

# THE ECONOMIC IMPACT OF SOUTH CAROLINA'S AUTOMOTIVE CLUSTER

**Dr. Doug Woodward**  
**Director, Division of Research**  
**Professor of Economics**  
**[woodward@moore.sc.edu](mailto:woodward@moore.sc.edu)**



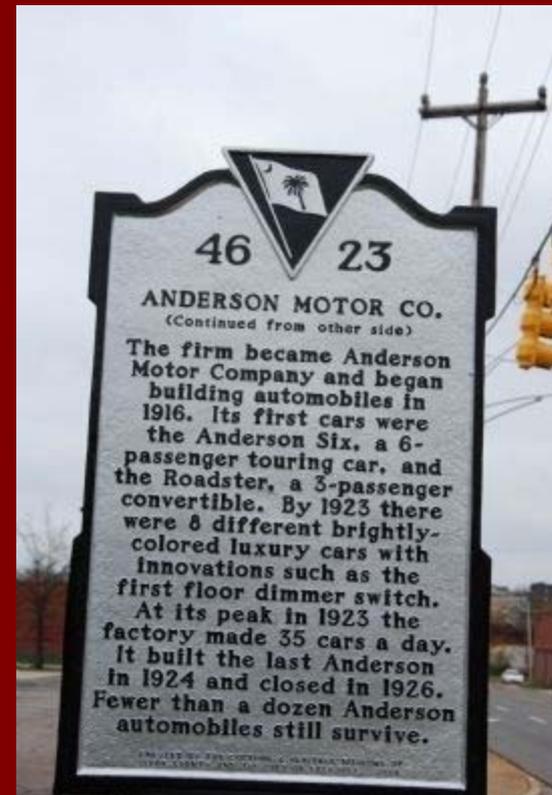
**MOORE** DARLA MOORE SCHOOL OF BUSINESS  
UNIVERSITY OF SOUTH CAROLINA

# Highlights

- ◎ Globally competitive **automotive and ground transportation** cluster.
- ◎ *A unique role* in economic development.
- ◎ The cluster contributes to *5.4 percent of the state's employment base* (2008).
- ◎ *Job impacts are higher than any other specific sector or industry.*

# Anderson Motor Company

- ◎ Rock Hill Buggy Company.
- ◎ 1916-1926.
- ◎ Luxury cars.
- ◎ Custom-built.
  - Peak: 35 cars a day.
- ◎ Innovative.
- ◎ Only a few survive.



# South Carolina's 21<sup>st</sup> Century Auto Cluster

- ◎ Mostly engaged in manufacturing.
  - Final goods assemblers and suppliers.
- ◎ Manufacturing linkages to a larger network of businesses.
- ◎ Generate a substantial economic impact.
- ◎ Growing research and development dimension will strengthen the cluster.

# Study: Methods

- ◎ Compile database on footprint
  - National Establishment Time-Series Database (NETS)
  - U.S. Census and other government sources
- ◎ Identify auto manufacturing cluster industries
  - Classify industries into cluster tiers
- ◎ Conduct impact analysis

# Cluster Dimensions

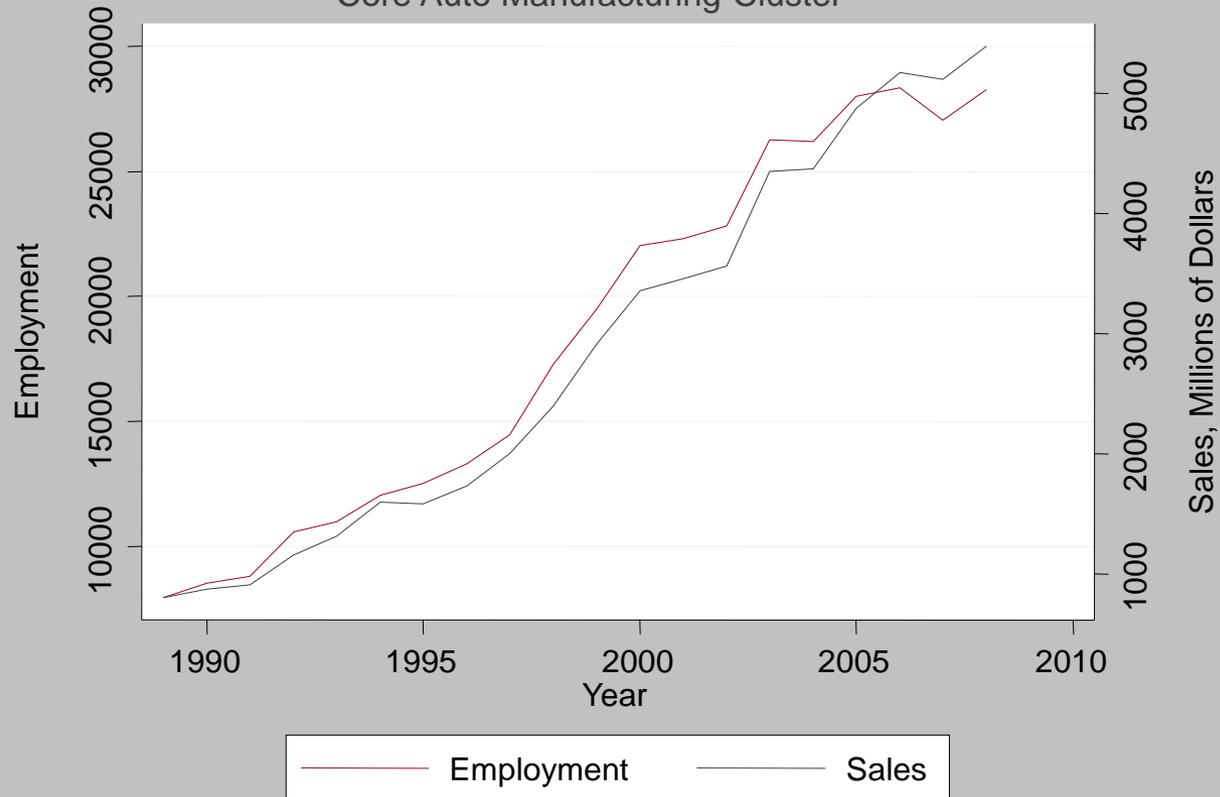
- ◎ The cluster has an immense economic footprint in the state.
- ◎ Small and large businesses.
- ◎ Local concentrations throughout the state.

# Automotive and Ground Transportation Footprint

	Establishments	Total Employment	Average Employment	Total Sales	Average Sales
<b>OEMs</b>	12	8,832	736	1,590,000,000	132,600,000
<b>First Tier</b>	307	21,062	72	4,110,000,000	14,040,557
<b>Second Tier</b>	4,645	129,040	28	21,400,000,000	4,598,921
<b>Total</b>	<b>4,964</b>	<b>158,934</b>		<b>27,100,000,000</b>	

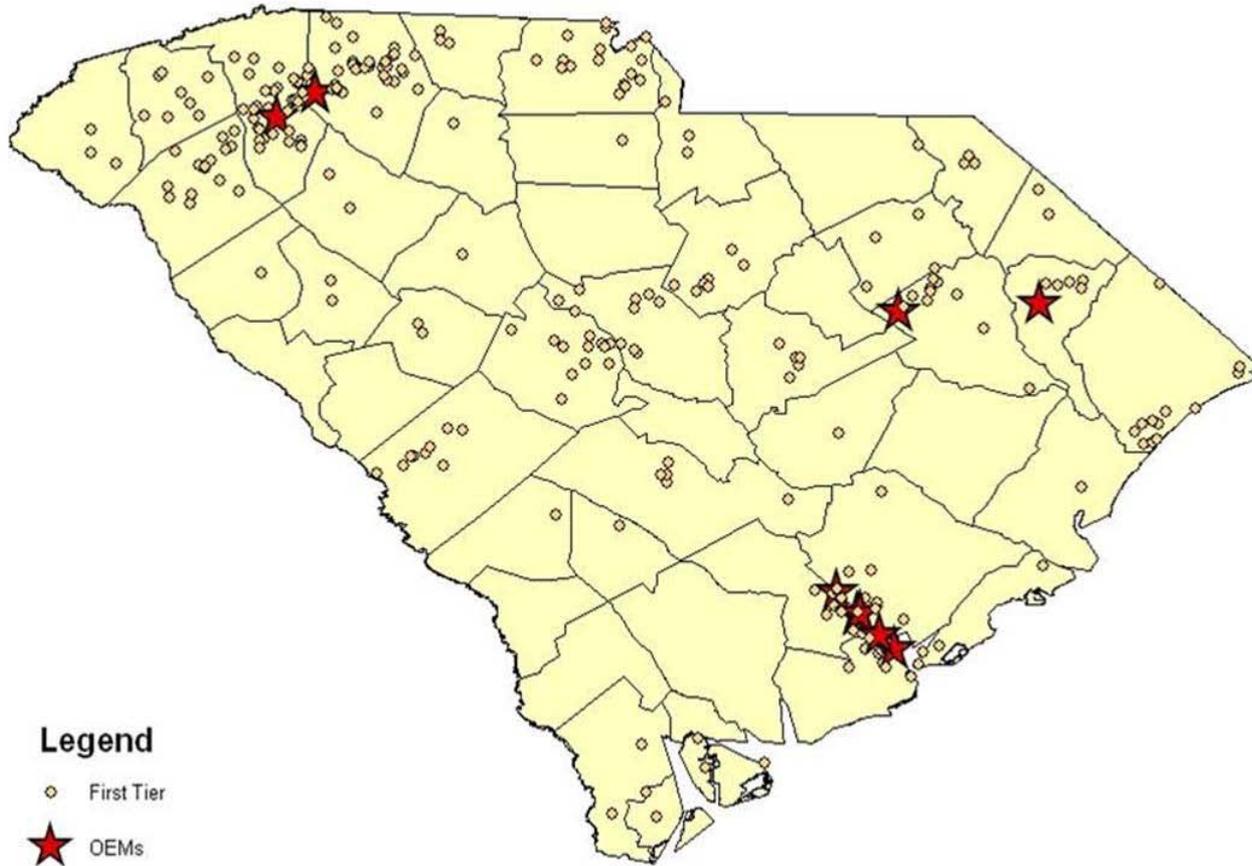
# Employment and Sales Growth

Employment and Sales Growth  
Core Auto Manufacturing Cluster



Source: SC Auto Cluster Database, NETS Database

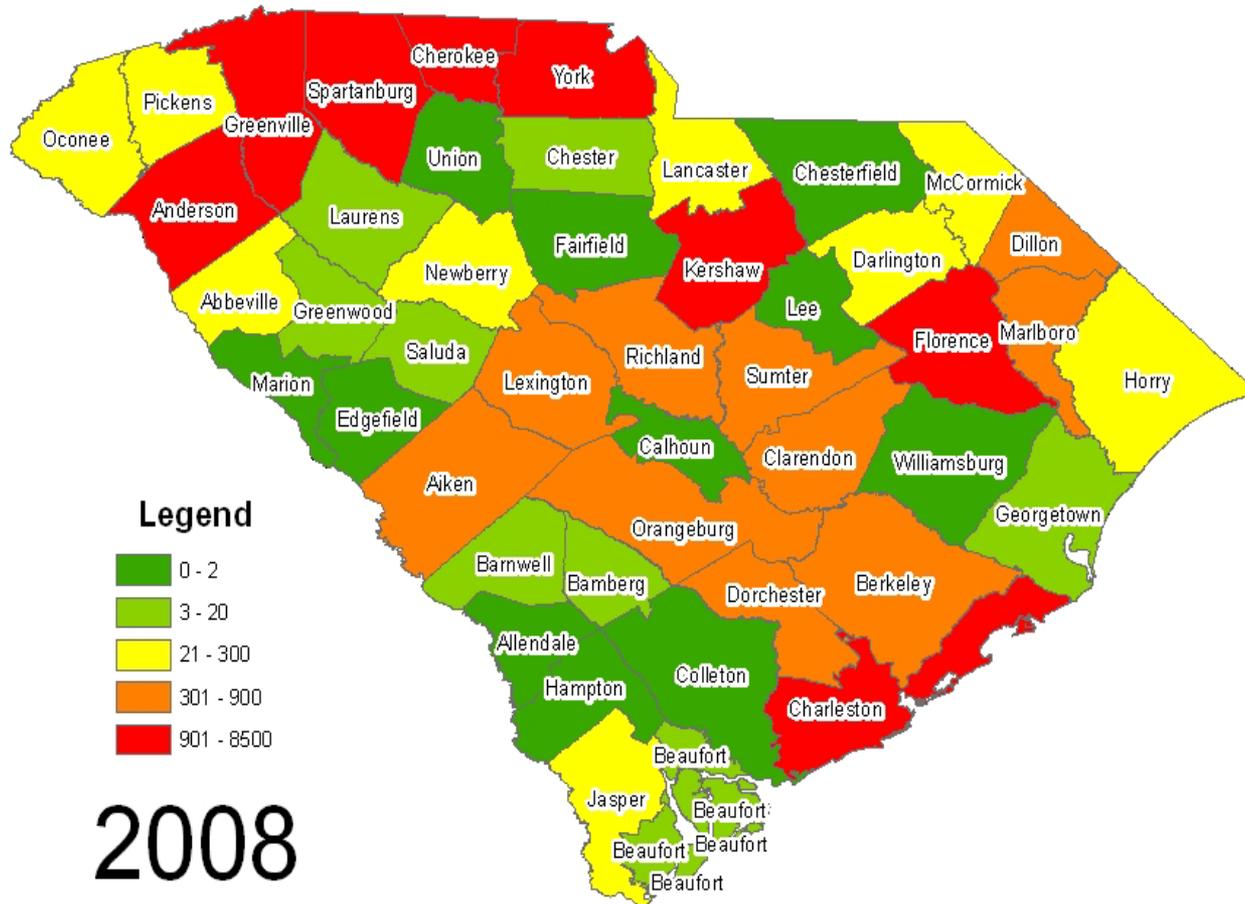
## Establishments in Core Auto Manufacturing Cluster



2008

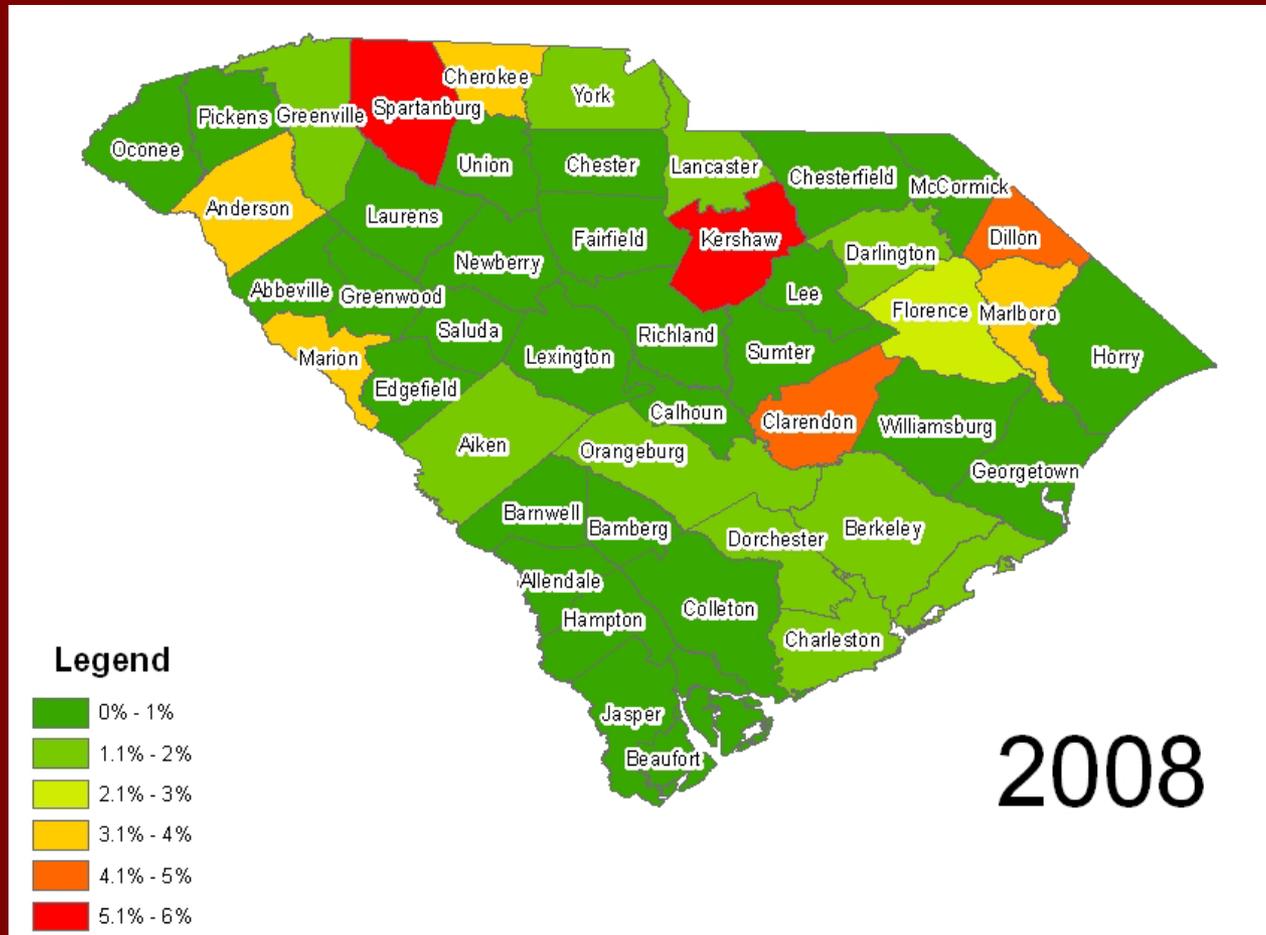
# Total Direct Employment

## Employment in Core Auto Manufacturing Cluster



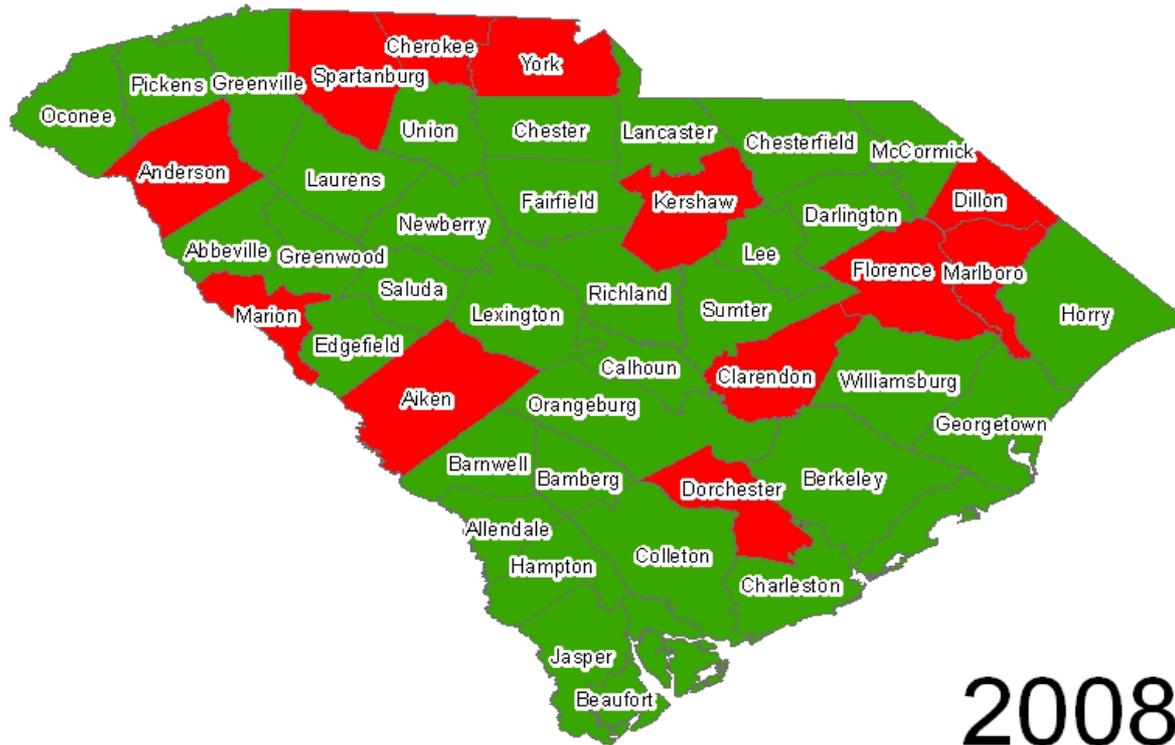
# Direct Employment Shares

Percentage Employed in Auto Cluster  
Core Automotive Manufacturing Cluster



# Location Intensity

## County Location Quotients Core Automotive Manufacturing Cluster



### Legend

- <1 Less Intensive
- >1 More Intensive

# Impact Analysis

## Multiplier effect of direct employment



### Direct Impact:

The effects of local expenditures on wages and purchases that are injected in the state's economy.

### Indirect Impact:

The ripple effects of spending on in-state suppliers.

### Induced Impact:

The ripple effects of expenditures from wages such as household spending.

# Key Impacts

- ◎ 5.4 % of total SC employment
- ◎ 10 % of total SC value added

	Value Added	Output	Employment
Direct	\$ 9,469,427,827.25	\$ 19,435,103,176.78	29,844
Indirect	\$ 3,822,786,732.69	\$ 4,471,439,719.46	26,774
Induced	\$ 2,567,217,123.83	\$ 3,144,963,279.05	28,317
<b>Total</b>	<b>\$ 15,859,431,683.77</b>	<b>\$ 27,051,506,175.29</b>	<b>84,935</b>

# Job Multipliers: Huge Potential

Auto Manufacturing Cluster Component Industry	Total Employment Multiplier	Total Value Added Multiplier
Automobile manufacturing	4.09	2.58
Light truck and utility vehicle manufacturing	4.59	2.74
Heavy duty truck manufacturing	3.01	3.07
Motor vehicle body manufacturing	2.26	1.92
Truck trailer manufacturing	1.93	2.64
Motor home manufacturing	1.90	2.37
Travel trailer and camper manufacturing	2.10	2.17
Motor vehicle parts manufacturing	2.38	2.21
Military armored vehicle, tank, and tank component manufacturing	5.52	2.67

# Picking Winners

- ◎ Study buttresses the argument that South Carolina should focus strategically on attracting and retaining automotive manufacturers.
  - High-wage employment
  - High job multipliers
- ◎ Few other economic sectors have this potential to scale up employment.
  - the most pressing economic imperative in South Carolina today.

# Job Multiplier Comparisons

Industry	Total Employment Multiplier	Industry	Total Employment Multiplier
<b>Military armored vehicle, tank, and tank component manufacturing</b>	<b>5.52</b>	Construction of new residential permanent site single- and multi-family structures	1.86
<b>Light truck and utility vehicle manufacturing</b>	<b>4.59</b>	Museums, historical sites, zoos, and parks	1.74
<b>Automobile manufacturing</b>	<b>4.09</b>	Accounting, tax preparation, bookkeeping, and payroll services	1.61
<b>Heavy duty truck manufacturing</b>	<b>3.01</b>	Hotels and motels, including casino hotels	1.49
<b>Extraction of oil and natural gas</b>	<b>2.97</b>	Cotton farming	1.42
<b>Motor vehicle parts manufacturing</b>	<b>2.38</b>	Real estate establishments	1.39
<b>Motor vehicle body manufacturing</b>	<b>2.26</b>	Warehousing and storage	1.37
Electric power generation, transmission, and distribution	2.19	Investigation and security services	1.32
Travel trailer and camper manufacturing	2.10	Employment services	1.26
Truck trailer manufacturing	1.93	Retail Stores - Miscellaneous	1.22
Motor home manufacturing	1.90	Tobacco farming	1.21
Broadwoven fabric mills	1.89	Performing arts companies	1.19

# High Wages

- Average income of employees working in Motor Vehicle Manufacturing sector in 2009 was **\$61,266**.
- Higher than the average income for South Carolina by **62%**.



# Recent Investment

- ◎ Proterra: assembles drive and energy storage systems for heavy duty vehicles
  - \$68 million; 1,300 new jobs
- ◎ American Titanium
  - \$422 Million; 360 new jobs



# More New Investment

- ◎ CT&T: Electric vehicles manufacturing
  - \$21 Million and 270 new jobs
- ◎ ZF Group: transmissions manufacturing
  - \$350 Million and 900 new jobs



# Research and Development

- ◎ Clemson University's partnership, CU-ICAR attracts new investment.
- ◎ Innovation necessary to maintain competitive advantage.
- ◎ Anchors the cluster in South Carolina.

# CU-ICAR

International Center of Automotive Research

- ◎ Public Private Partnership
- ◎ Less than one percent of funding for Automotive R&D comes from the Federal Government in the U.S.



# Ongoing Research

- ◎ TWEELS- Michelin; experimental tire design that does not need air.
- ◎ Deep Orange- BMW, FEV, Dell and Michelin; hybrid vehicle



# Auto Cluster: Summary

- ◎ In South Carolina: a total economic impact of \$27.1 billion (2008).
- ◎ Ten percent of state economic activity.
- ◎ The auto cluster supports *84,935 full-time equivalent jobs in South Carolina.*
- ◎ Attracting new investment.
- ◎ Becoming innovative.

# Full Study

Moore School Division of Research Studies