

A close-up photograph of a car's front wheel and fender, showing the tire and the body panel. The background is a blurred green landscape.

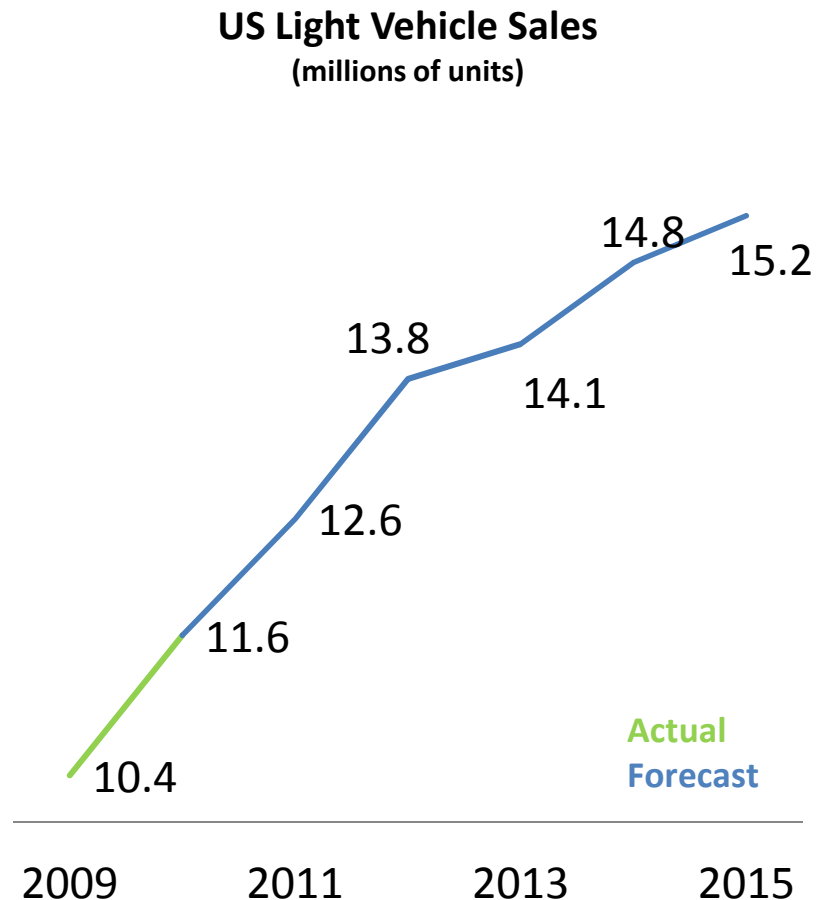
# The Changing Nature of Manufacturing and Engineering Work in the Automotive Industry

West Michigan Automotive Summit  
Grand Rapids, Michigan  
12 October 2011

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# Overview

- Factors Driving Hiring
- Productivity & Employment Trends
- Macro Concerns
- Skill Needs
- Displaced Workers
- Outlook
- Automotive Workforce Trends



# Reasons to Believe in a Rebound



- No comprehensive public transportation system
- Vehicle miles travelled increasing over the long term
- Over 2 vehicles per household, and holding
- Household formation increasing
- Vehicle stock decreased sharply and must be replenished
- Weak dollar

# Factors Driving Hiring...

- Profitability & Market
  - Market recovery and production rebound
  - Profitable at lower volumes
- Labor
  - Underlying workforce demographics
  - Labor cost parity possible under recent UAW agreements
  - New job commitments
- Faster cadence of new products and introduction of advanced vehicle technologies
- Technological changes
  - Need to meet new fuel economy and GHG mandates
  - Improved safety
  - Increased electronics content for safety, connectivity and entertainment
- Investment
  - Corporate investment >\$17.4B in U.S. and Canada in 2010-2011
  - Government investment incentives (DOE \$9.1B, ARRA)



Posted: Jan. 10, 2011

## Bill Ford: 'It feels so good' to be adding jobs

BY BRENT SNAVELY  
FREE PRESS BUSINESS WRITER



## Ford Plans to Hire More Than 7,000 Workers

By NICK BUNKLEY  
Published: January 10, 2011



## Ford joins General Motors, Chrysler in hiring more workers

Published: Thursday, December 09, 2010, 6:46 PM  
Updated: Thursday, December 09, 2010, 6:46 PM

Home » Manufacturing

## Rochling to open new U.S. plant to serve Ford, GM

Ohio factory will produce engine and body undershields  
Douglas A. Bolduc  
Automotive News -- February 21, 2011 - 12:30 pm ET



# Help wanted!



Bright Automotive hiring 200 engineering and business development jobs in Southeast Michigan



## Saginaw-based Nexteer Automotive hiring up to 100 workers

Posted: 10.16.2010 at 9:44 PM



## Chrysler plans to hire 60 salaried employees at its transmission complex in Kokomo

THE ASSOCIATED PRESS  
First Posted: April 21, 2011 - 5:36 pm



## UAW: 600 Jobs Coming to Ford Plant in Brook Park

October 10, 2011

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Last update: October 9, 2011, 8:35 AM

## Stamping plant hits jackpot with Ford's big investment

Updated: October 9, 2011, 8:35 AM

Home > Michigan Automotive News

## Third shift at General Motors' Flint Truck Assembly makes workers feel more secure about plant's future

Published: Monday, January 24, 2011, 1:52 PM



By Ron Fonger | Flint Journal  
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January 9, 2011

## Finally: Help wanted in Michigan as firms hiring again

By KATHERINE YUNG  
Free Press Business Writer



Dec 01, 2010

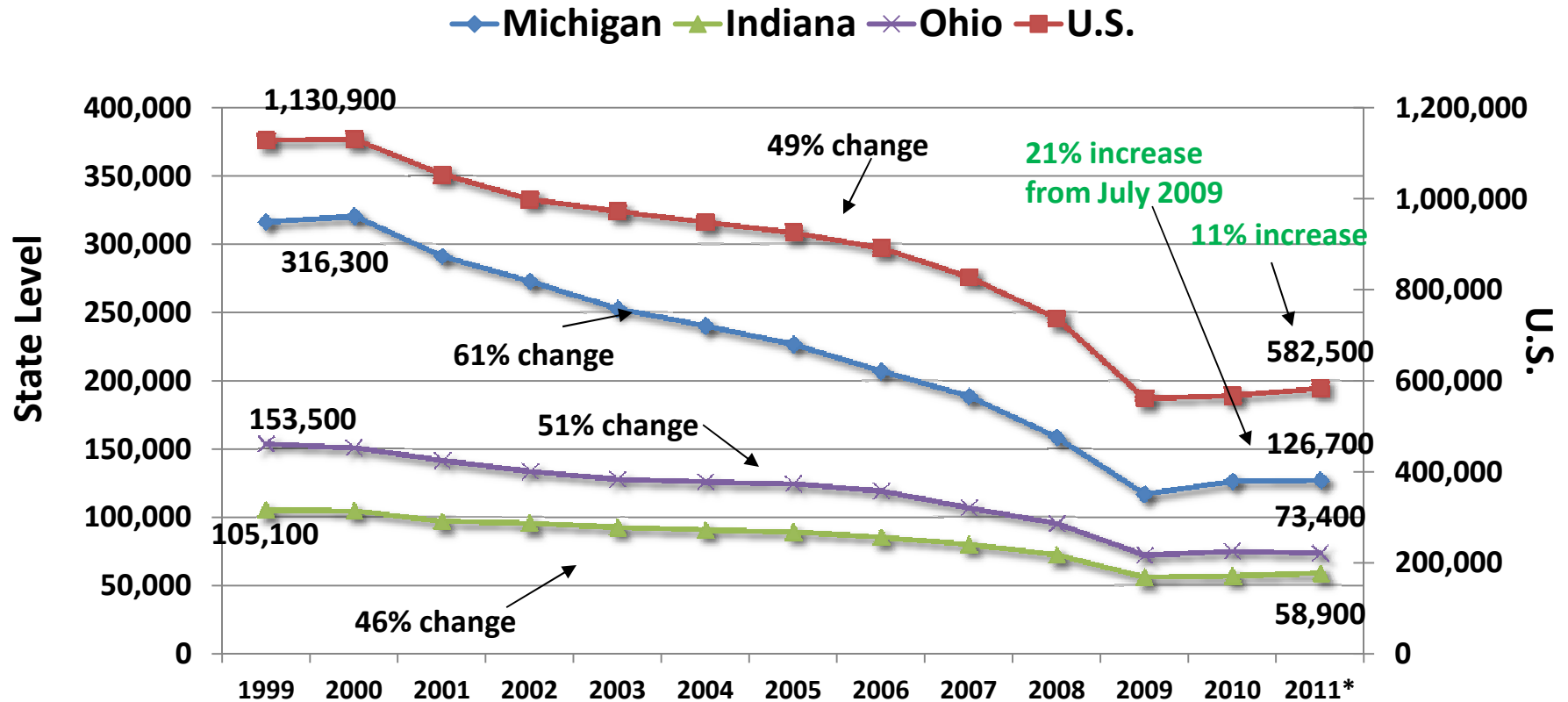
## Jobs at last! GM, Chrysler hang out hiring shingle

# New UAW Contracts and Jobs

Contract terms	Ford	GM
<b>Signing bonus</b>	\$6,000 (\$5,000 for <1 year seniority)	\$5,000
<b>Wages</b>	Entry level range \$15.78-19.28, four year progression; no change for first tier	Entry level range \$14.78-19.28, 4 year progression; no change for first tier
<b>Jobs</b>	<b>Promises 5,750 new entry-level jobs; 6,250 previously announced job creation/retention</b>	<b>Promises 6,400 new entry-level jobs; 11,800 previously announced job creation/retention</b>
<b>Buyouts</b>	\$100,000 for skilled trades and \$50,000 for production workers who retire by 3/31/12	Up to \$75,000 for skilled trades who retire by 3/31/12; \$10,000 for production workers who leave by 2013
<b>Profit-sharing</b>	\$1 for every \$1 million in North American profit (Avg. \$3,752 payout in November based on Q1-2 2011); capped at \$12,000 per year	\$1 for every \$1 million in North American profit; capped at \$12,000 per year
<b>Retirees</b>	No change to pensions and no bonuses; health care trust may get 10% of Ford workers' profit-sharing	No change to pensions and no bonuses; health care trust may get 10% diversion of GM workers' profit-sharing
<b>Cost-of-living adjustment</b>	None	None
<b>Other bonuses</b>	Four annual payments of \$1,500 for inflation protection; and four annual payments up to \$250 per year for competitiveness bonus	Three annual payments of \$1,000 for inflation protection (2012-2014); and four annual payments up to \$250 per year quality bonus
<b>Health care</b>	No change to worker contribution; \$20 co-pay for unlimited office visits	No change to worker contribution; \$25 co-pay for unlimited office visits

Source: Detroit Free Press, UAW-Ford and UAW-GM White Books

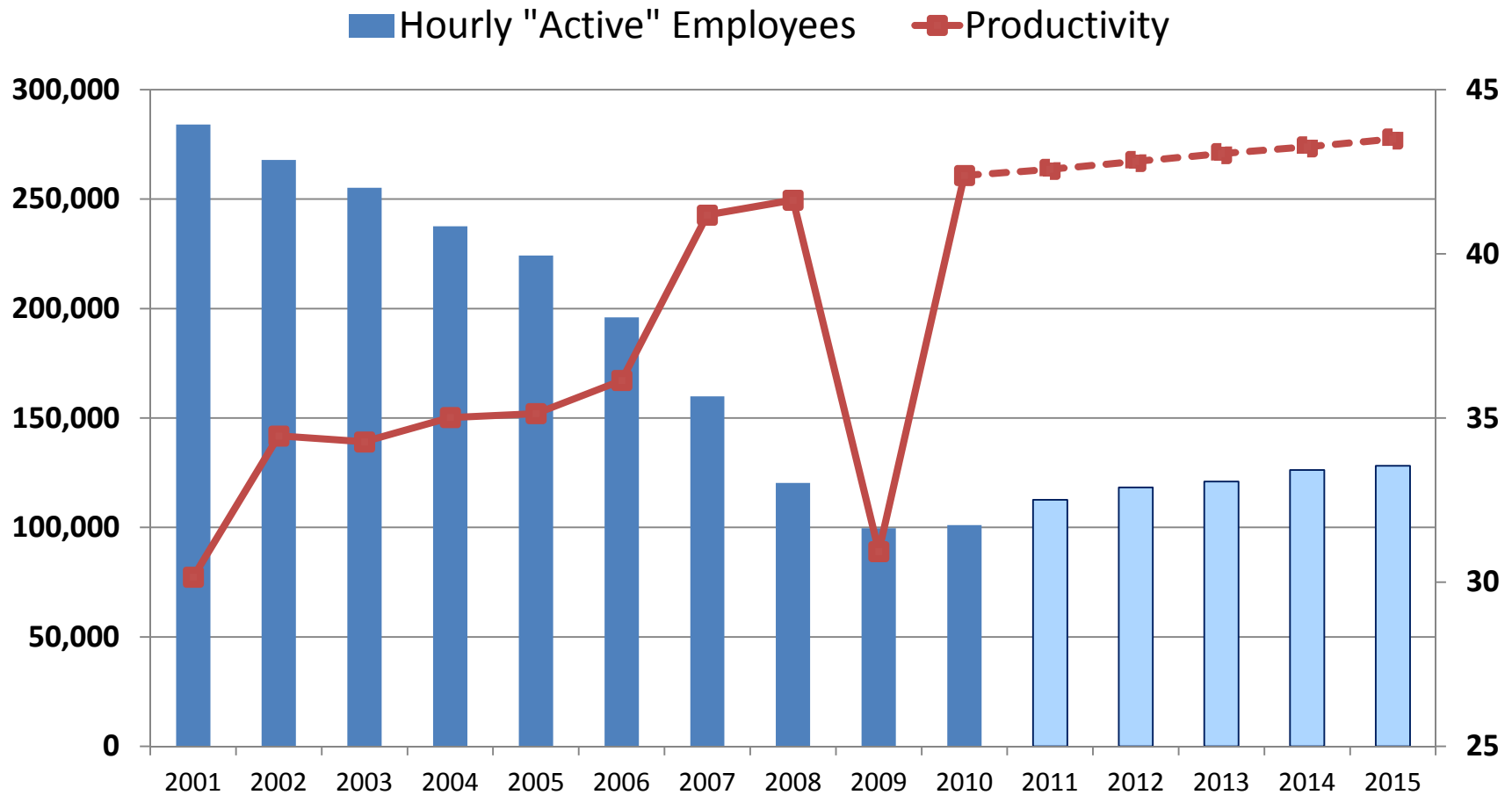
# Motor Vehicle & Parts Manufacturing Employment 2000 – 2011\*



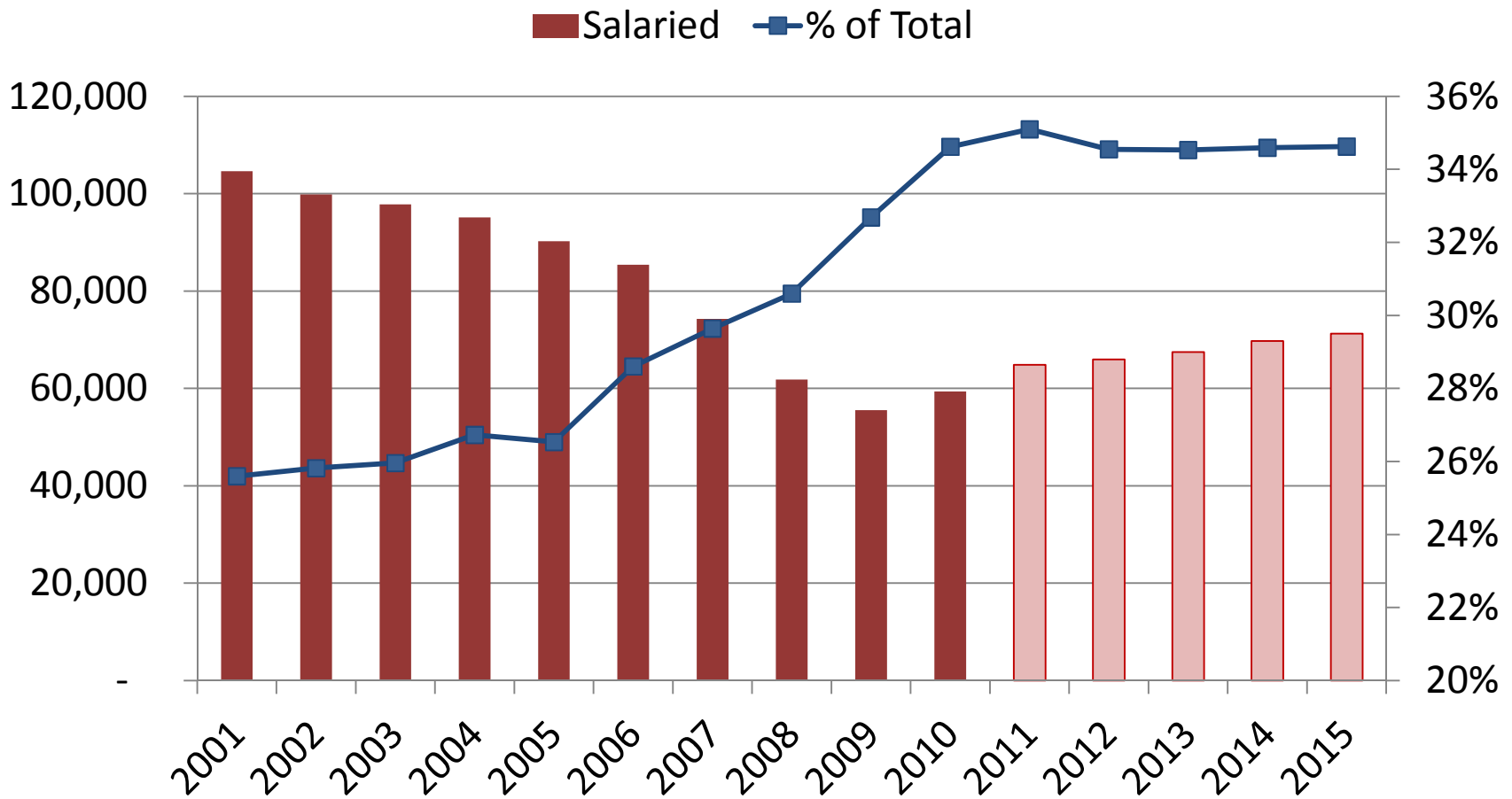
\*2011 through August

Source: BLS, U.S. DOL

# Detroit Three U.S. Hourly Employment and Productivity 2001-10, 2011-15 Forecast



# Detroit Three U.S. Salaried Employment 2001-10, 2011-15 Forecast

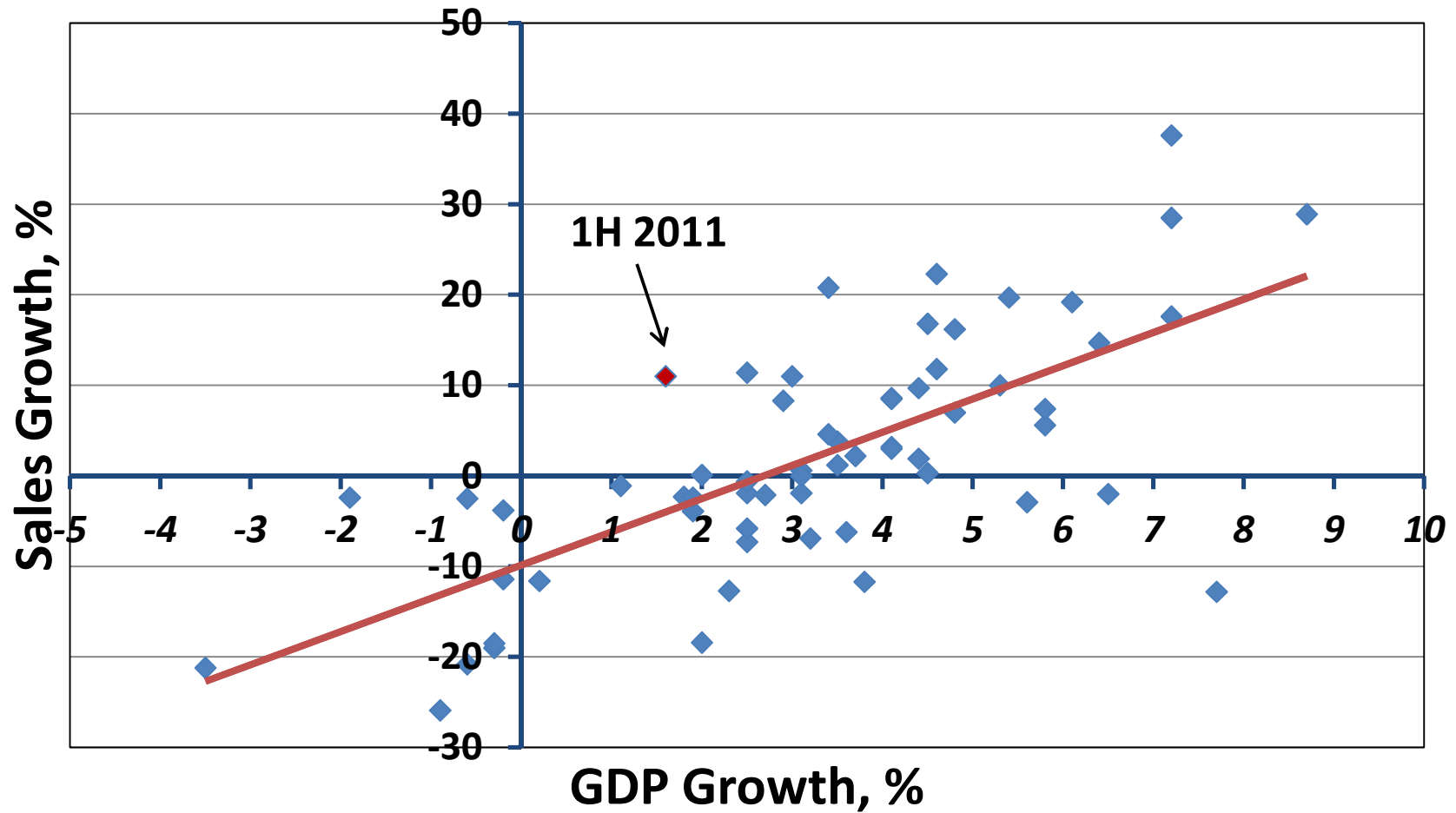


Source: Company Proprietary Data; CAR Research

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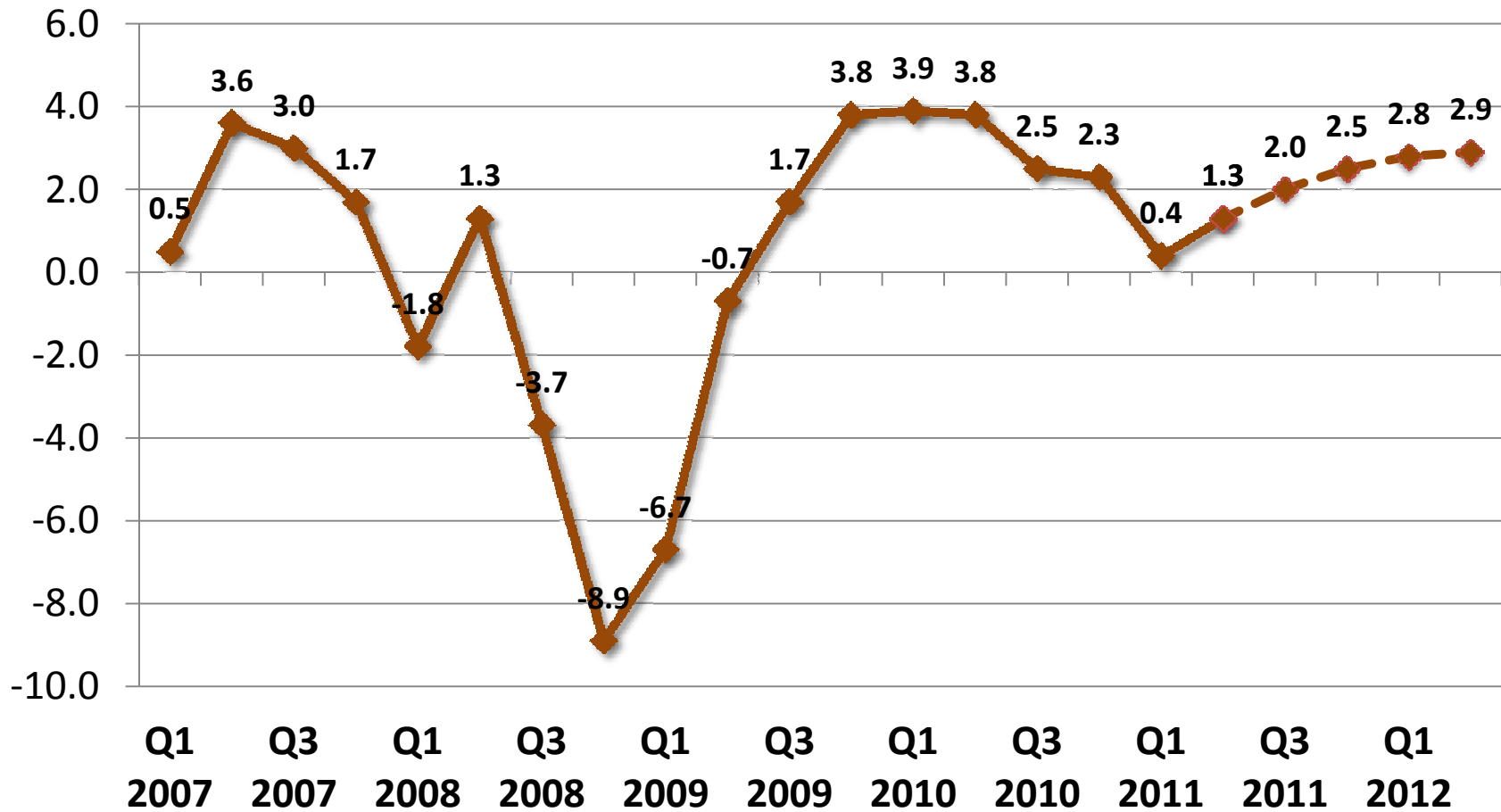
# Need 3% GDP Growth To Have a Positive Sales Growth

## GDP Growth Rate and Sales Growth Rate, 1950-1H 2011



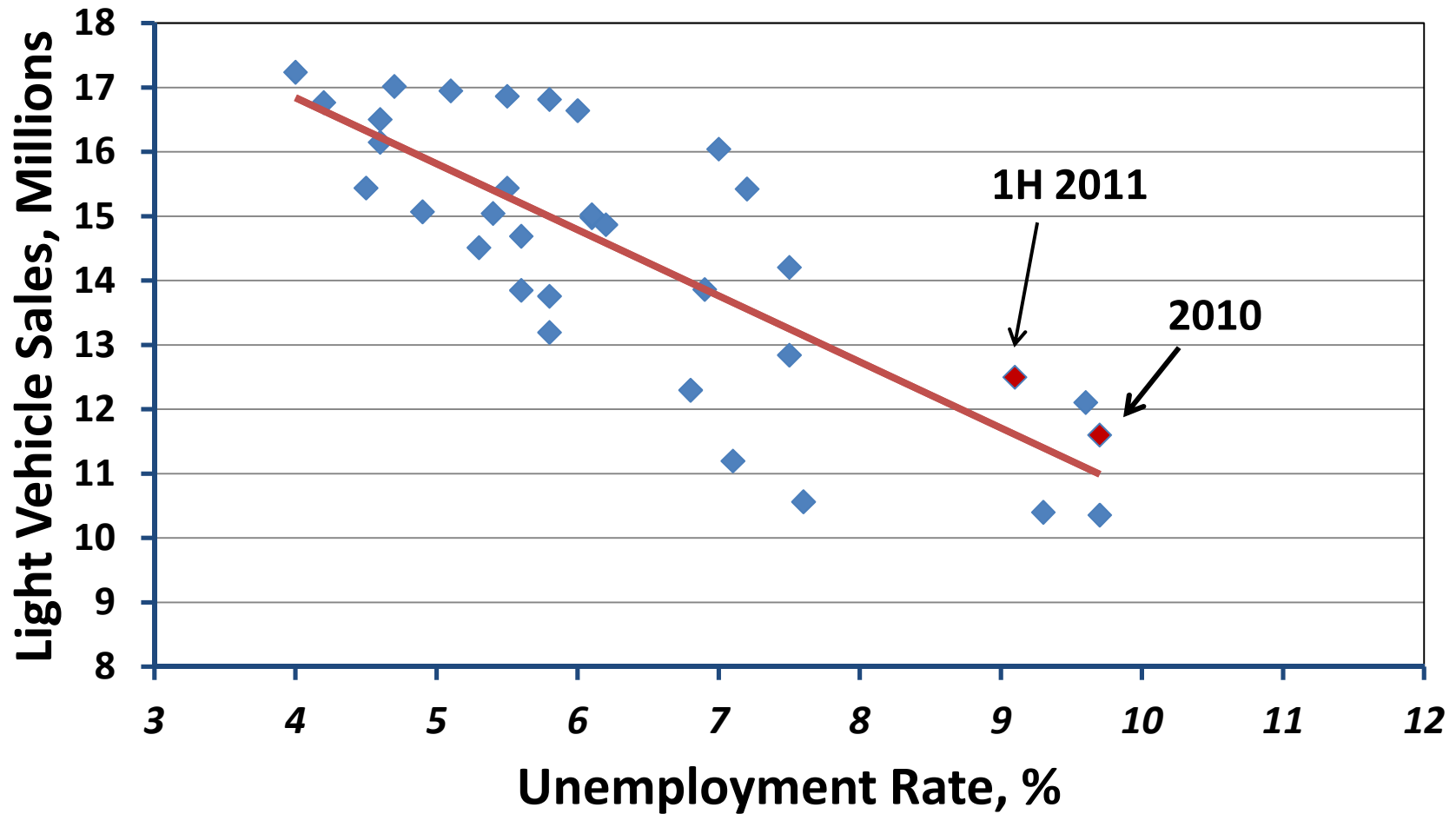
# Quarterly GDP Growth Rate

## Q1 2007-Q2 2011 and Forecast Q2 2011-Q1 2012



Source: 18<sup>th</sup> Automotive Outlook Symposium, Jun 3, 2011.

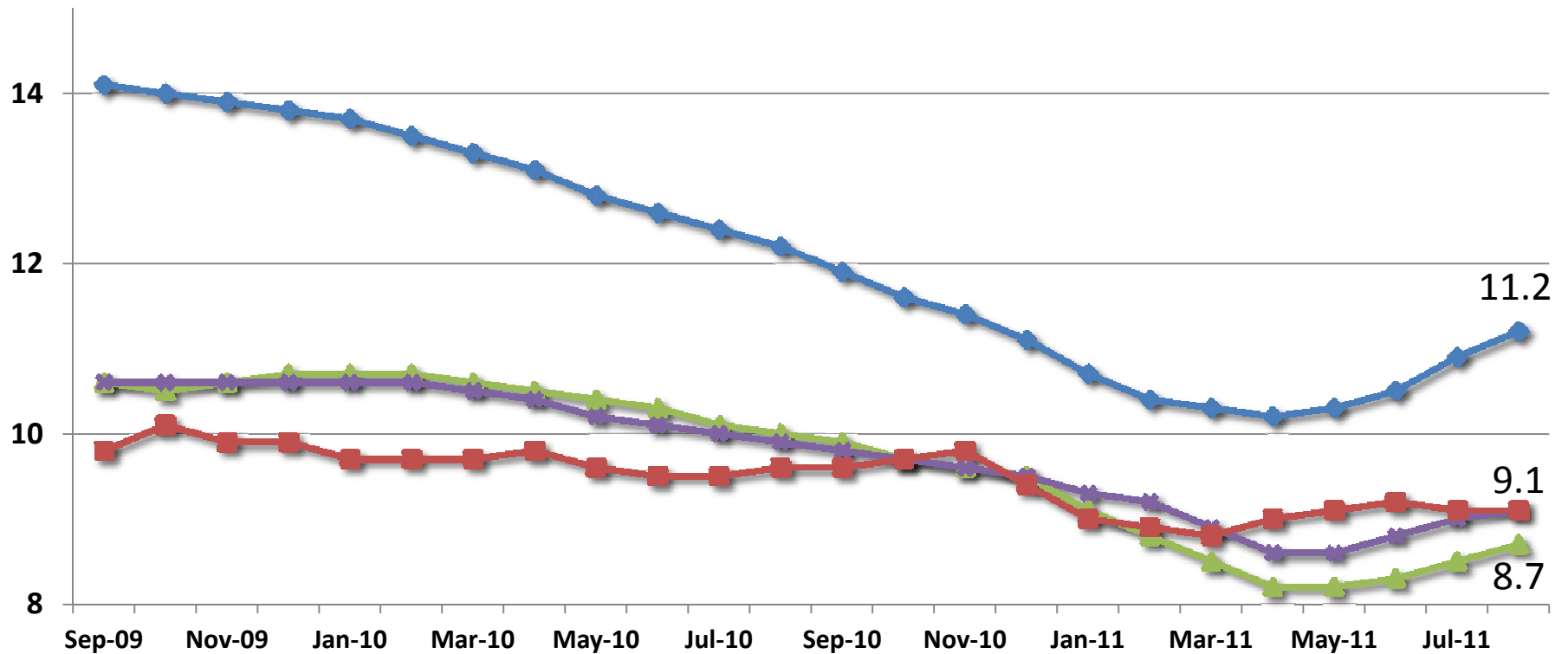
# Need Unemployment Rate Below 6% to Have 15M+ Light Vehicle Sales and Unemployment Rate 1978-1H 2011



# Unemployment Rate

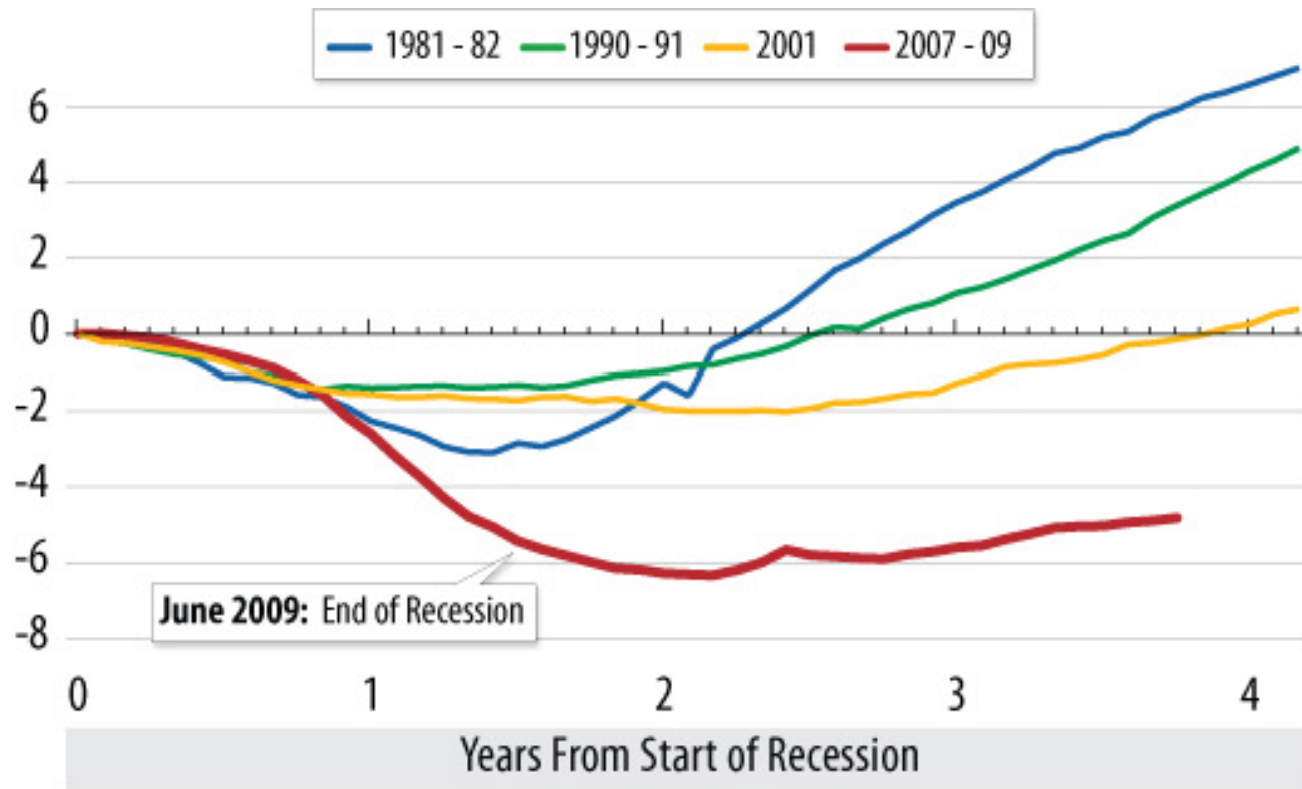
Aug 2009 – August 2011

Michigan Indiana Ohio U.S.



Source: BLS, U.S. DOL

# Percent Change in Nonfarm Payroll Employment Since Start of Recession



Source: CBPP calculations from Bureau of Labor Statistics data. Center on Budget and Policy Priorities | [cbpp.org](http://cbpp.org)

# Driving Change: Project Goals

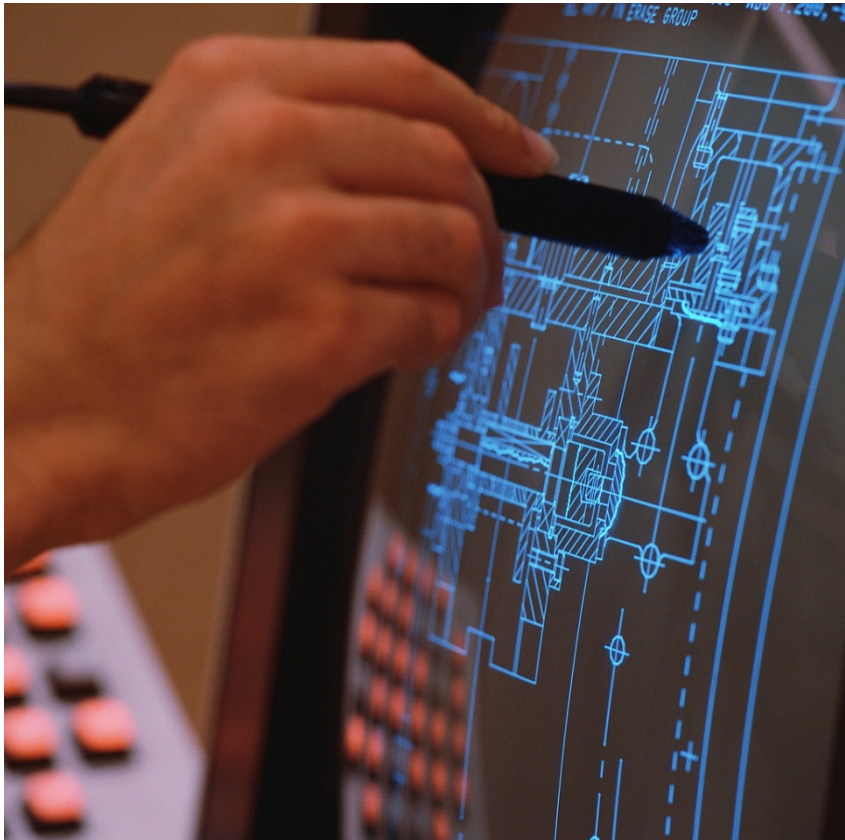
- Chronicle the automotive industry & workforce transformations
- Identify the impact of the transformation on the supply chain workforce
- Examine alternative career pathways for displaced workers
- Identify the skills gap & training needed for dislocated workers to transition to new occupations

<http://drivingworkforcechange.org>

# What We Learned

- Powertrain & Fuel
  - Electrification is happening, but ICE is still tough to beat
  - Many possible technology choices—timing is tough to predict
- Lightweight Materials & Forming
  - Industry is steel-centric—but it will change
  - America is not a material science leader
  - Modeling tools for competing materials still lacking
- Electronics, Software & Controls
  - In-vehicle electronics is rapidly growing
  - Jobs in the automotive electronics sector are increasing

# Skill Needs: Engineering and Technical



- Electrical
- Powertrain
- Chemical & electrochemical
- Materials
- Software & electronics
- Mechatronic
- Environmental
- **Systems**

# What Employers Want

Some direct salaried hires—especially at suppliers, but significant portion of new jobs will be contract and “temp-to-perm”

- Suppliers re-building core capabilities through direct hiring
- Many employers still tentative on program and market recovery – not willing to commit
- Becoming a “candidate’s market” as competition for skills intensifies

# What Employers Want

Automakers and suppliers want people who have broad, cross-functional skills—especially problem solving

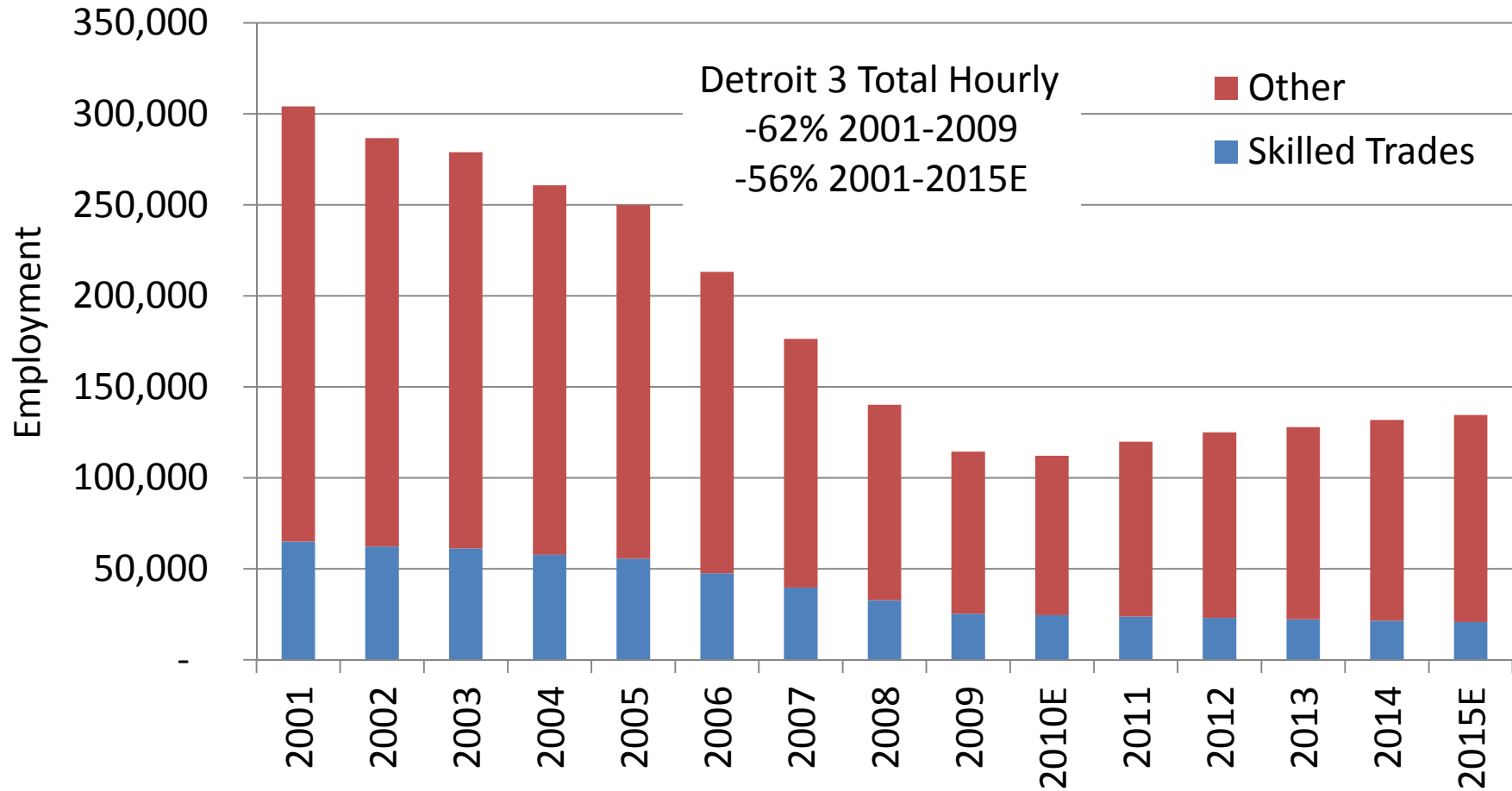
- “Soft skills” are critical for collaboration, systems integration, problem solving
- Still want deep knowledge
- Not everyone can do both
- Many of these skills acquired on-the-job and through corporate “branded” training

# What Employers Want

Engineering & Technical Demand is high for very specific skills (hybrid/electrification, battery, embedded software, designers)

- Many of these graduates are “produced” elsewhere – difficult to get them to move where the jobs are
- Employers want mid-level experience, but few people were hired 5-8 years ago
- Training for new grads and re-training for dislocated workers needed

# Detroit Three U.S. Hourly Employment 2001-2009 Actual, 2010-2015 Forecast



# What Employers Want

Employers want highest quality hourly labor at a much lower “entry-level” wage— little, if any, differences in job requirements

- Selection process more extensive (9-for-1)
- Higher turnover (0%? 20%?)
- What happens in a tighter labor market?
- “Entry level”

# Skill Needs: Production and Trades

- Product change is quicker and more revolutionary
- Most training is product-based
- Other areas:
  - Problem Solving
  - Continuous Improvement
  - Teamwork
- Trades:
  - Cross-skilling
  - Mix is changing with green

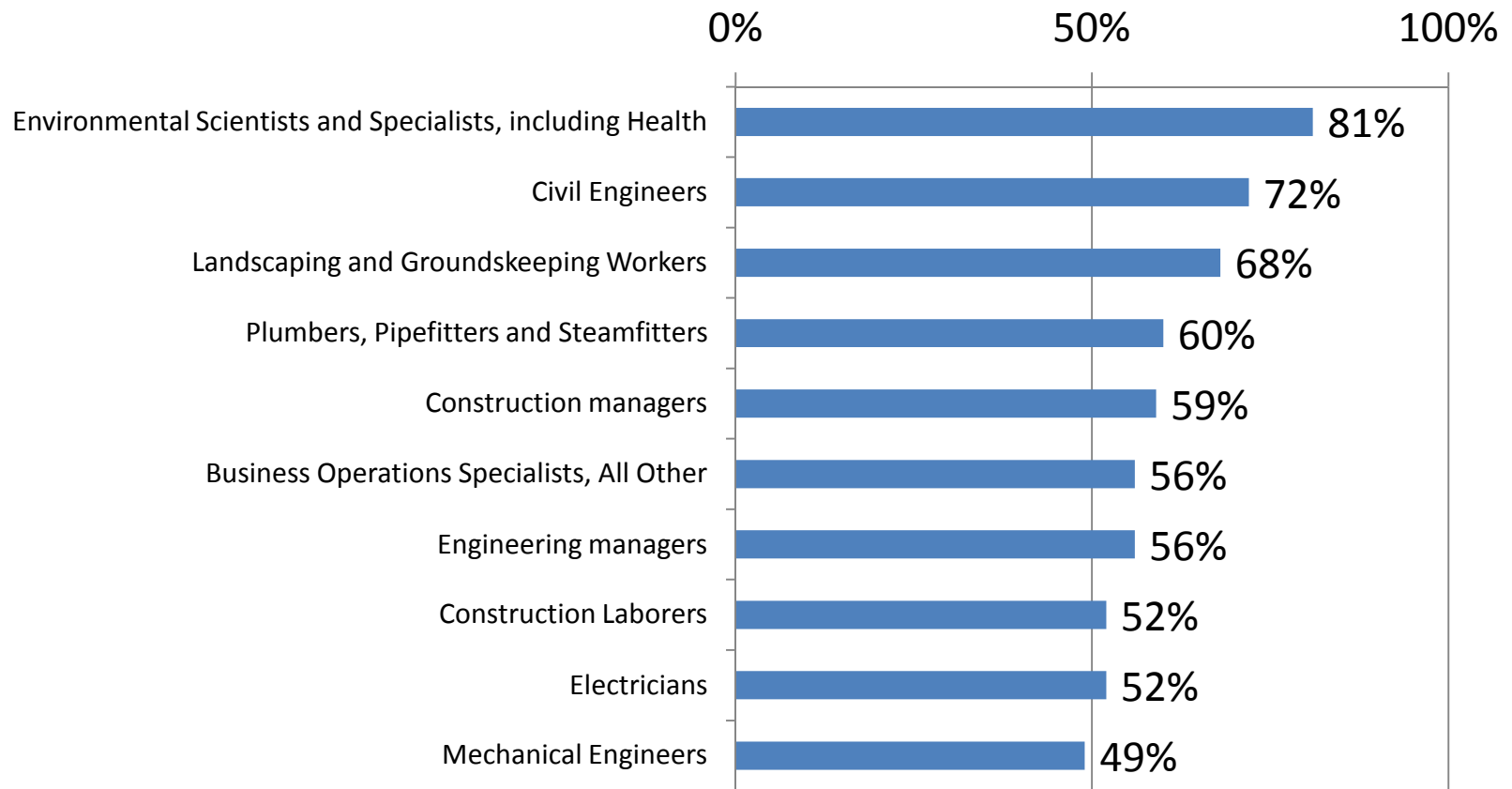


# Green Jobs in Michigan

## Green jobs categorized into 5 core green areas

Core Area	Michigan
<b>Total Direct Green Jobs</b>	<b>96,767</b>
Increasing Energy Efficiency	23.0%
Agriculture and Natural Resource Conservation	12.4%
Pollution Prevention and Environmental Cleanup	12.8%
Renewable Energy Production	9.1%
Clean Transportation and Fuels	40.6%
Green Jobs Not Assigned to a Core Area	2.1%

# Survey Findings: Occupations That Require Unique Skills for Green Projects



# Tri-State Top Five Green Enhanced Skills Automotive Occupations by Job Postings and Expected Job Change to 2018

	HWOL Green Postings <sup>1</sup>	10-year Expected Growth <sup>2</sup>	Postings-to-Employment Ratio <sup>3</sup>	Mean Wage <sup>4</sup>
1. Mechanical Engineers	6,626	6.0%	1:7	\$78,759
2. Maintenance and Repair Workers, General	5,004	10.9%	1:25	\$36,712
3. Electrical Engineers	2,901	1.7%	1:4	\$76,464
4. Machinists	2,307	-4.6%	1:28	\$38,823
5. Electronics Engineers, Except Computer	1,444	0.3%	1:6	\$81,587

<sup>1</sup> Source: HWOL, Quarter 4, 2010; Green enhanced skills auto occupation total, N=20,553.

<sup>2</sup> Source: BLS; Projections from 2008 to 2018 are for the parent, six-digit SOC. HWOL and O\*NET now report occupations at the eight-digit SOC level. As a result, those occupations listed in this table are at the more detailed, eight-digit SOC while the projection figures are for the parent six-digit SOC. Hence the projection is for a group of similar occupations and not the specific occupation listed in the table.

<sup>3</sup> Source: IBRC using HWOL and BLS/OES data

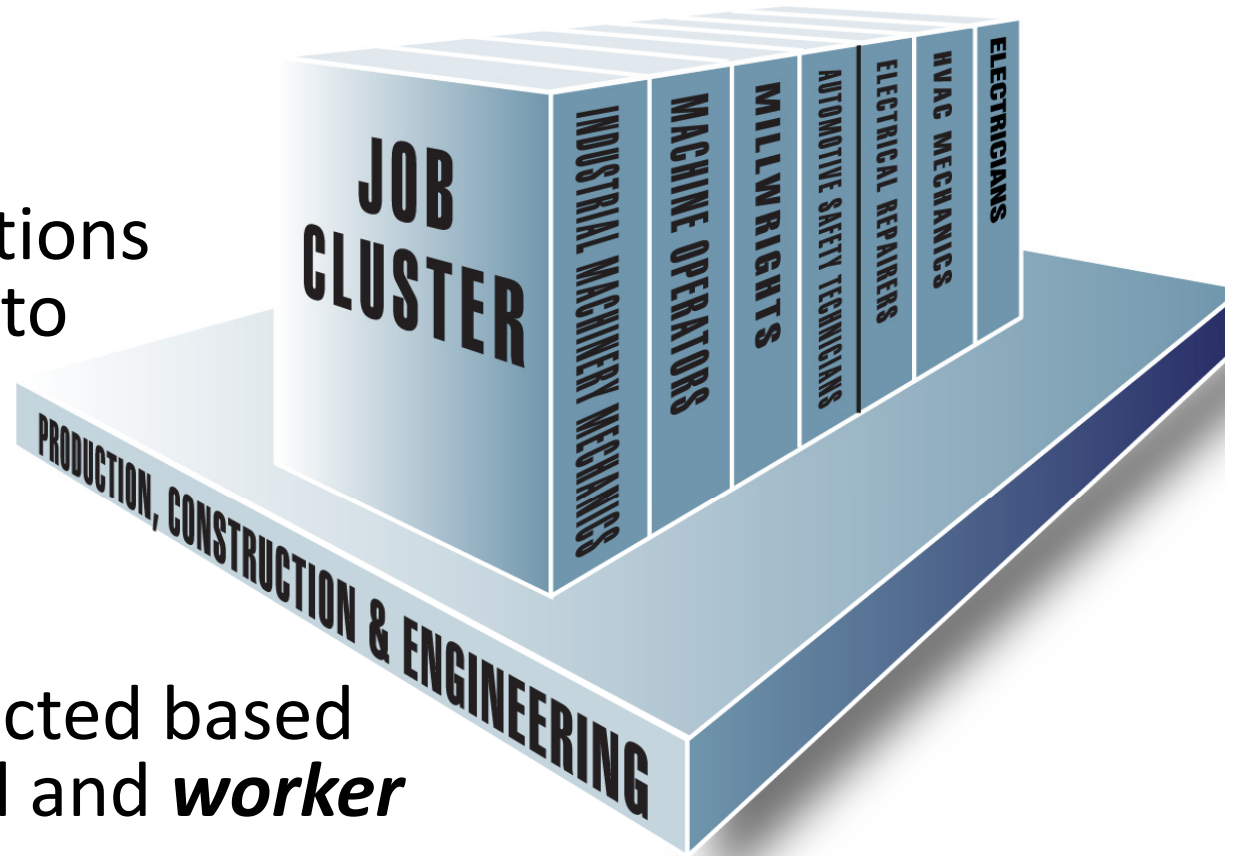
<sup>4</sup> Source: 2009 data from BLS. Mean wage calculated for tri-state using a weighted average

# Green Jobs Survey Implications

- Employers indicated that most green-related training is done on-the-job
- Squares with consortium partner research that production and trade jobs require little special green-related training
- Engineering and high-skilled jobs require specialized and advanced education and skills
- STEM disciplines
- Green Jobs are not a pathway out of poverty

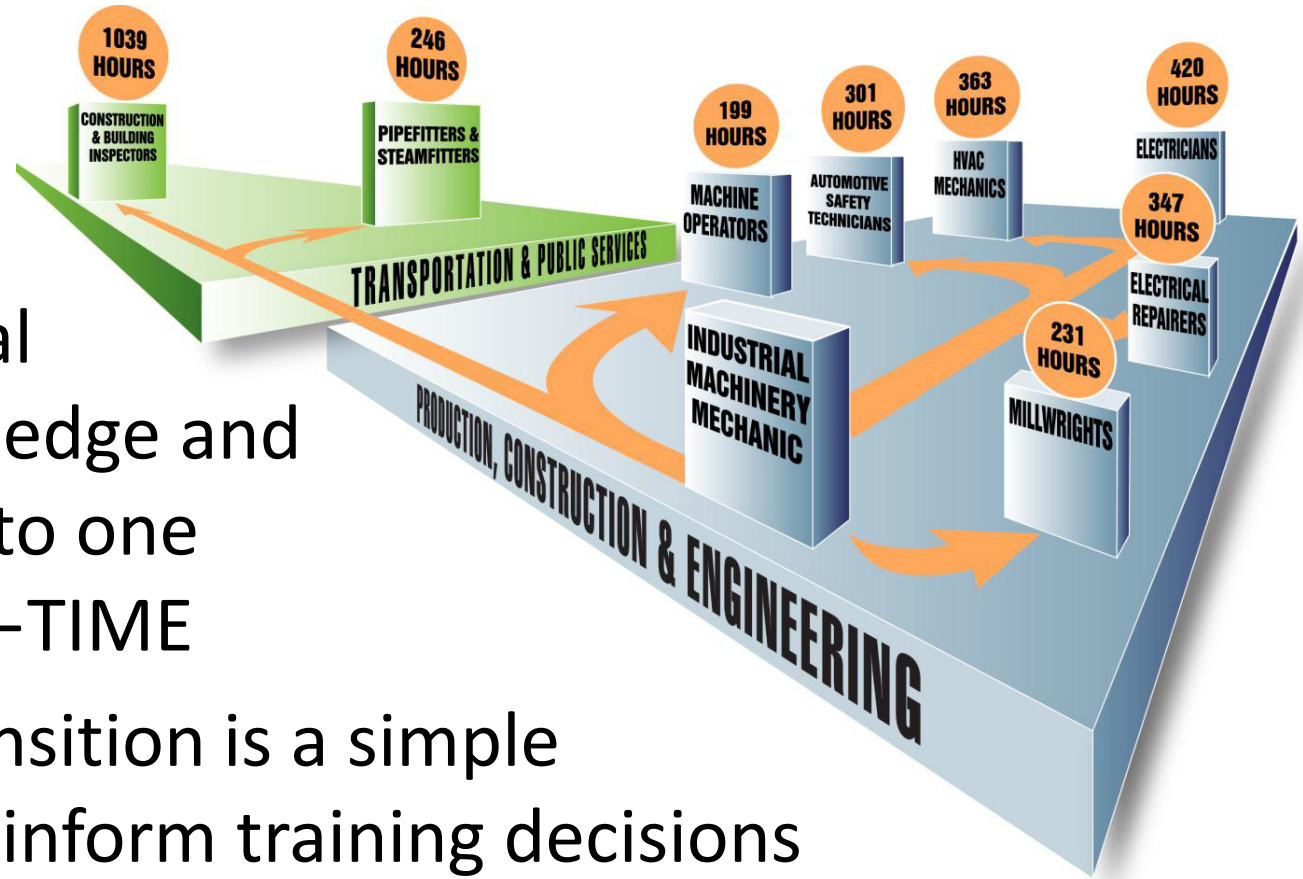
# Job Clusters

- Goal: Identify occupations that are similar to the displaced worker's occupation
- Pathway clusters constructed based on occupational and *worker* similarities
- Provides a user a set of several possible target occupations



# Skills Gap = Human Capital Gap

- Goal: boil down occupational skills, knowledge and experience to one dimension—TIME
- Time-to-transition is a simple measure to inform training decisions
- Based on O\*NET job zone framework



Tri-State Training Program x

www.drivingworkforcechange.org/triptime/

**DRIVING CHANGE**  
Greening the Automotive Workforce

Google™ Custom Search Search

A research consortium of the Indiana, Michigan and Ohio Labor Market Information Offices tackling changes in the auto industry and resulting workforce needs.

The Project The Conference The Research The Databases

## Trip Time Tool

This interactive tool is designed to let users—an unemployed worker or a workforce career counselor, for example—to estimate the preparation time required to transition from one occupation to another. "Trip time", while measured in hours of academic, technical or vocational training, is a relative measure to provide one with an estimate of the relative ease or difficulty of moving from one type of job to another. The trip time method, in effect, compares the similarity of education and training between occupations.

For the best user experience, use Firefox or Google Chrome browsers.

**Quick Steps To Use This Tool**

Type in the job title of the current occupation:  
industrial

- Commercial and Industrial Designers
- Electrical and Electronics Repairers, Commercial and Industrial Equipment
- Industrial Engineering Technicians
- Industrial Engineers
- Industrial Machinery Mechanics
- Industrial Production Managers
- Industrial Safety and Health Engineers
- Industrial Truck and Tractor Operators

**You have chosen:** Industrial Machinery Mechanics

Enter a desired annual wage:  
50000

Select a state to highlight high wage/high demand jobs:  
MI

submit

### Trip time from Industrial Machinery Mechanics

What do these results mean?

Head Start	Shorter	Longer	Longest
66 Records	13 Records	19 Records	266 Records

Destination Occupation Title	Remaining TripTime	Starting Salary	Median Salary	Head Start %
Postal Service Mail Carriers (Detail)	80	\$46,110	\$53,860	54.3
Bridge and Lock Tenders (Detail)	80	\$33,700	\$45,930	74.9
Rail-Track Laying and Maintenance Equipment Operators (Detail)	90	\$37,110	\$45,970	70.8
Rail Car Repairers (Detail)	100	\$35,710	\$47,410	81.3
Control and Valve Installers and Repairers, Except Mechanical Door (Detail)	120	\$35,770	\$48,430	72.9
Postal Service Clerks (Detail)	130	\$53,090	\$53,100	42
Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation (Detail)	140	\$42,980	\$57,640	79.2
Railroad Brake, Signal, and Switch Operators (Detail)	140	\$38,320	\$47,670	66
Shuttle Car Operators (Detail)	140	\$42,750	\$48,110	68.7
Crane and Tower Operators (Detail)	150	\$35,340	\$46,230	73.9

Driving Change is funded by the State Labor Market Information Improvement Program of the U.S. Employment and Training Administration.

# Outlook

- Forecast for steady employment growth through 2015, depends on:
  - Steady GDP growth
  - Reduction in UR
- Profitability and market share could fall with higher gas prices, higher fuel economy/emissions standards
- No time for strategy
  - Cost-cutting in 2008-2009
  - Competitive market for skills 2010+
- Dislocated workers
- Pipeline

# Automotive Workforce Trends

- Flexible employment (temps/contractors)
- Flexibility/multi-skilling (everyone must wear more hats)
- Flexible compensation (rewards in good years; labor costs fall in bad years)
- Continuous improvement (everyone's a problem solver)
- Systems approach (helps to be able to see the big picture)

# Questions