

# **SOCIAL IMPACTS OF MARCELLUS SHALE EXPLORATION: A RESEARCH SUMMARY**

Kathryn J. Brasier, PhD

Dept. of Ag Econ, Sociology, and Education, Penn State University

ARC Livable Communities Workshop

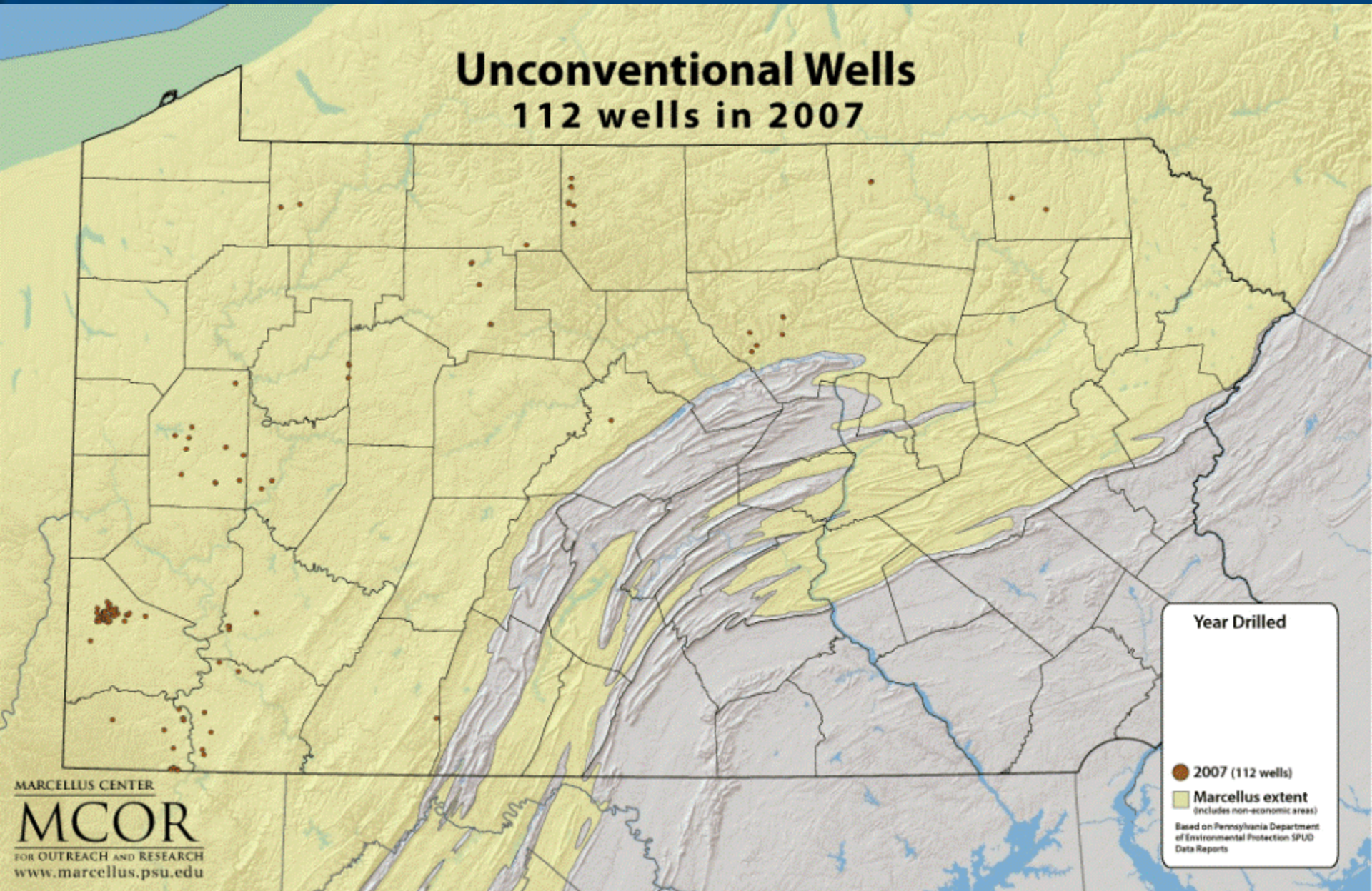
August 16, 2012, California, PA



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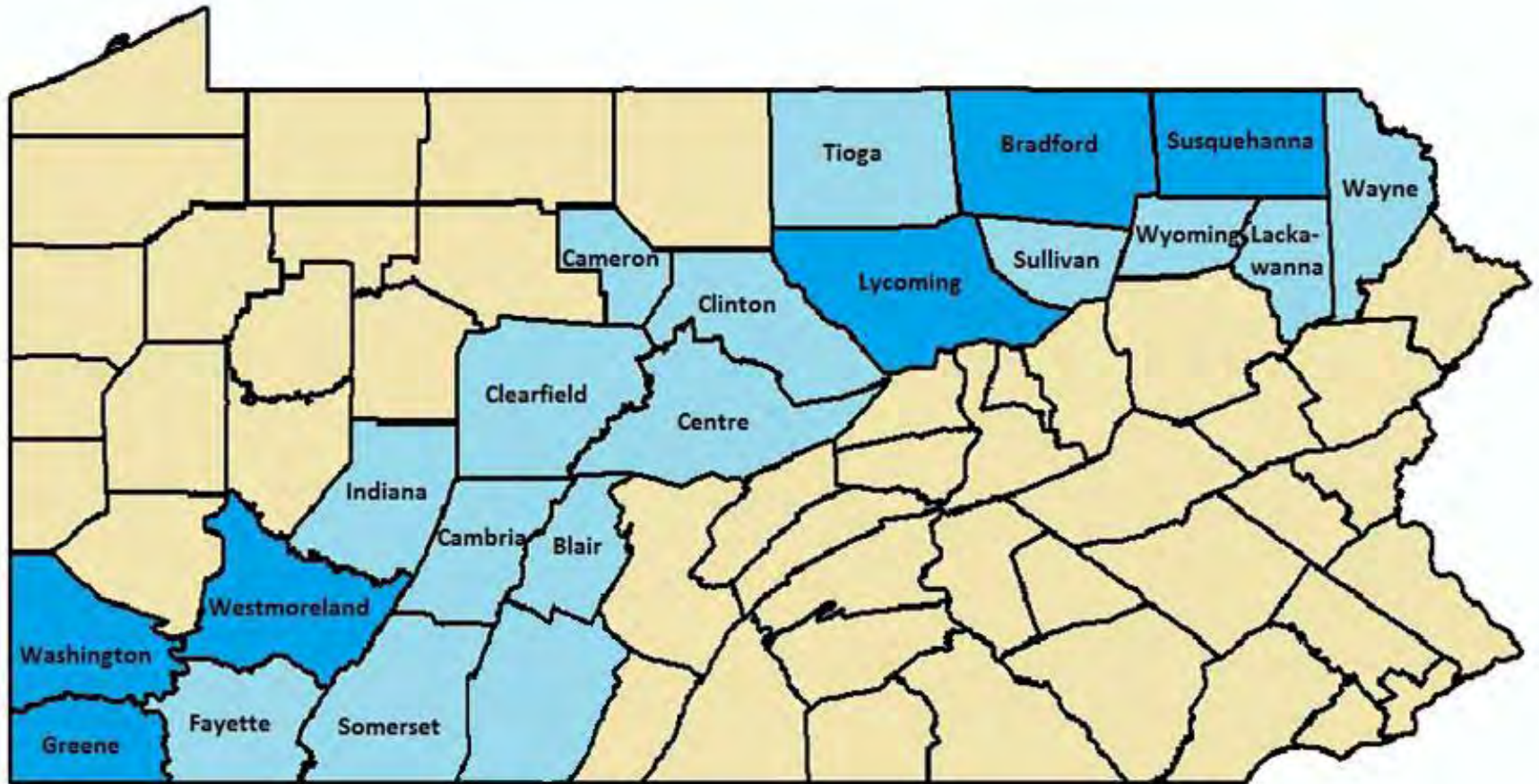
## Unconventional Wells 112 wells in 2007



# Research and Outreach Projects

| Title ( <i>Funder</i> )  | Investigators   | Years     |
|--|---|-----------|
| Community Impacts: Case studies<br>( <i>PSU CAS, ARC</i> )                               | <i>Brasier, Filteau, Goetz, Jacquet, Kelsey, McLaughlin, Stedman, Rhubart</i>   | 2009-2010 |
| Community Satisfaction & Change:<br>Household Survey<br>( <i>PSU CAS, Cornell, ARC</i> ) | <i>Willits, Brasier, Filteau, Jacquet, McLaughlin, Stedman</i>                  | 2009-2010 |
| Community Task Forces<br>( <i>PSU CAS</i> )  | <i>Brasier, Filteau, Goetz, Jacquet, Kelsey, McLaughlin, Stedman, Rhubart</i>   | 2009-2010 |
| Marcellus Family Project<br>( <i>PSU MCOR</i> )  | <i>McLaughlin, Martin, K. Davis, Brasier, Gunsallus</i>                         | 2011-2012 |
| Community Dialogue Project<br>( <i>PSU CAS</i> )   | <i>Brasier, Kelsey, Whitmer</i>   | 2011-2012 |
| <i>Marcellus Shale Impacts Project</i><br>( <i>CRP</i> )                                 | <i>Brasier, L. Davis, Filteau, Glenna, Kelsey, McLaughlin, Rhubart, Schafft</i> | 2012-2013 |

## PA Counties in Case Studies, Surveys



 Household Survey

 Household Survey and Case Study

*\*New York Counties: Broome, Chemung, Delaware, Schuylcr, Steuben, Sullivan, Tioga, and Tompkins.*

# Case Study Summary

| County       | Region | Rural/<br>urban* | Wells drilled<br>2008-2010 | Interviews | Year<br>Interviews<br>conducted |
|--------------|--------|------------------|----------------------------|------------|---------------------------------|
| Bradford     | NC     | Rural            | 513                        | 15         | 2009                            |
| Washington   | SW     | Rural**          | 309                        | 15         | 2009                            |
| Lycoming     | NC     | Rural**          | 144                        | 18         | 2009                            |
| Greene       | SW     | Rural            | 189                        | 12         | 2010                            |
| Susquehanna  | NC     | Rural            | 184                        | 13         | 2010                            |
| Westmoreland | SW     | Urban            | 111                        | 16         | 2010                            |

*\*Center for Rural PA definition where rural = < 284 persons per square mile*

*\*\*lies within a metropolitan statistical area*

## Household Survey

- Sample of 6000 households in 21 PA counties and 8 NY counties
- Mail survey conducted Oct. 2009 – March 2010
- 1917 out of 5479 valid surveys returned (35%)

### *Community Satisfaction and Change*

#### A Study of Communities in the Marcellus Shale Region

In the years ahead, your community will face many important decisions. This survey seeks information on your feelings about where you live and your opinions about some of the changes that may occur in the future. Your answers, combined with those of others, can help focus attention on the issues of concern to people like yourself.

**A.** For each of the following questions, please think about your community and your life situation as it is TODAY. For each item choose the ONE answer that best expresses your views.

**A1.** For EACH of the following, rate your present community as it is today. Use a scale of 1 to 5, where: 1 = Very Poor, 2 = Poor, 3 = Neither Poor nor Good, 4 = Good, and 5 = Very Good

|  | Very Poor | Poor | Neither Poor nor Good | Good | Very Good |
|--|-----------|------|-----------------------|------|-----------|
| a. Availability of good jobs .....         | 1         | 2    | 3                     | 4    | 5         |
| b. Public schools.....                     | 1         | 2    | 3                     | 4    | 5         |
| c. Medical services/Health care.....       | 1         | 2    | 3                     | 4    | 5         |
| d. Availability of affordable housing..... | 1         | 2    | 3                     | 4    | 5         |
| e. Roads and streets.....                  | 1         | 2    | 3                     | 4    | 5         |
| f. Freedom from crime/violence.....        | 1         | 2    | 3                     | 4    | 5         |
| g. Natural environment.....                | 1         | 2    | 3                     | 4    | 5         |
| h. Neighborliness/friendliness.....        | 1         | 2    | 3                     | 4    | 5         |
| i. Drinking water.....                     | 1         | 2    | 3                     | 4    | 5         |
| j. Recreation opportunities.....           | 1         | 2    | 3                     | 4    | 5         |
| k. Cultural events and activities.....     | 1         | 2    | 3                     | 4    | 5         |
| l. Job training opportunities.....         | 1         | 2    | 3                     | 4    | 5         |
| m. Overall quality of life.....            | 1         | 2    | 3                     | 4    | 5         |

**A2.** How would you rate the cost of living in your community?

- 1 Relatively low
- 2 About average
- 3 Relatively high

**A3.** Would you say that your community is better off, worse off, or about the same as it was five years ago?

- 1 Better off
- 2 Worse off
- 3 About the same

**A4.** Would you say that your community will be better off, worse off, or about the same in five years compared to how it is now?

- 1 Better off
- 2 Worse off
- 3 About the same

Early visible, tangible effects  
Concerns about future effects  
Effects on place

## **RESEARCH SUMMARY**



## ‘Boomtowns’ and ‘Boom and Bust’

- Rapid industrialization of small, isolated rural communities
- Focused on energy development in intermountain West in 1970s and 1980s
- ‘Social disruption’ lens: rapid population growth and change stress infrastructure and social relations, create jobs and economic growth
- Distribution of costs/benefits uneven across place, stage of development, social position
- Boom-Bust-Recovery model



# Economic Impacts

- Economic effects
  - Employment in industry, related businesses
  - Personal income, leasing/royalty income
- Issues
  - Competition for workers, materials
  - Localized inflation reported
- Economic future in rural places
  - Workforce education
  - Stem 'brain drain'
- Agriculture: save it or kill it?

*“[Company] has put their... headquarters here. So that provides opportunities for skilled labor... and white collar jobs... It will change some of our youth.”*

*“so far there have been a lot of new millionaires in this area”*

*“Are millionaires going to milk dairy cows?”*

## Infrastructure

- Transportation and roads
- Public safety
  - Traffic
  - Crime
- Housing
- Displacement of disabled, low-income families
- Stress on human service agencies, court system, schools



*“You can’t swing a dead cat in our county right now without hitting a water truck.”*

*“for our homeless programs we would put people up at the local hotels and we wanted to put someone up two weeks ago and the next available room is [four months later]. So there is no short term housing.”*

# Environmental Quality

- Issues mentioned:
  - Public and private water sources
  - Water quality
  - Forest fragmentation
  - Wildlife, habitat
  - Air quality
- Recreation & tourism impacts
- Comparison to coal legacy



*“... but the fact that there’s millions of gallons of water being injected under ground at high pressure’s gonna create some turbidity in some private wells...”*

# Effects on Place

- Population growth and change in rural areas
- Threat to rural identity, quality of life
- Increased diversity, changing social networks
- Social conflict
- Attachment to place and its natural and social amenities

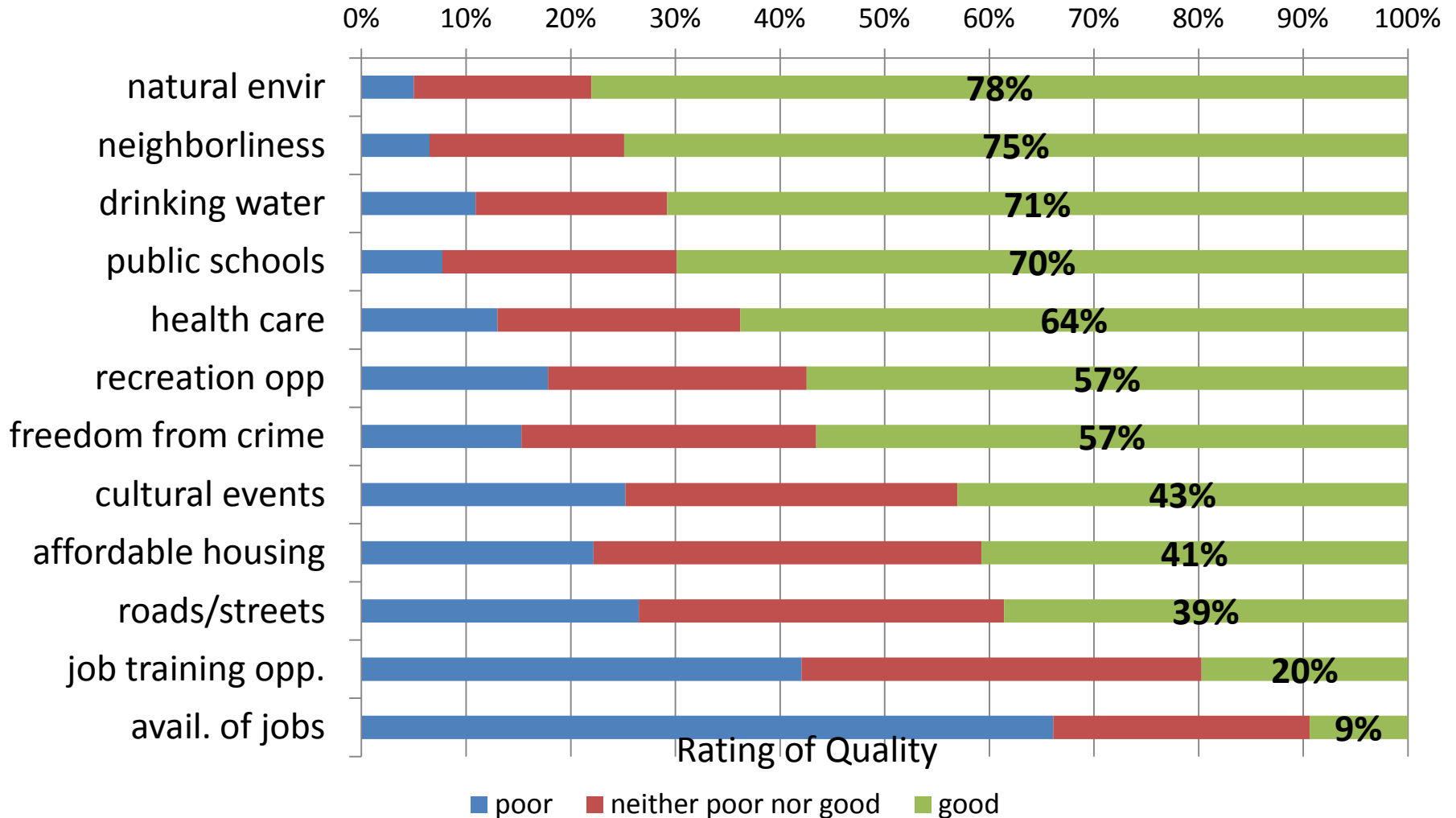
*“Our biggest influx of people...is hunting season.”*

*“... a lot of the workers ... don't feel the need to take care of this area... they don't care if they trash the place or spend all their money on booze....”*

*“... [seasonal residents] not as concerned... as the people who live here full time.... If they're up here three weeks a year ... they don't have to worry....”*

*“I've turned down many opportunities to go other places and work for bigger pay... it's such a beautiful ... place to live that I hate to see those values be degraded.”*

# Quality of Community Features



Source: Community Satisfaction and Change: A Study of Communities in the Marcellus Shale Region.

## Expectations of Changes

| Marcellus development will make... | Get better | Stay same | Get worse | Don't know |
|------------------------------------|------------|-----------|-----------|------------|
| Good jobs                          | 42%        | 34%       | 2%        | 23%        |
| Job training                       | 30%        | 43%       | 4%        | 23%        |
| Roads/streets                      | 10%        | 42%       | 31%       | 17%        |
| Affordable housing                 | 9%         | 51%       | 20%       | 20%        |
| Recreation                         | 5%         | 58%       | 16%       | 22%        |
| Neighborliness                     | 4%         | 65%       | 10%       | 21%        |
| Natural environment                | 4%         | 30%       | 48%       | 18%        |
| Drinking water                     | 3%         | 33%       | 41%       | 23%        |
| Crime/violence                     | 3%         | 52%       | 23%       | 21%        |
| Overall quality of life            | 14%        | 48%       | 19%       | 20%        |
| Overall cost of living             | 9%         | 42%       | 28%       | 21%        |

# Context Matters

- Perceptions of social effects vary by:
  - Social, cultural, economic history (esp. extractive)
  - Speed, scale, and type of development
  - Geographic location and proximity to infrastructure
  - Human and social capacity to respond to change
- Examples:
  - Most rural, with least infrastructure, w/o history of fossil fuel extraction => most visible change, most difficulty absorbing change
  - ‘Hubs’ with business infrastructure may be able to ‘keep the dollars local’
  - Areas with seasonal residents and in-migration may have conflicting perspectives

Overall attitudes: “This could be a good thing - if it’s done right”

Perceptions of risk

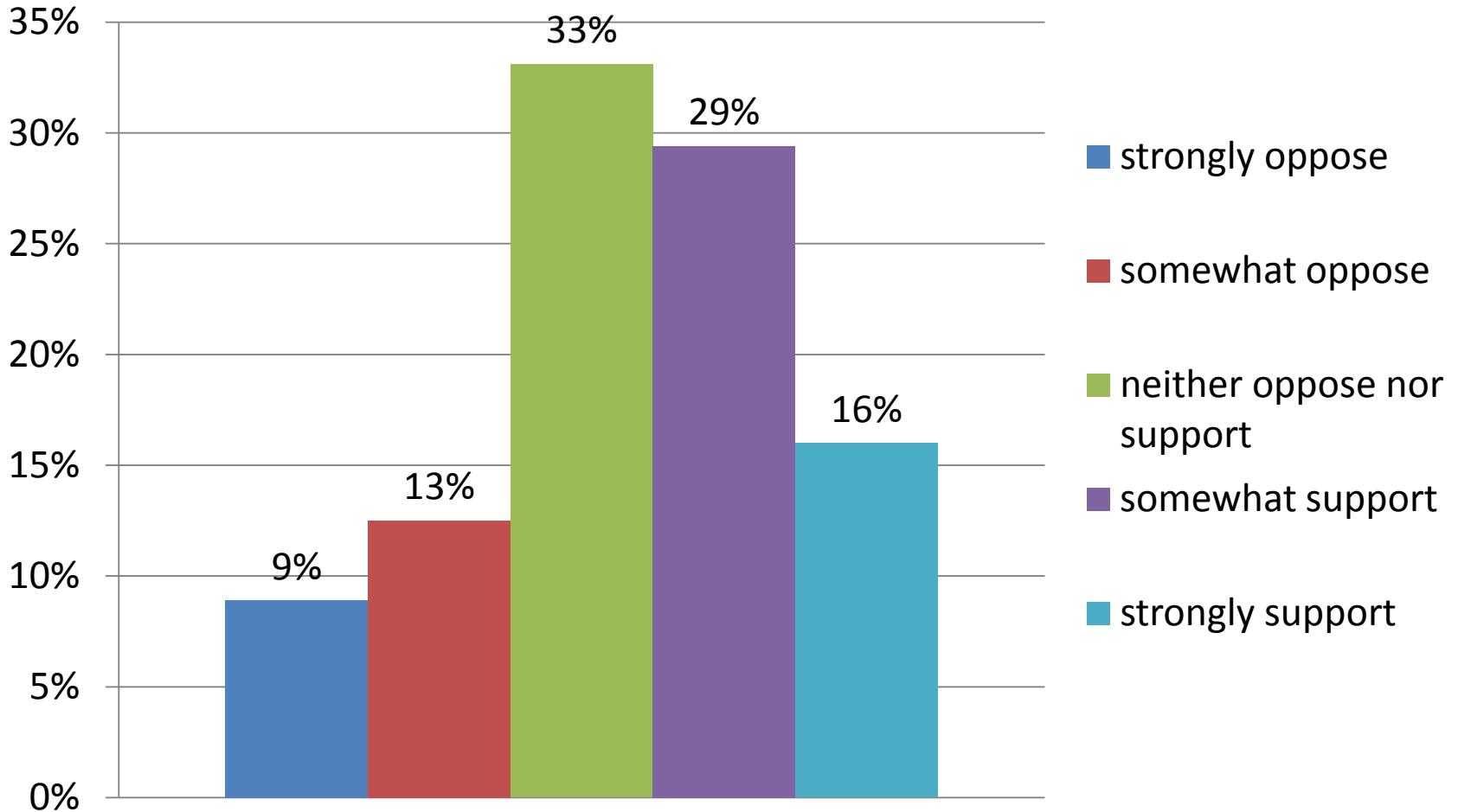
Trust in managing institutions

## RESEARCH SUMMARY

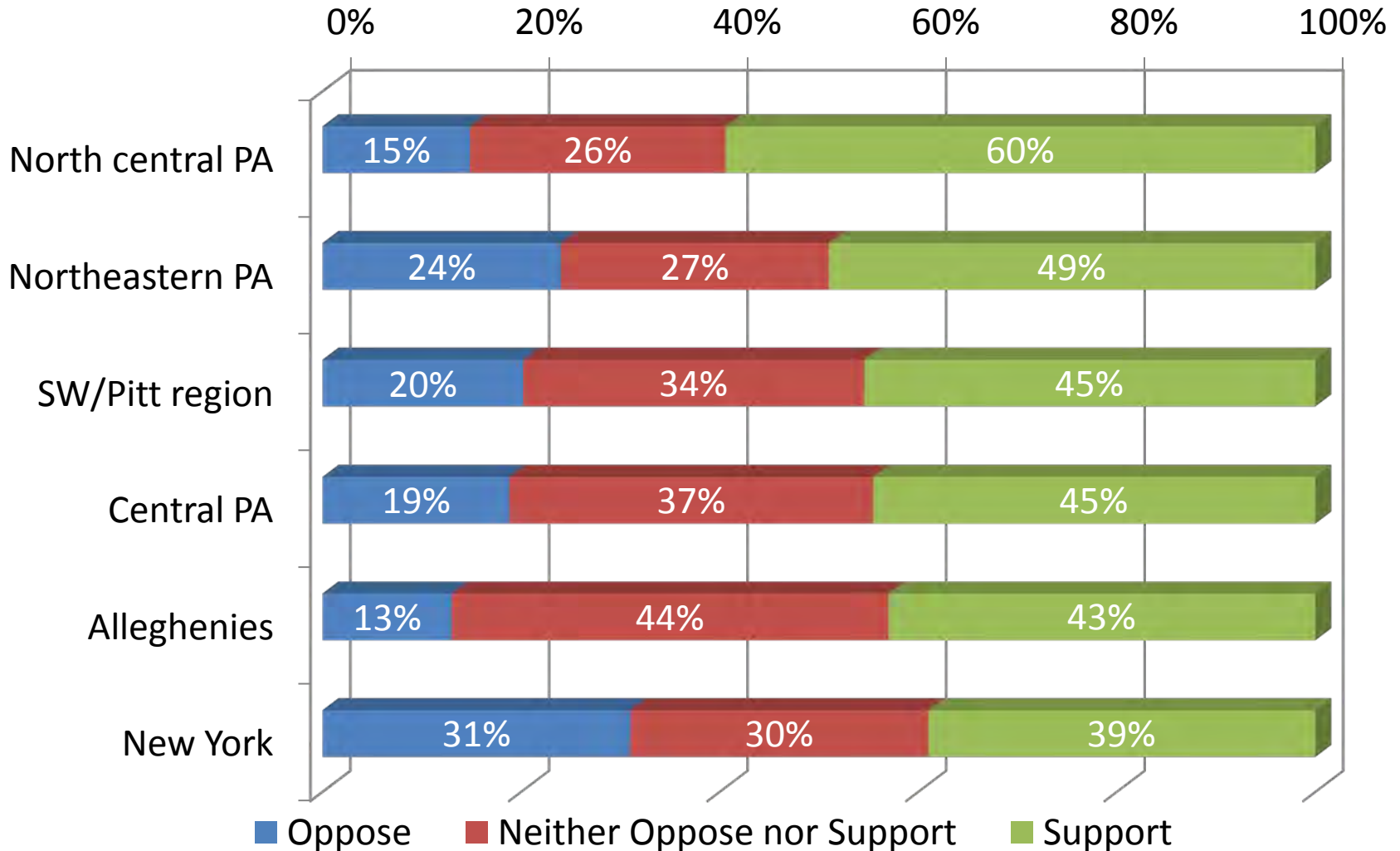




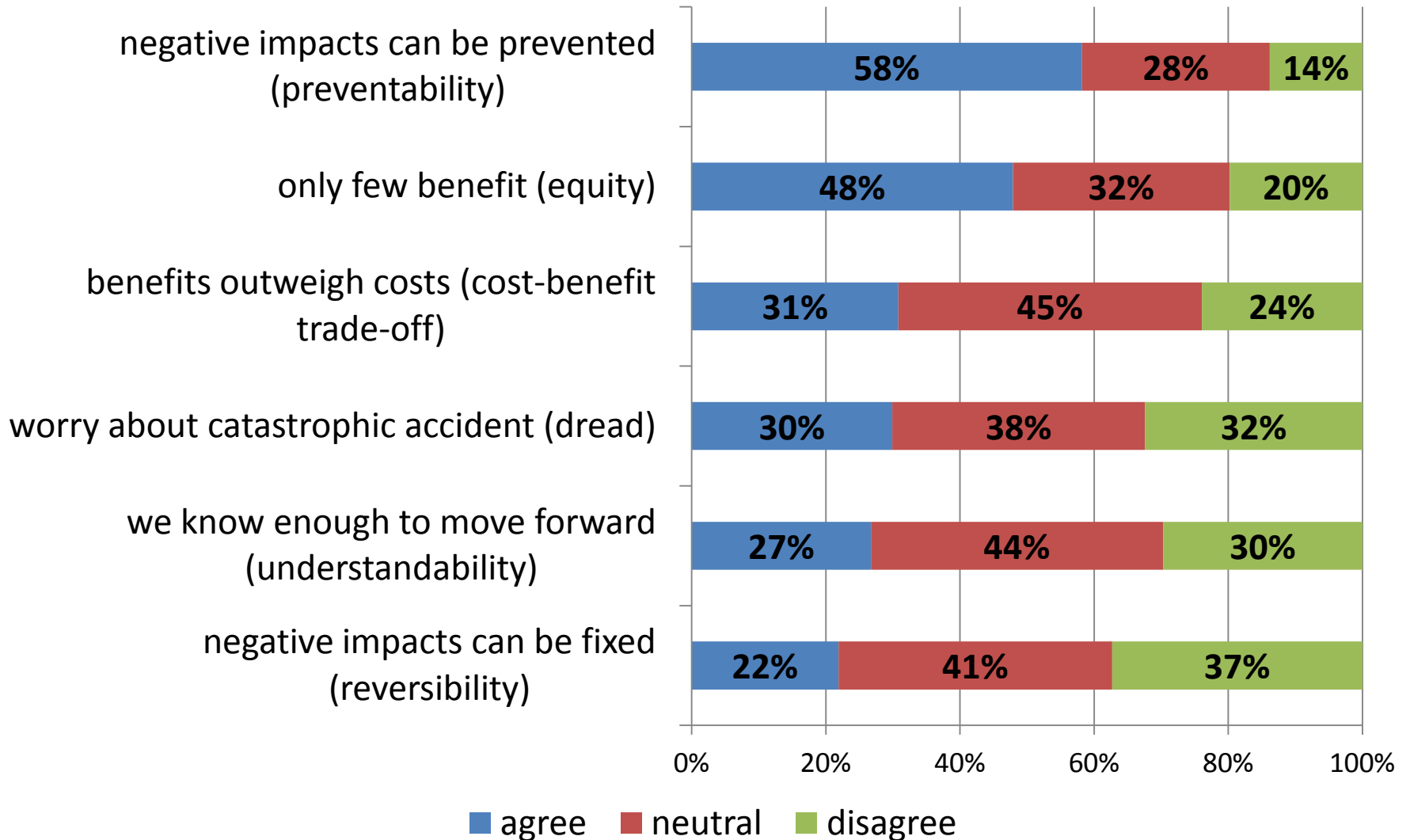
## “How do you feel about natural gas extraction from the Marcellus Shale?”



## Overall Attitude by Region



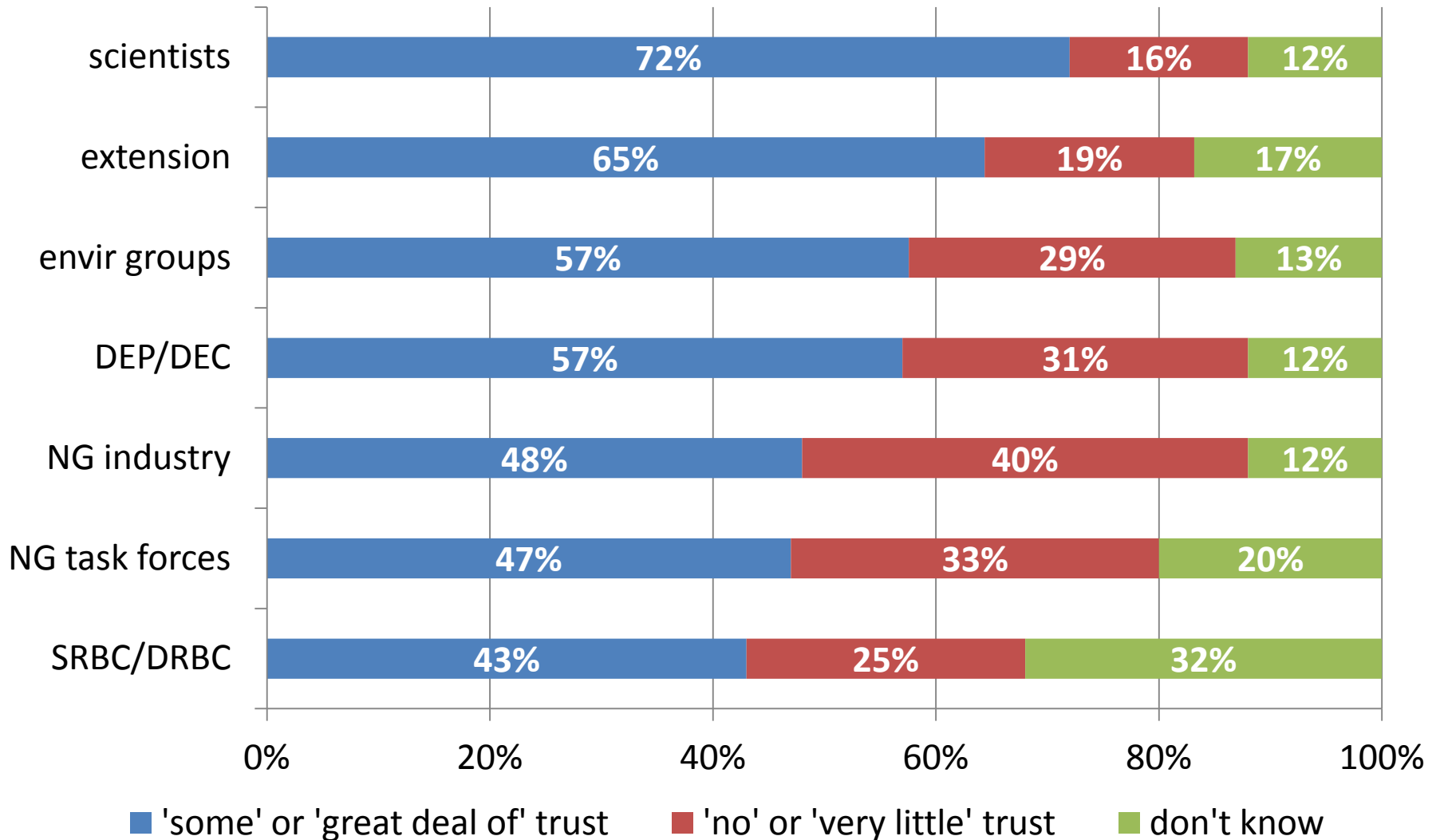
## Perceptions of Risk Related to Marcellus



# Statistical Analysis of Risk Perceptions

- Those with perceptions of greater risk....
  - Have less trust in natural gas industry and science institutions, more trust in environmental groups
  - Hold a worldview in which humans are part of ecological system (as opposed to dominant over nature)
  - Expect environment and jobs to get worse with Marcellus
  - Report less knowledge of economic and social issues and more knowledge of environmental issues
  - Are male
  - Do not own mineral rights
  - Live in New York
  - Have friends or family with drilling

## Institutional Trust



# Institutional Trust

|                           | Fiduciary Responsibility   | Competence   |
|---------------------------|--|--|
| Natural Gas Industry      | <ul style="list-style-type: none"> <li>• Perception of fairness, consistent communication</li> <li>• Direct behaviors (landmen)</li> <li>• Asymmetry of information</li> <li>• Lack of transparency</li> <li>• Perceptions of motives</li> </ul> | <ul style="list-style-type: none"> <li>• Can industry manage risks of new technology?</li> </ul>   |
| State Regulatory Agencies | <ul style="list-style-type: none"> <li>• Integrity</li> <li>• Commitment to protect people</li> </ul>  | <ul style="list-style-type: none"> <li>• Do they have capacity in time of tight budgets?</li> <li>• Do they have needed expertise?</li> <li>• Are they too reactionary?</li> </ul> |
| State Government          | <ul style="list-style-type: none"> <li>• Indecision about severance tax or how money might be allocated</li> <li>• 'Fire-sale' leasing of state land</li> <li>• 'Ulterior motives'</li> </ul>  |  |

# Summary: Attitudes toward Marcellus Shale Development

- Hydraulic fracturing is the ‘face’ or point of conflict - but not the only issue
  - What is at risk – environment, community, place
  - Risk perceived holistically, across multiple dimensions
  - Effects of trust in critical institutions (esp. industry, scientists)
- Polarization
  - Don’t forget the middle! Large group of people mixed or unsure about development
  - Polarized groups have fundamentally different orientations toward natural environment and sources of trusted information

# MARCELLUS SHALE IMPACTS STUDY: Chronicling Social and Economic Change in North Central and Southwestern Pennsylvania

2012-2013 Research Project

**Penn State Project Team:** Kathy Brasier, Lisa Davis, Matt Filteau, Leland Glenna, Tim Kelsey, Mark Leach, Diane McLaughlin, & Kai Schafft



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# Marcellus Impacts Study



- Project Goals
  - Identify and document indicators of change
  - Understand and interpret trends related to Marcellus activity
  - Describe the experiences of critical populations and institutions
  - Evaluate organizational management strategies
- Funded by the Center for Rural Pennsylvania
- Dates: February, 2012 – August, 2013

# Marcellus Impacts Study



- Case study counties: Bradford, Lycoming, Washington, and Greene
- Collect publicly available data and examine trends in relation to:
  - Other Pennsylvania counties in and out of Marcellus shale region
  - Historical trends for that county
- Collect primary data in case study counties

Opportunities and Challenges

# TAKING ACTION LOCALLY TO SHAPE IMPACTS



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# Challenge #1: Education

- Strong need to help public understand what is occurring, implications, and what is being done to regulate
  - Competing, partial information, lack of scientific certainty, misinformation
  - Strident dialogue and polarizing public debate
- Recognize both the emotional and fact components of peoples' attitudes towards gas development – both are valid and need to be acknowledged
- Within the context of fractured trust in institutions

## Challenge #2: Coordination

- Changes from Marcellus:
  - Are rapid
  - Will look different from one community to another
  - Will require unique, evolving responses
  - Involve several jurisdictions and lines of authority
- Any efforts will require...
  - Coordination and communication among jurisdictions, agencies, organizations, and private sector
  - Broad public awareness and understanding
  - Resident and taxpayer acceptance and support
  - On-going monitoring, dialogue and discussion

## Challenge #3: Thinking Long Term

- Need to focus on how to make the community better AFTER the boom
  - Frame Marcellus as a potential means to improve economy, social organization, human capital, physical infrastructure
  - Draw on public resources (social networks, collaboration, communication, leadership) to address the Long Run
  - Identify how Marcellus fits into past, present, and future of the community
- Allocating impact fees from Act 13

## Challenge #4: Public Choices

- Need to make public decisions about:
  - Local resource allocation across services
  - Leasing of public land
  - Local investment opportunities
  - Revenue generation
  - Land use and development
    - Building for current (worker housing, industrial sites) and future needs
    - Infrastructure (roads/bridges, railways, etc.)
    - Environmental protection, valued areas

# Community Action Examples

- Formation of new groups
  - Monitoring (WaterDogs), watershed groups
  - Opposition groups (Damascus group, Responsible Drilling Alliance)
  - Landowner coalitions
  - Natural Gas task forces
- Public dialogue efforts
  - Charting the Future of Our Community (Tioga County)
  - Centre County Public Issues Forum



# Natural Gas Task Forces

- Mission: Maximize opportunities; mitigate negative impacts
- Objectives and activities
  - Advise County Commissioners
  - Coordinate, communicate
  - Educate task force members, public and industry
  - Manage discussion and dialogue
  - Provide valid, reliable information
  - Build on economic potential
  - Share model ordinances, best practices, recommendations

# ACKNOWLEDGEMENTS

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