ECONOMIC ALTERNATIVES FOR GULF OF MEXICO OYSTER PROCESSING SECTOR

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FOOD DISTRIBUTION RESEARCH SOCIETY
2010 ANNUAL CONFERENCE
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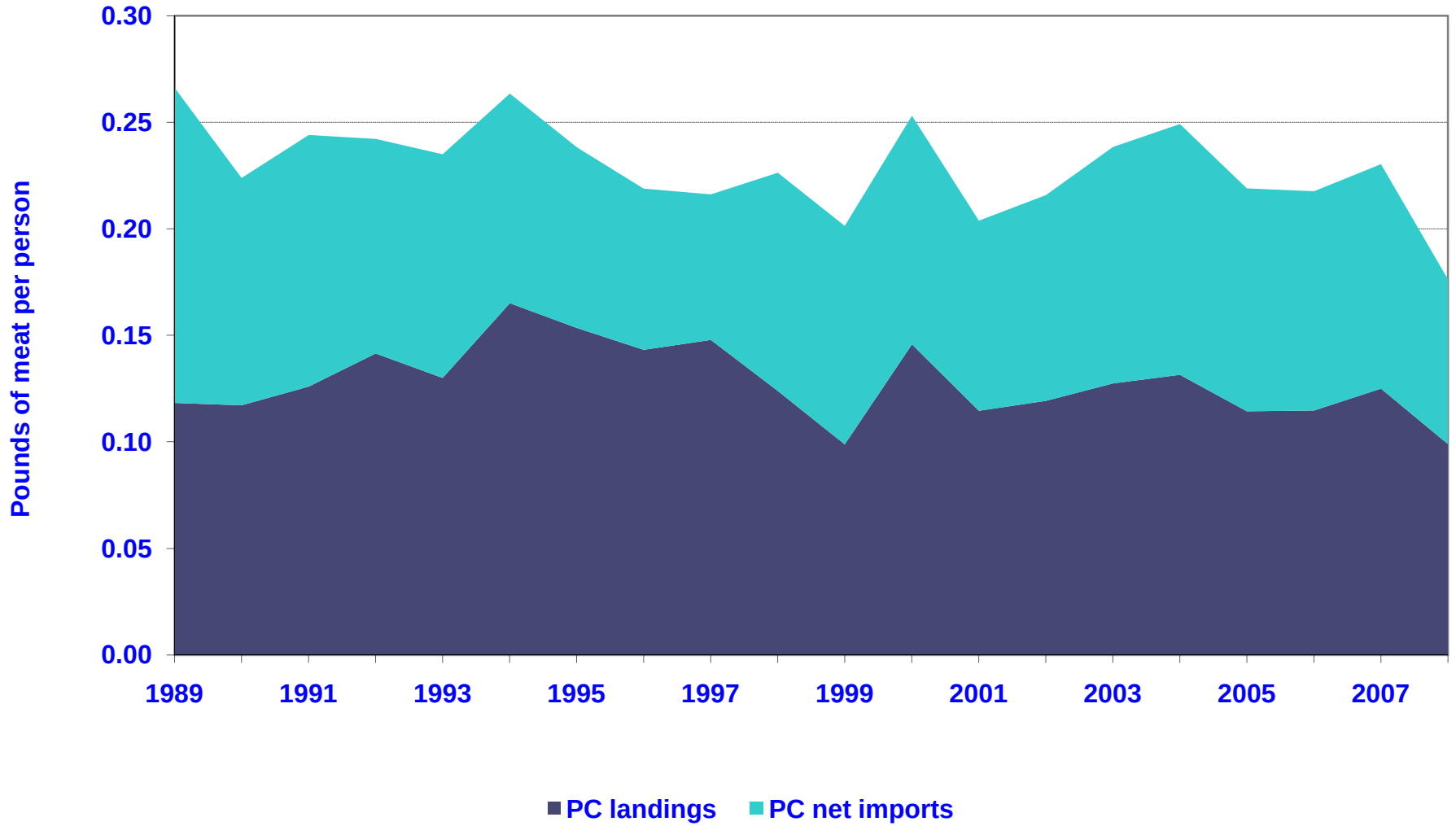
Sandestin, Florida

Mississippi State University
Coastal Research & Extension Center

Sea Grant
Mississippi State University

U.S. Per Capita Oyster Supply *

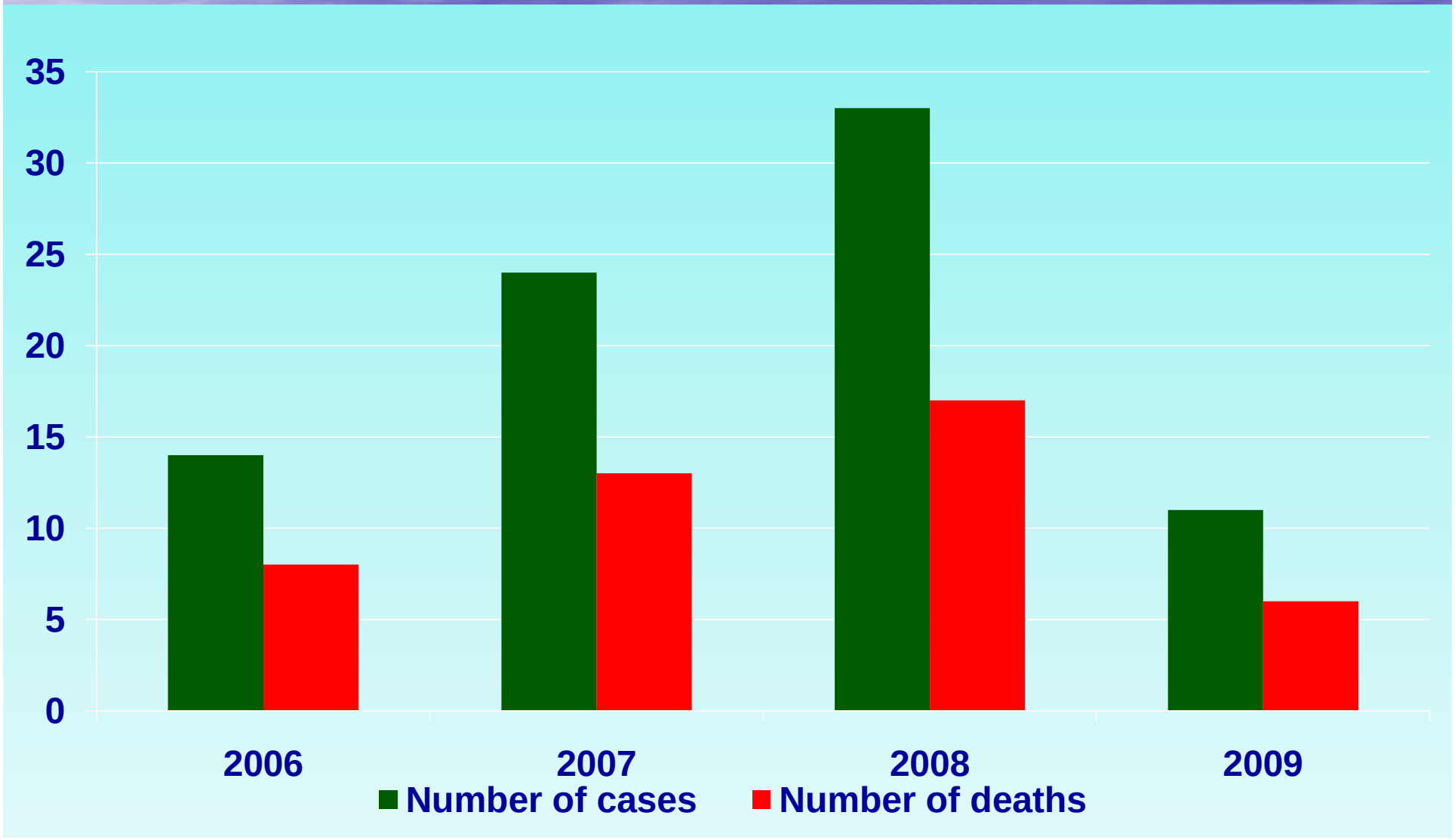


GOM Raw Oyster Products*






Shellfish-related *Vibrio vulnificus* cases and deaths*



Regulatory and Market Constraints*

- Since 2003, California required that all GOM oyster products harvested from April 1 to October 1 must be subjected to approved PHP before they can be sold for raw consumption
- In Oct 2009, FDA proposed new regulations that would require GOM oysters to undergo PHP from April 1 to October 1

2001 Oyster PHP Program*

- MSU-Coastal Research and Extension Center initiated an oyster PHP research and extension program in collaboration with the Mississippi Department of Marine Resources to evaluate consumer acceptance of PHP oyster products and economic viability of oyster PHP systems

2010 Gulf-wide Oyster Initiative*

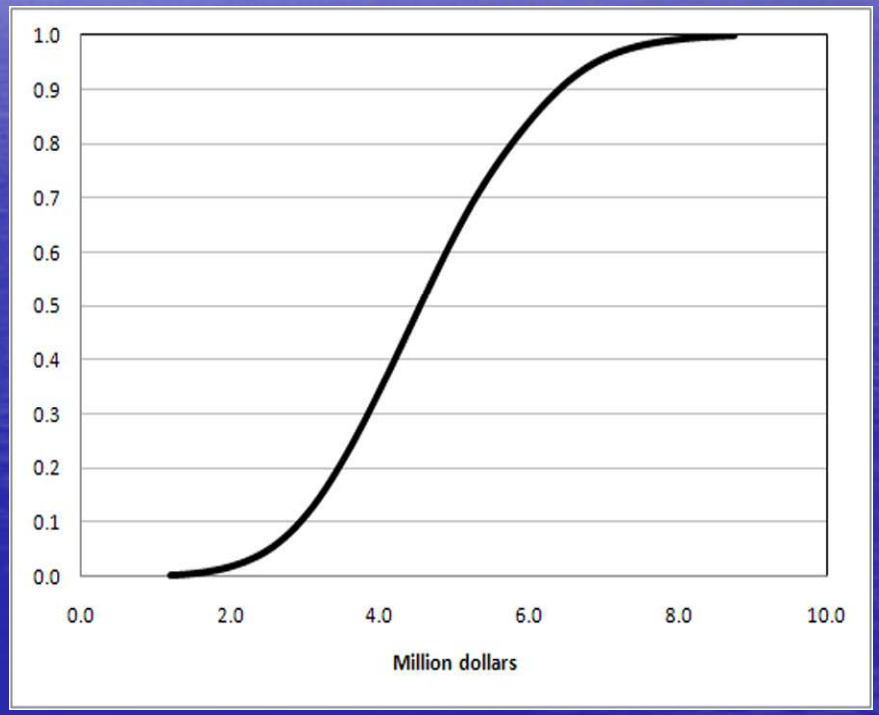
- Economists from the five Gulf states Sea Grant programs met with oyster processors on March 19, 2010 to assess the economic implications of the proposed new FDA regulations that would require GOM oysters to undergo PHP from April 1 to October 1

FDA-Approved Commercial PHP Systems for Raw Oysters*

- Heat-Cool Pasteurization (HCP)
- High-Hydrostatic Pressure (HHP)
- Individually Quick Freezing (IQF)
- Low Dose Irradiation (LDI)

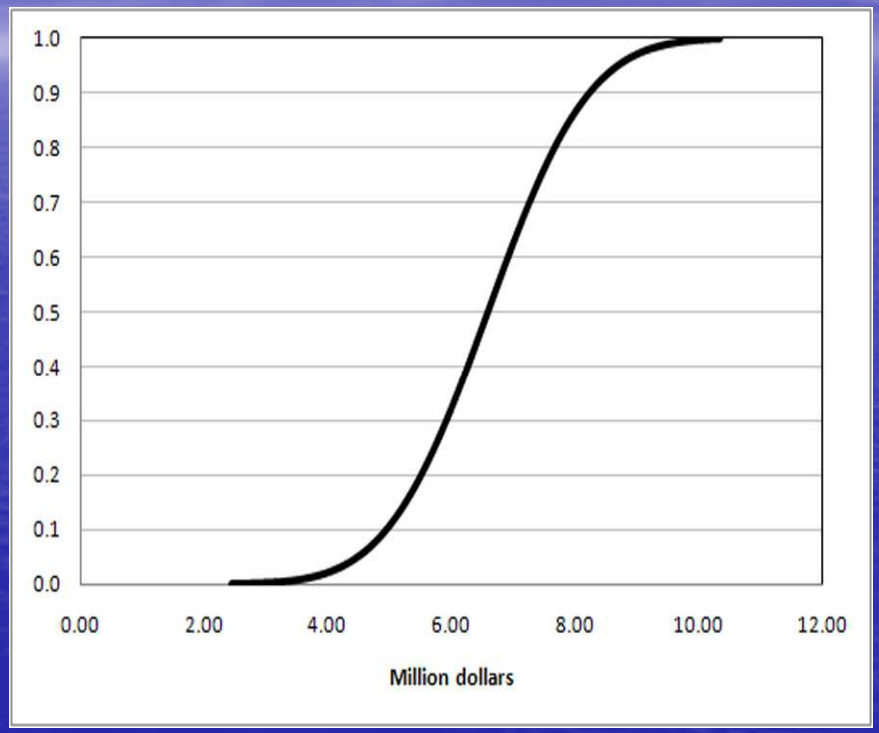
NPV Approximations for HCP**

Heat-cool pasteurization (HCP) is a process where live oysters are placed in warm water for a period of time and then dipped in cold water to stop the cooking process.



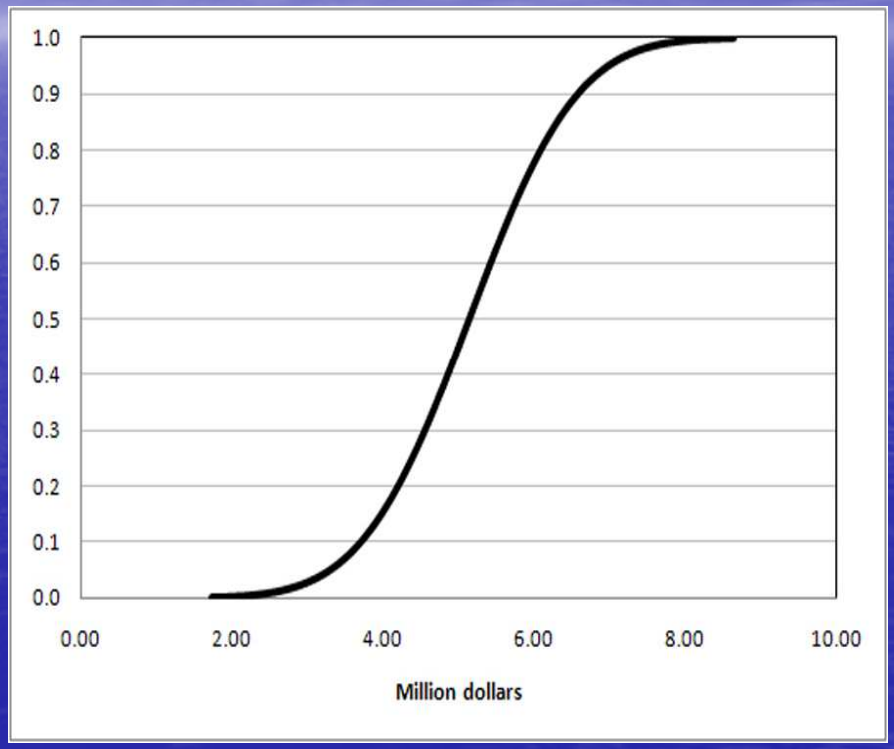
NPV Approximations for HHP**

High hydrostatic pressure (HHP) subjects oysters to very high pressures for 3 to 5 minutes to kill bacteria and reduce microorganisms like Vibrio to non-detectable levels.



NPV Approximations for IQF**

Individual quick freezing (IQF) involves rapid freezing of half shell oysters on trays, then adding a thin glaze of ice to seal in the natural juices before storing them frozen.



Low Dose Irradiation*

Cobalt-60 irradiation (C-60) is the traditional means used to irradiate foods. The gamma ray from the cobalt isotope is very penetrating through food packages and product. There is no residual radioactivity.

U.S. Oyster Postharvest Processing Plants, 2010

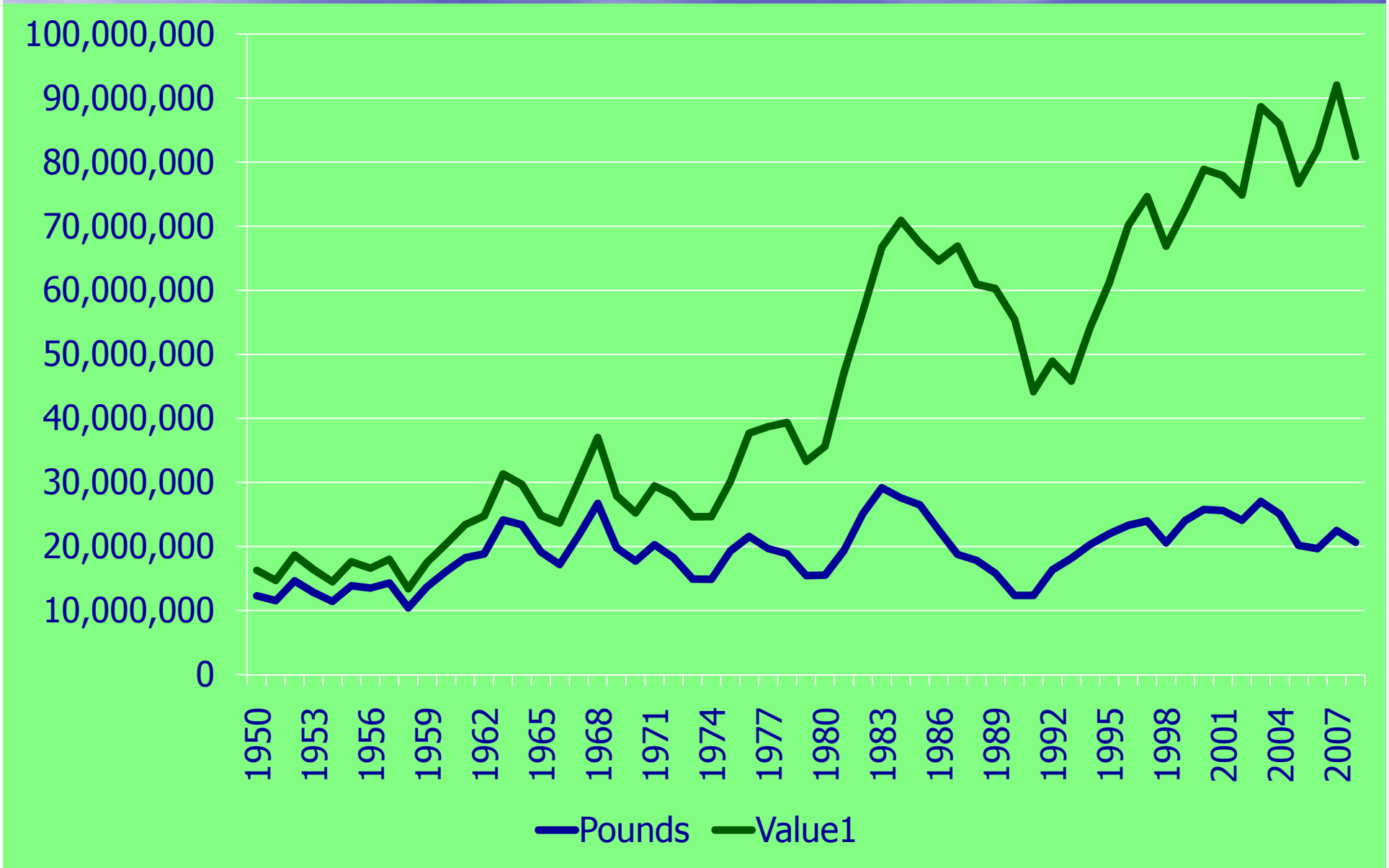
Postharvest Processes

- Heat Cool Pasteurization
- High Hydrostatic Pressure
- Individually Quick Freezing
- Low Dose Irradiation

0 250 500 1,000 Miles

**This map is for planning purposes only.*

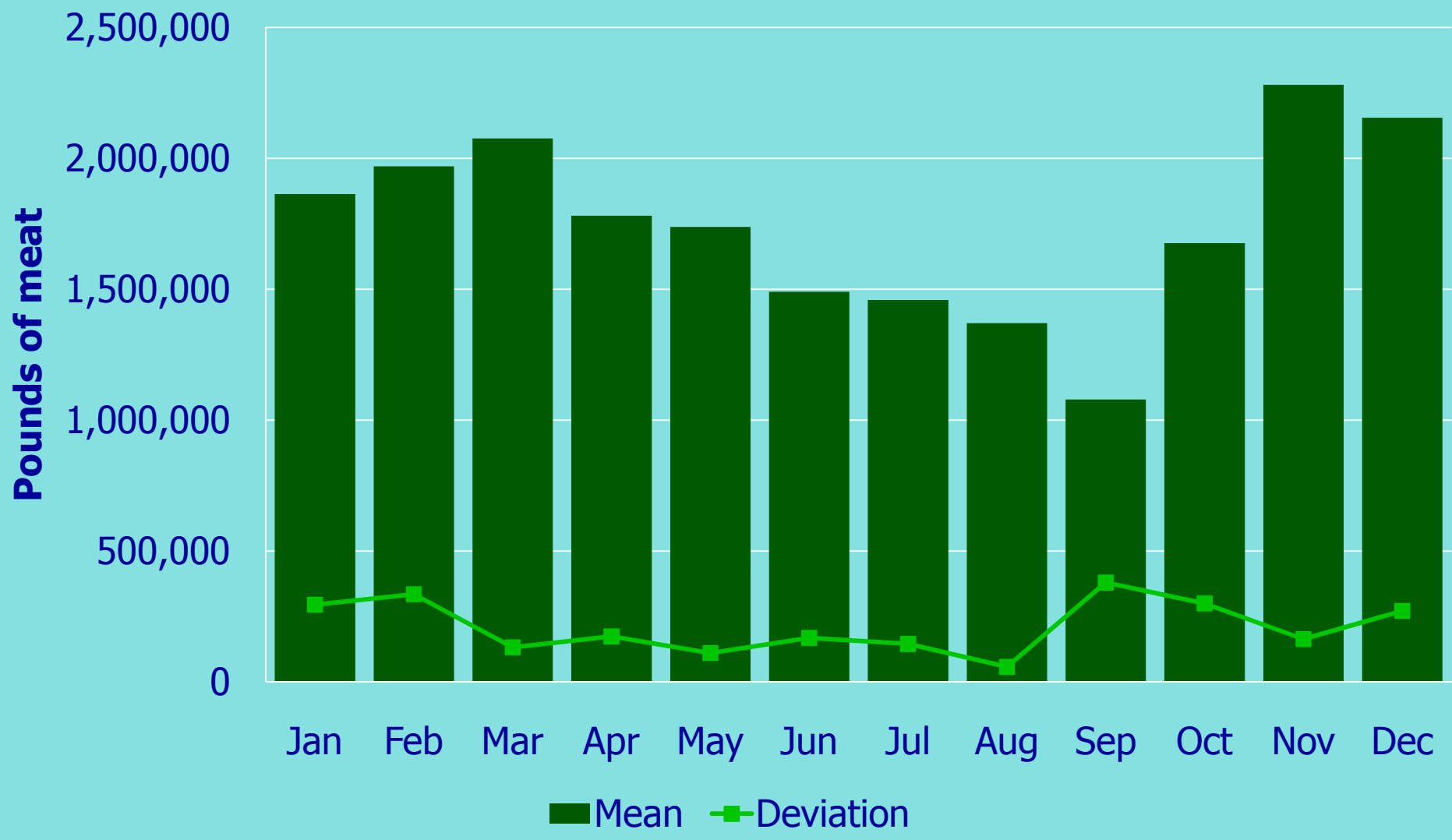
Annual GOM Oyster Landings*



Damages of Deepwater Horizon Oil Spill*

- **April 20, 2010 ~~ 100 days**
- **4.9 million barrels**
- **1.8 million gallons of dispersants**
- **Fishing closures in federal and state waters**
- **Damages to oyster resources**
- **Market perceptions of safety of GOM seafood**
- **Market prices of Gulf seafood**
- **Market shares of Gulf seafood**

GOM Monthly Oyster Landings**

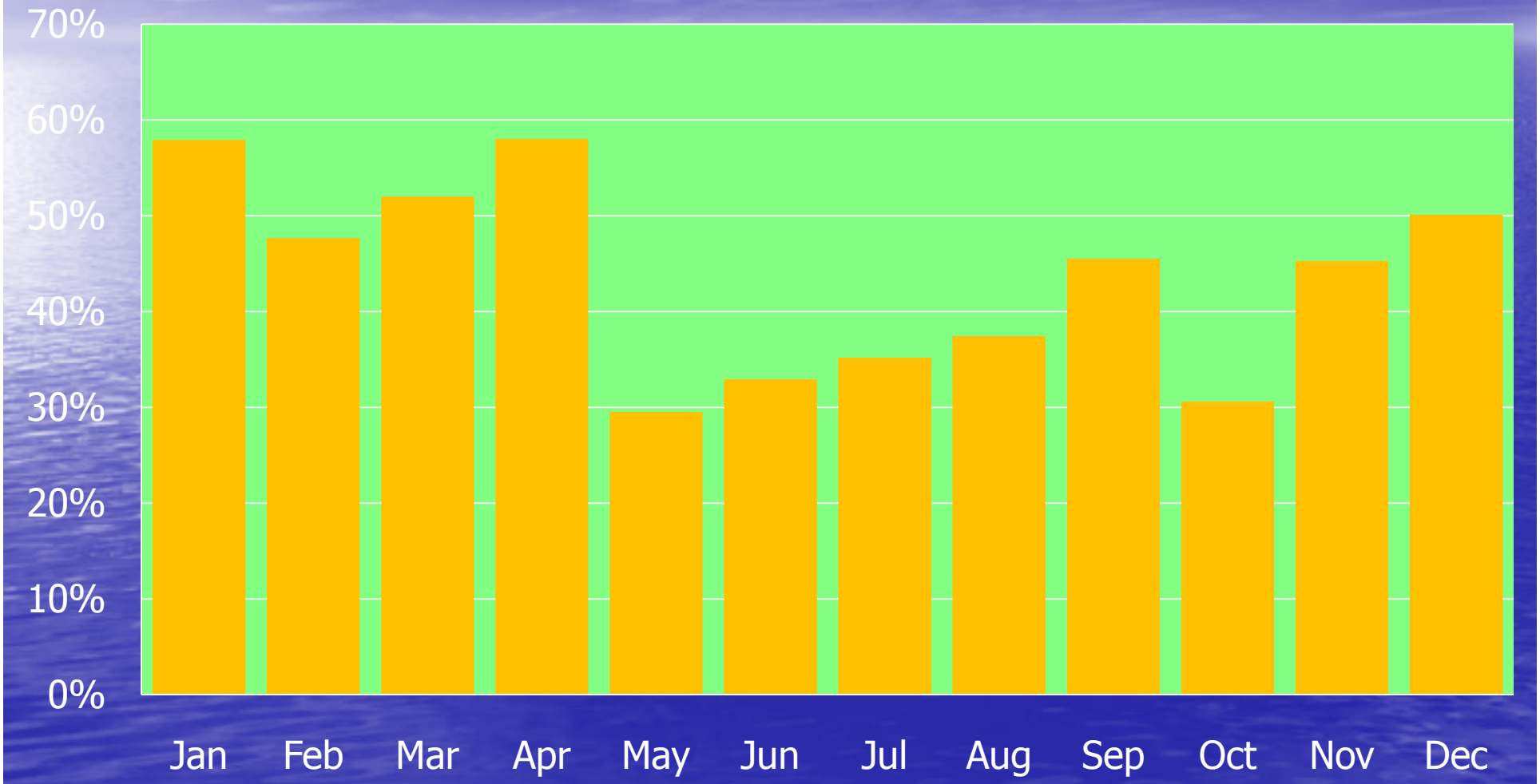


Stochastic Individual Plant Monthly PHP Capacity**

PLANT = [POUNDS x HOURS x SHIFTS x DAYS]

where PLANT = individual plant PHP capacity per month,
POUNDS = equivalent pounds of shellstock processed per hour,
HOURS = number of hours operating per shift,
SHIFTS = number of shifts operating per day,
DAYS = number of days operating per month.

Percent of GOM PHP Capacity to Landings With One Shift**



Summary and Capacity Modeling Implications*

- Meat yield differences between summer and winter harvests
- Type of PHP system: year-round or 6-month operation
- Processing mix: half shell, whole shell, shucked
- Processing days per week and per month
- Length and number of shifts per day

Summary and Compliance Implications*

- Current PHP equipment
- Planned purchases of PHP equipment
- Testing and validation of PHP process
  - New location
  - New owner
  - New equipment
  - New workers

Summary and Transportation Implications*

- From docks to PHP plants
- From docks to processing plants to PHP plants
- From PHP plants to storage facilities
- From PHP plants or storage facilities to market destinations

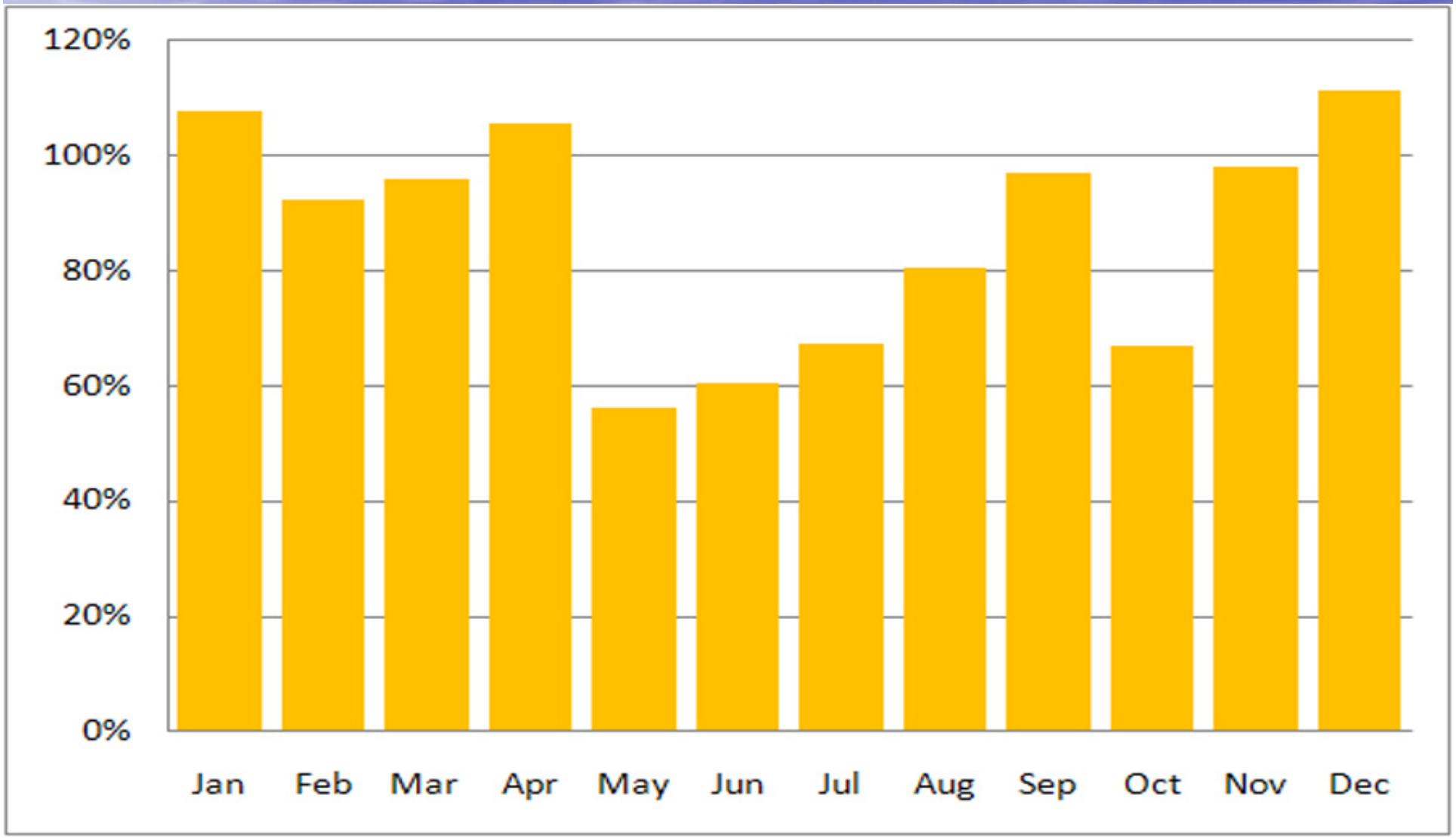
Summary and Financial Implications*

- Short-term capital for operations
  - Oyster shell stock
  - Labor
- Long-term capital for capacity expansion
  - Equipment
  - Space

Summary and Sustainability Implications*

- Recovery of GOM oyster harvesting sector from DHOS damages
  - Graded oyster shellstock
- Recovery of lost market shares of GOM oyster products
  - Traditional oysters
  - PHP oysters
- Prices of major PHP inputs
  - Shellstock
  - Energy

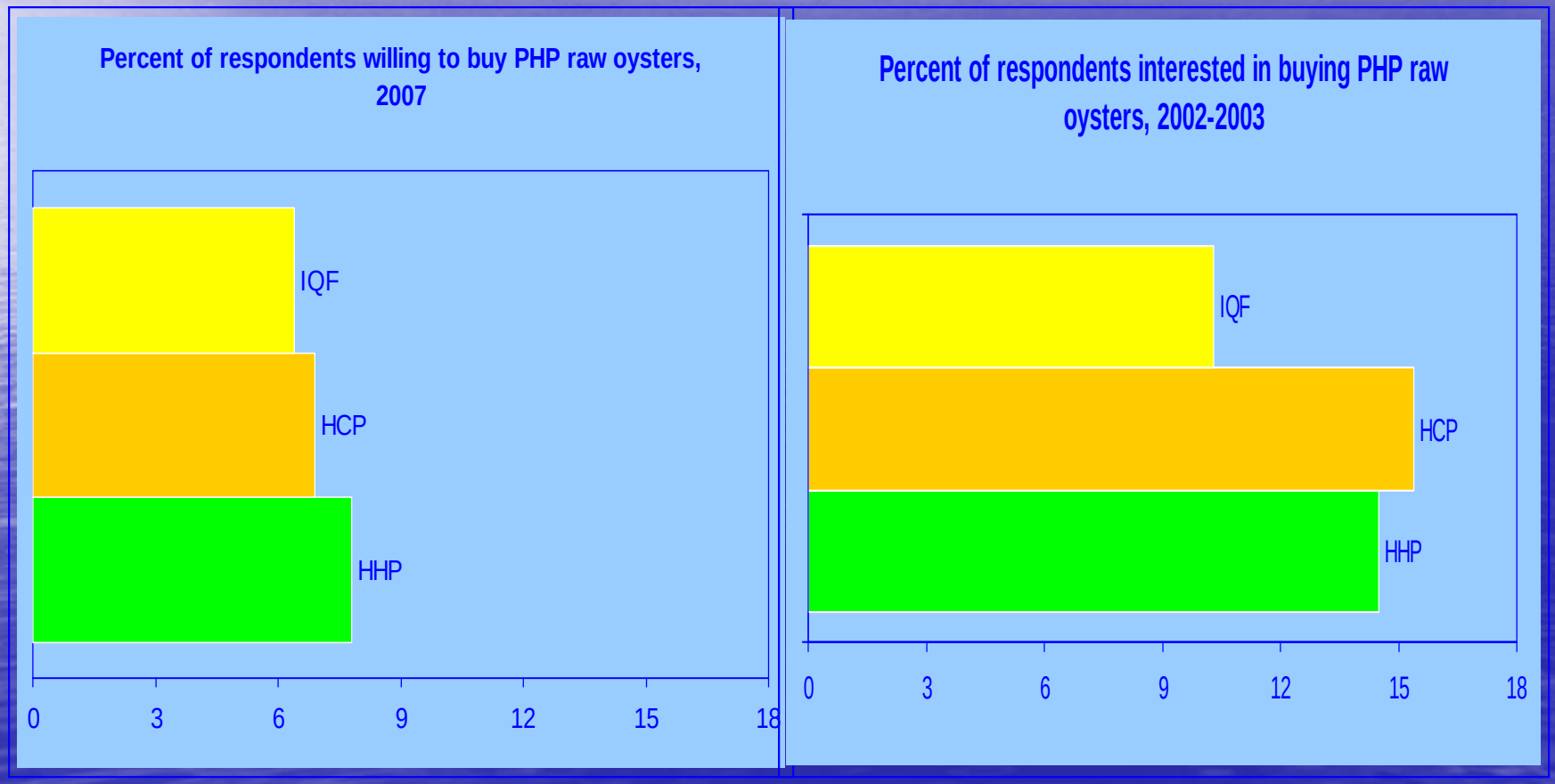
Percent of GOM PHP Capacity to Landings With Two Shifts**



Summary and Marketing Implications*

- Market perceptions
  - Overall safety of Gulf seafood
  - Safety of eating raw oyster products
  - Consumer acceptance of PHP oysters
  - Willingness to pay for PHP oysters
- Promotion of PHP oyster products

Willingness to Buy PHP Oyster Products**



Willingness to Buy PHP Products*

- It seems that respondents with higher education are more willing to buy PHP products as are those who are in the upper income brackets.
- There is slight evidence that male respondents are more willing to buy PHP products.
- Seafood markets seem to be the preferred source of product with oyster bars and grocery stores being preferred in some instances.
- While race did not seem to affect willingness to buy, age did seem to play a role with older individuals less willing to purchase PHP products.
- Respondents in Pascagoula, Mississippi were less willing to buy PHP products.

Willingness to Buy PHP Products*

- Respondents who considered the appearance, smell and taste of oysters to be important were less willing to buy PHP products.
- Respondents who had health and safety concerns about raw oysters were also less likely to buy PHP oysters.
- Respondents who perceived raw oysters to taste good and were fun to eat, their willingness to buy was positively enhanced.
- Respondents who were aware of the health risks and methods to reduce risks seem to be positively influenced in their willingness to buy PHP products.

THANK YOU FOR VIEWING THIS PRESENTATION.

http://coastal.msstate.edu/owmr.html