



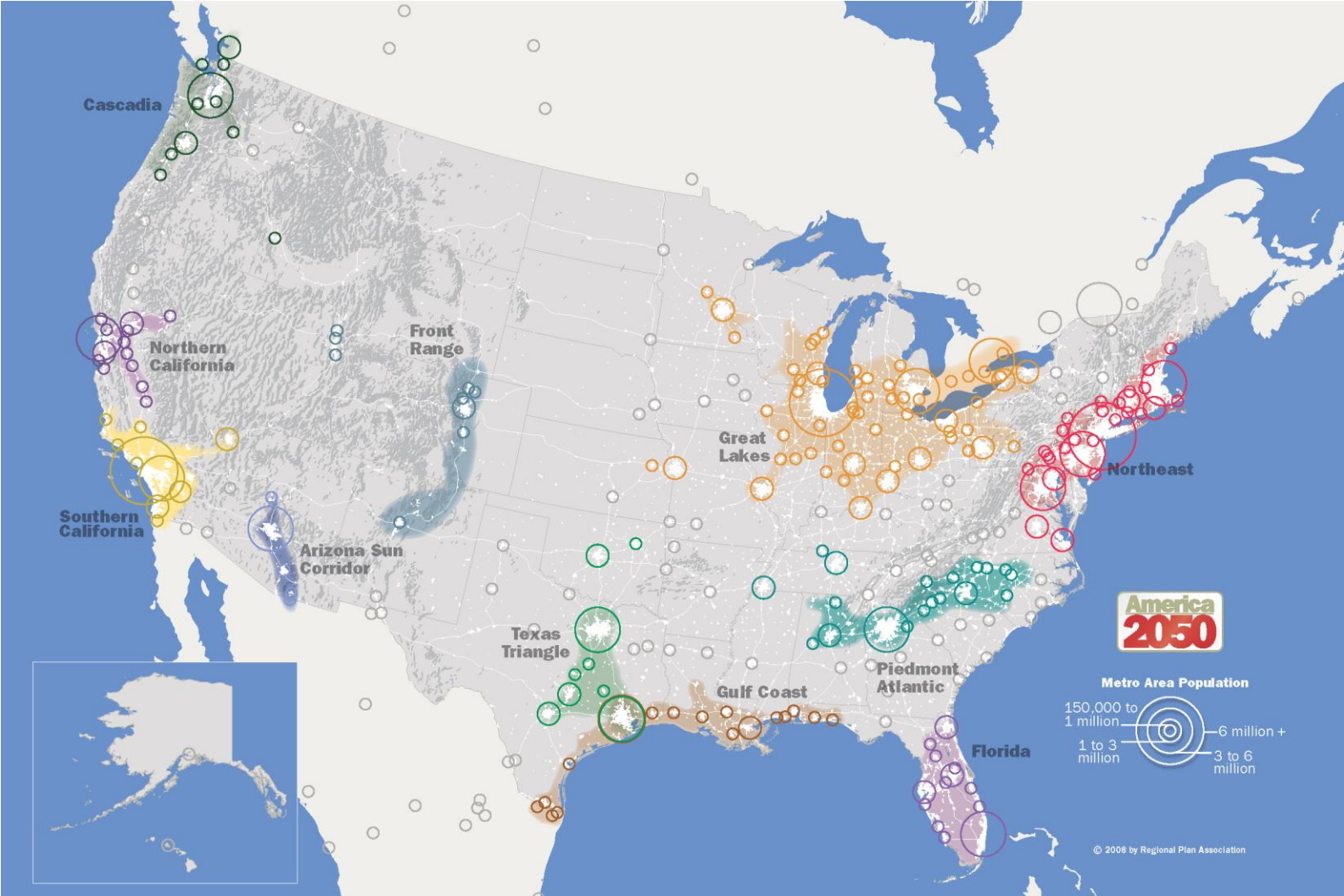
Beyond Traffic

2045

TRENDS AND CHOICES



Megaregions ...



Trends: How We Move ...

Population Increase

2015: **320 million people**
2045: **390 million people**

In 30 years our population is expected to grow by about

70 million

... that's more than the current populations of



Bumper-to-Bumper

On average, we spend

over **40**  hours stuck in traffic each year

The annual financial cost of congestion is

\$121 billion



Older Americans — Redefining Longevity

By 2045, the number of Americans over age 65 will increase by

77%



About **one-third of people over 65** have a disability that limits mobility. Their access to critical services will be more important than ever.

Millennials — Shaped by Technology

There are **73 million Millennials** aged 18 to 34. They are the first to have access to the internet during their formative years and will be an important engine of our future economy.

Millennials are driving less. By the end of the 2000s, they drove over **20% fewer miles** than at the start of the decade.



Income Inequality

10% of the population takes home **one-third** of our national income.

Transportation is the **second-largest** expense for U.S. households.



Megaregions and Shifts in Population Centers

11 megaregions are linked by transportation, economics, and other factors.

They represent over **75%** of our population and employment.

In 2014, **365,000** people moved to the South—up **25%** from 2013—and moves to the West doubled.

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Policy Options: How We Move

1. Increase infrastructure capacity and improve operational efficiency

- * Expanding highway capacity on congested corridors
- * Improving operation of existing capacity

2. Manage demand for transportation

- * Increase use of tolls
- * Adopt policies that support increased population density
- * Encourage teleworking and flexible work schedules

3. Increase transportation choices for all

- * Investing in transit, bike and pedestrian facilities
- * Subsidize car ownership for working poor
- * Strengthen coordination of human and transportation services

Trends: How We Move Things ...

Transportation and the Economy

By 2045, the U.S. economy is forecast to grow by **115%** to **\$36.7 trillion**—and the transportation sector will represent about

\$1.6 trillion

of total Gross Domestic Product.

Global Demand for U.S. Products

Global trade is one of the brightest spots in our economy.

U.S. exports reached **\$2.3 trillion** in 2013, setting a new record for the 4th straight year

\$1 billion in exports = **5,000 U.S. jobs**

The U.S. energy boom is placing unprecedented demand on our transportation system.

42x the 9,500 carloads of crude oil in 2008

Crude oil production is up **50%** since 2008

Rail carried **400,000** carloads of crude oil in 2013

By 2040, U.S. freight volume will grow to **29 billion tons**—an increase of **45%**.



Major gains in freight movement are predicted by 2040

By 2040, the value of freight will grow to **\$39 trillion**—an increase of **125%**.



54 million tons of freight move across our nation every day

Freight Movement is Multimodal

Every mode of transportation moves freight, but trucking is the primary mode of freight travel.

	2012	(in tons)	2040
Truck	13.2 billion	+43%	18.8 billion
Rail	2.0 billion	+37%	2.8 billion
Waterborne	975 million	+10%	1.1 billion
Air	15 million	+250%	53 million

System Performance and the Cost of Congestion

By 2040, nearly **30,000 miles** of our busiest highways will be clogged on a daily basis.

Truck congestion wastes **\$27 billion** in time and fuel annually.



Policy Options: How We Move Things

- 1. Improve freight planning and operations**
 - * Develop a national multi-modal freight strategy
 - * Integrate freight issues in planning processes
- 2. Invest in capacity at critical freight bottlenecks, chokepoints, and nodes**
 - * Establish dedicated federal funding for targeted capital investments in freight infrastructure
 - * Incentivize private investment in infrastructure
- 3. Streamline regulations**
 - * Standardize regulations across jurisdictions to reduce paperwork

Trends: How We Move Things Better ...

More and more, the transportation sector is relying on data to drive decisions, and on technology to reimagine how we move people and goods.

Connected Vehicles

Vehicles that communicate are the latest innovation in a long line of **successful safety advances**.

The motor vehicle fatality rate has dropped by **80%** over the past 50 years.

Connected vehicles and new crash avoidance technology could potentially address

81% of crashes involving unimpaired drivers.

Robotics

Advances in robotics are changing transportation operations and will impact **the future transportation workforce**.

Robots will perform vital transportation functions, such as critical infrastructure inspection.

NextGen

GPS and new technologies are leading to a **safer, more efficient** U.S. airspace.

By 2020, **one-second updates** will pinpoint the **aircraft location and speed** of 30,000 commercial flights daily.

Real-time Travelers

Mobile access to everything from **traffic data** to **transit schedules** informs our travel choices.

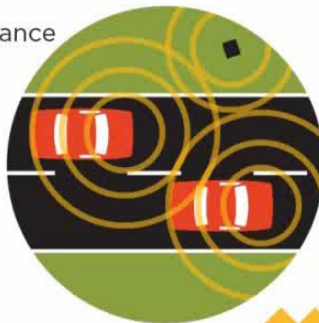
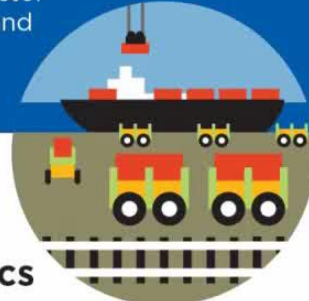
90% of American adults own a mobile phone.

20% use their phones for **up-to-the-minute** traffic or transit information.

Smartphones are regularly used for **turn-by-turn navigation**.

Big data is all around us. Global data generated is projected to grow by **40%** annually.

Data enables innovative transportation options, such as **car-sharing, ride-sharing, and pop-up bus services**, and more **rapid delivery of goods**.



Policy Options: How We Move Better

1. Address regulatory barriers to deployment of new technologies

- * Ensure regulatory framework is flexible and responsive to commercial development of technology
- * Incentivize adoption of socially beneficial technologies

2. Support research on transportation innovations

- * Increase public investment in transportation research
- * Incentivize private investment in transportation research

3. Improve data collection, management and analysis

- * Invest in public sector data collection, management and analysis capabilities
- * Provide open source data to the public to enhance transparency, improve services, and crowdsource solutions

Trends: How We Adapt ...

Our changing climate

is disrupting transportation systems in the U.S. and abroad.



100-year devastating storms used to occur **once a century** ...



... but with the climate changing, they could occur **every 3 to 20 years** (by 2080).



We're Heating Up

Average U.S. temperatures are rising.



By 2050, our temperature is predicted to **rise 2.5° F**

Scientists say we need to avert a **2° F increase** in temperature to avoid the most catastrophic impacts of climate change

Globally, the **10 warmest years** have occurred since 1998

U.S. **droughts** and western **wildfires** cost **\$30+ billion** in 2012 alone

In extreme heat:
Roads deteriorate faster

Truck tires are prone to blow out

Rail track buckles

Runways soften

Inland waterway traffic is disrupted during droughts

Rising Sea Levels Will Disrupt Transportation

Superstorm Sandy's surge damaged electrical systems, highways, rail track, runways, and port cargo. The cost to the U.S. economy was an estimated **\$65 billion**.



The transportation sector is the **second-biggest source of greenhouse gases (GHGs)** in the U.S.



Transportation emits **28%** of GHGs

New stronger fuel economy standards will double the efficiency of our cars and trucks. Corporate Average Fuel Economy Standards have **saved 14 billion tons of CO₂** emissions since 1970.



Policy Options: How We Adapt

1. Incentivize increased use of alternative fuels and fuel efficient vehicles

- * Invest in alternative fuel research and infrastructure
- * Subsidize the purchase of electric and alternative-fuel vehicles
- * Extend fuel efficiency standards across all modes and vehicles

2. Promote land use and energy consumption policies that lead to reductions in carbon emissions

- * Promote zoning and development policies that discourage sprawl
- * Price carbon emissions to encourage reduced emissions

3. Plan, design and build stronger, more resilient infrastructure systems

- * Integrate climate change considerations into transportation plans and design standards
- * Strengthen vulnerable infrastructure

Trends: How We Align Decisions and Dollars...

Transportation Investment

Improving the condition and performance of the transportation system will cost



\$120 billion

for highways and bridges between 2015 and 2020. Current annual spending at all levels of government—federal, state and local—is just

\$83.1 billion.



\$43 billion

for public transportation. Meanwhile, annual capital spending is just

\$17.1 billion.

To compete in the global economy, the U.S. needs a world-class transportation system. Some of our most critical transportation infrastructure is crumbling.

65% of U.S. roads are in **less than good condition**



25% of U.S. bridges **need significant repair** or can't handle today's traffic



50% of locks and chambers are **more than 50 years old**



Overall U.S. Infrastructure Grade

D+

Our World Standing

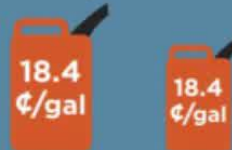
Quality of roads 2008 = 8th

Quality of roads 2014 = 16th

Transportation Spending is in Decline

Our highway and mass transit accounts are trending toward the red. The Federal gas tax is no longer enough to address our transportation needs.

The Federal gas tax has not increased for over 20 years ...



18.4
¢/gal

1993

18.4
¢/gal

2015

... and the value of the dollar has declined.

Transportation Trust Fund projected annual shortfall



-\$4
billion

Transit

-\$12
billion

Highway

Oregon Pilots Road User Charges

Oregon is one of many States seeking new revenues to make up for transportation budget shortfalls.



During a recent pilot program in Oregon, participants paid **1.56 cents per mile driven** rather than a state tax of **30 cents per gallon of gasoline.**

1.56¢



Over the next decade higher fuel economy standards will result in more than **\$50 billion** in lost gas tax revenues.

Policy Options: How We Align Decisions and Dollars

1. Ensure adequate revenues to address critical needs

- * Raise the federal gas tax
- * Transition to an alternative federal revenue source
- * Devolve transportation funding to the states
- * Reduce transportation spending

2. Prioritize investments based on performance and needs

- * Tie funding allocations to performance metrics
- * Establish more competitive discretionary grant programs

3. Improve coordination of planning and decision making

- * Create incentives for MPOs and other transportation agencies to collaborate
- * Provide states funding flexibility based on good governance of transportation programs

Feedback: Equity and the Opportunity Gap

A Global Problem ...
... an American Problem

80 individuals have as much wealth as the poorest half of the world—3.5 billion people.

80  = 3,500,000,000 

Over a recent 3-year period, the wealthiest 1% in the U.S. enjoyed 95% of income gains.

Income inequality in the U.S. has **more than doubled** since 1980, well outpacing other wealthy nations.

Share of income held by the richest 1% **19%**



Big Bonuses, Low Wages

\$28.5 billion



Wall Street bonuses (2014)

\$14 billion



Earnings of ALL full-time workers making the federal minimum wage (2014)

Why Does Transportation Matter?

Transportation gets low-income people ...

-  To their first jobs, second jobs, third jobs ...
-  To and from daycare and school ...
-  To grocery stores ...
-  To health-care providers ...
- To all the places that **ALL** Americans go ...

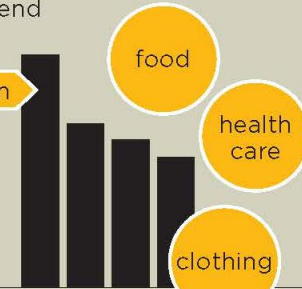
BUT AT A MUCH HIGHER COST

The Cost of Transportation

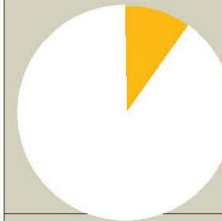
Americans spend more on

transportation

than they do on:



Low-income Americans spend nearly a **quarter** of their annual income on transportation ...



... while **high-income** Americans spend only about **one-tenth** on transportation.

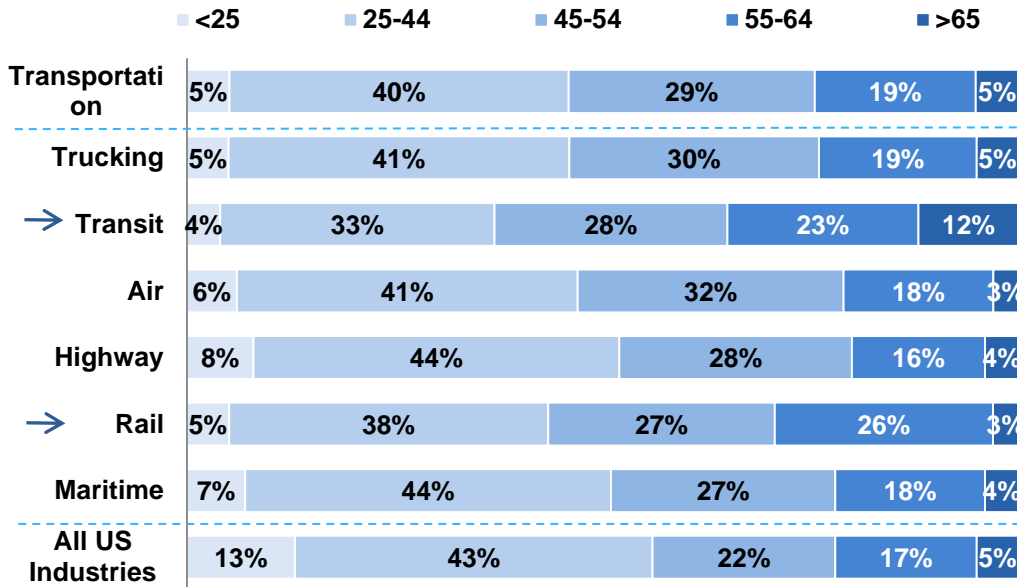
It's not just dollars and cents. Both **where we live** and **where our jobs are** have a huge impact on how we move.

People in poverty with shorter commutes have a better chance of getting out of poverty ...



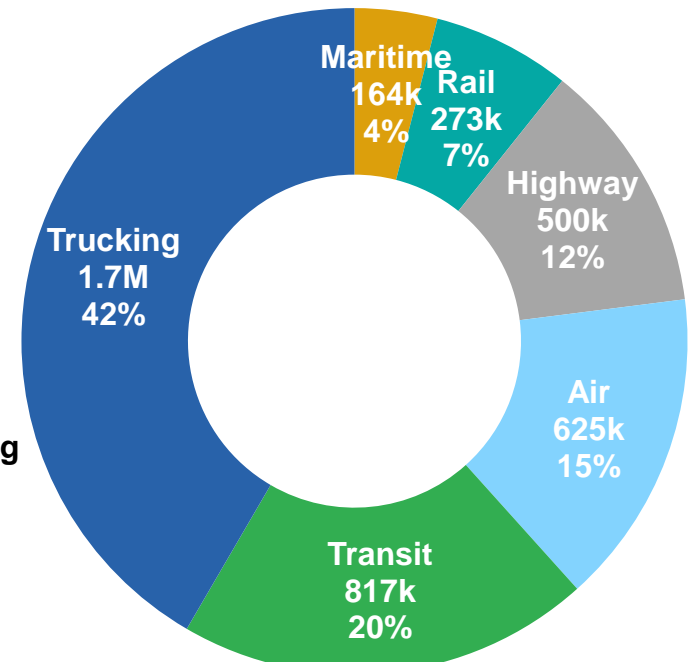
Feedback: Workforce Development

2014 Worker Distribution by Age: Transportation Subsectors vs. All Industries

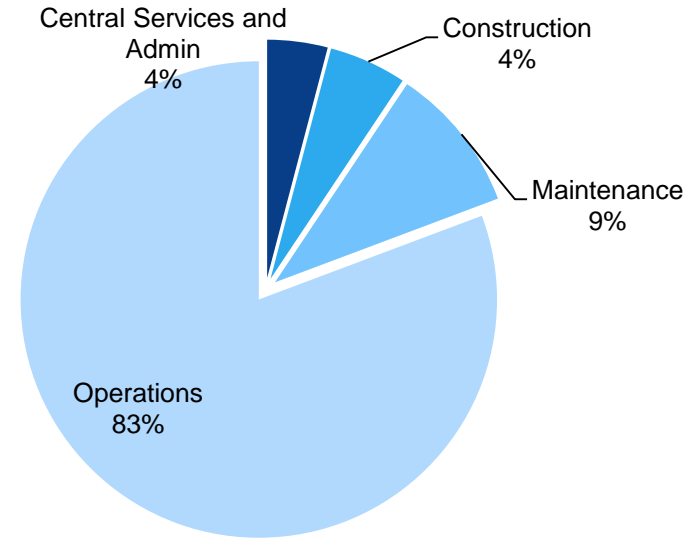


2014 Share of Current Industry Employment

■ Maritime ■ Rail ■ Highway ■ Air ■ Transit ■ Trucking



Top 20 Jobs in Transportation Subsectors Based on 2012–2022 Projected Job Openings Share by Career Area



“The future is always a choice.”



Tie that literally binds our nation together.

Sows the seeds of economic opportunity and national prosperity.

Aging and increasingly incapable of bearing the load our future demands.

We will make our choices one statement at a time, in state capitals, city halls, corporate boardrooms and union halls.

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