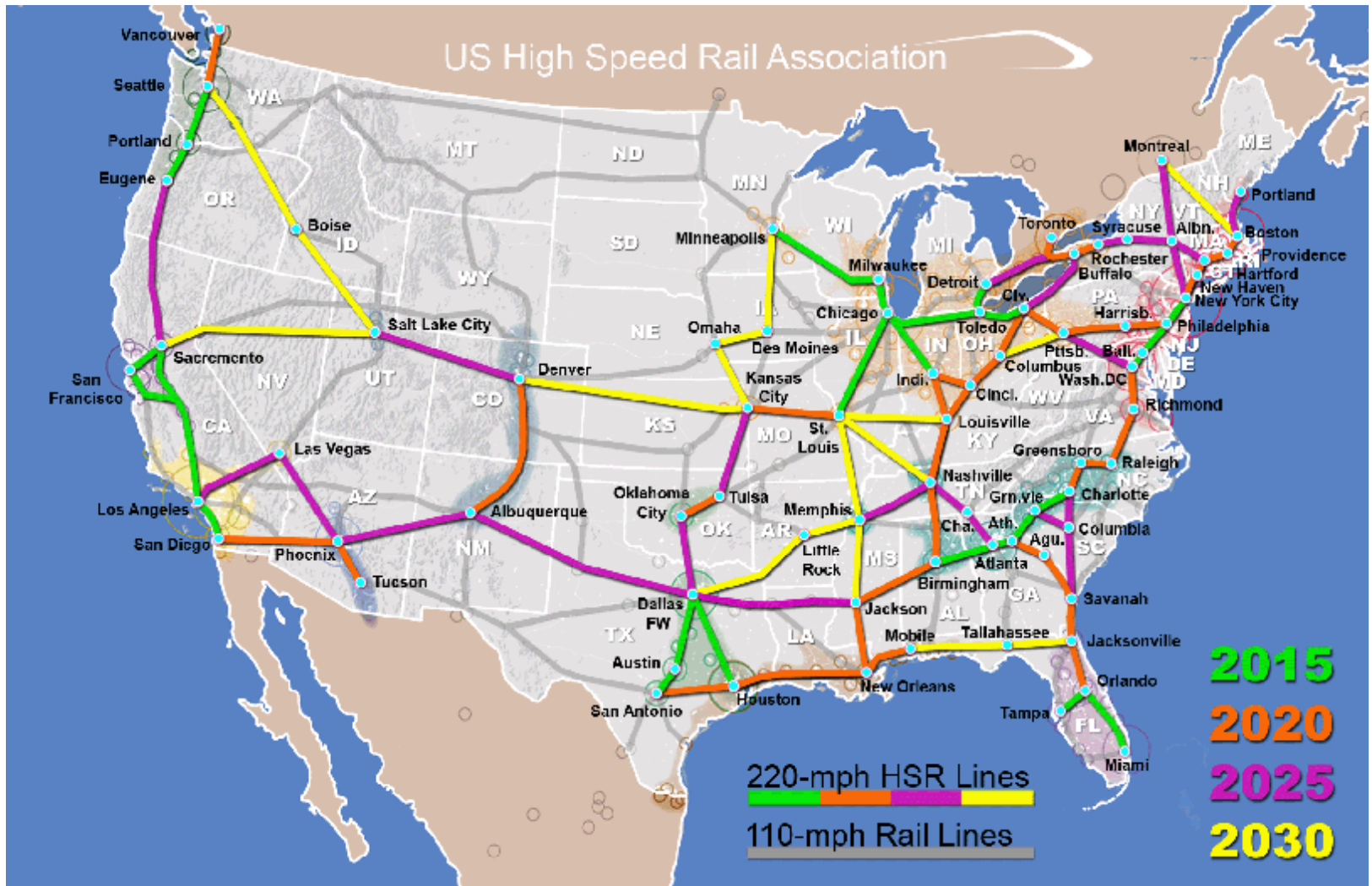
Population Density Map Rand McNally



High Speed Rail System in the US?



<http://www.ushsr.com/ushsrmap.html>



Gas Prices (USD per gallon)

\$ 4.16 avg

RANK	Country	Feb. 25, 2014	Feb. 9, 2015	Oct. 6 2015	Oct. 18 2019
	HONG KONG				\$ 8.66
1 / 4	NORWAY	\$ 9.50	\$ 8.04	\$ 6.63	\$ 7.04
2 / 5	NETHERLANDS	\$ 8.47	\$ 7.50	\$ 6.74	\$ 6.92
10 / 14 / 16 / 28	GERMANY	\$ 8.01	\$ 6.25	\$ 5.86	\$ 5.83
50 / 51 / 52 / 147	USA	\$ 3.40	\$ 2.31	\$ 2.40	\$ 2.99
56 / 158	SAUDI ARABIA		\$ 0.50	\$ 0.47	\$ 2.20
	CUBA				\$ 0.34

Source: <http://www.fuel-prices-europe.info/index.php?sort=4>
Globalpetrolprices.com

<http://gasprices.aaa.com/>



	Regular	Mid-Grade	Premium	Diesel	E85
Current Avg.	\$2.656	\$2.999	\$3.259	\$2.998	\$2.344
Yesterday Avg.	\$2.658	\$2.999	\$3.260	\$2.998	\$2.345
Week Ago Avg.	\$2.641	\$2.988	\$3.247	\$2.999	\$2.331
Month Ago Avg.	\$2.651	\$2.951	\$3.211	\$2.972	\$2.327
Year Ago Avg.	\$2.865	\$3.168	\$3.420	\$3.297	\$2.426

HIGHEST RECORDED	AVERAGES		Price	Date
Regular Unleaded			\$4.114	7/17/08
Diesel			\$4.845	7/17/08

What caused the USA to become so dependent on the automobile?

- How many cars does your family have?
- Do both your parents work?
- Did you grow up using public transportation?
- What influences your decision on how you commute to campus?

Classroom Group Discussion: In your groups, please answer these questions.

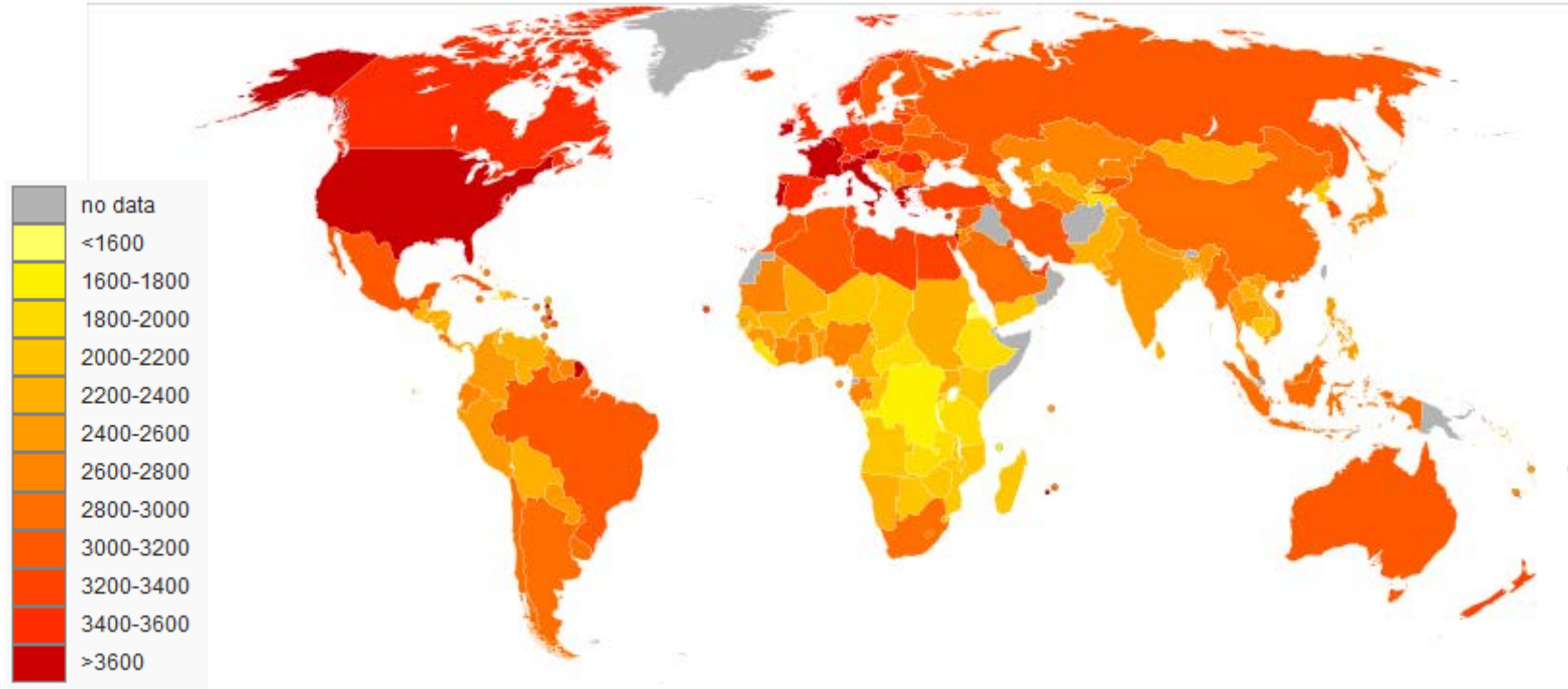
(Appoint a note taker...get everyone's name – turn in at end of the class)

- 1. How do you envision yourself *traveling to work* in 2040?**
- 2. What will happen to those people who have chosen to settle many miles away from the nearest infrastructure or township / city center?**
- 3. What are the most critical determining factors that you use today in deciding how to go from *Point A to Point B*?**
- 4. *How does it make you feel when you have a full tank of gas in your car?***
- 5. *Why has the US become so dependent on the personal automobile? What will change our overall dependence on personal automobiles?***

Driverless Vehicles ...

- Pilotless Aircraft?
- Drones..

Energy Consumption per Capita



kcal/person/day

Angry Greta Thunberg tells global leaders she 'will never forgive' them for failing on climate change

<https://www.cnn.com/2019/09/23/weather/greta-thunberg-unga-climate-speech-intl/index.html>

Proposed Policy Changes for Consideration

Changes in behaviour that lead to more active transportation habits in the US and Europe will result from realization of financial gains (incentives) such as:

- tax credits for reduction in car ownership;
- increased fuel taxes;
- reduced healthcare insurance premiums for utilizing active transportation
- real estate tax incentives for properties adjacent to /near active transportation corridors;
- policies that reduce real estate taxes on those who live within walking or biking distance to their place of employment.
- real estate tax incentives for inner-city properties;

Increased Value Propositions

Some of the incentives and value propositions that can be realized by individuals and local communities embracing and promoting active transportation include, but are not limited to, the following:

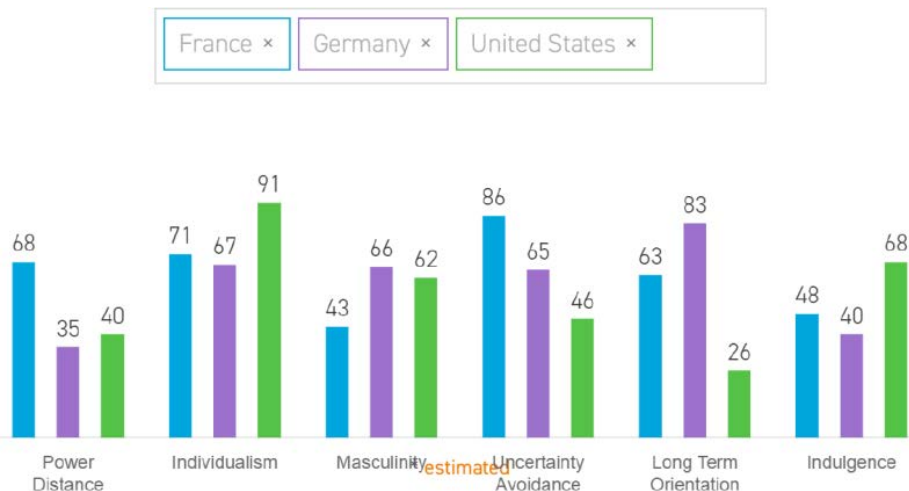
- Decreased overall transportations costs
- Decreased obesity
- Increased overall health
- Increased real estate property values
- Decreased carbon footprint
- Decreased reliance on fossil fuels
- Increased air quality
- Increased productivity
- Increased socio-economic impacts
- Increased mobility options



Increased value propositions

Human nature is usually self-indulging (especially in the US), let's review some of those value added propositions with a direct positive financial impact on the individual...

- reduced commuting costs using active transportation
- lowered fuel and maintenance costs on their automobile
- car payments, insurance, annual road taxes, nor any licensing fees.
- replace their car with very dependable bicycle for easily less than 1 or 2 car payments



<https://www.hofstede-insights.com/product/compare-countries/>

Increased value propositions

US Case Examples: Real Estate / Property Value Increase

- Orlando Florida's Edgewater Drive project resulted in adjacent property values increasing by 80%
 - Indianapolis Cultural Trail property values within a block of the biking / walking trail increased 148% within the first 6 years of opening the 8 mile trail.
 - Total reported increased value of more than \$ 1 billion across nearly 1800 land parcels within 500 feet (152 m) of the \$62.5 M landscaped trail through the heart of the city.
-



Increased value propositions

US Case Examples: Bike Share Program Impacts on Local Businesses: (Buehler & Hamre)

- 66% of bike share riders state that they use bike sharing to make purchases
- 20% of businesses report increased sales thanks to Capital bike share project in Washington, D.C. (CaBi)
- 70% of businesses reported positive improvements in the area
- 23% of riders reported that they spend more because of using bike share
- Customers of the Nice Ride bike share program in Minneapolis spent an estimated \$150,000 in one season at restaurants and other local businesses near Nice Ride Stations (Wang et al, 2012)
- In the 2012 assessment of Sunday Streets San Francisco program reported a 44% increase in customer activity and sales. For every dollar spent during Sunday Streets, \$9.32 was generated in the local economy (Zieff & Chaudhuri, 2013).

Increased value propositions

Real Estate Values

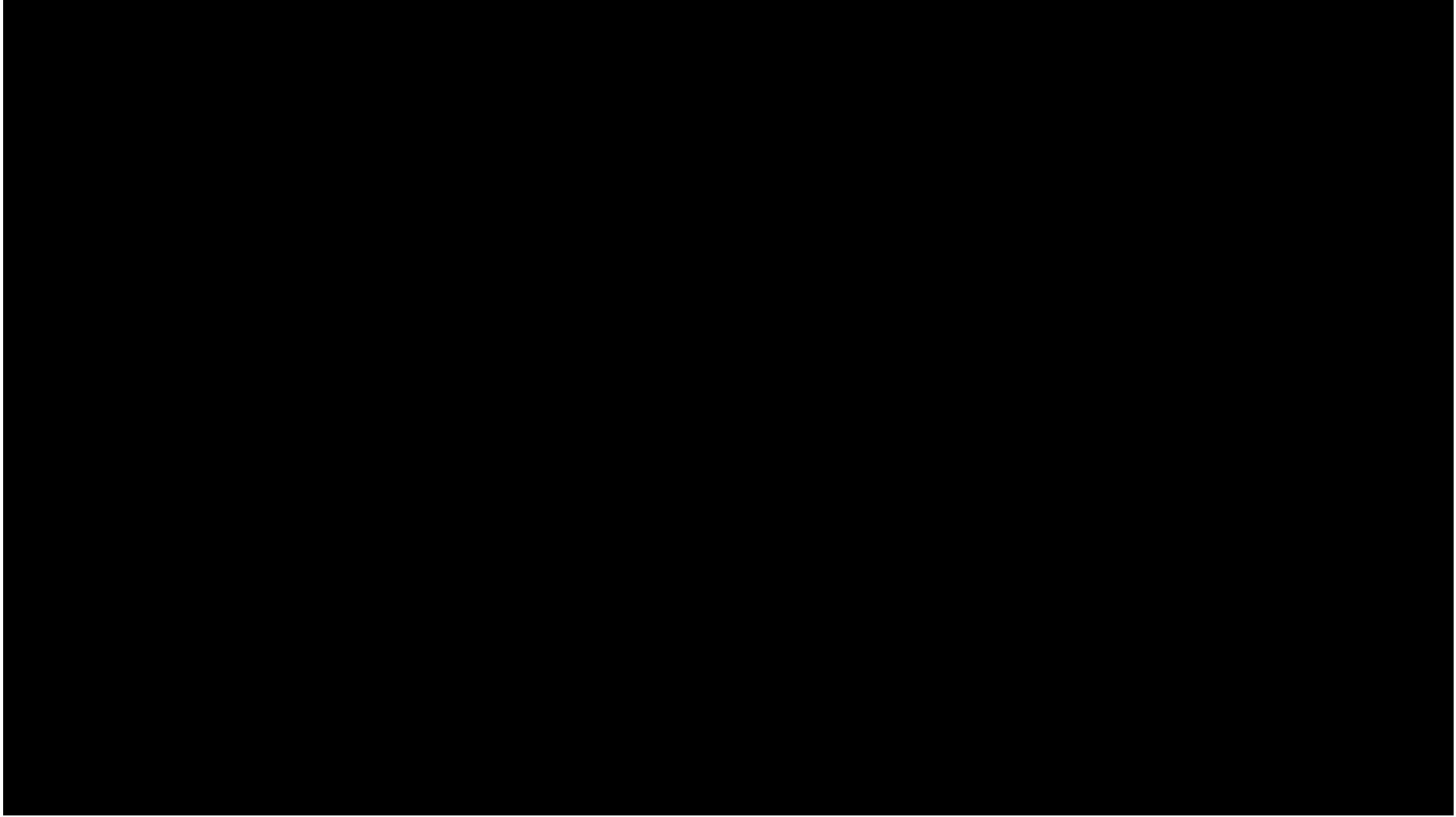
- 8 of 10 Complete Street Projects showed increases in property values
- Dubuque, IA realized property value increases of 111%
- Complete Streets were shown as catalyst
- Recent studies of the 30 largest U.S. metropolitan areas found office rental rates were higher in walkable urban places (“WalkUPs”) \$35.33 per sf versus \$20.32 per sf in drivable suburban locations.
- WalkUPs garnered a 44% rental price premium over drivable suburban locations in other metro studies, except for in New York city (Leinberger and Lynch, 2014)

<https://files.constantcontact.com/5600e112101/9c53ea1b-ca55-4f23-89b2-ef0803097bd1.jpg>



A short video: „The Bill“

by: German Watch (4 minutes)



Tech 330 – Technology and the Global Society

“Mobility Options”



Peel P50 - “world’s Smallest car”

