ECONOMIC IMPACT SESSION
Cluster Analysis and General Economic Trends in Guernsey County, OH

NCRCRD GRANT PROJECT
August 8, 2014

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Objectives

- Overview of shale development - Guernsey Co. region

- General demographic and economic trends

- Cluster analysis findings
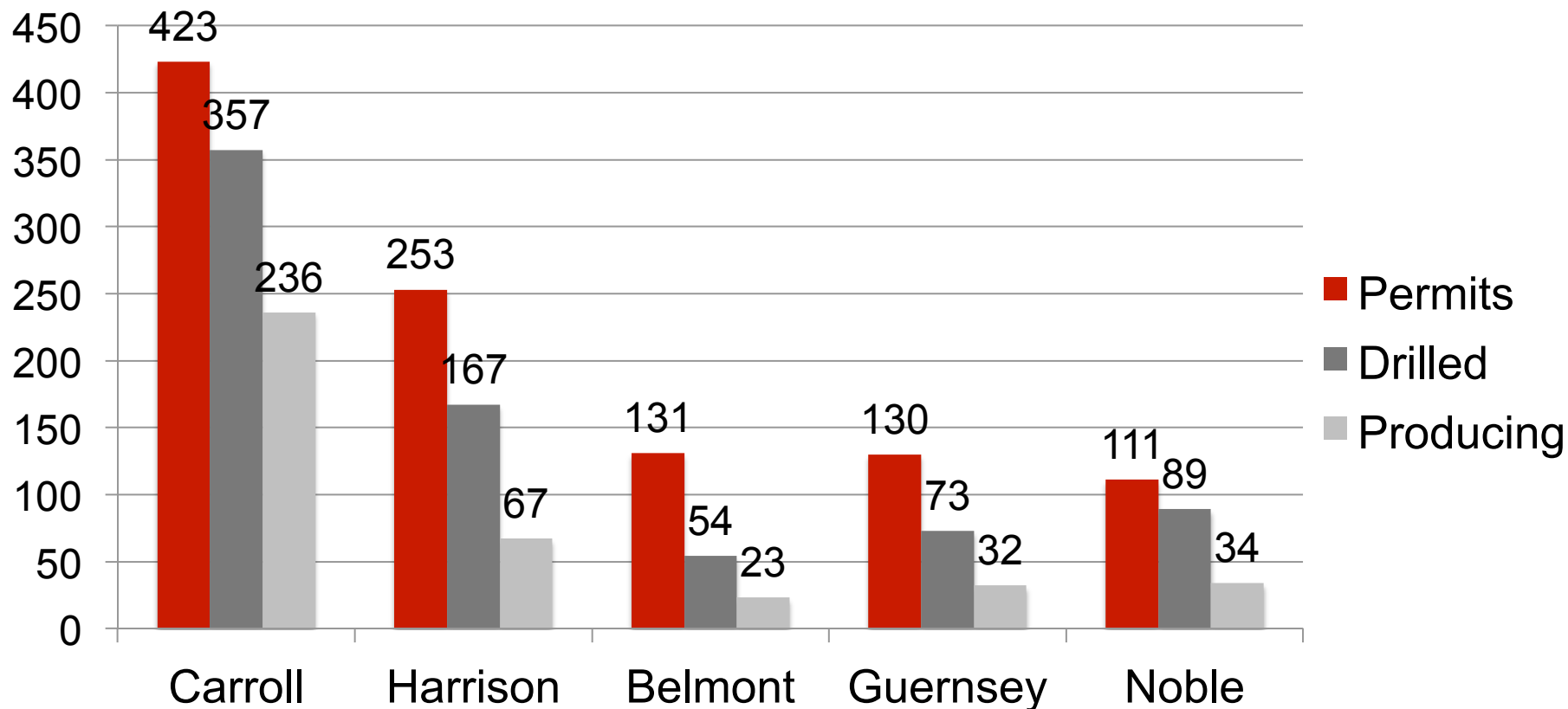
- Breakout strategy discussion

Shale Development Update

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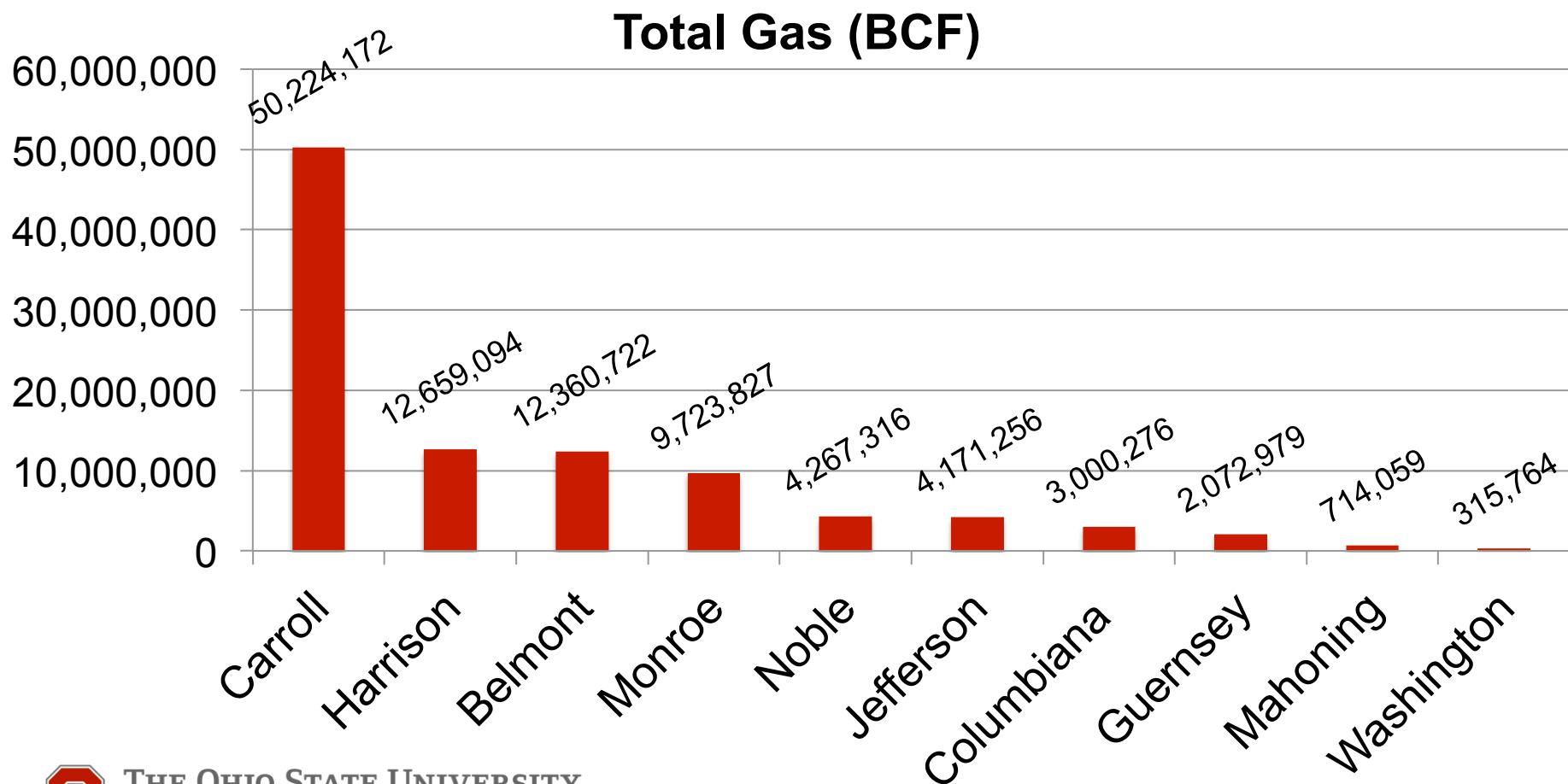
Utica Development Update

Source: ODNR 7/26/2014

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2013 Horizontal Well Gas Production

Total Gas (BCF)

Bar chart values:
- Carroll: 50,224,172
- Harrison: 12,659,094
- Belmont: 12,360,722
- Monroe: 9,723,827
- Noble: 4,267,316
- Jefferson: 4,171,256
- Columbiana: 3,000,276
- Guernsey: 2,072,979
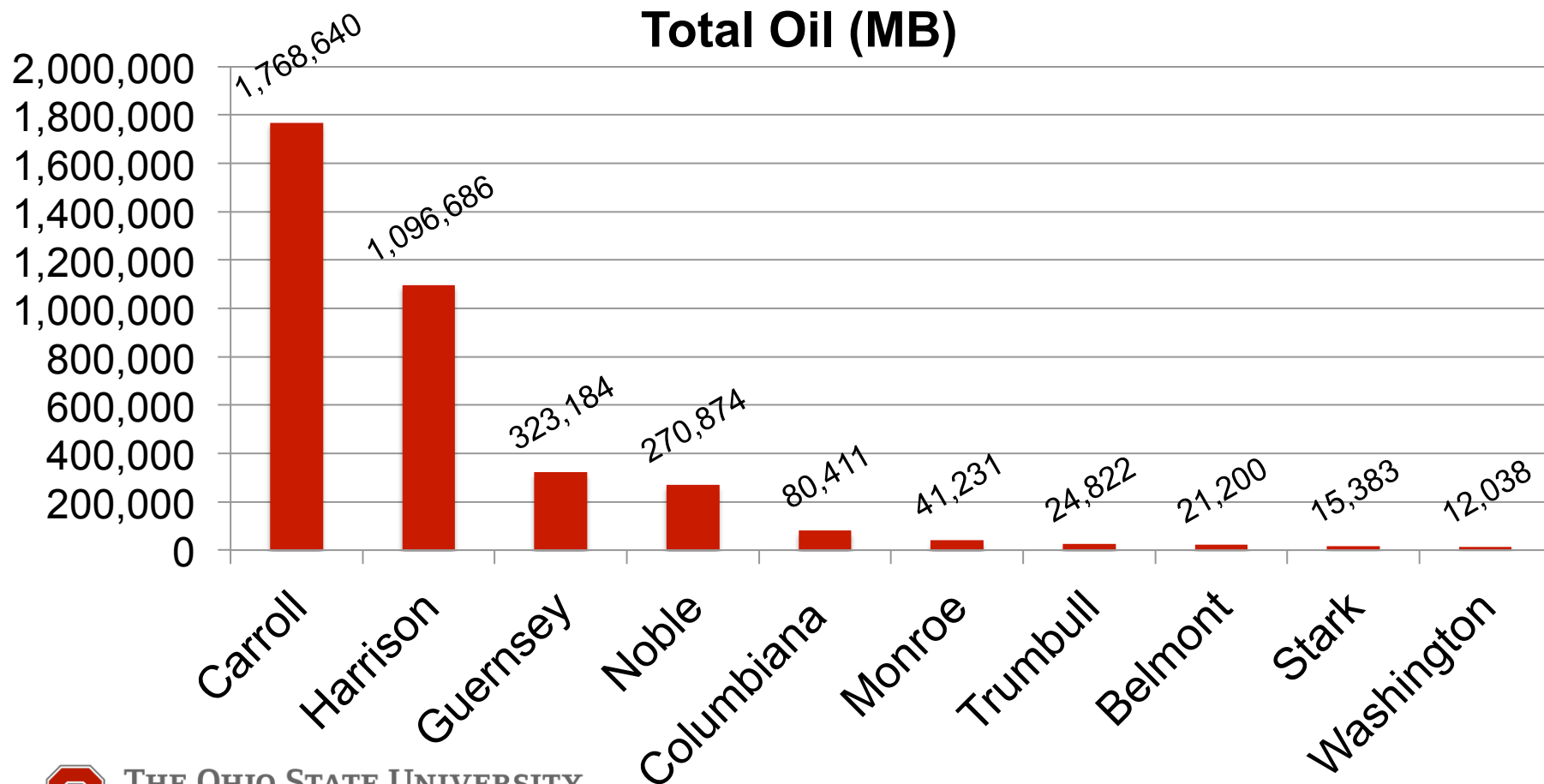- Mahoning: 714,059
- Washington: 315,764

Source: ODNR 7/26/2014

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2013 Horizontal Well Oil Production

Total Oil (MB)

County	Total Oil (MB)
Carroll	1,768,640
Harrison	1,096,686
Guernsey	323,184
Noble	270,874
Columbiana	80,411
Monroe	41,231
Trumbull	24,822
Belmont	21,200
Stark	15,383
Washington	12,038

Source: ODNR 7/26/2014

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"The "resource curse" is the term coined for the seemingly counterintuitive occurrence of slow long-term economic growth in regions rich in natural resources."

Source: Making Shale Development Work for Ohio, Michael Farren, Amanda L. Weinstein, and Mark D. Partridge (June, 2012)

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Situation Overview – Managing the Boom

Public Capital

(Roads, Water, Electric, Information)

Human Capital

(Education & Job Training)

Natural Capital
(Non- renewable natural resource extraction)

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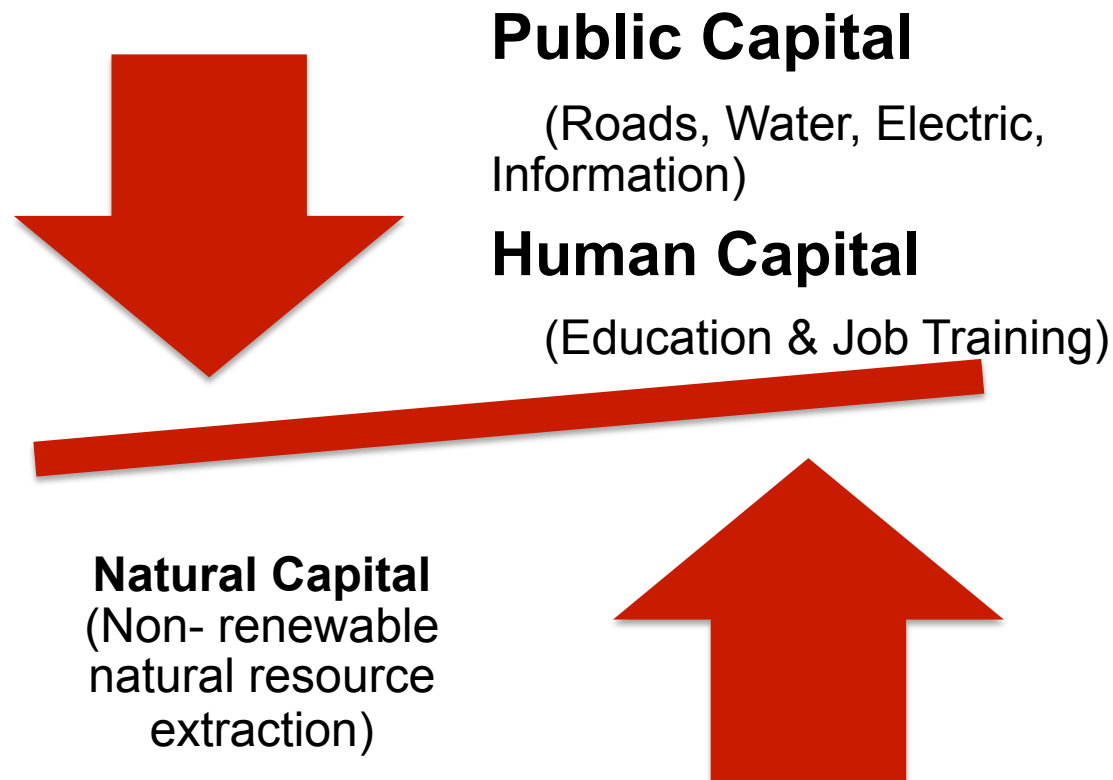
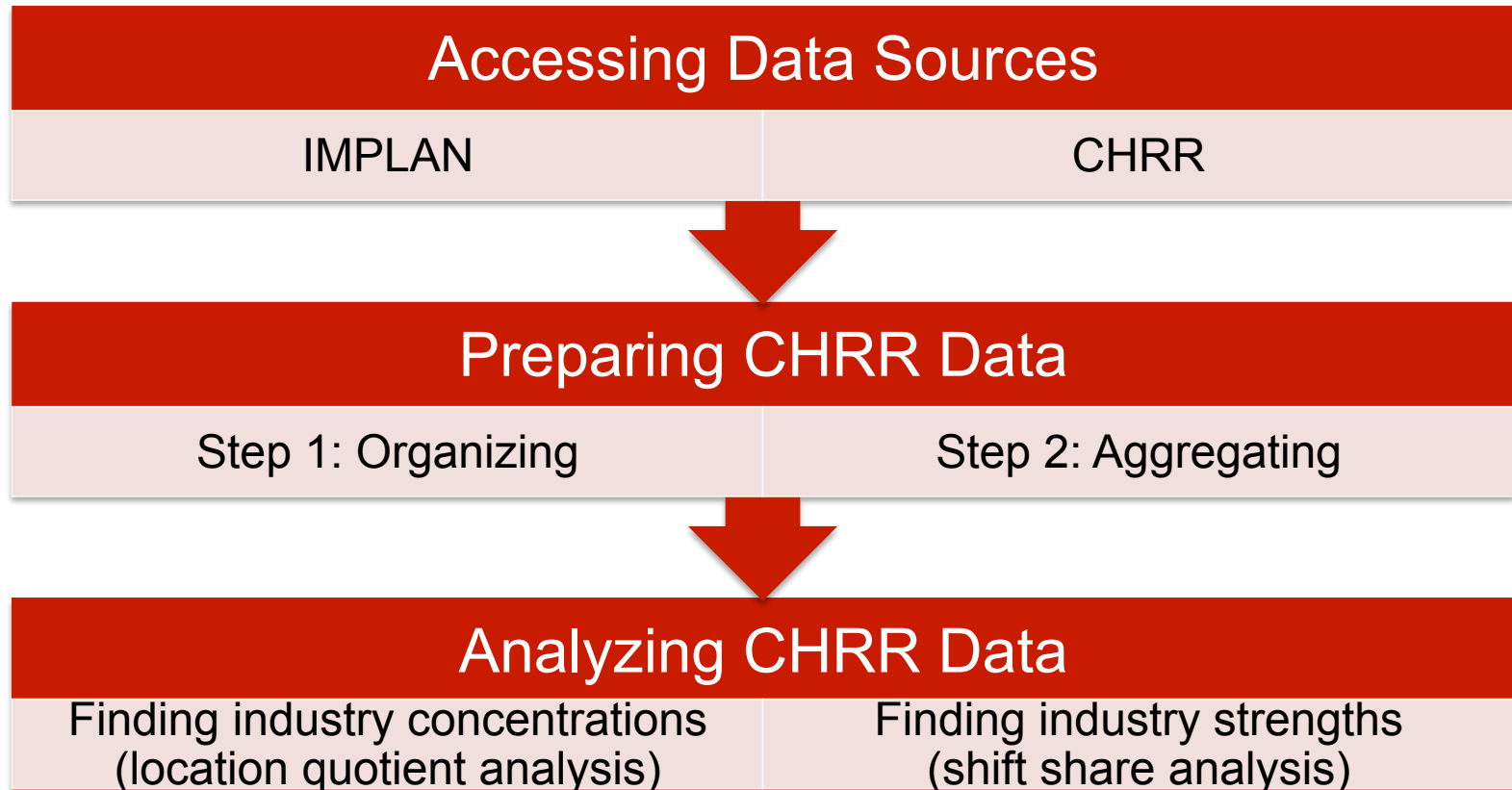# Economic Impacts

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Cluster Analysis Data Sources and Steps

Accessing Data Sources	
IMPLAN	CHRR

Preparing CHRR Data	
Step 1: Organizing	Step 2: Aggregating

Analyzing CHRR Data	
Finding industry concentrations (location quotient analysis)	Finding industry strengths (shift share analysis)

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Demographic Changes 2000, 2008-2012

- Population shrank from 40,177 to 39,927, a difference of 250 people between 2008-2012.

- Employment in Guernsey County increased from 17,958 in 2008 to 19,909 in 2012, increasing by 1,951.

- Employee compensation increased 7% between 2008 and 2011 from $584M to $631M and rose another 8.4% to $684M in the year between 2011-2012.

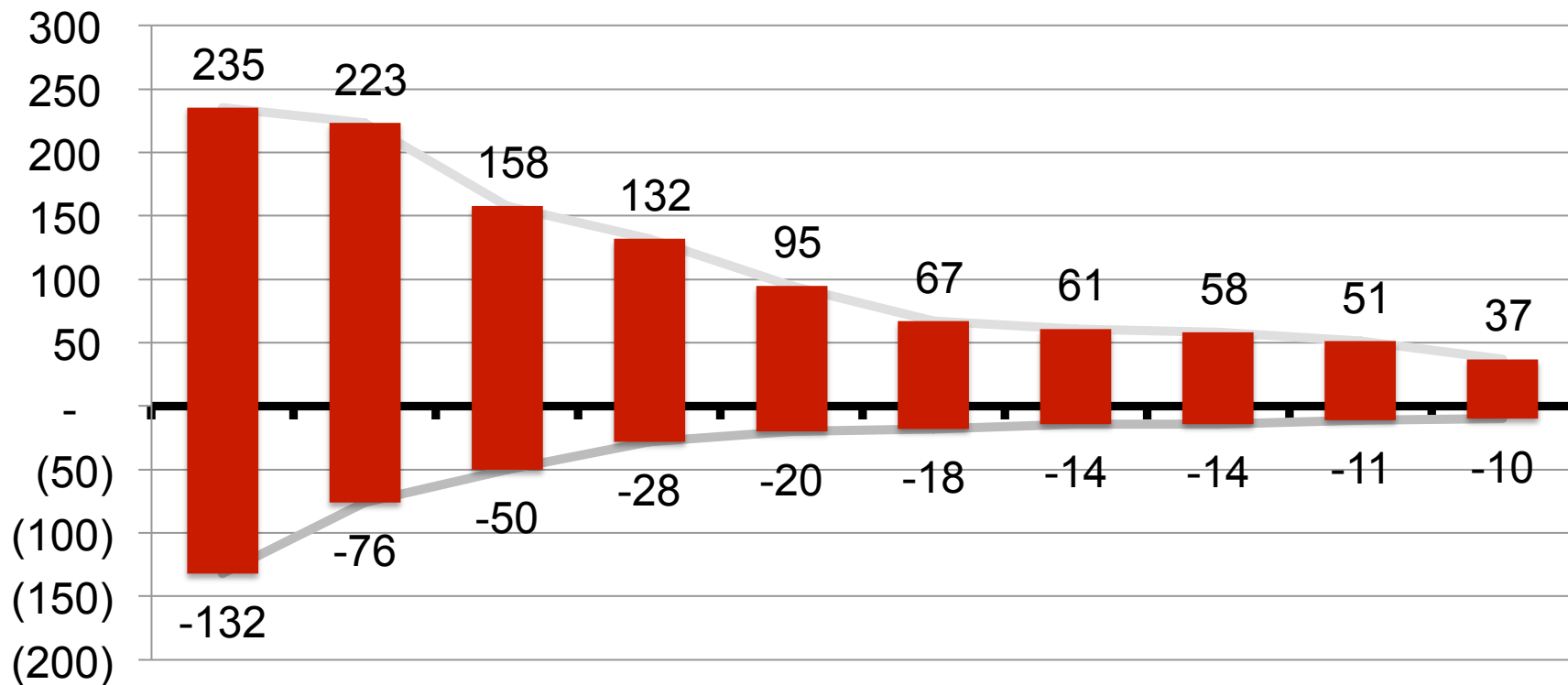- Average household income rose by 14.6% from $62,664 to $71,829 between 2008-2012.

Source: IMPLAN

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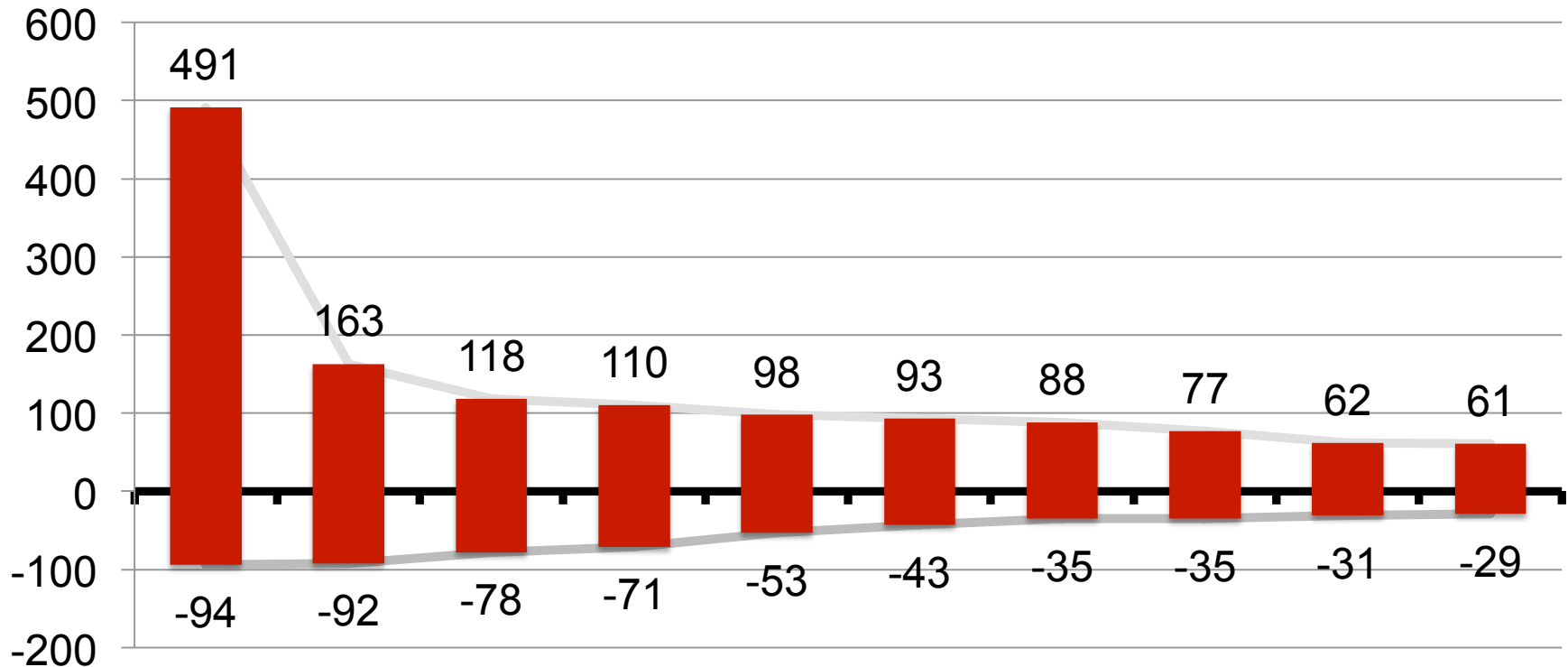AND ENVIRONMENTAL SCIENCES

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2000 - 2005 Top Ten Employment Change Gain vs. Loss

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2005 - 2010 Top Ten Employment Change Gain vs. Loss

491, 163, 118, 110, 98, 93, 88, 77, 62, 61
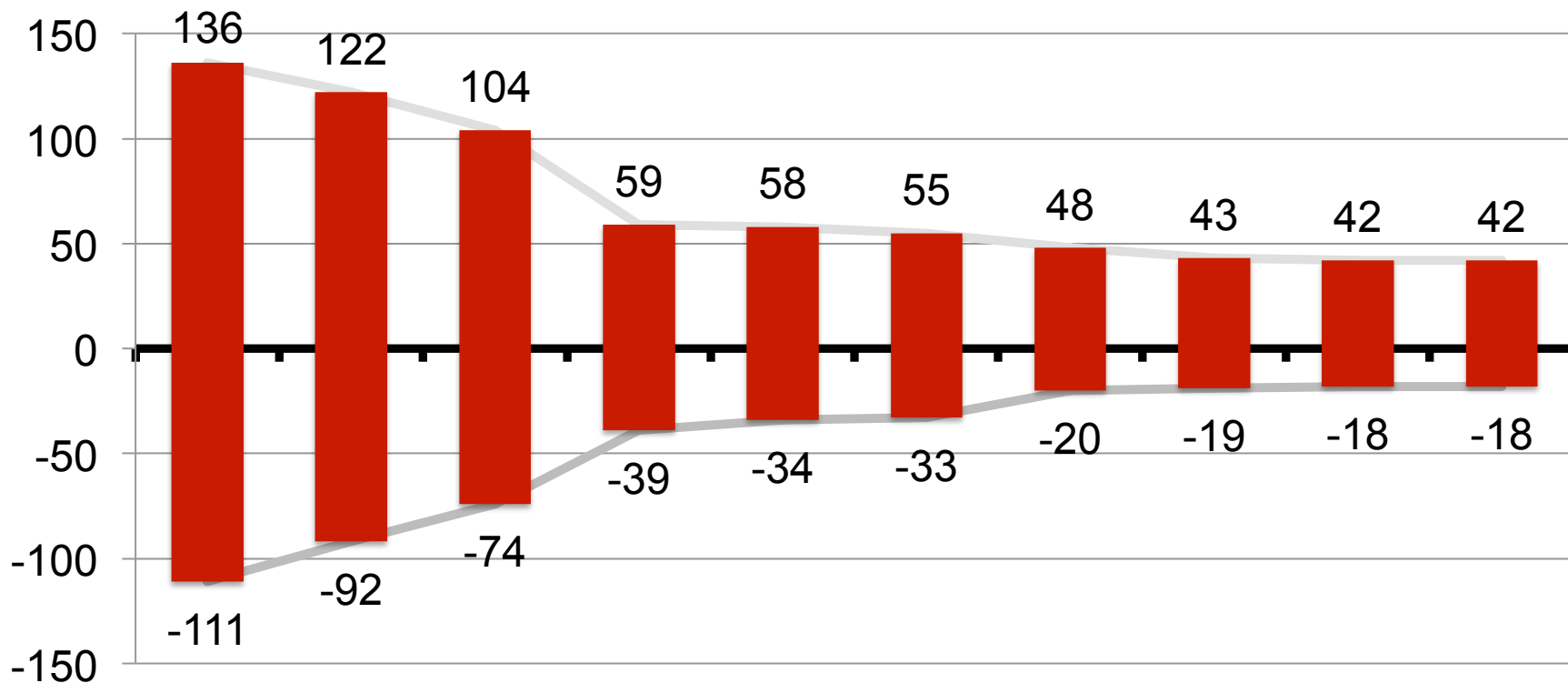
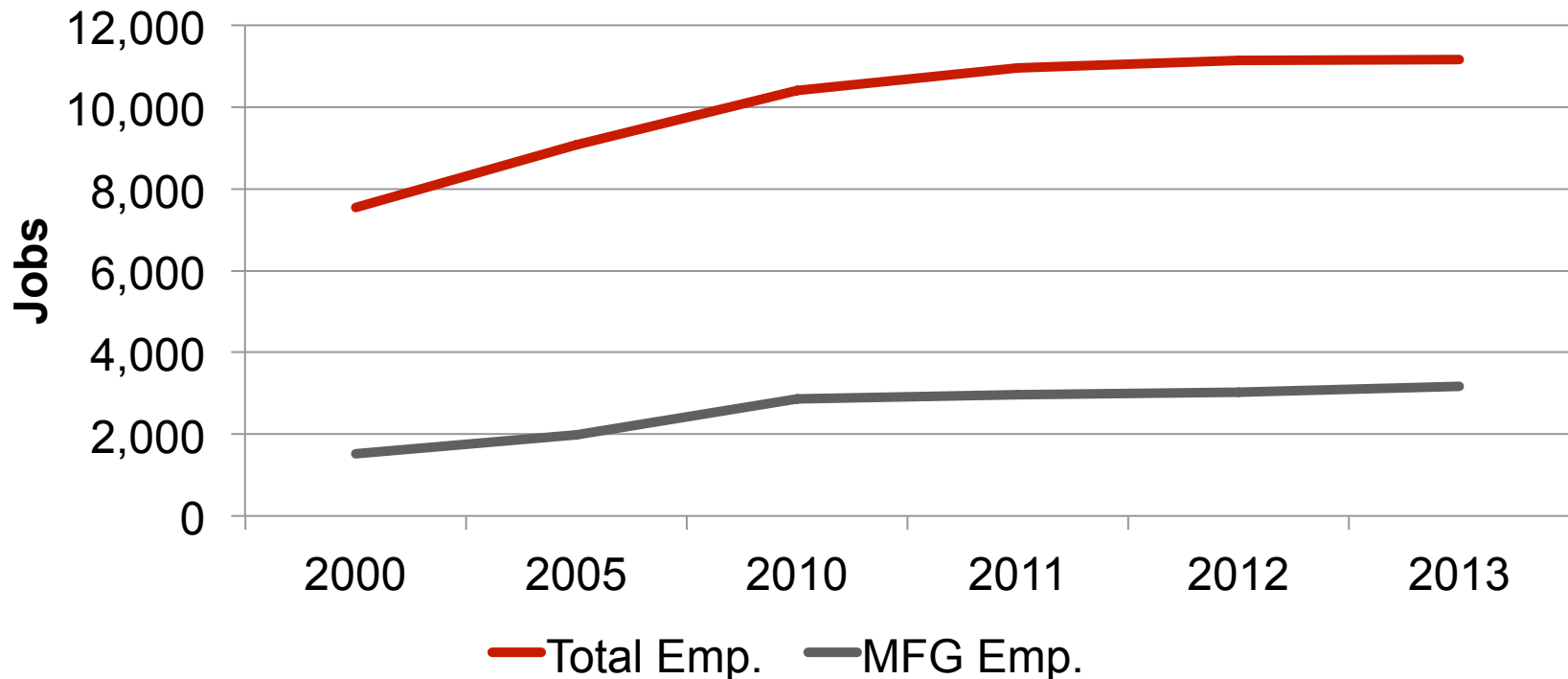-94, -92, -78, -71, -53, -43, -35, -35, -31, -29

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2010 - 2013 Top Ten Employment Change Gain vs. Loss

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Guernsey County Employment Trend

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Ohio Department of Job & Family Services Core Shale Industries

NACIS	Description	2010 -2013 Emp. Change
213112	Support Activities for Oil and Gas Operations	-6
237120	Oil and Gas Pipeline and Related Structures Construction	136
211111	Crude Petroleum and Natural Gas Extraction	4
211112	Natural Gas Liquid Extraction	104
Total Jobs		**238**

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ODJFS Ancillary Shale Sectors (2010-2013)

NACIS	Description	2010 -2013 Emp. Change
331210	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	48
484110	General Freight Trucking, Local	-1
541330	Engineering Services	38
237310	Highway, Street, and Bridge Construction	9
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	-1
484220	Specialized Freight (except Used Goods) Trucking, Local	18
237110	Water and Sewer Line and Related Structures Construction	-5
238912		4
423830	Industrial Machinery and Equipment Merchant Wholesalers	1
331110	Iron and Steel Mills and Ferroalloy Manufacturing	-1
562910	Remediation Services	2
541380	Testing Laboratories	1
541620	Environmental Consulting Services	0
531190	Lessors of Other Real Estate Property	-2
423810	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	13
Total Jobs		**124**

"But Global Data also flagged the competitive advantage that U.S. companies will receive from the lower cost provided by shale gas. And this opportunity is attracting investment from some of the industry's bigger names. Just last week the International Energy Agency said some **30 million European jobs** are at risk as manufacturers of petrochemicals, plastics and fertilizers are relocating to the U.S."

Source: *Shale Reshapes Petrochemicals Business*.
The Wall Street Journal. Ben Winkley (July, 2014)

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Downstream Value Chain Markets
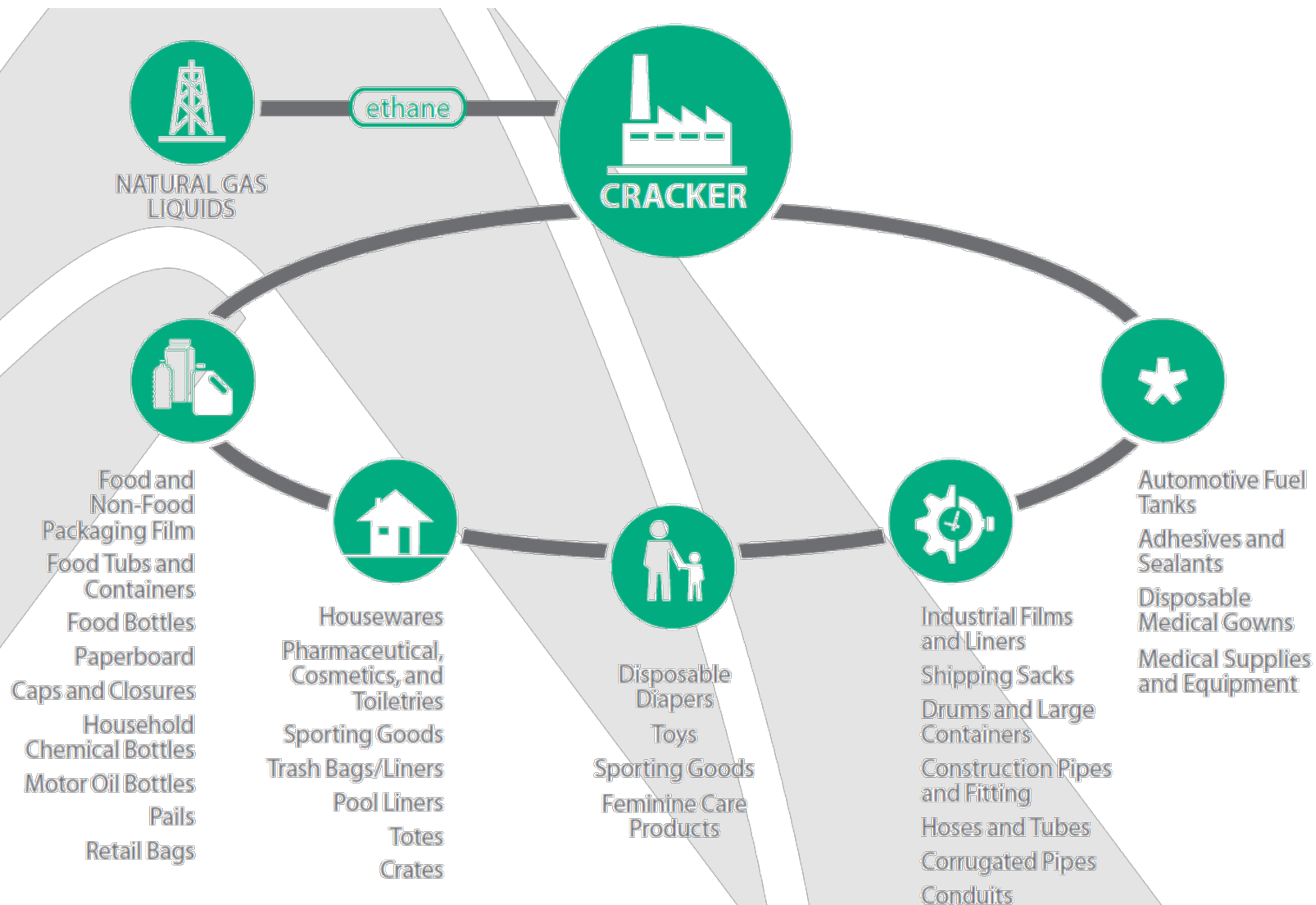
Cluster Analysis

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What's a Cluster?

A geographic concentration of interdependent, collaborating and/or competing businesses and related institutions that draw productive advantage from their mutual proximity and connections…

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Companies Cluster Together Because…

- Each one benefits from being located near other similar or related companies

- They have competitive strengths and needs

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Cluster Supply Chains Include Diverse Sectors

- Core: extraction
- Secondary (or Ancillary): manufacturers
- Tertiary (or Ancillary): services
- Quaternary: knowledge-based focused on technology R&D

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Examples of Clusters

Wisconsin has a large energy and power cluster

900 COMPANIES

100,000 EMPLOYEES

OVER **$38 Billion** IN SALES

South Carolina Engineering Cluster

SILICON VALLEY

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Top Ten Basic Industry Sectors by Employment (2013)

NACIS	Description	2010 Jobs	2013 Jobs	% Change
3336	Engine, Turbine and Power Transmission Equipment Mfg.	491	527	7.3%
3312	Steel Product Manufacturing	346	394	13.9%
3256	Soap, Cleaning Compound & Toilet Prep Mfg.	321	349	8.7%
2371	Oil and Gas Pipeline & Related Structures	162	298	84%
3262	Rubber Product Manufacturing	164	283	20.3%%
3359	Other Electrical Equipment & Component Mfg.	105	128	22%
3114	Fruit and Vegetable Preserving & Specialty Food Manufacturing	88	125	42.1%
2111	Oil and Gas Extraction	0	104	1080%
2123	Nonmetallic Mineral Mining and Quarrying	20	54	170%
3322	Cutlery and Handtool Mfg.	10	24	140%

Source: Center for Human Research Resource (CHRR)

For purposes of cluster analysis, we are concentrating on the export industries clusters that begin with the core and include the secondary, tertiary (or ancillary) sectors. That is a true cluster.

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Top Ten Basic Industry Sectors by Location Quotient (2010-2013)

NACIS	Description	2013 LQ	2010 LQ	% Change
3312	Steel Product Manufacturing	43.7	58.3	(34%)
3336	Engine, Turbine and Power Transmission Equipment Mfg.	34.5	37.4	(-8%)
3256	Soap, Cleaning Compound & Toilet Prep Mfg.	25	20.5	18%
3262	Rubber Product Manufacturing	13.6	8.4	38%
3359	Other Electrical Equipment & Component Mfg.	6.6	5.5	17%
3114	Fruit and Vegetable Preserving & Specialty Food Manufacturing	4.9	3.5	27%
2371	Oil and Gas Pipeline & Related Structures	2.3	4.3	46%
3322	Cutlery and Handtool Mfg.	4.1	1.8	56%
2111	Oil and Gas Extraction	4	.6	85%
2123	Nonmetallic Mineral Mining and Quarrying	4	3	25%
Source: Center for Human Research Resource (CHRR)				

Location Quotient (LQ) is the concentration of employment in one area relative to the U.S. An LQ over 1 represents a greater than average concentration, or an industry strength.

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Top Ten Basic Industry Sectors by Regional Share (2010-2013)

NACIS	Description	National Share	Industry Mix	Regional Share	Total
2371	Oil and Gas Pipeline & Related Structures	23	(29)	142	136
3262	Rubber Product Manufacturing	26	(12)	108	122
2111	Oil and Gas Extraction	2	6	104	112
3256	Soap, Cleaning Compound & Toilet Prep Mfg.	54	(95)	69	28
3114	Fruit and Vegetable Preserving & Specialty Food Manufacturing	15	(14)	36	37
2123	Nonmetallic Mineral Mining and Quarrying	3	(1)	31	34
3359	Other Electrical Equipment & Component Mfg.	18	(19)	24	23
3322	Cutlery and Hand tool Mfg.	(1)	0	13	12
3336	Engine, Turbine and Power Transmission Equipment Mfg.	83	(16)	(31)	36
3312	Steel Product Manufacturing	58	110	(120)	48

Source: Center for Human Research Resource (CHRR)

Shift Share measures the influences of job growth based on national growth trends, regional growth trends or sectoral changes. A positive regional share indicates positive growth trends supporting that industry in the region/county.

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Top Ten Industry Sectors by Output (2012)

Description		Output
3336	Engine Equipment Manufacturing	$421,833,000
3256	Soap and Cleaning Compound Manufacturing	$375,628,300
3261	Plastics Material and Resin Manufacturing	$203,931,300
6222	Rental Activity for Owner-Occupied Dwellings	$151,774,200
3312	Steel Product Manufacturing	$125,898,800
3262	Rubber Product Manufacturing	$90,791,110
2123	Private Hospitals	$87,901,130
5615	Wholesale Trade Businesses	$73,924,300
3256	Construction of New Residential Structures	$73,467,290
3359	Government (non-education)	$68,256,960
Source: IMPLAN		

Output represents the total value of industry production including sales, profit, wages, and inventory change.

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Fastest Growing Services Sectors (2010-2013)

Description	2010 Employment	2013 Employment	Change in Employment
722511 Full-Service Restaurants	207	266	59
621610 Home Health Care Services	403	461	58
721211 RV (Recreational Vehicle) Parks and Campgrounds	50	105	55
922120 Police Protection	154	197	43
813319 Other Social Advocacy Organizations	0	42	42
622210 Psychiatric and Substance Abuse Hospitals	98	140	42
541330 Engineering Services	139	177	38
561520 Tour Operators	0	29	29
713910 Golf Courses and Country Clubs	27	51	24
722513 Limited-Service Restaurants	223	239	16
Source:CHRR			

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Workforce Strengths: Top Occupational Clusters by Employment and LQ (2012)

Industry	Employment	Share of Total Employment	Concentration (LQ)
Installers & repairers	1,827	9.30%	1.33
Health care and medical science (aggregate)	1,233	6.30%	1.1
Legal, financial services, and real estate	1,037	5.30%	.67
Managerial, sales, marketing and HR	959	4.90%	.62
Education & social services	910	1.60%	.88
Technology-based and knowledge clusters	874	4.40%	.56
Agribusiness and food technology	871	4.40%	2.91
Totals	7,711	36.2%	

Source: Statsamerica.org

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Strategy Discussion and Breakout

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Guernsey County/Regional Clusters

1. Oil and Gas Extraction, Mining and Construction

2. Steel Products, inc. Engine and Large Equipment

3. Rubber and Plastics, inc. Compounds

4. Electrical Equipment and Components

5. Specialty Food Processing

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Steel Product and Machinery Manufacturing Mega-Cluster Map (NAICS 33)

Primary/Core Industries:

Fabricated structural metal, cutlery and flatware, metal buildings, plate and sheet metal work, heavy machinery manufacturing

Services/Support:

Engineering services, metal heat treating, metal coating and electroplating, machine shops, metal heat treating

Secondary/Suppliers:

Iron and steel forging, custom roll forming, metal stamping, fabricated pipe and pipe fitting, powder metallurgy parts mfg.

Specialized Infrastructure:

Clean water supply

Hazardous waste disposal

Wholesale and distribution services

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Sample Oil & Gas Cluster Strategies

- Establish regional collaboration to organize cluster linkages and map assets
- Develop cluster marketing strategy
- Expand participation in upstream mining activities
- Build on downstream mineral supply chain development
- Leverage QOL and infrastructure improvements (broadband, roads, water)

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Discussion Questions – Identify Opportunities

1. What are the opportunities,(i.e. wealth and income creation, workforce development, emerging manufacturing, retail or services gaps, etc.)
2. What sustainable strategies can be identified (i.e. workforce preparation, entrepreneurship, regional innovation etc.)? Who will do it?

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