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Understanding the Ocean Economy within Regional and National Contexts

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Understanding the Ocean Economy within Regional and National Contexts

Abstract

- Extending discussion of the ocean economy beyond “How Big”
- Changes in the U.S. related to the Great Recession
- Decomposing changes to major types of change
- Finding relative sizes
 - Exploring the expanding attention to the ocean economy in other parts of the world
- Likenesses and differences in:
 - Definitions
 - Measures
 - Geographies
 - Purposes

Where do we go from here?

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Center for the Blue Economy
at the Monterey Institute of International Studies

noep
NATIONAL OCEAN ECONOMICS PROGRAM

Understanding the ocean economy within regional and national contexts

Charles S. Colgan
University of Southern Maine

Judith Kildow
Center for the Blue Economy
Monterey Institute for International Studies

CNREP
New Orleans
March 25, 2013



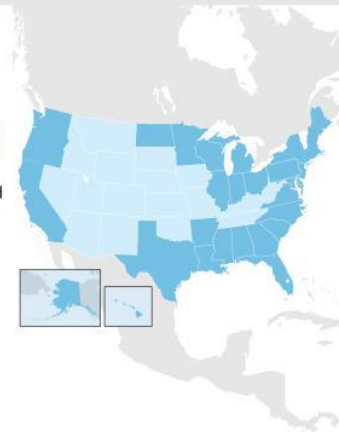
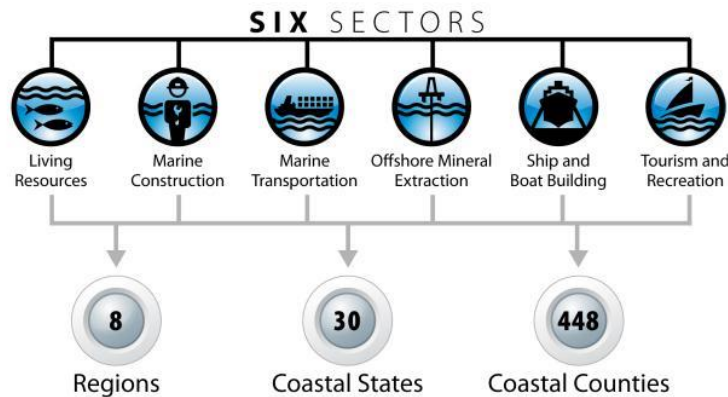
Overview

- Extending discussion of the ocean economy beyond “How Big”
 - Changes in the U.S. related to the Great Recession
 - Decomposing changes to major types of change
 - Finding relative sizes
- Exploring the expanding attention to the ocean economy in other parts of the world
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 - Definitions
 - Measures
 - Geographies
 - Purposes
- Where do we go from here?



Center for the Blue Economy
at the Monterey Institute of International Studies

What is the Ocean and Great Lakes Economy?



The Ocean Economy of the U.S.

Ocean Economy Sector	Ocean Economy Industry
Construction	Marine Construction
Living Resources	Fish Hatcheries & Aquaculture
	Fishing
	Seafood Processing
	Seafood Markets
Minerals	Sand & Gravel
	Oil & Gas Exploration and Production
Ship & Boat Building and Repair	Boat Building & Repair
	Ship Building & Repair
Tourism & Recreation	Boat Dealers
	Eating & Drinking Places
	Hotels & Lodging Places
	Marinas
	Recreational Vehicle Parks & Campsites
	Scenic Water Tours
	Sporting Goods
	Amusement & Recreation Services
	Zoos, Aquaria
Transportation	Freight Transportation
	Marine Passenger Transportation
	Marine Transportation Services
	Search and Navigation Equipment
	Warehousing

New

2011 Commercial Seafood Landings data now available!

2012 Cargo & Ports Data are now available!

About NOEP

The National Ocean Economics Program (NOEP) provides a full range of the most current policy-relevant economic and demographic information available on changes and trends along the U.S. coast, Great Lakes, and coastal waters. NOEP will soon expand to international datasets to support the broader mission of its new host, the [Center for the Blue Economy\(CBE\)](#) to "promote ocean and coastal sustainability."

Data Menu

Market

- OceanEconomy
- Coastal Economy

Natural Resource

- Living Marine Resources
- Offshore Mineral Resources

Non-Market

- Valuation Studies
- Value Estimates
- References & Tools

Ports & Cargo

- Ports & Cargo Data
- About the Data

Population & Housing Data

Government Expenditures

- OMB Ocean Budgets
- Ocean Time Series



Market

Ocean and coastal economic data for the U.S. coastal states, counties, and coastal regions.



Natural Resources

Commercial fisheries information and economic data of the offshore oil and gas production of the U.S.



Population & Housing

Population and housing statistics for the coastal states and shoreline regions.



Non-Market

Non-Market valuation research studies about the coastal regions and waters.



Ports & Cargo

Marine based foreign trade shipping volume and values.



Government Expenditures

Historical data of federal marine expenditures for ocean and coastal activities collected from the U.S. Office of Management and Budget.

updated 13-Mar-2013



[Clear All](#)

[Compare](#)

Single Year

Change

2005 2010

Pinellas County, FL

Florida

Gulf of Mexico

Coastal U.S.

[Compare](#)

[Clear](#)

[Compare](#)

[Clear](#)

[Compare](#)

[Clear](#)

Establishments

2,262



1.9%
43

[Map It](#)

Employment

34,173



7.6%
2,586

[Map It](#)

Wages

\$790.8 Million



24%
\$189.8 Million

[Map It](#)

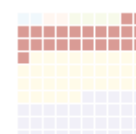
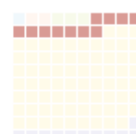
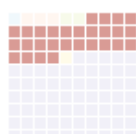
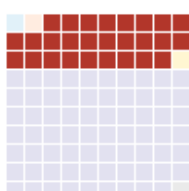
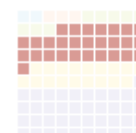
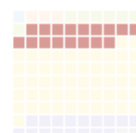
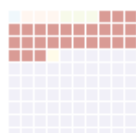
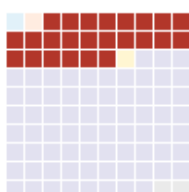
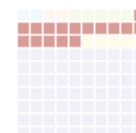
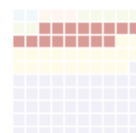
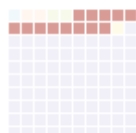
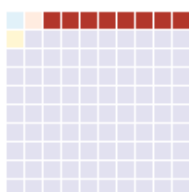
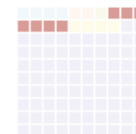
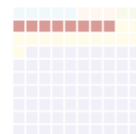
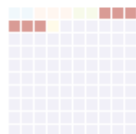
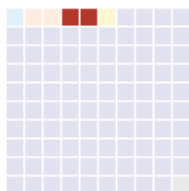
GDP

\$1.8 Billion



26.9%
\$484.5 Million

[Map It](#)



Indicators

Sectors

All Ocean Sectors

Living Resources

Marine Construction

Ship and Boat Building

Marine Transportation

Offshore Mineral Extraction

Tourism and Recreation

Minerals Menu

Offshore Minerals

- Oil & Gas Overview
- Oil & Gas Data
- About Oil & Gas Data
- Oil & Gas Terms
- Data Sources

Data Menu

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Population & Housing Data

Government Expenditures

- OMB Ocean Budgets
- Ocean Time Series

Offshore Minerals

Oil & Gas Production

[About the Data](#)

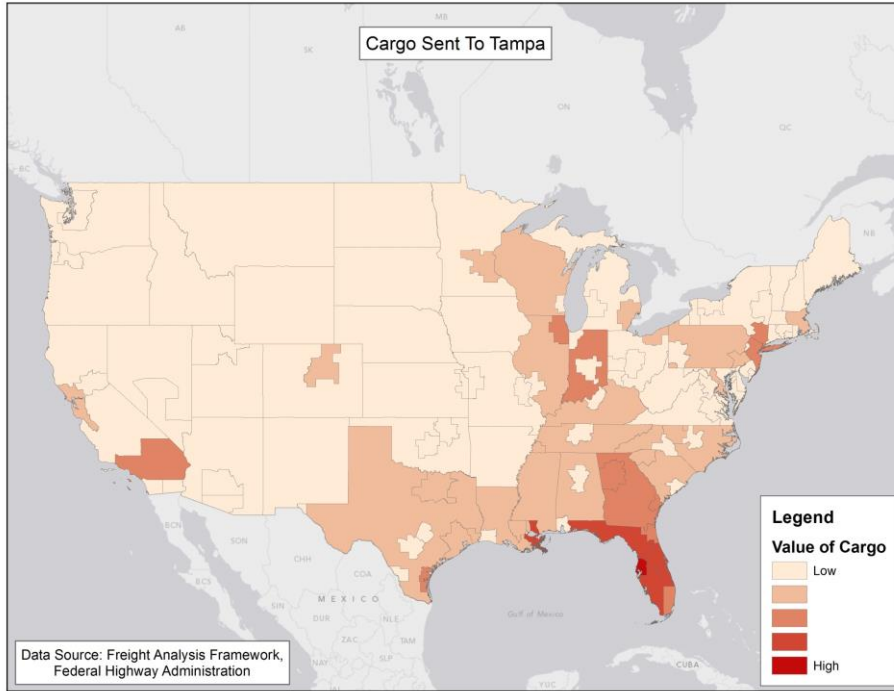
[Need Help?](#)

To obtain data for oil & gas, **start by selecting one or more states, regions, or areas, then select one or more oil and gas measures**, and any pricing options from the checkboxes, and click the **Start Search** button.

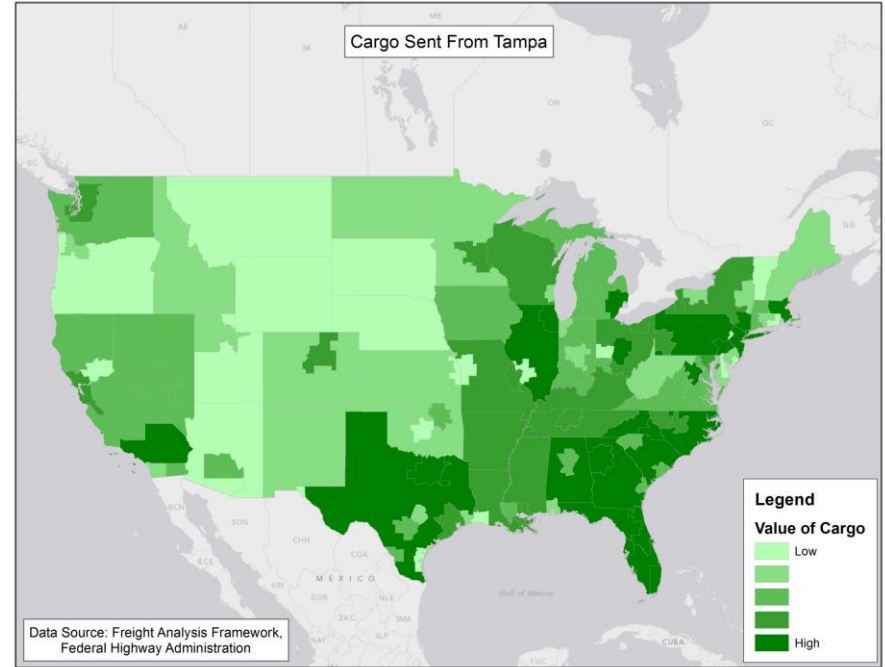
Select State(s) Region(s)	<input type="text" value="California"/> <input type="text" value="Louisiana"/> <input type="text" value="Mississippi"/>	Select Area(s)	<input type="text" value="All Areas"/> <input type="text" value="Louisiana State Offshore"/> <input type="text" value="Louisiana Federal Offshore (OCS)"/>
Select Production Measure(s)	<input checked="" type="checkbox"/> Crude Oil <input checked="" type="checkbox"/> Condensate Oil <input checked="" type="checkbox"/> Total Oil <input checked="" type="checkbox"/> Natural Gas	Options	<input checked="" type="checkbox"/> Show Production Values <input type="checkbox"/> Show Price Per <input checked="" type="checkbox"/> Convert to 2005 \$
Select Year(s)	<input type="text" value="All"/> <input type="text" value="2010"/> <input type="text" value="2009"/>	Output To:	<input type="text" value="Display in Window"/>

Start Search

Origins of Cargo Sent to the Port of Tampa



Destinations of Cargo Distributed from the Port of Tampa



Economics: National Ocean Watch (ENOW)

\$112 Billion



\$94 Billion

Non-Market Menu

- Non-Market**
- Valuation Studies
- Value Estimates
- Non-Market Methodologies
- What You Should Know (FAQs)
- Influencing Public Policy
- References & Links
- Data Menu**
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Environmental & Recreational (Non-Market) Values - Valuation Studies Search

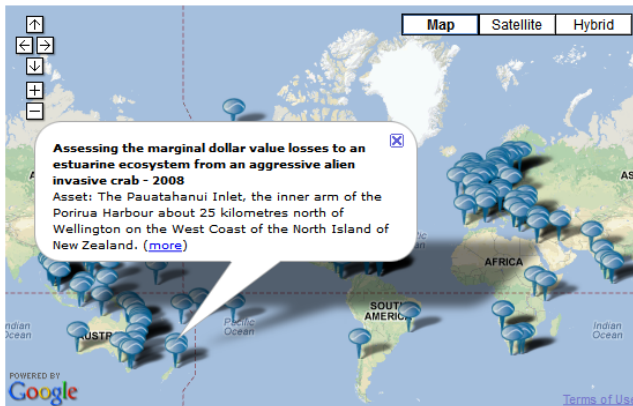
Valuation Studies Search

[About the Data](#) [Methodologies](#) [Need Help?](#)

The Non-Market library provides a listing of Non-Market research papers regarding the ocean and coastal resources.

Use this map to view our Non-market studies from around the world. Place your cursor over a marker to see a brief description of the related study. Click on the marker to get the study's details shown in a separate window.

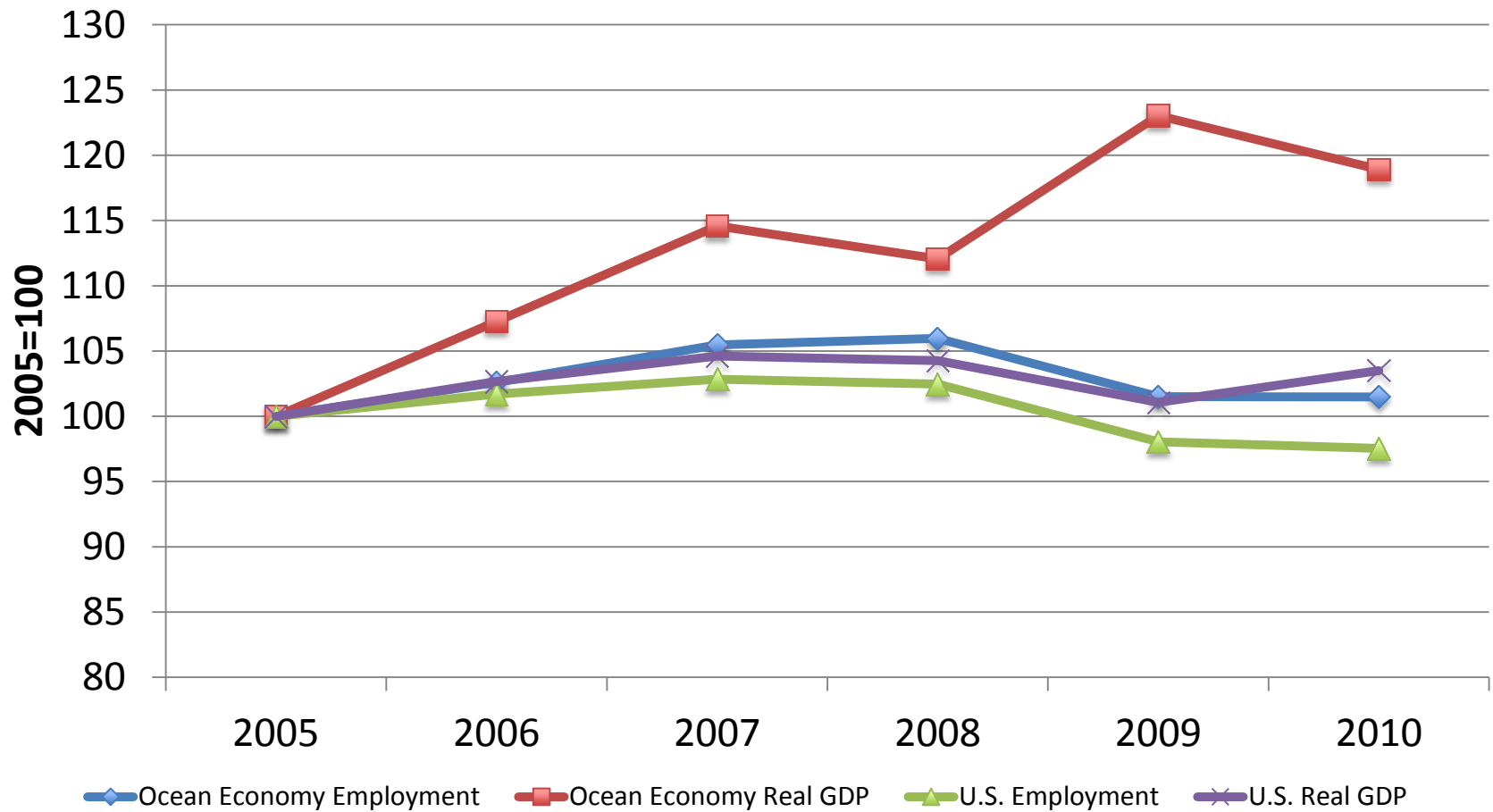
Or, enter your search preferences into the form below to select from the library by publication or study types, authors, assets, methodologies, and other options. The search results list the publications' titles, authors, years, source information, and any available abstracts or download links, or asset valuations.



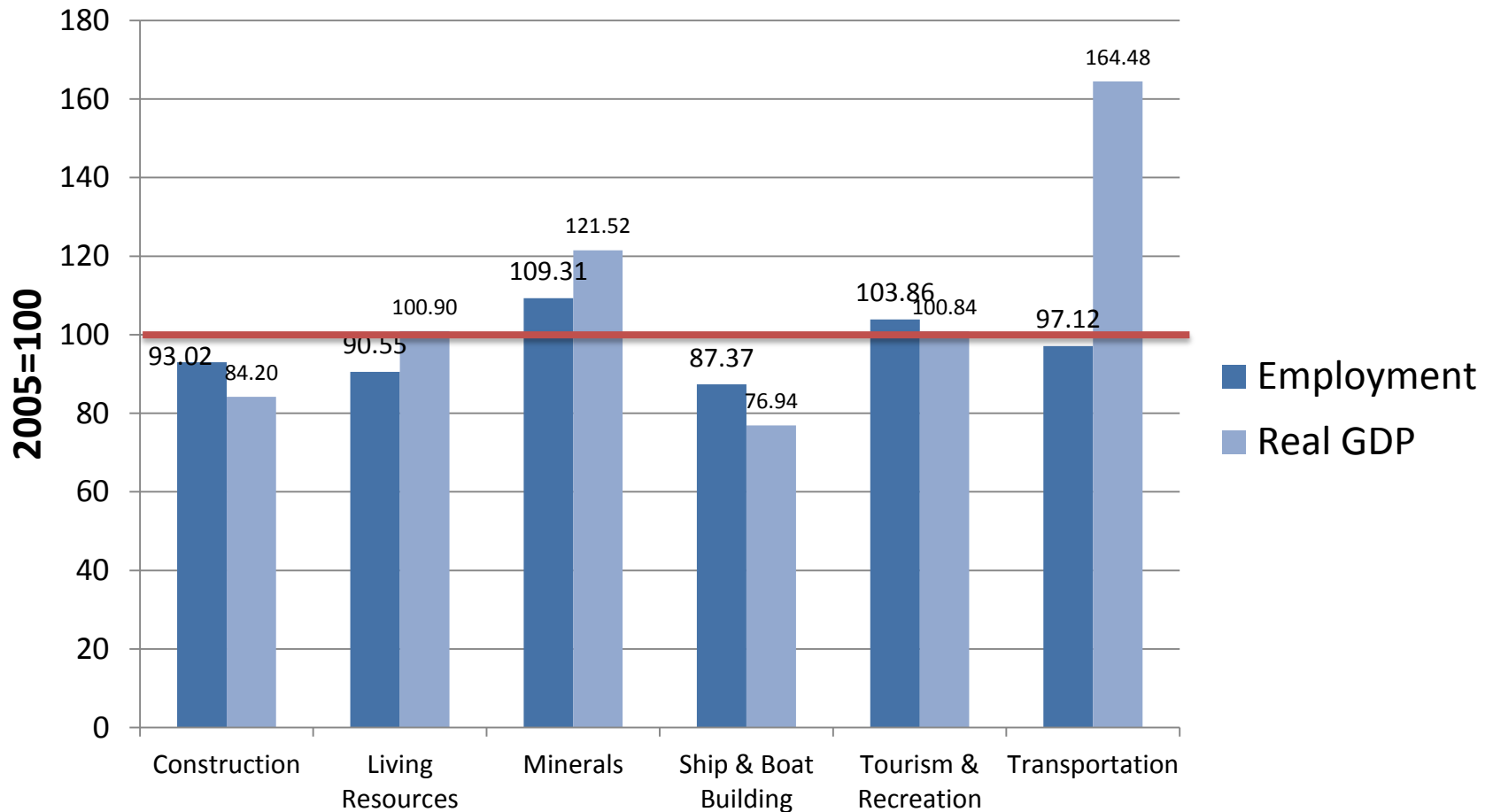
To search the Non-Market library, **start by entering words or names into the Title, Authors, or Keywords boxes, or select options from the many list boxes and click the Start Search button.**

Title: <input type="text"/>	Authors: <input type="text"/>
Keywords: <input type="text"/>	Publication Type(s): <input type="list" value="Any Peer-Reviewed Book Chapter"/>
Year(s): <input type="list" value="Any 2012 2011"/>	Location: <input type="list" value="All United States Alabama"/>
Methodology(s): <input type="list" value="Any Avoided Cost Method Benefit Transfer Method"/>	Data Source(s): <input type="list" value="Any Original Literature Review"/>
Non-use Value(s): <input type="list" value="Any Option value Existence value"/>	Assets Valued: <input type="list" value="Any Bay/Gulf/Sound Beaches"/>
Recreational Activities: <input type="list" value="Any Boating General Beach Recreation"/>	Include: <input type="list" value="Any qualifying entry"/>
Sort Results by: <input type="list" value="Relevance"/>	Number of Records to Show: <input type="list" value="All"/> records
<input type="button" value="Start Search"/>	<input type="button" value="CLEAR FORM"/>

Ocean Economy outperformed the U.S. in the recession in both Employment and GDP

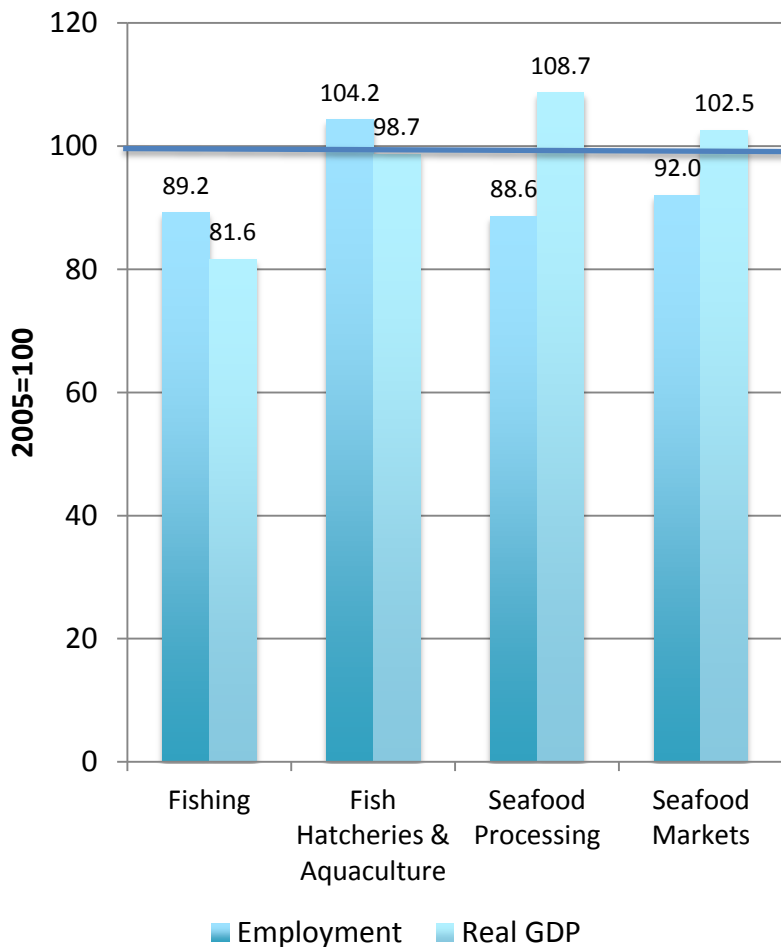


Construction and Ship & Boat Building were most affected by the recession. Tourism & Recreation was stable; Living Resources were mixed. Transportation and Minerals grew in output



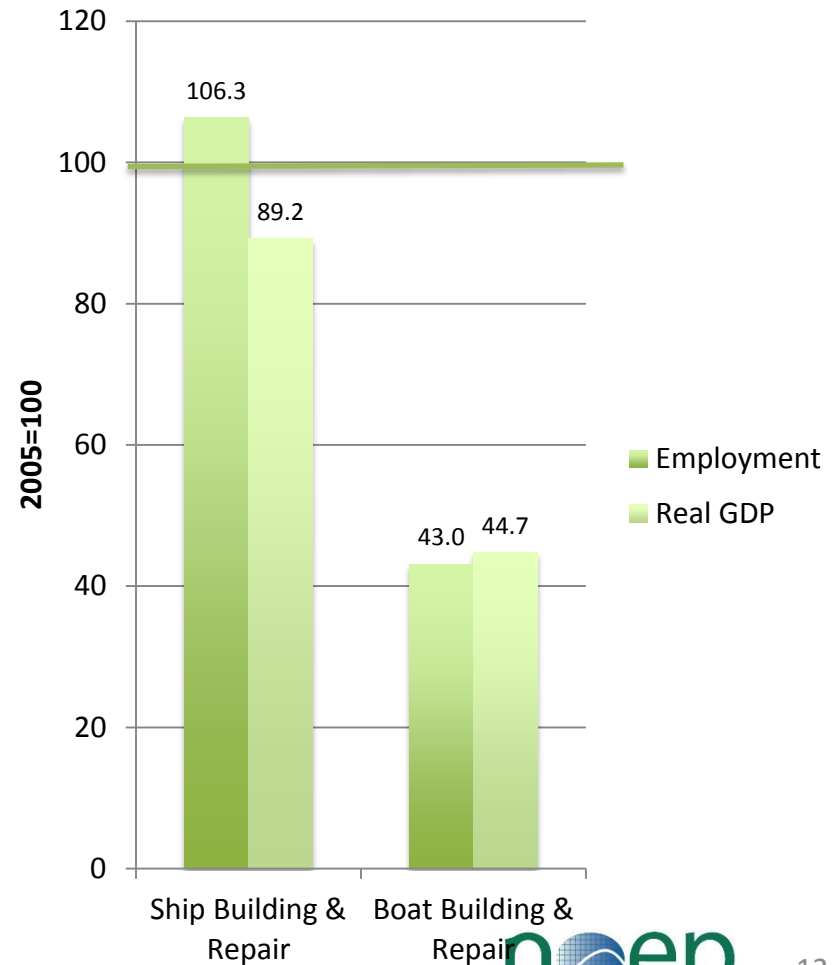
The sector was relatively stable but employment fell significantly in non-cultured fish industries

Living Resources



Boat building fell dramatically in employment and output

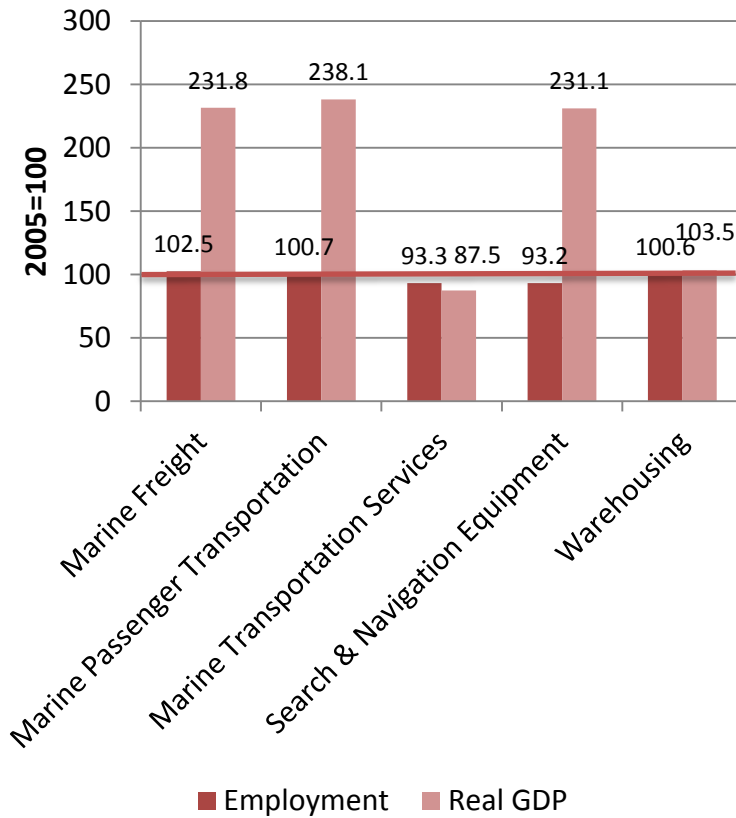
Ship & Boat Building



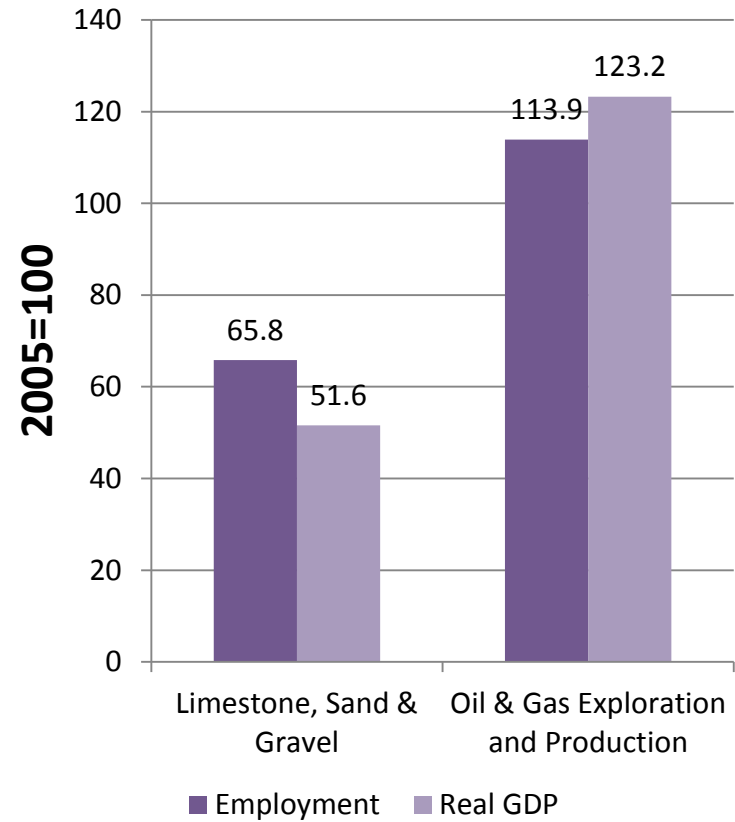
Overall marine transportation activity was not greatly affected by the recession with the value of marine freight going up along with the output of search & navigation equipment

High oil and gas prices kept offshore oil production up, while declines in construction severely affected sand & gravel

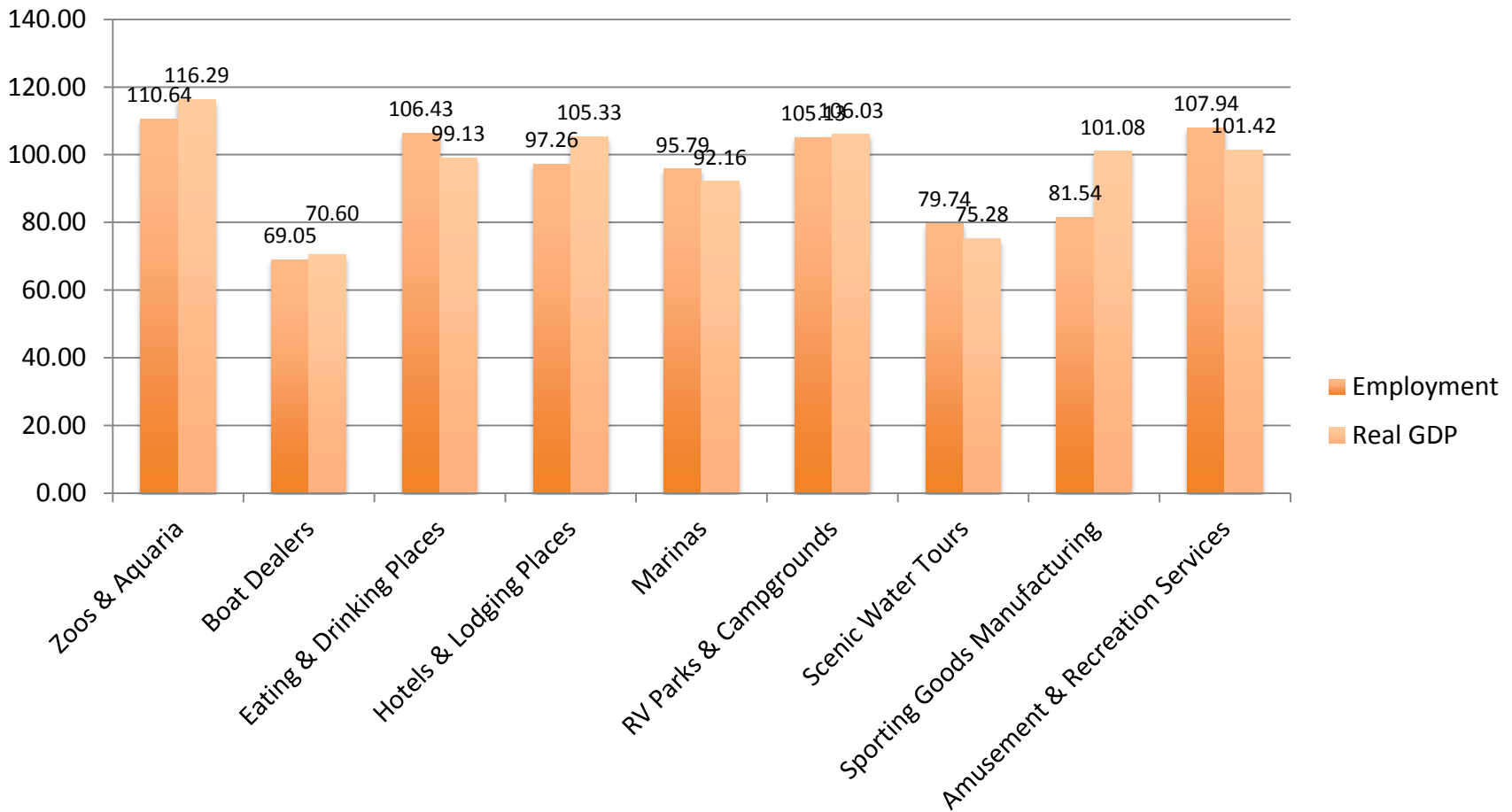
Transportation



Minerals



Boat dealers with the most severely affected, along with scenic water tours, but other industries held up moderately well.



Shift/Share Analysis

Change in Employment = National Effect + Industry Effect + Local Effect

$$De = N + I + L$$

Industry grows at overall national growth rate

$$N = e^{t-1} \left(\frac{E^t}{E^{t-1}} - 1 \right) + 1$$

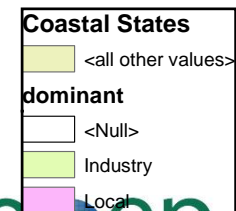
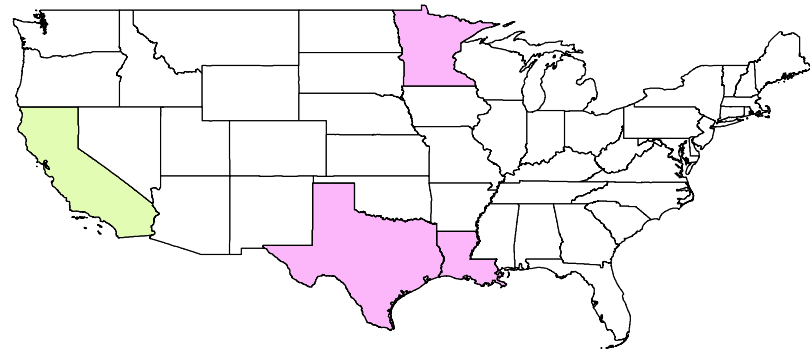
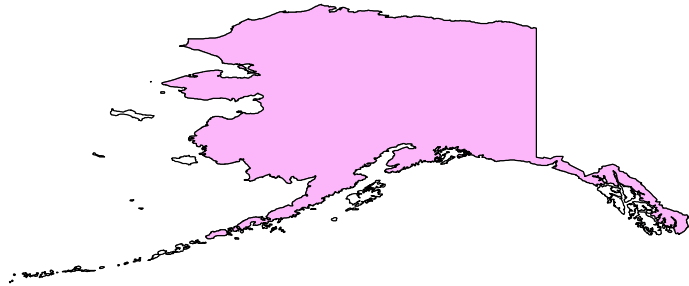
Industry grows at rate of national industry

$$I = e^{t-1} \left(\frac{E_i^t}{E_i^{t-1}} - \frac{E^t}{E^{t-1}} \right)$$

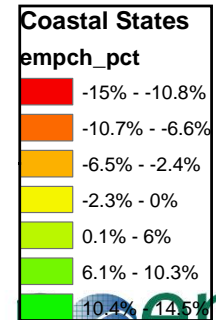
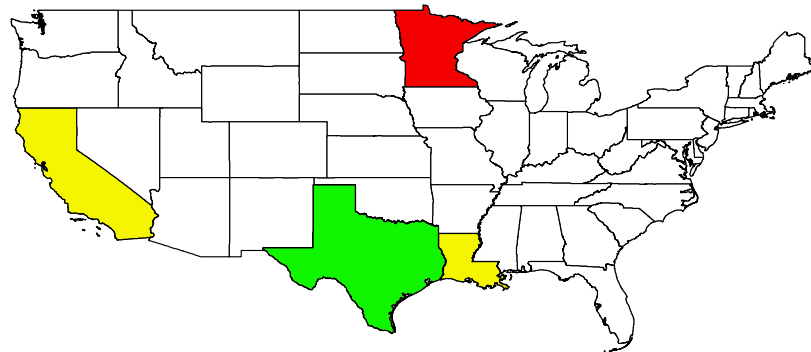
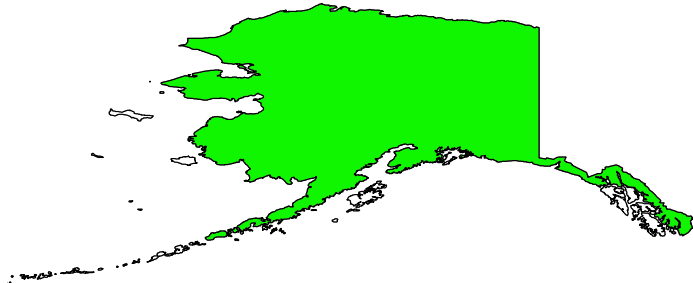
Industry grows at local factors

$$L = e^{t-1} \left(\frac{e_i^t}{e_i^{t-1}} - \frac{E^t}{E^{t-1}} \right)$$

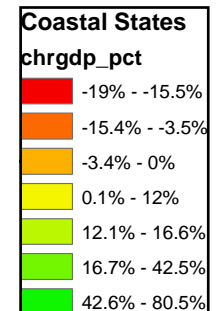
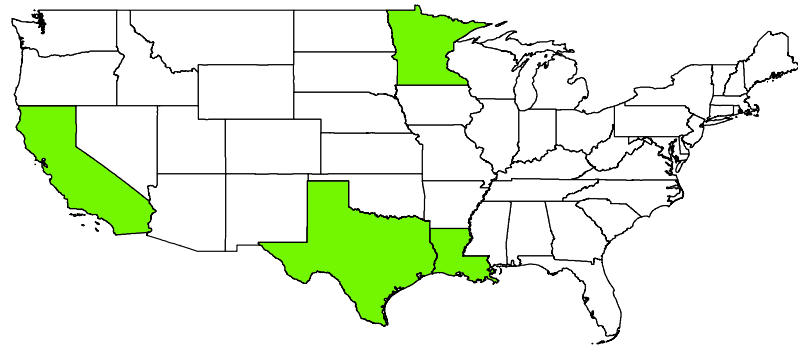
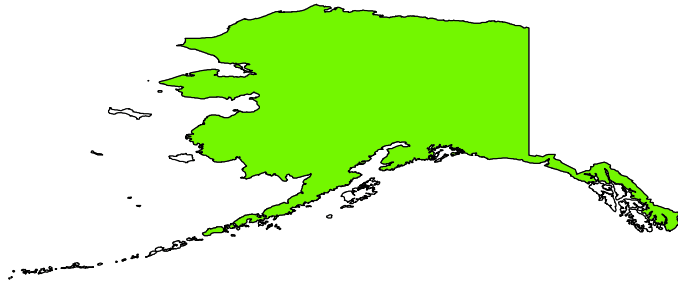
Components of Employment Change 2005-2010



Employment Percent Change 2005-2010



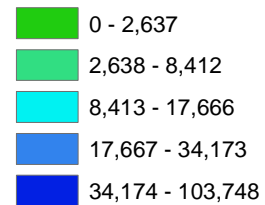
GDP Percent Change 2005-2010



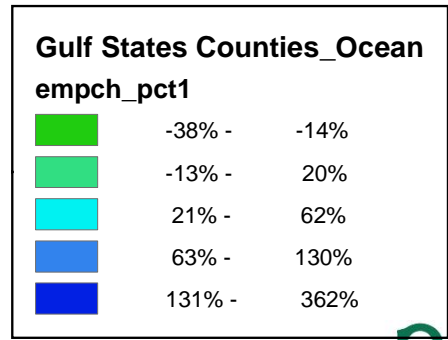
Ocean Economy Employment 2010



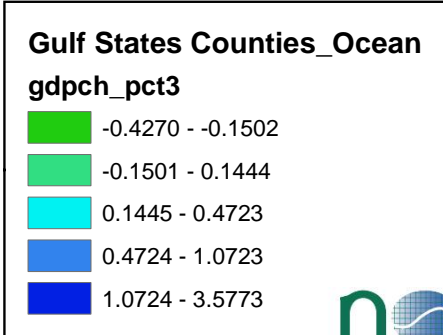
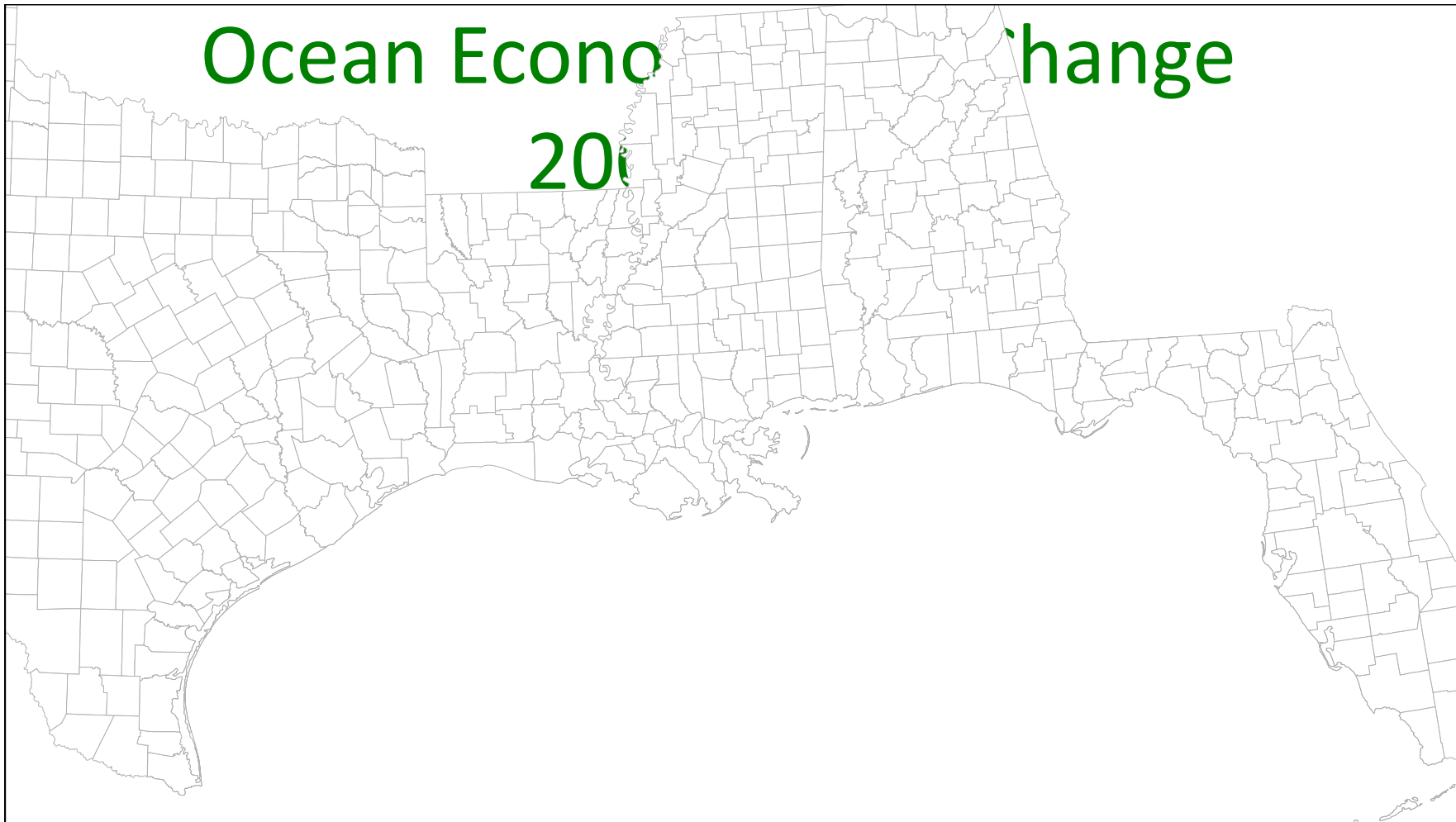
**Gulf States Counties_Ocean
emp10_9**



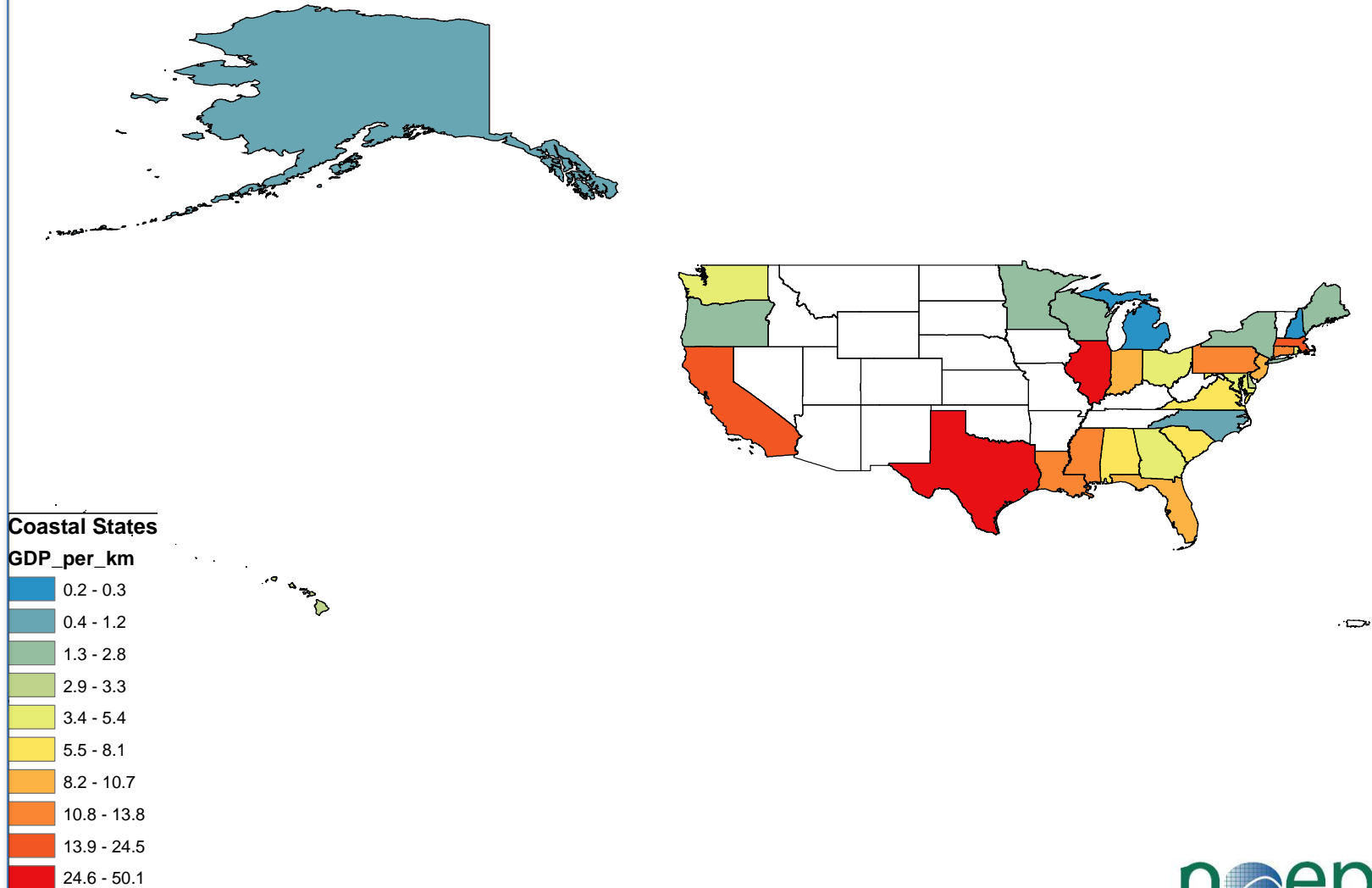
Ocean Economy Employment Change 2005-2010



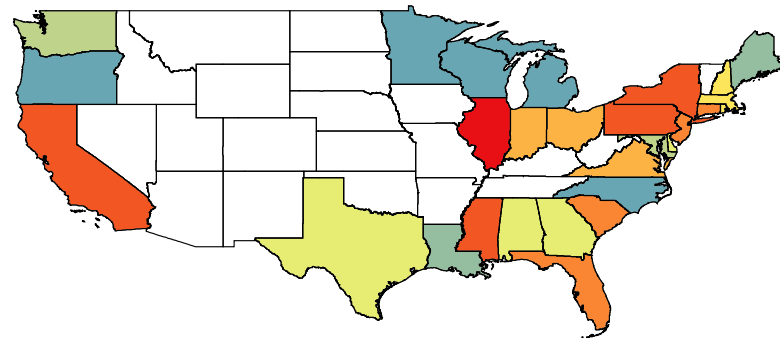
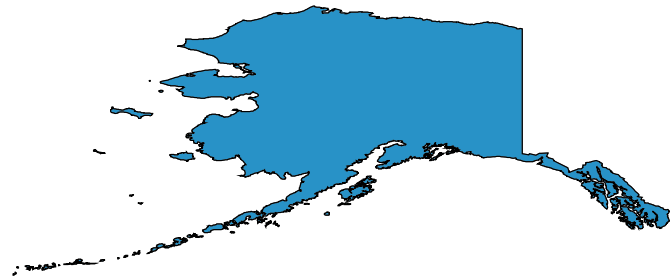
Ocean Economic Change 2000-2010



Ocean Economy GDP per KM of Shoreline

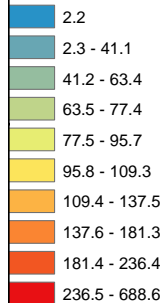


Ocean Economy Employment per KM of Shoreline



Coastal States

Emp_per_km



Specialization Ratio (Location Quotient)

$$\frac{\frac{e_r^i}{e_r^t}}{\frac{E_R^i}{E_R^t}}$$

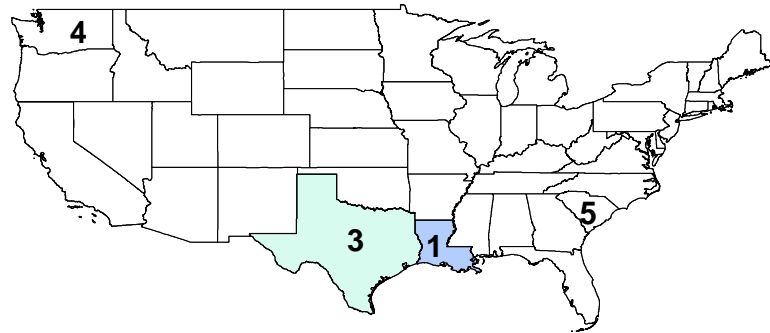
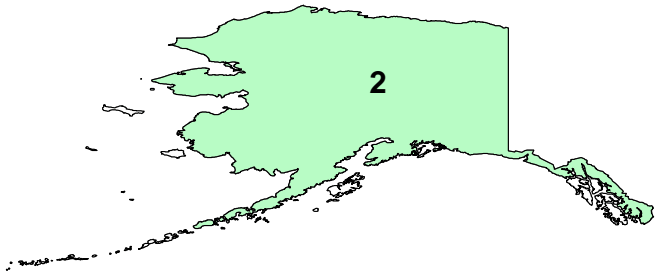
e_r^i = employment in industry i in state s

e_r^t = total employment in state s

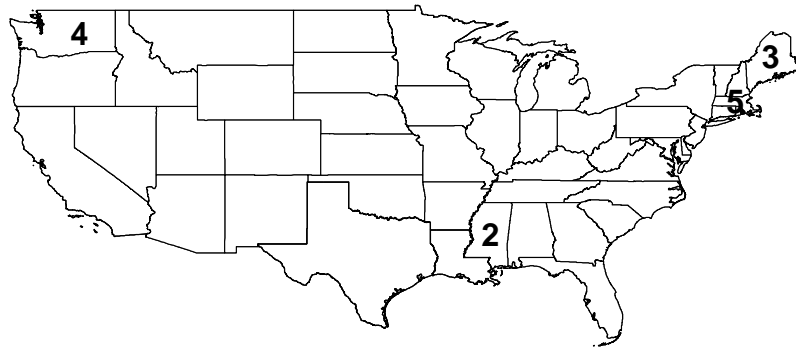
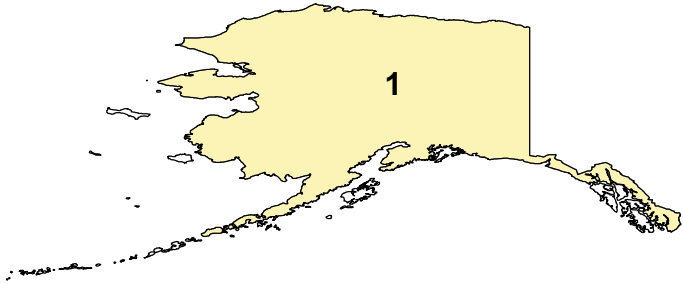
E_R^i = employment in industry i in the nation

E_R^t = total employment in the nation

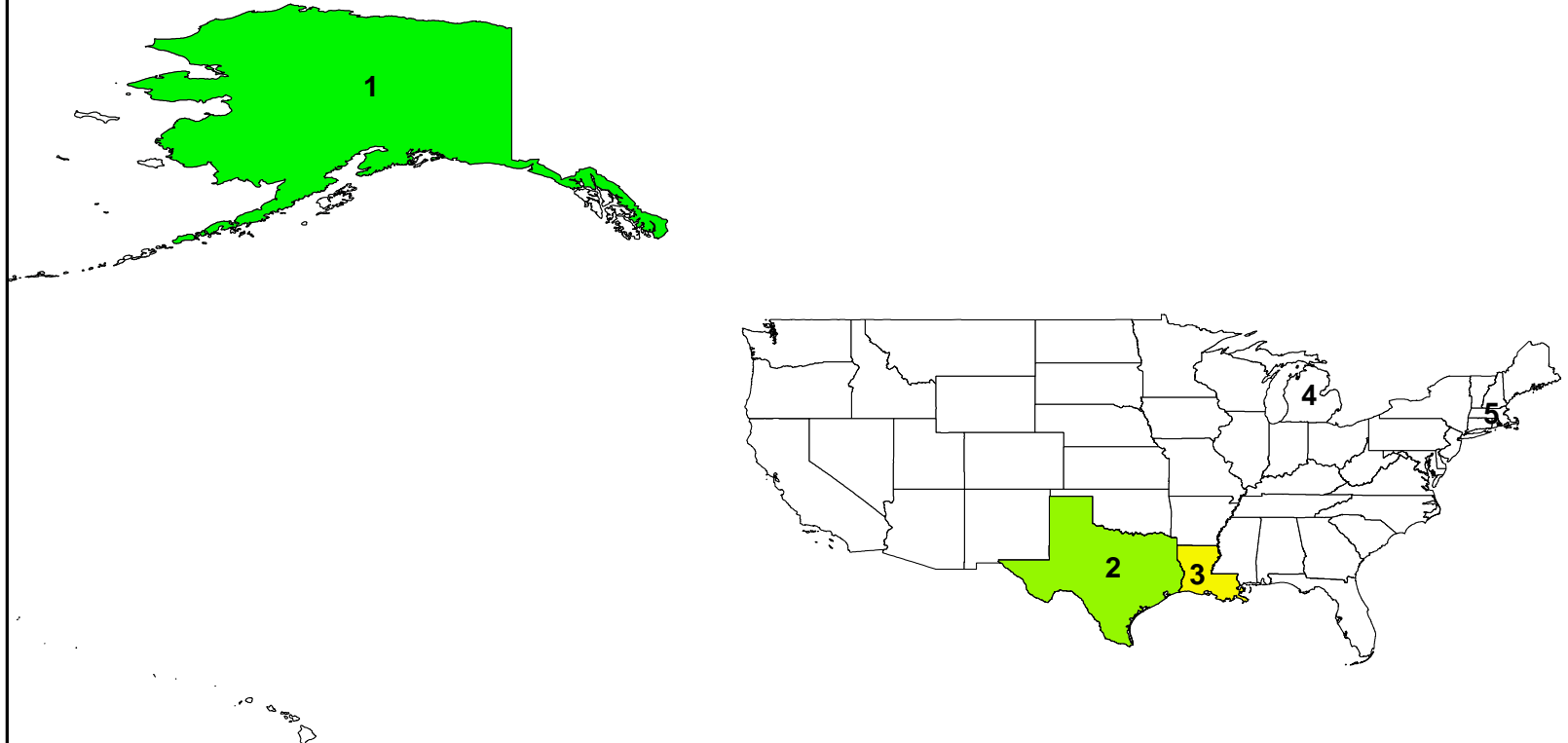
Construction



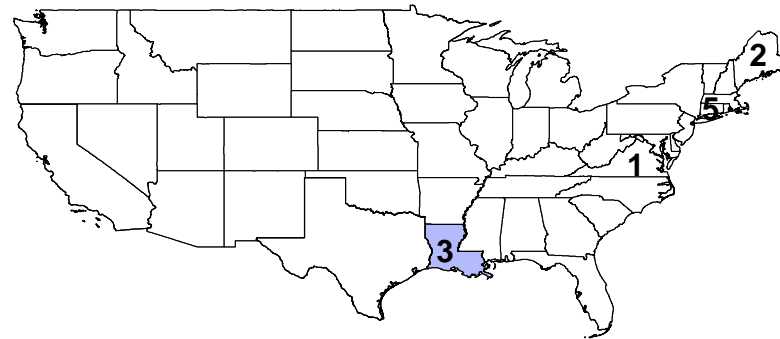
Living Resources



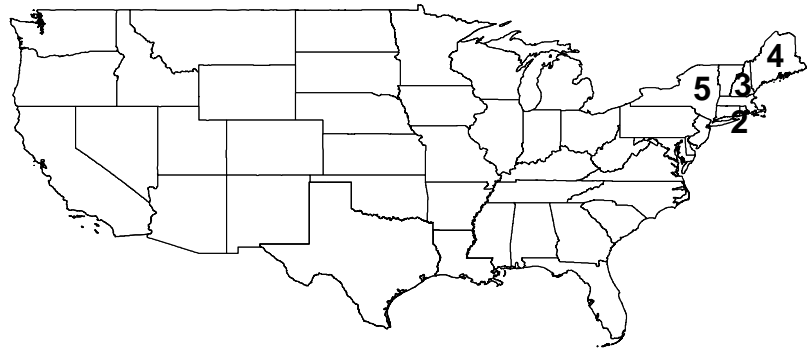
Minerals



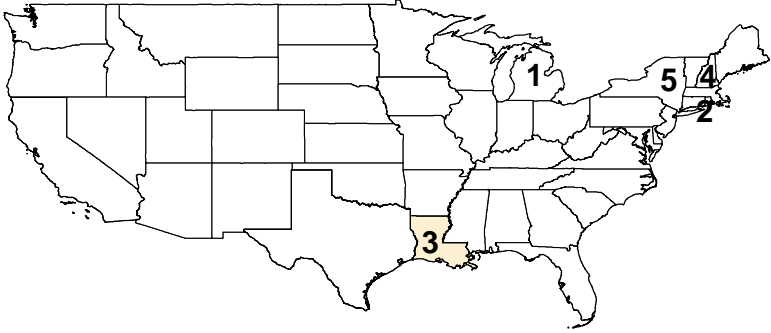
Ship & Boat Building



Tourism & Recreation



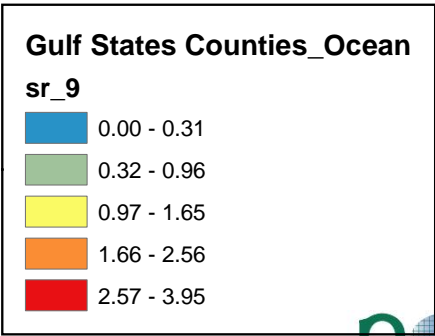
Transportation



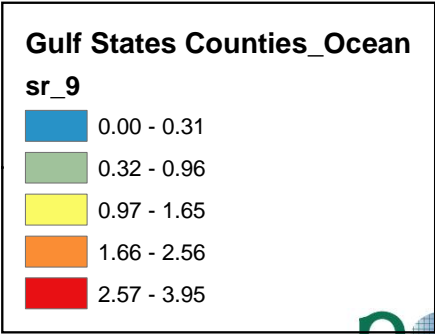
The Top 5 counties by Ocean Economy Sector

	Ocean Economy		Construction	
Rank	Specialization	Size	Specialization	Size
1	Aleutians West, AK	New York, NY	Harris, TX	Harris, TX
2	Bristol Bay, AK	Harris, TX	Calcasieu, LA	Calcasieu, LA
3	North Slope, AK	Los Angeles, CA	Los Angeles, CA	Los Angeles, CA
4	Keweenaw, MI	San Diego, CA	San Diego, CA	San Diego, CA
5	Jackson, MS	Cook, IL	Hillsborough, FL	Hillsborough, FL
	Living Resources		Minerals	
Rank	Specialization	Size	Specialization	Size
1	Aleutians West, AK	Aleutians West, AK	North Slope, AK	Harris, TX
2	Bristol, MA	Bristol Bay, AK	Refugio, TX	North Slope, AK
3	Essex, MA	Valdez-Cordova, AK	Iberia, LA	Terrebonne, LA
4	King, WA	Pacific, WA	Terrebonne, LA	Iberia, LA
5	Los Angeles, CA	Hyde, NC	Vermilion, LA	Nueces, TX
	Ship & Boat Building		Tourism & Recreation	
Rank	Specialization	Size	Specialization	Size
1	Kitsap, WA	Portsmouth (city), VA	Keweenaw, MI	New York, NY
2	Portsmouth (city), VA	Kitsap, WA	Worcester, MD	San Diego, CA
3	San Diego, CA	York, ME	Monroe, FL	Cook, IL
4	Jefferson, LA	Jefferson, LA	Maui, HI	Honolulu, HI
5	York, ME	Mobile, AL	Mackinac, MI	San Francisco, CA
	Transportation			
Rank	Specialization	Size		
1	Prince George, VA	Los Angeles, CA		
2	Lafourche, LA	Harris, TX		
3	Plaquemines, LA	Cook, IL		
4	Suffolk, VA	Miami-Dade, FL		
5	St. Mary, LA	Orange, CA		

Ocean Economy Specialization



Tourism & Recreation Socialization



Part II

International Perspective On National Accounts

Judith Kildow



Countries included in this comparison:

Canada

Ireland

United Kingdom

European Union

Australia

New Zealand

Thailand

Vietnam

Japan

China

Korea

Indonesia

Malaysia

Philippines

Singapore

Elements of Ocean Economy Definition Common to All Countries

- Sectors fully identifiable in the statistical classification (e.g. shipbuilding and shipping);
- Sectors partly identifiable in the classification (fishing and seaports)
- Sectors only indirectly identifiable, i.e. whose outlets are partly maritime, partly non maritime (e.g. marine equipment and a range of services);
- Coastal tourism, including a diversity of small local businesses and sectors, certain of which are identifiable on the basis of their coastal location, and certain others (e.g. travel agencies) are indirectly identifiable.

Different Approaches

Japan:

Type A Industries: Execute business activities in the ocean – fisheries, transportation, oil development, pollution control.

Type B: Supply type A industries with products and services, e.g. ship builders, electronics, steel makers.

Type C: Receive output of type A industries and convert to own products and services, e.g. fishery processing

Approaches to Defining the Ocean Industry:

1. Common Industry Categories

- Fishing – (aquaculture, etc)
- Marine Transportation
- Marine Mining
 - Marine Aggregate exploitation (sand and gravel)
 - Offshore oil and gas production
- Ship and boat building, maintenance and repair
- Coastal and Marine Construction
- Coastal Tourism and Recreation/Leisure

Approaches to Defining the Ocean Industry:

2. Differences in Goods Production Industries

- Marine Energies
 - Alternative: wind, tidal, wave, etc
- Saltwater products
- Seaweed
- Submarine Cables
- Marine Chemical industry
- Marine Biotech/Pharmaceuticals
- Maritime aggregate exploitation- diamonds
- Marine/Manufacturing/Technology/ Equipment
 - navigation
 - communications
 - telecommunications

Approaches to Defining the Ocean Industry:

3. Differences in Services Industries

- Engineering
- Consulting
- Real Estate
- Equipment Rentals
- Business activities
- Marine Communications/
Telecommunications
- Maritime Insurance and Financing
- Maritime Legal and arbitration services
- Seawater utilization – China
- Mapping
- Surveying

Approaches to Defining the Ocean Industry:

4. Differences in Publicly Provided Services

- Defense: Navy
- State intervention at sea
- Coastal/ocean environment protection
- Marine science research
- Marine education.
- Inland navigation and construction

Geographic Coverage

European Union: Maritime Basin Approach:

- analyses of wealth yielded by each sea region of the EU zone, i.e. by
 - marine resources (energy, non-energy, living)
 - diversity of industries located and operating in this sea region.
- Thailand: Valuation Categories
 - Natural Resources
 - Marine Economic Activities
 - Environmental Impacts

Economic measures used

Common Measures in Standard Economic Accounts

- GDP or Value Added
- Number of people Employed
- Wages

Varied Measures in Economic Account

- No. of establishments
- Full time Employees
- Labor Turnover (Hiring and Separations)
- Trade
 - Export Value of Fish Products - Asia
- Regional Multipliers
 - Employment
 - Income
- Tourism Expenditures

Ocean Economic Outputs Not Included in National Economic Accounts

Common

- Natural Resource Production and Values
 - Oil and gas
 - Aggregates
 - Fisheries
- Shipping Tonnage, Value, Destination
- Population/Demographics
- Length of coastline

Unique

- Environmental Damage costs
- Costs of environmental restoration
- Costs of Beach Nourishment
- Beach visits
- Housing



Sustainability Indicators



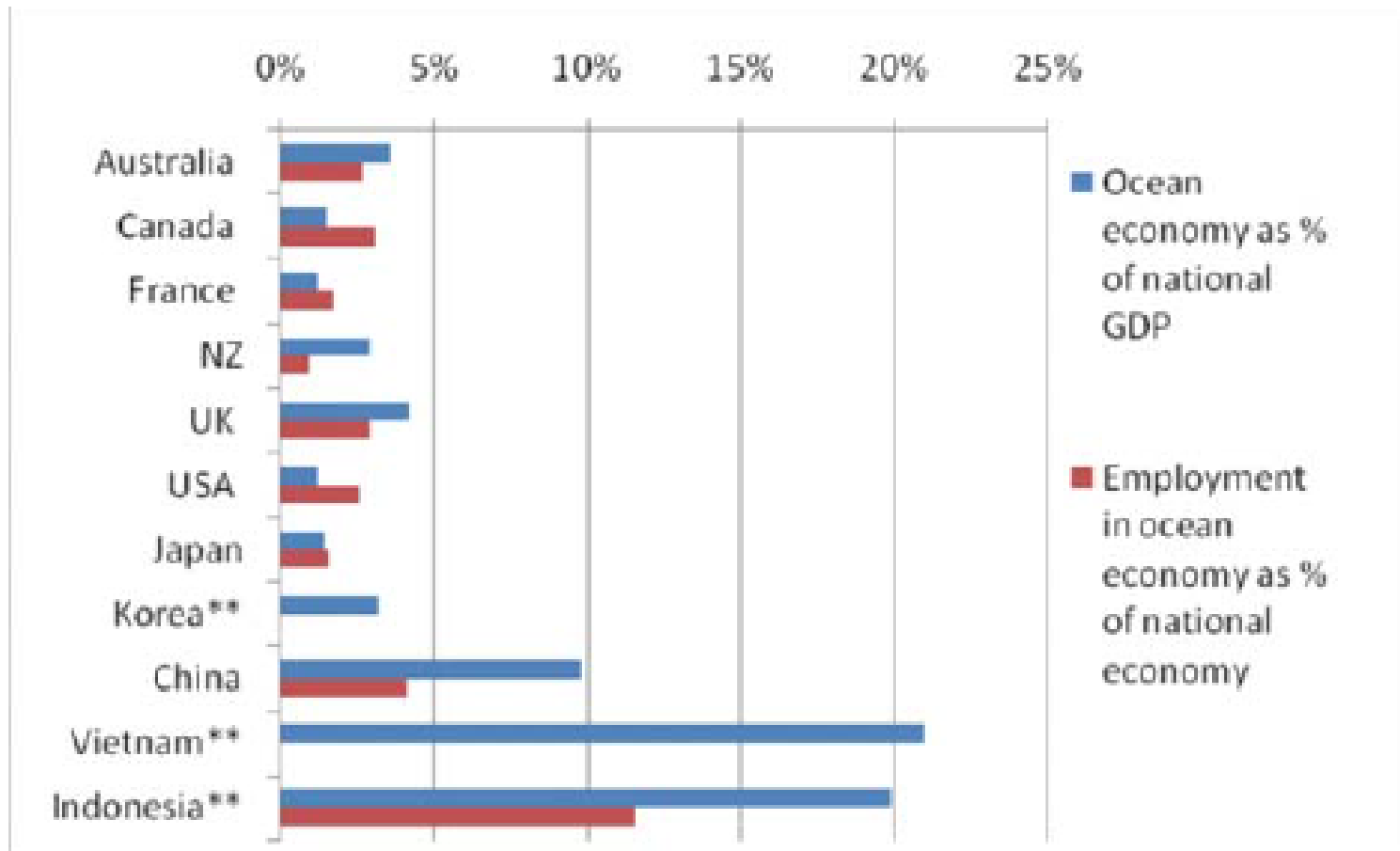
- Natural Capital (Thailand)
 - Protective value and cost of damage to the coastal ecosystems after the India Ocean tsunami
Thailand
- Other (E.U.)
 - Pressure for road travel near the coast,
 - Pressure for coastal and marine leisure,
 - Bathing water quality

National Estimates of Marine Economies and % of GDP

Country	Author	Date	Date of Data in Study	Ocean Economy GDP (Billions of native currency)	Ocean Economy GDP (Billions of US Dollars)	Percentage of national GDP
Australia	Allen	2004	1996 - 2003	A\$ 26.70	\$17.00	3.60%
Canada	RASCL	2004	1988-2000	C\$ 22.70	\$15.98	1.50%
France	Kalaydjian et al.	2006	2003	€ 18.90	\$16.69	1.40%
France	Kalaydjian et al.	2008	2005	€ 21.50	\$17.27	1.20%
NZ	Statistics NZ	2006	1997-2002	NZ\$ 3.30	\$2.14	2.00%
UK	Pugh & Skinner	2002	1999-2000	£ 39.0	\$61.10	4.90%
UK	Pugh	2008	2005-06	£ 46.0	\$84.27	4.20%
USA	Colgan	2004	2000	US\$ 118.0	\$118.00	1.20%
USA	Kildow & Colgan	2009	2004	US\$ 138.0	\$138.00	1.20%

Kildow and McIlgorm, 2009

Contribution of Marine Economy to National Economy



** Denotes preliminary result; n.b. employment estimates for Vietnam and RO Korea not available.

Differences in Purposes for Which Measures of the Ocean Economy are Developed

- Extend official national statistics to ocean-related economic activity
- Specific Policy Purposes (e.g. MPAs, program investments)
- Track the health of ocean and coastal sectors
- Meet Marine Spatial Planning needs for detailed databases, especially economic ones to value multiple and competing activities.
- Show whether current environmental protection measures are working.
- Provide clear evaluation of progress towards a vision: clean, healthy, safe, productive and biologically diverse oceans and seas.

Recession Effects

- All nations with ocean accounts suffered losses
- Hardest hit sectors: tourism, shipbuilding, transportation, construction.
- Least affected: oil and gas production due to rise in prices.

Summary and Conclusions

- Ocean economy is a major sector which needs both measurement and analysis, but...
- Measurement and analysis of the ocean economy is still in its early stages
 - Industry and geographic elements
 - Time series
- Future Needs
 - Better measurements of industries
 - More consistent geographies
 - Create models of the ocean economy
 - Cross-national comparisons
 - Benchmarking
 - Develop a global ocean economy measurement



www.OceanEconomics.org

Questions?