

Attracting, Developing & Retaining Automotive Talent in Michigan

Kristin Dziczek
Director, Industry & Labor Group
CAR Industry Briefing
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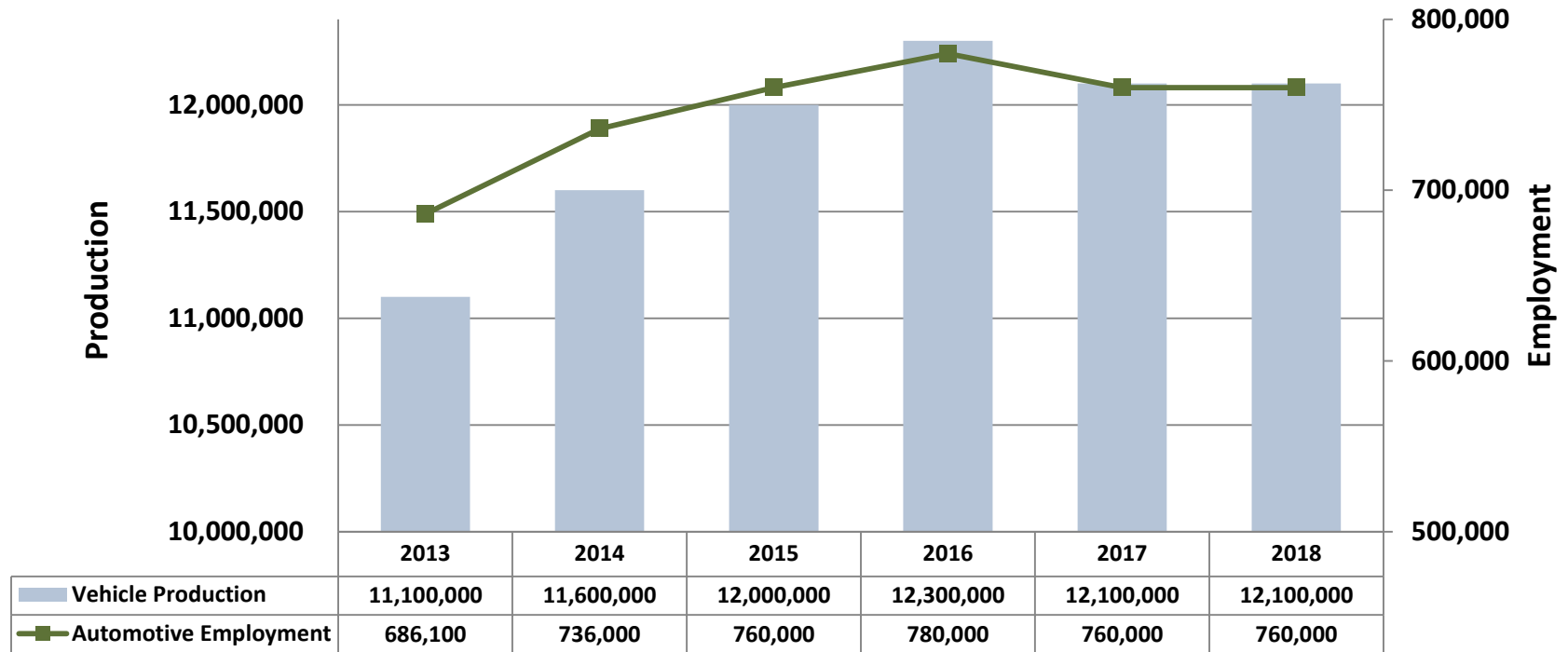
The Research

- Attracting & retaining world-class talent is one of the three main pillars of the MEDC Automotive Strategic Plan
- CAR examined automotive industry talent needs for:
 - Engineers
 - Technicians
 - Designers
 - Software Developers
 - Skilled Trades
 - Production
- The needs were related to five areas of technological change:
 - Connected & automated vehicles
 - Lightweight & multi-material vehicles
 - Powertrain & propulsion
 - Advanced manufacturing systems
 - Supply chain & logistics
- We looked two, five & ten years out at:
 - Anticipated hiring & attrition
 - Organizational hiring & training practices
 - Required knowledge & skills
 - Desired education & training

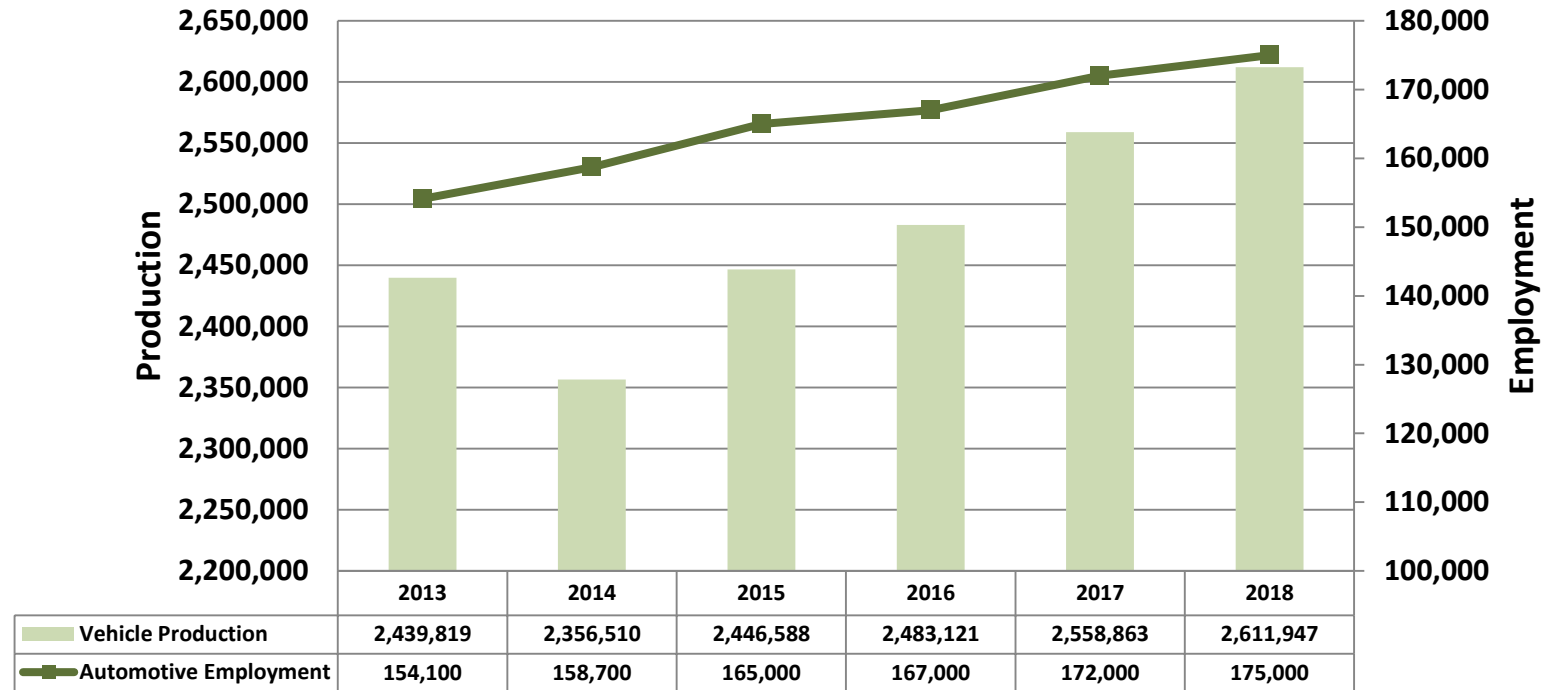
Methodology

- One-on-one structured interviews and data collection:
 - Five automakers, representing 63% of U.S. sales (including the four largest in North America)
 - Eight automotive suppliers, representing over \$36 Billion in North American OE sales
 - Four emerging technology companies
 - Engineering hiring managers, HR executives, technical leads
- Literature review
- Data
 - Proprietary CAR databases
 - Proprietary company data
 - State & Federal government data
 - Commercially-available data

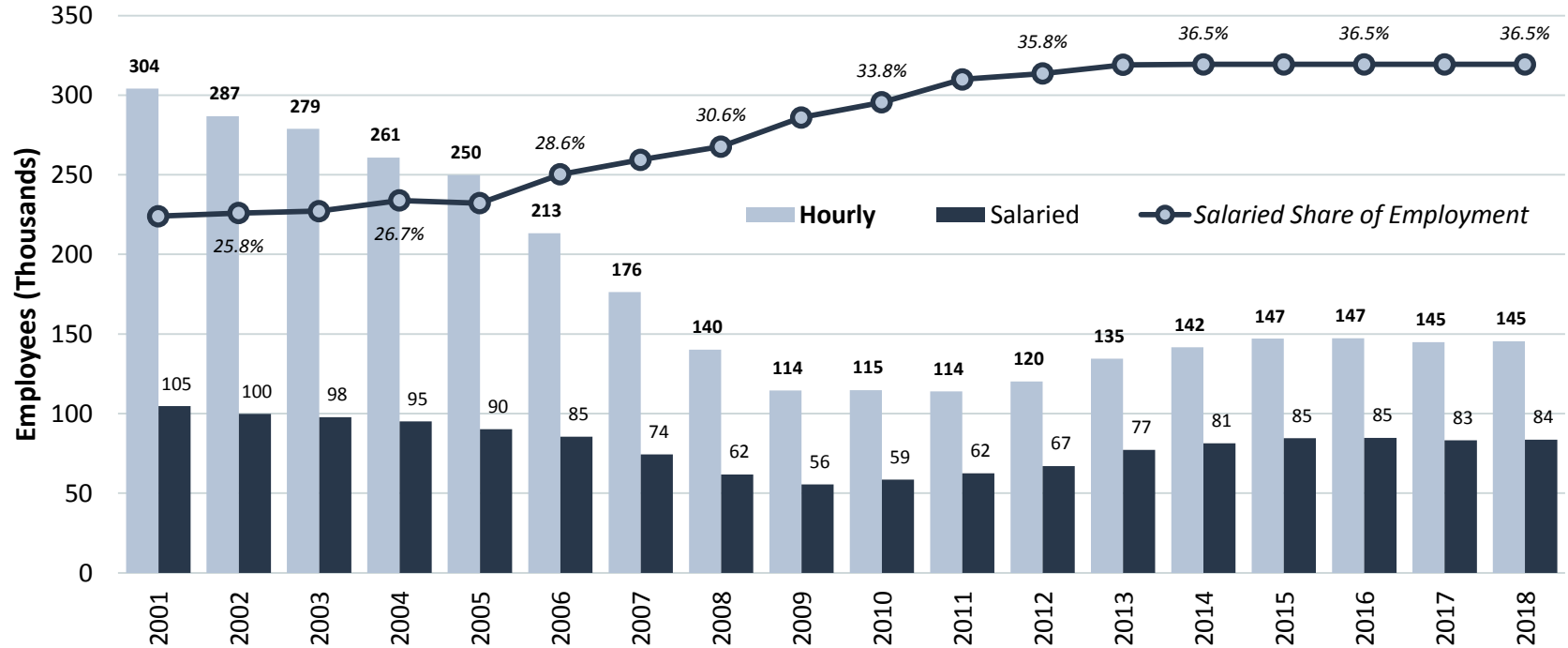
U.S. Vehicle Production & Automotive Employment Forecasts: 2015-2018



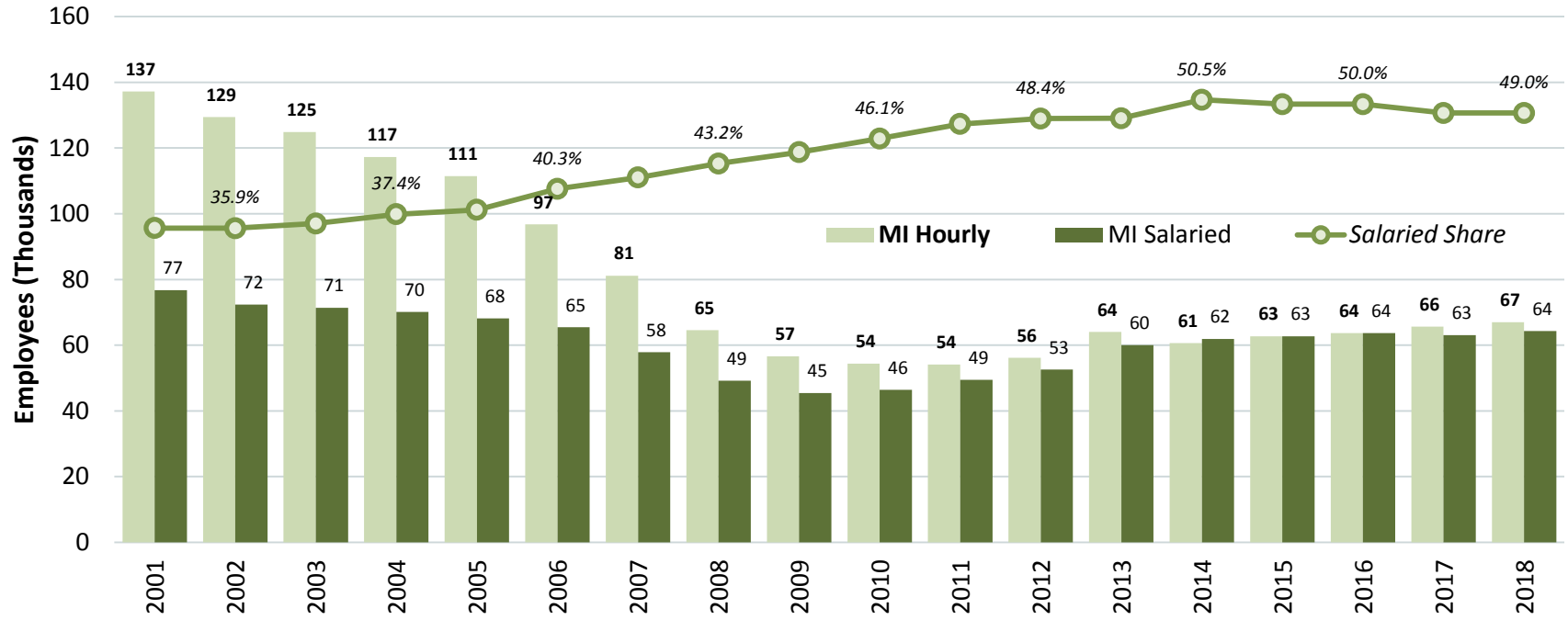
Michigan Vehicle Production & Automotive Employment Forecasts: 2013 – 2018



FCA, Ford & GM Total U.S. Employment 2001 – 2018



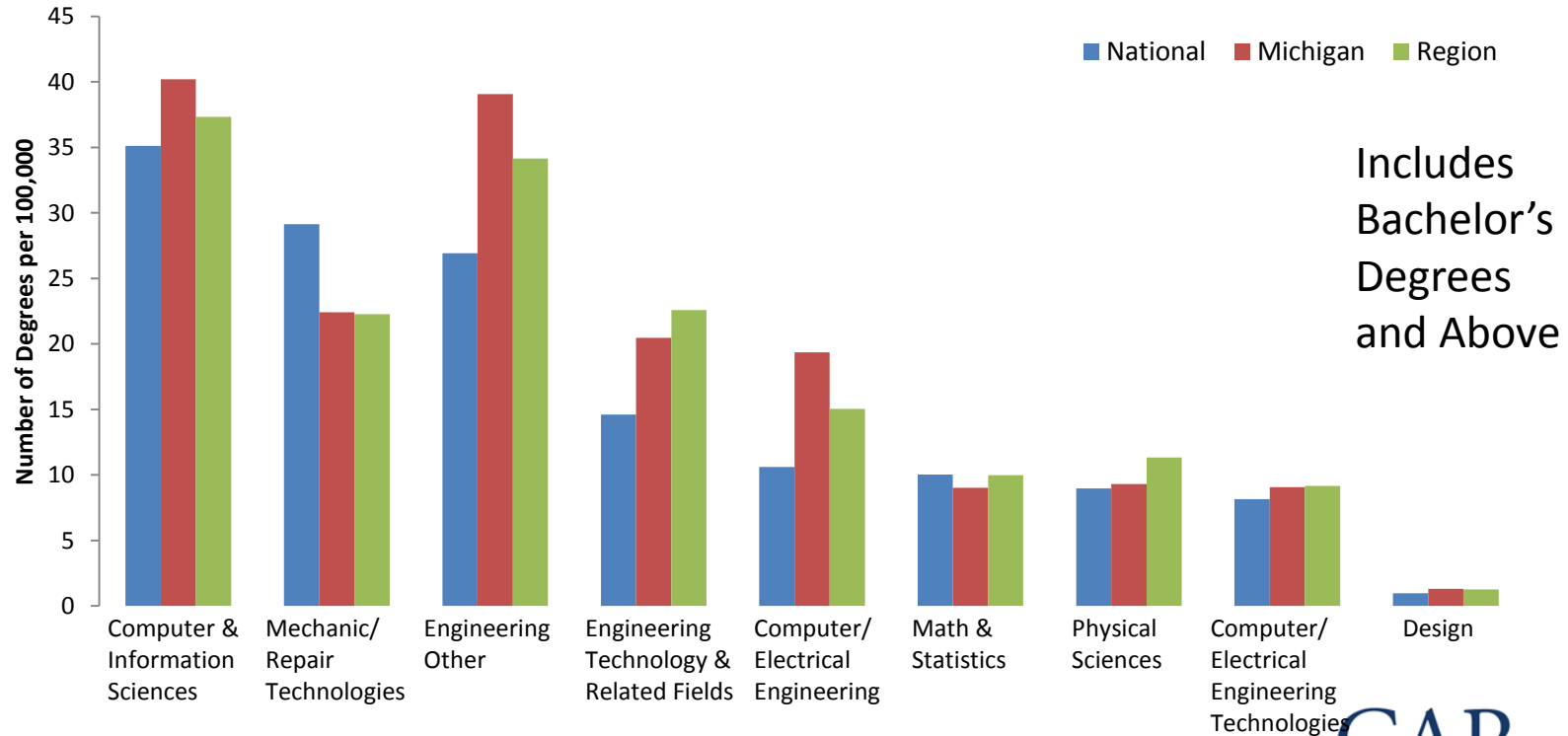
FCA, Ford & GM Total Michigan Employment 2001 – 2018



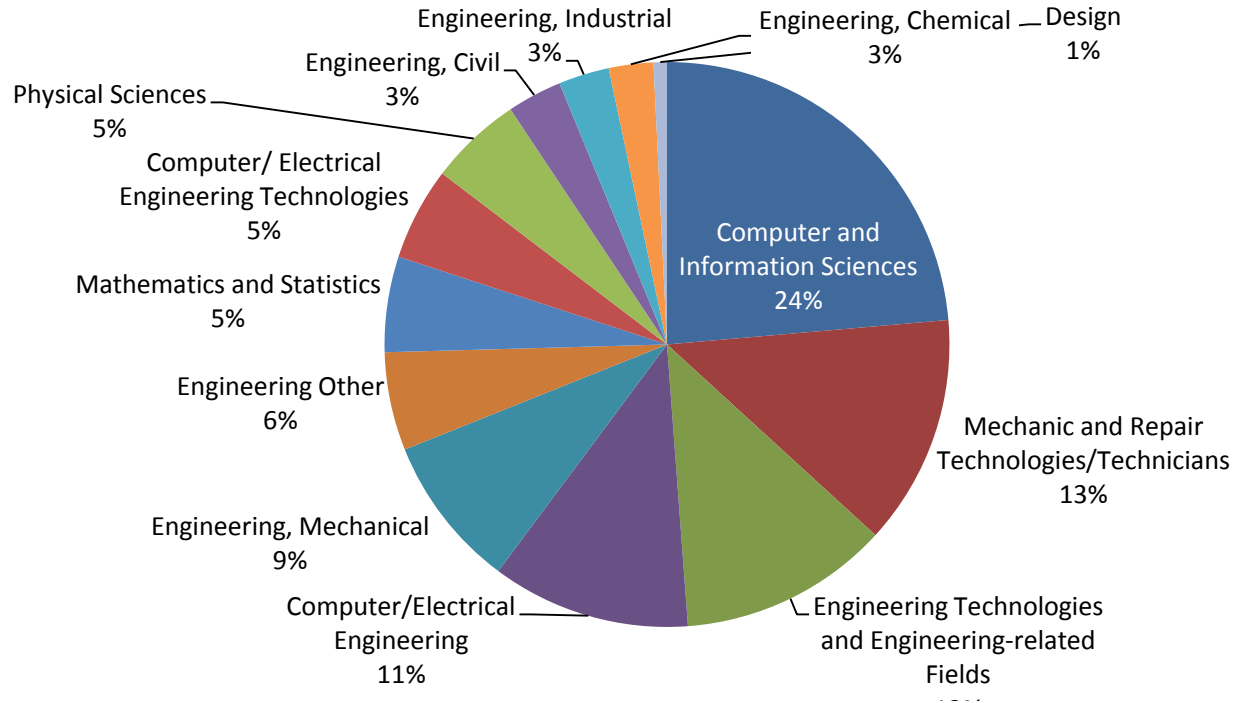
Students Graduating from Michigan Schools 2002-2020



Automotive Related Degree Completions per 100,000 (2011-2012)

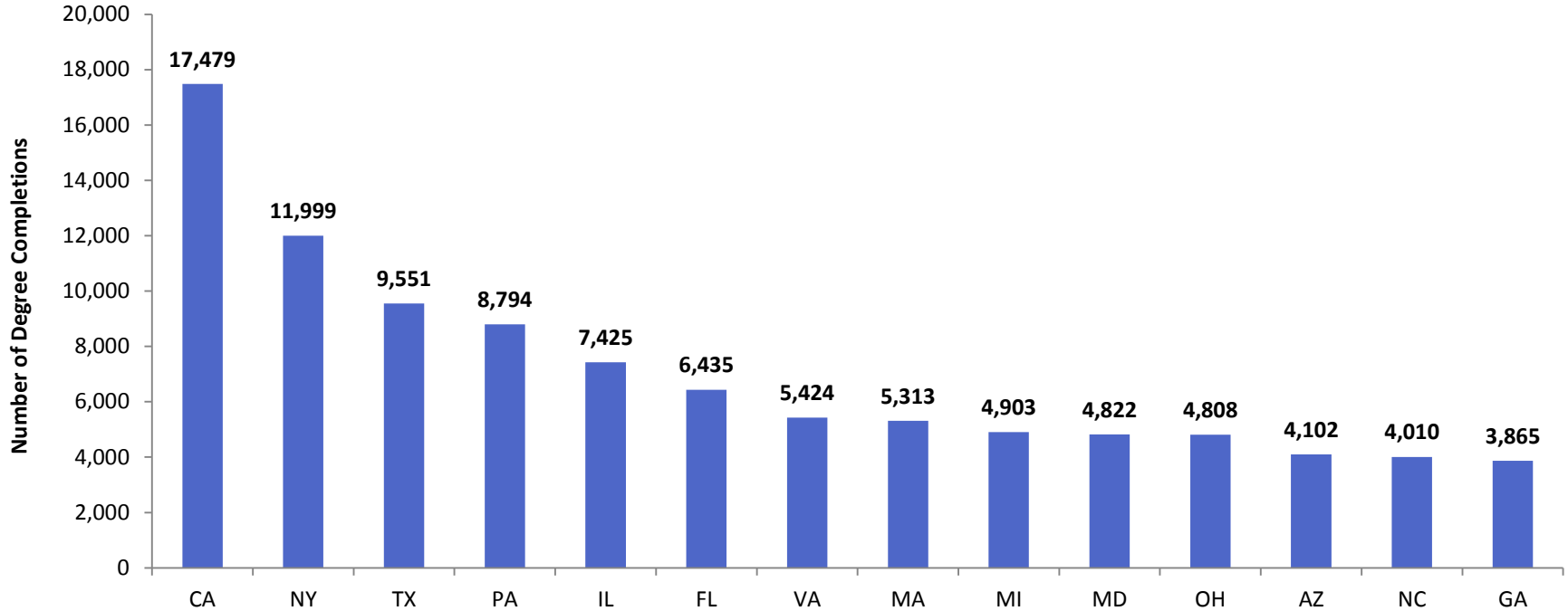


Automotive Related Degree Completions in Michigan by Category, 2011-2012



Includes Bachelor's Degrees and Above

Top States with CAV Related Degree Completions (Bachelor or Higher) in 2011-2012



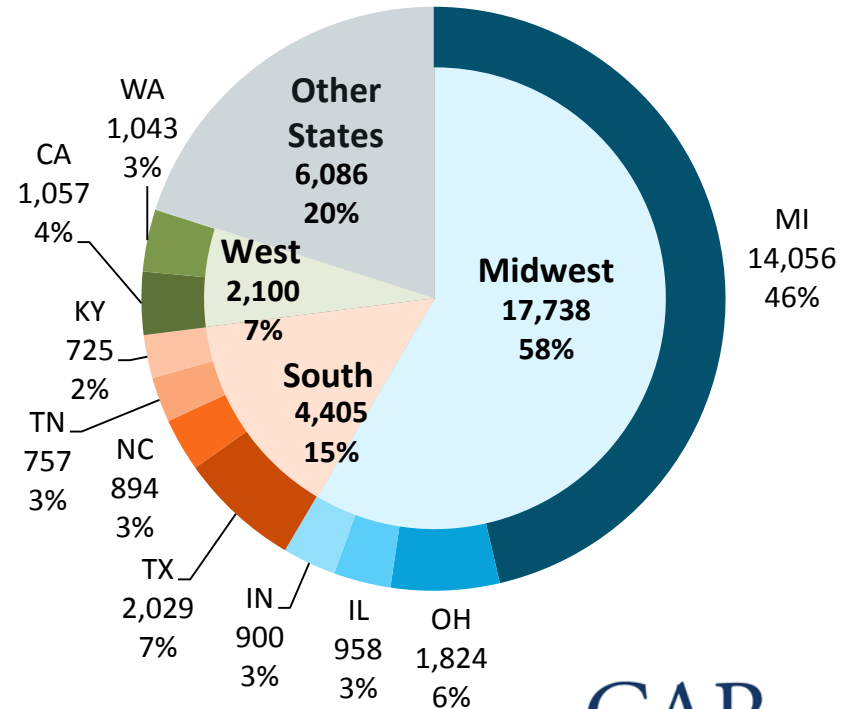
The Challenge to Find Talent

- Plenty of applicants; but applicants with the desired skills are hard to find
- Difficulty filling positions
 - Only 40% of positions filled in the last 12 months
 - 80 day average per position—about 20-35 days “too long”
- 80% of respondents have difficulty finding talent in the region
 - 50% say talent is hard to find anywhere
 - So, moving the job to another location is not always a solution
- Suppliers are competing with their customers for talent

Recent Auto Industry Hiring by State/Region

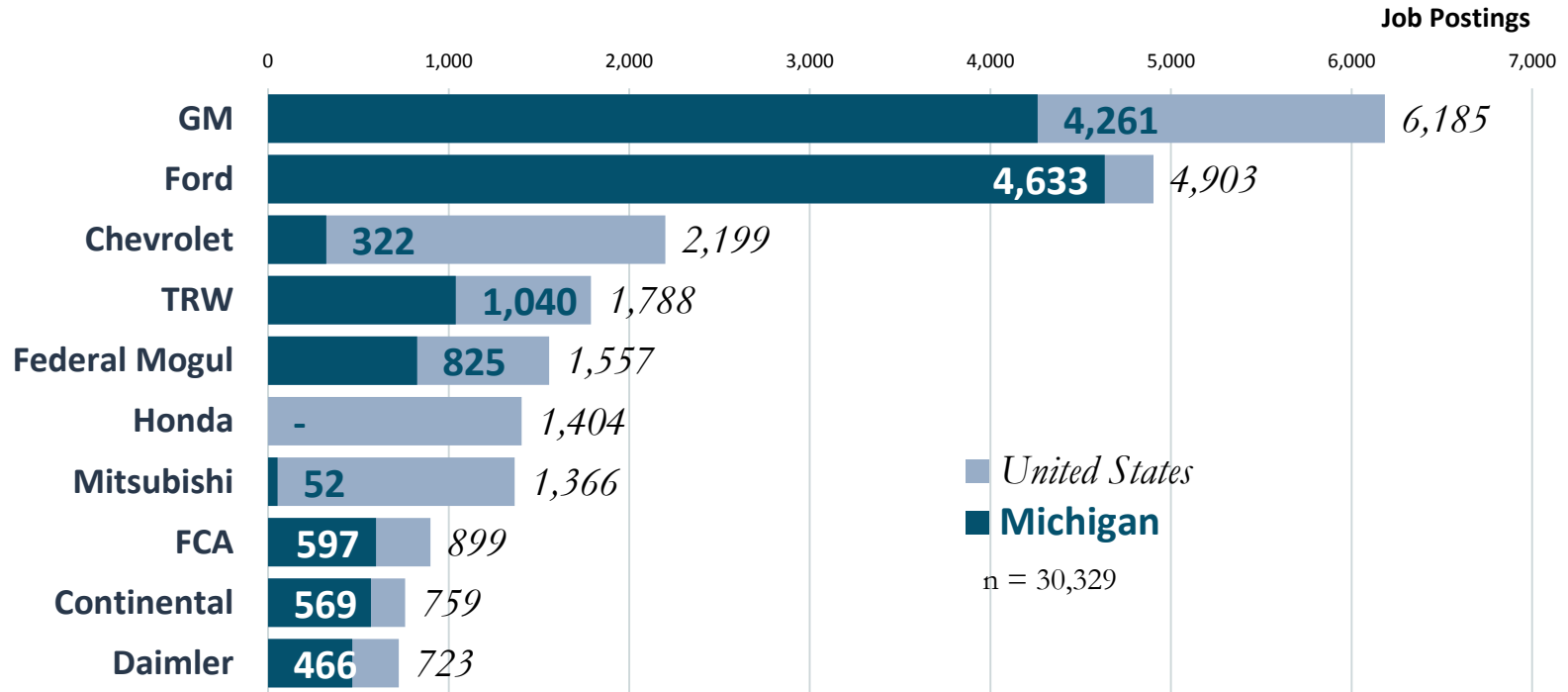
Job Postings January 2014 - March 2015

- Over 30,000 job postings in 15 months
- Nearly half of all jobs posted are located in Michigan (in line with historical trends)
- Job postings are not 1-to-1 related to positions hired



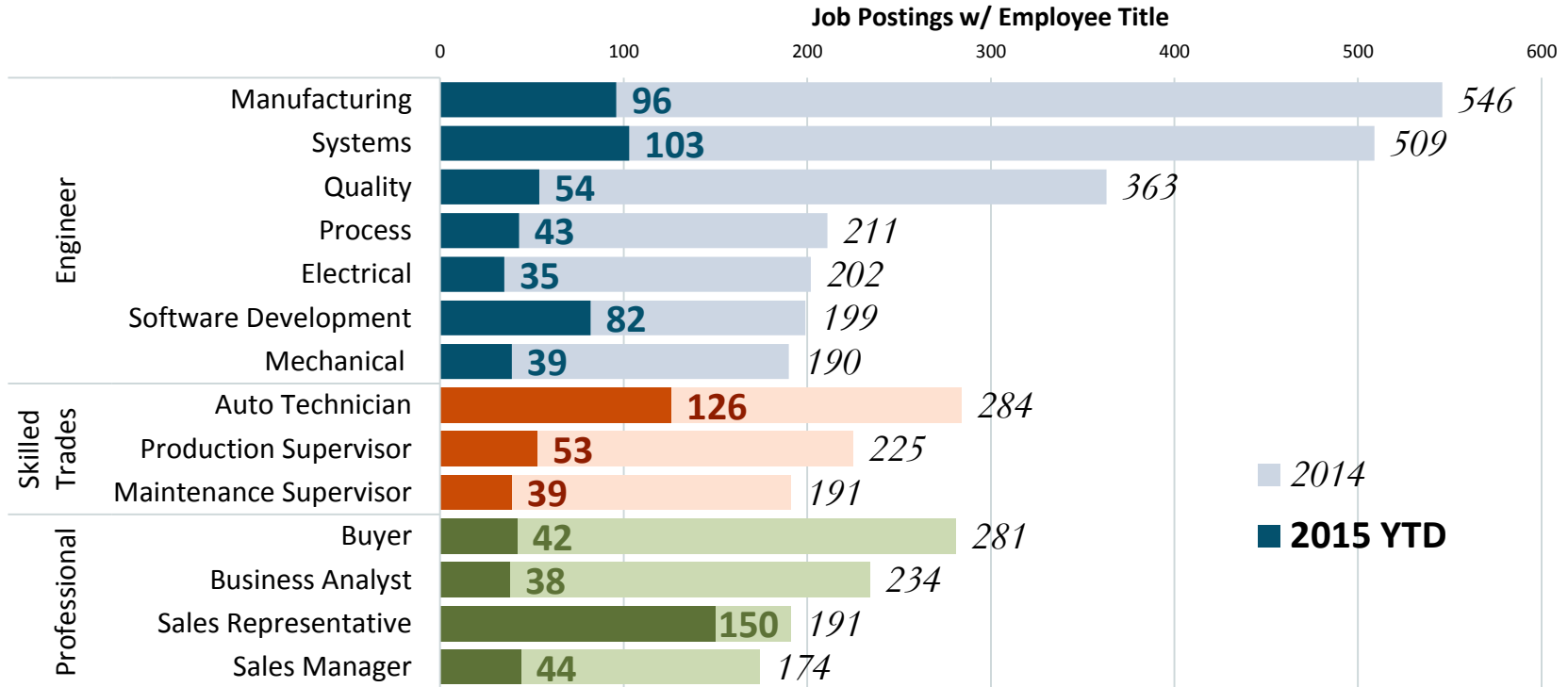
Top Employers in the United States and Michigan

Auto and Parts Manufacturing Jobs (by postings): January 1, 2014 – 2015 YTD



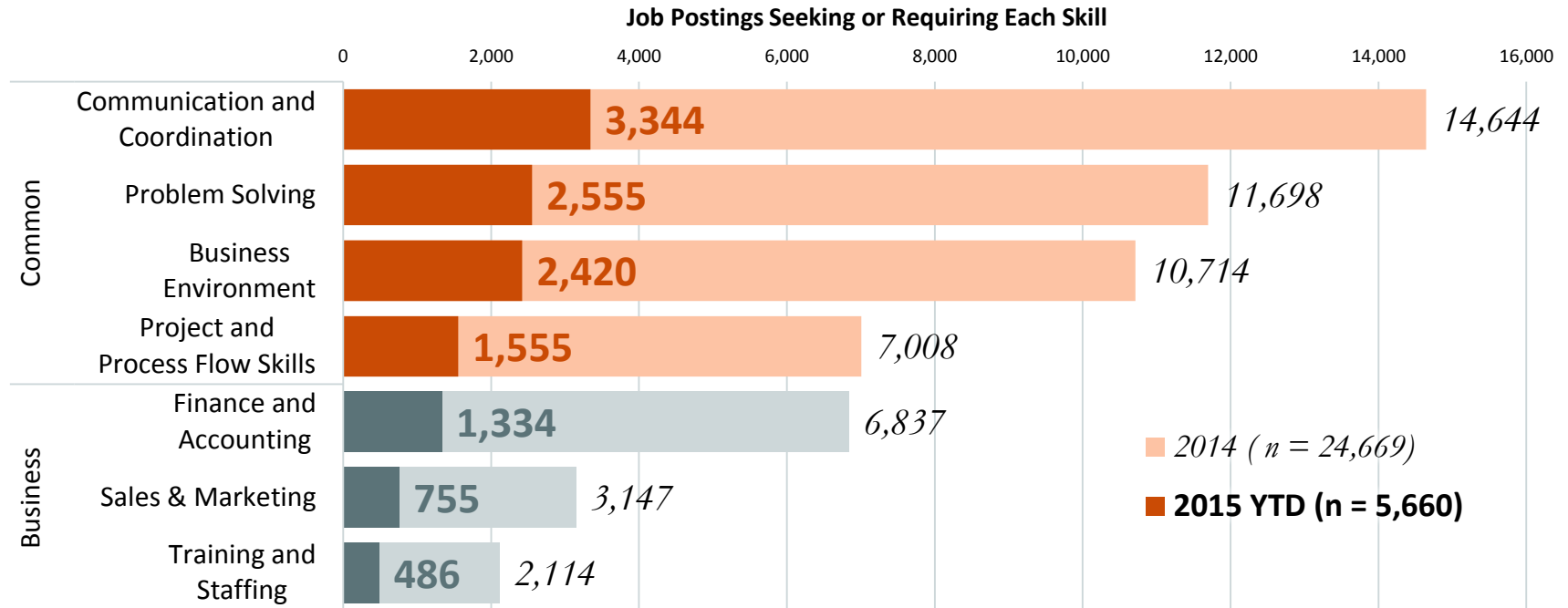
Top Job Titles

Auto and Parts Manufacturing Jobs (by postings) in the United States: 2014 and 2015 YTD



Skills Demand in Auto and Parts Manufacturing

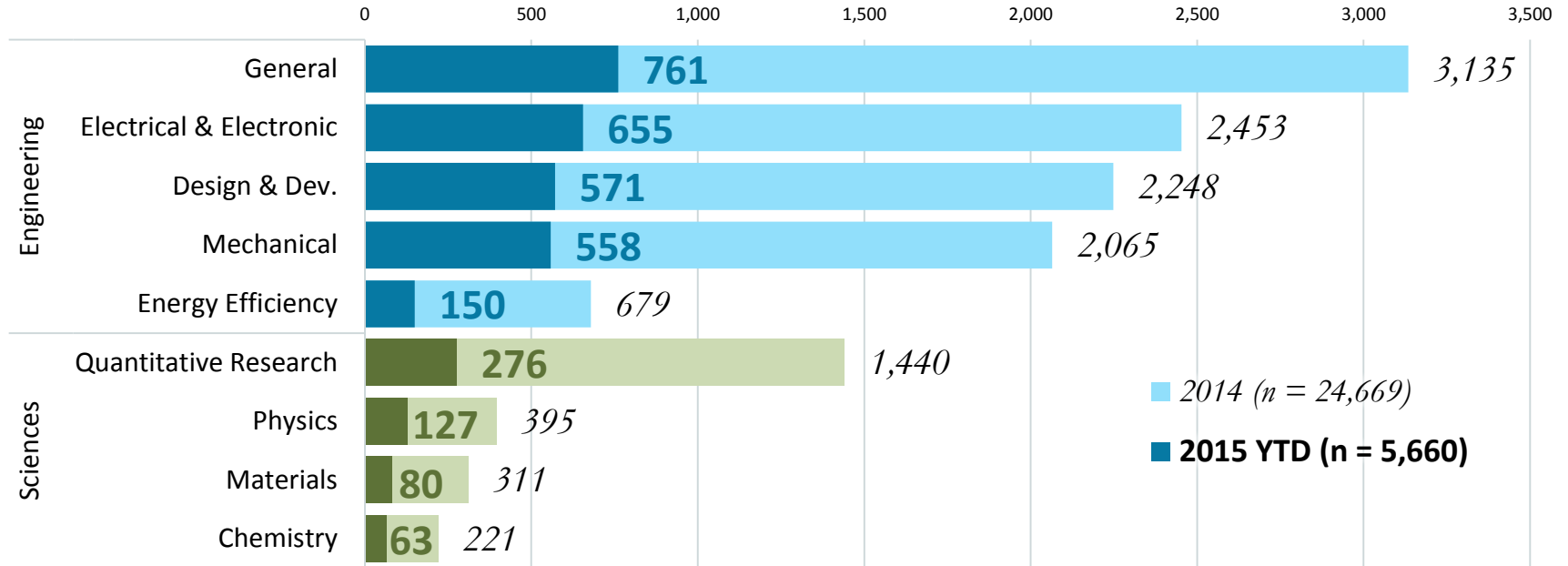
Business and Common Skills: 2014 and Q1 2015



Skills Demand in Auto and Parts Manufacturing

Engineering and Sciences: 2014 and 2015 YTD

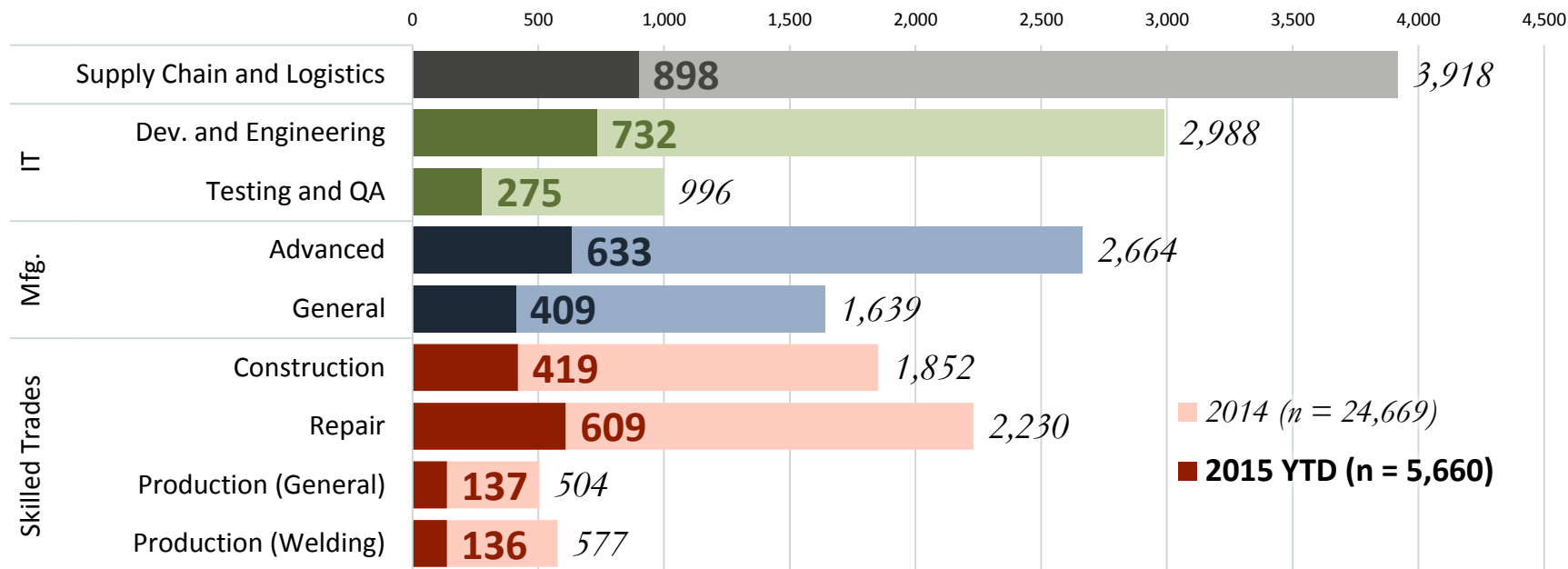
Job Postings Seeking or Requiring Each Skill



Skills Demand in Auto and Parts Manufacturing

IT, Manufacturing, and Skilled Trades: 2014 and 2015 YTD

Job Postings Seeking or Requiring Each Skill



Skills in Demand in the CAV Space

- Electrical Engineering
 - Computer Science/Software Engineering
 - Mathematics—geometry, algorithms
 - Mechanical Engineering
 - Hardware testing/calibration
 - Supply Chain Management/Logistics
- Software Skills:
 - Embedded automotive software (including RTOS such as ThreadX and QNX)
 - Agile development
 - Linux—becoming the basis for infotainment and instrument cluster
 - Network protocols
 - Hardware Skills:
 - Higher-level VHDL (VHSIC Hardware Description Language)
 - VLSI (Very Large Scale Integration)
 - SPGA (Staggered Pin Grid Array)

Engineering Fields Dominate the Job *Titles*, but the Most Sought-After *Skills* are Non-Technical



The overwhelming demand is for technical skills PLUS:

- Communication
- Coordination
- Problem Solving
- Project & Process Flow
- Language Skills & Cross-Cultural Communication

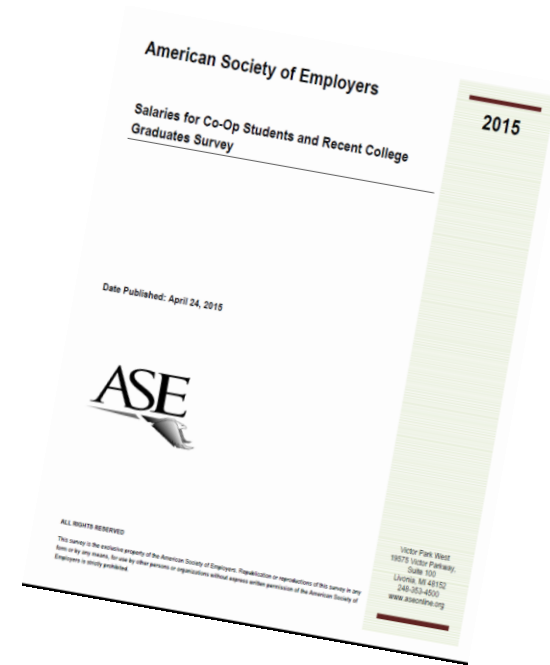
Where do Employees Learn These “Soft Skills”?



1. Co-ops and Internships
2. Extracurricular teams
3. Experiential learning
4. Academic coursework
5. On the job

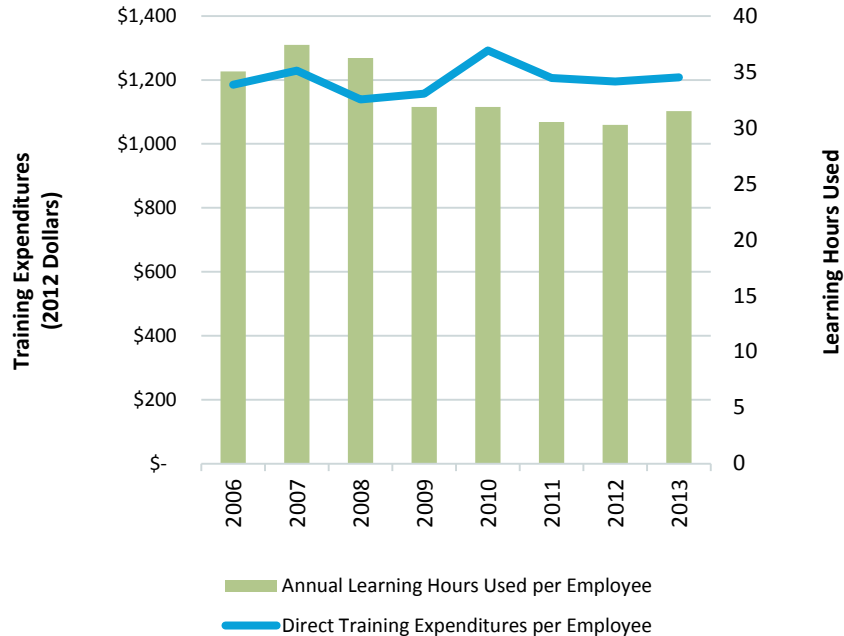
Not All Auto Suppliers Have Formal Co-op/Internship Programs.

- 88% of auto supplier have a co-op/internship program
- Mostly hire undergraduates and advanced degree students, but some work with high school juniors & seniors
- Only 57% of auto suppliers surveyed have a formal program

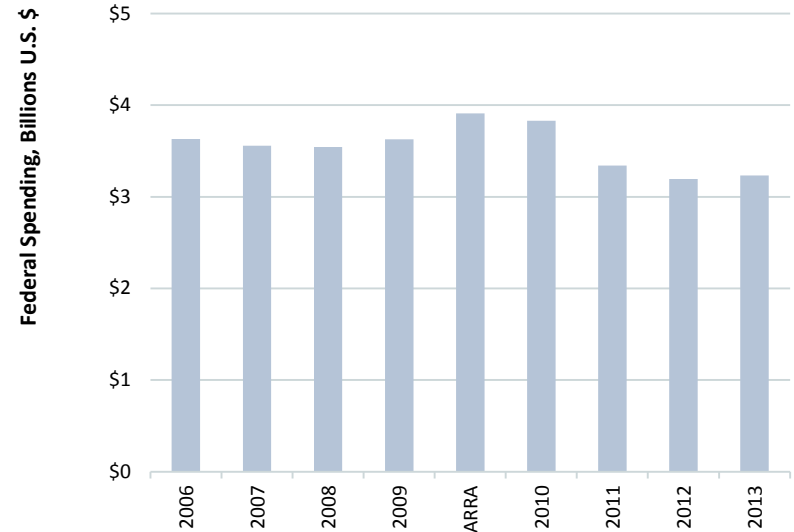


Private & Public Spending on Job Training is Not Growing; Hours of Training/Year Remain Flat

Direct Corporate Spending on Training per Employee and Hours Spent in Training per year, 2006-2013

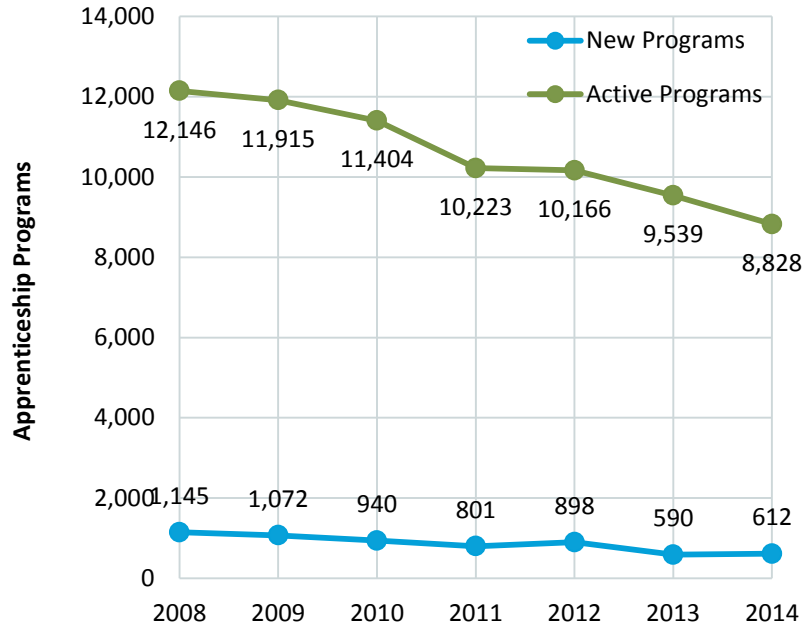


U.S. Federal Spending on Training & Employment Services, 2006-2013

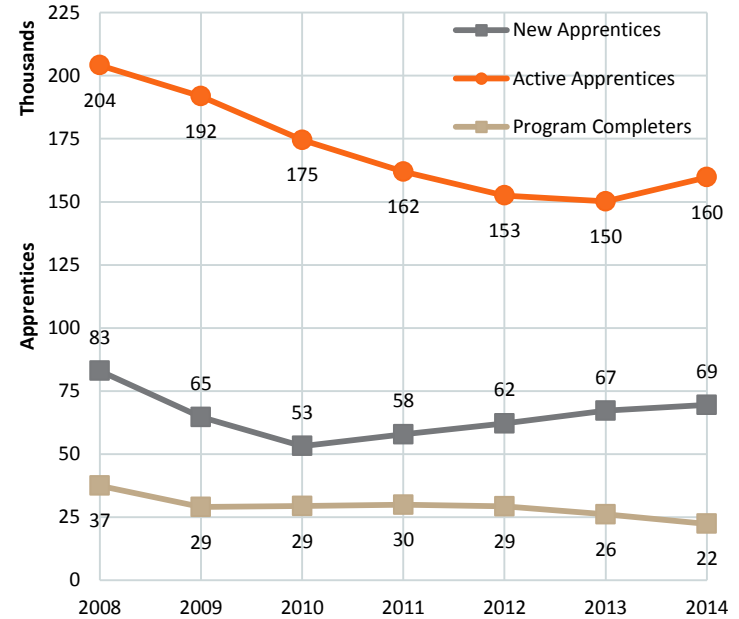


Number of Apprenticeship Programs has been Falling; The Number of Active Apprentices Grew in 2014

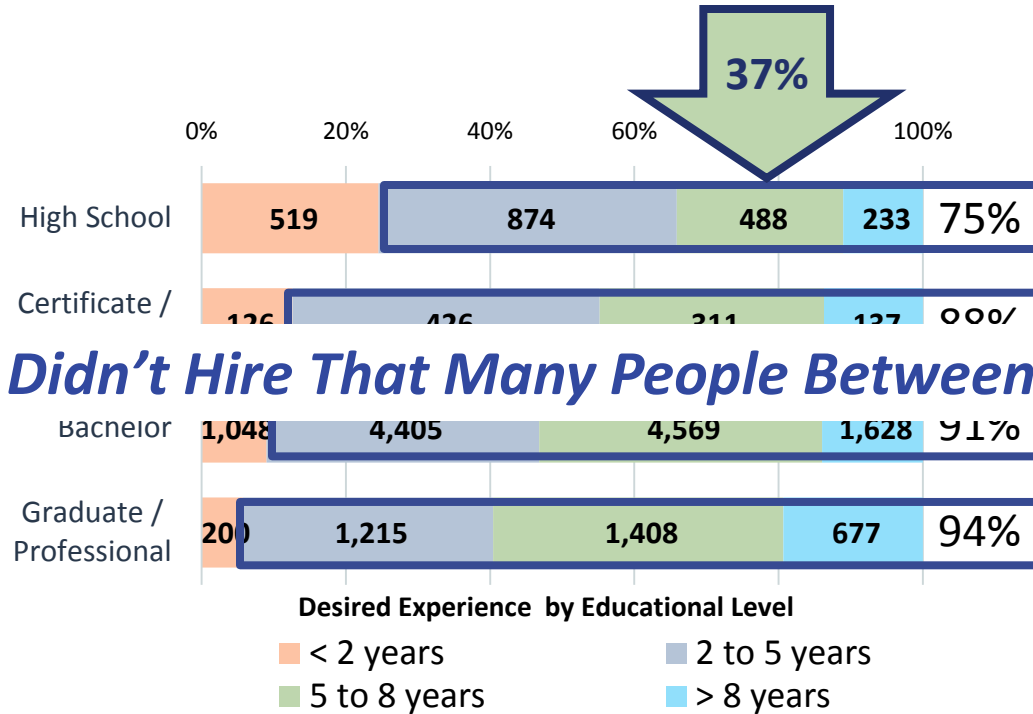
U.S. Apprenticeship Programs, 2008-2014



U.S. Apprentices, 2008-2014



Experienced Hires are in High Demand.

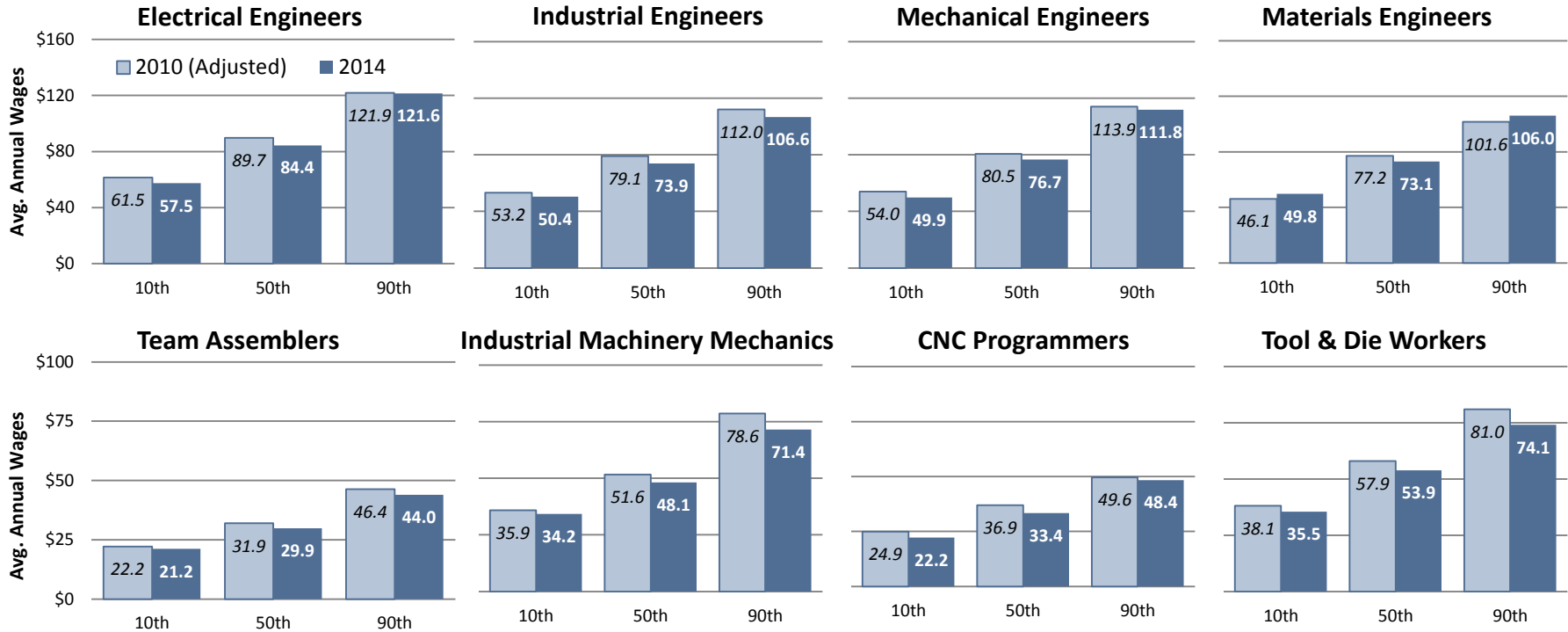


The Industry Didn't Hire That Many People Between 2007-2010

Employers Report Very Little Pressure to Raise Wages for Engineering/Technical Hires

- Despite a “shortage” of candidates, a vast majority of employers we interviewed report little or no upward wage pressure...with a few notable exceptions:
 - Embedded systems
 - Software/hardware integration
 - HMI design
 - Candidates with experience (acquired through employment and/or experiential learning)
- Competition is not all in Michigan, United States, or North America, so salaries must be in-line with employees in other countries

Wage Comparisons Charts, Selected Occupations in U.S. Motor Vehicle & Parts Manufacturing, 2010 and 2014



Employers Report a Shortage of Qualified Candidates, but Little to No Upward Wage Pressure. Something has got to give.





Kristin Dziczek
kdz@cargroup.org