

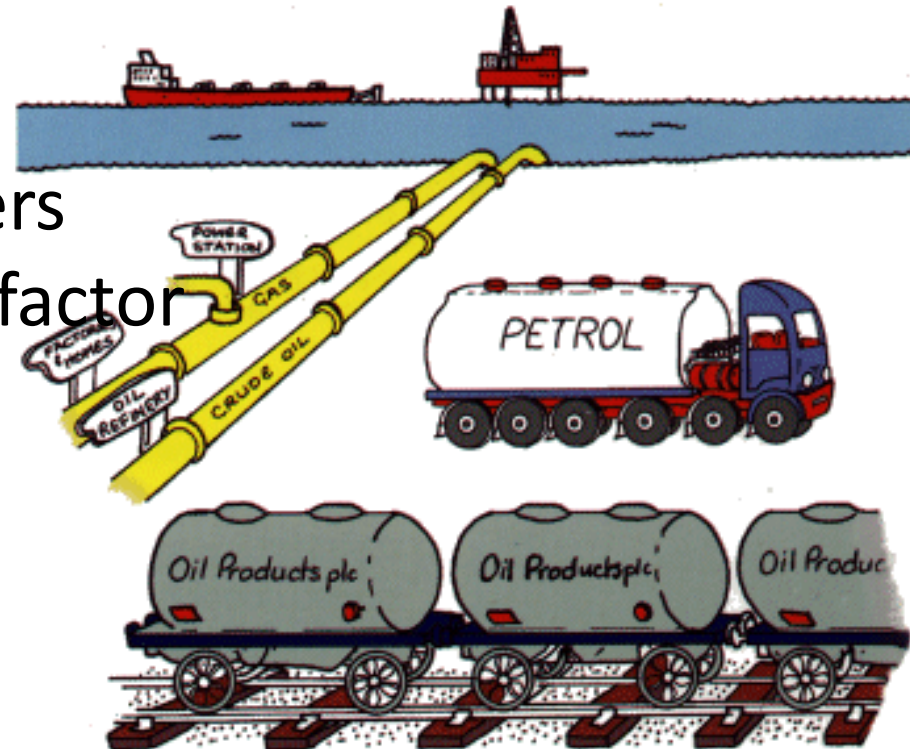
Oil Transportation Risks and Emergency Response Problems

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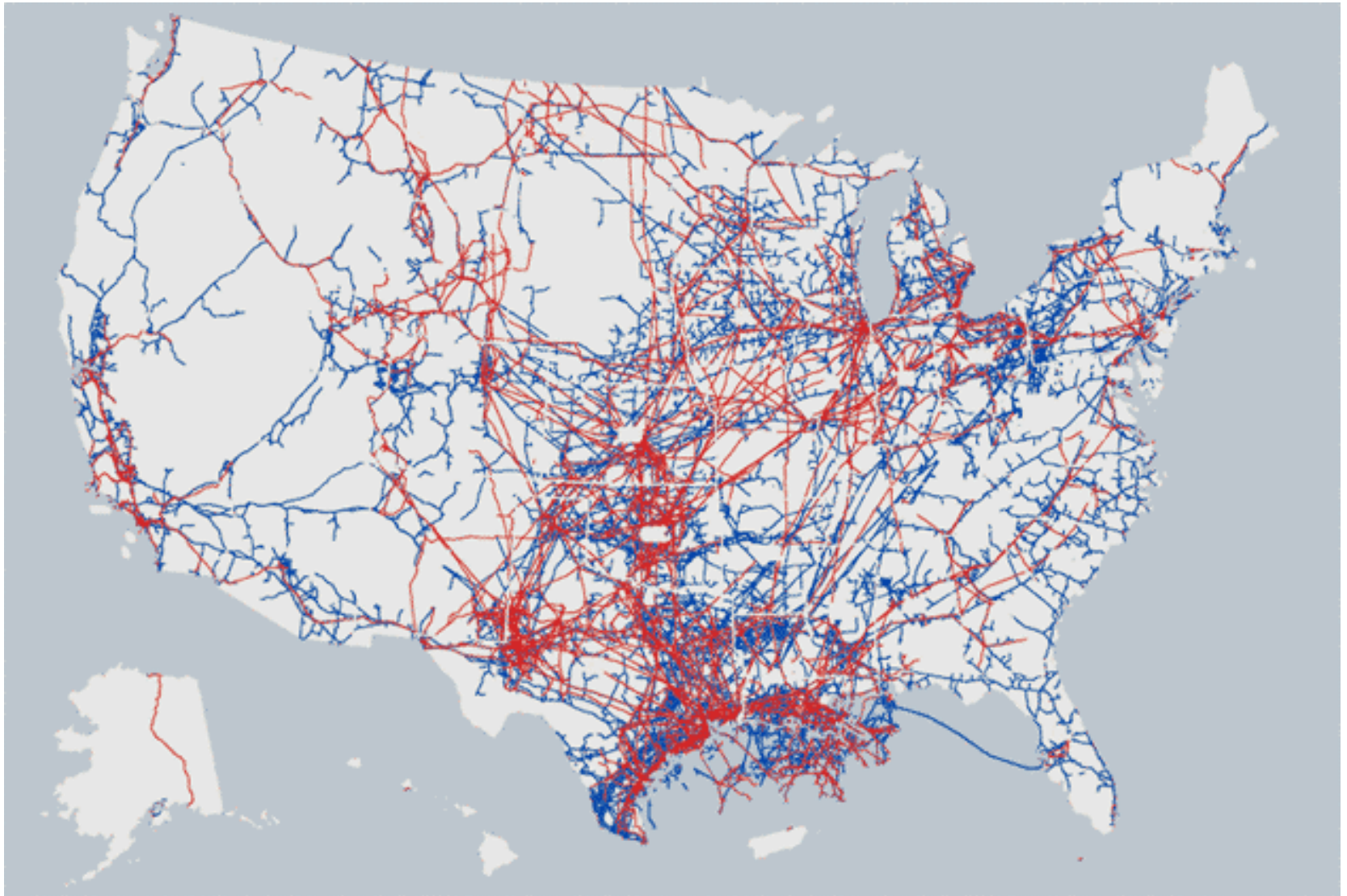
GREAT LAKES AND ST. LAWRENCE CITIES INITIATIVE,
2014 ANNUAL MEETING AND CONFERENCE, Thunder Bay, Ontario, June 18-20, 2014

Oil Transportation: The Risk Problems




- Accumulation of risk in time and space
- Risk sources (hazards)
- Risk consequences
- Dynamic risk agent
- Risk owners vs risk bearers
- Risk and climate change factor
- Risk assessments
- Risk and regulation
- Risk acceptability






Accumulation of Risk in Time & Space



Risk sources (hazard)

Transportation Mode	Average Product release per year (gallons)	Release per incident (gallons)	Release per billion ton-miles (gallon)
 Roads	477,558	687	13,707
 Rails	83,745	1,688	3,504
 Pipelines	6,592,366	19,412	11,286

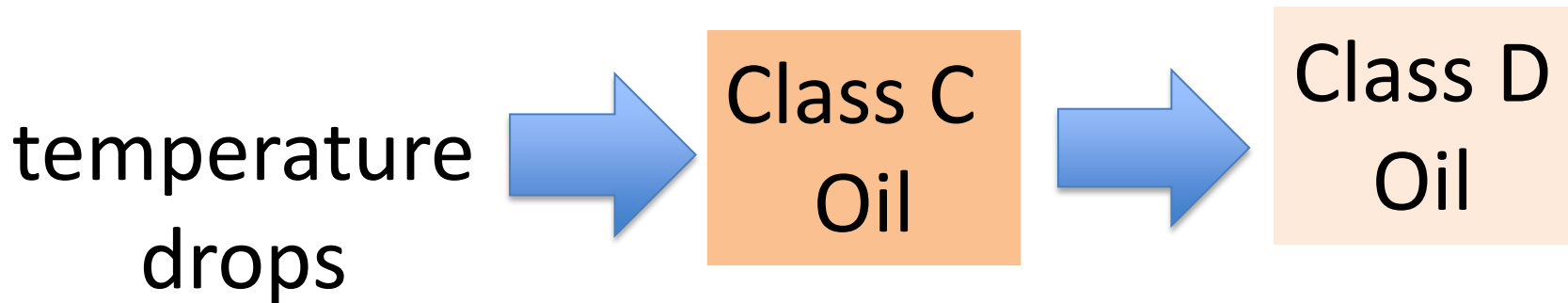
Risk sources (consequences)

Transportation Mode	Average fatality per year (gallons)	Release per incident (gallons)	Release per billion ton-miles (gallon)
 Roads	10.2	687	13,707
 Rails	2.4	1,688	3,504
 Pipelines	2.4	19,412	11,286

Dynamic risk agents

- Water temperature
- Weather conditions

Class A (Light, Volatile)
Class B Oils are less toxic
Class C (Heavy, Sticky)
Class D (Nonfluid)



Weather a concern as oil spill cleanup efforts continue

Wednesday's forecast calls for rain, choppy waters

Author: Amanda Perez, Reporter, aperez@click2houston.com

Jill Courtney, Sr. Web Editor, Click2Houston.com

Ryan Korsgard, Reporter, rkorsgard@click2houston.com

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Risk and Climate Change!!

Climatic Change (2013) 121:41–53
DOI 10.1007/s10584-013-0891-4

Vulnerability of the oil and gas sector to climate change and extreme weather events

Ana Maria Cruz • Elisabeth Krausmann

“Overall, we conclude that climate change and extreme weather events represent a real physical threat to the oil and gas sector, which **needs to take climate change seriously, assess its own vulnerability**, and take appropriate measures to prevent or mitigate any potentially negative effects.

Risk Assessments!?

The conclusion of this report is that:

1. “Enbridge’s oil spill risk assessment contains **methodological deficiencies** and does not therefore provide an accurate assessment of the degree of risk associated with the ENGP”.
2. The risk assessment in this report also concludes that the **ENGP has a very high likelihood of a spill** that may have significant adverse environmental effects.

A Spill Risk Assessment of the Enbridge Northern Gateway Project

Dr. Thomas Gunton
Sean Broadbent

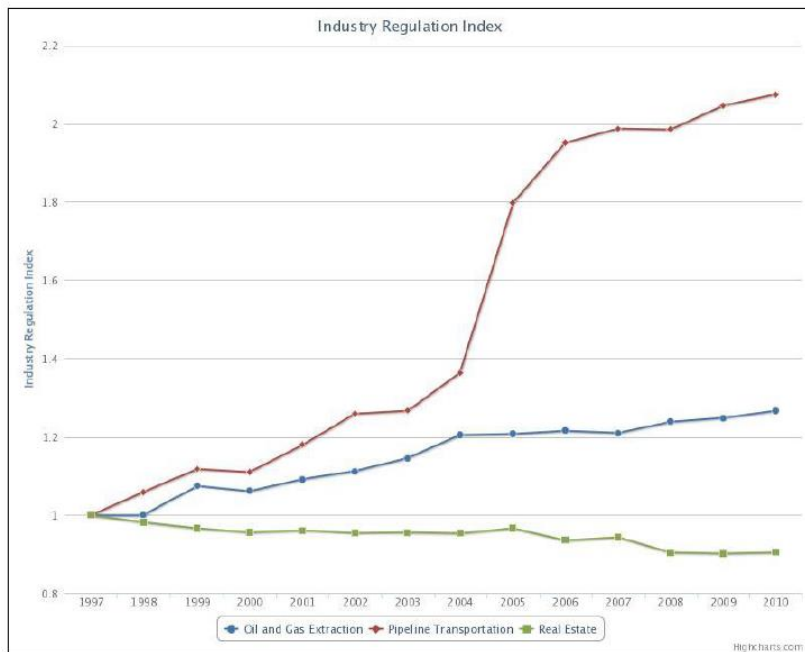
School of Resource and Environmental Management
Simon Fraser University

April 2013



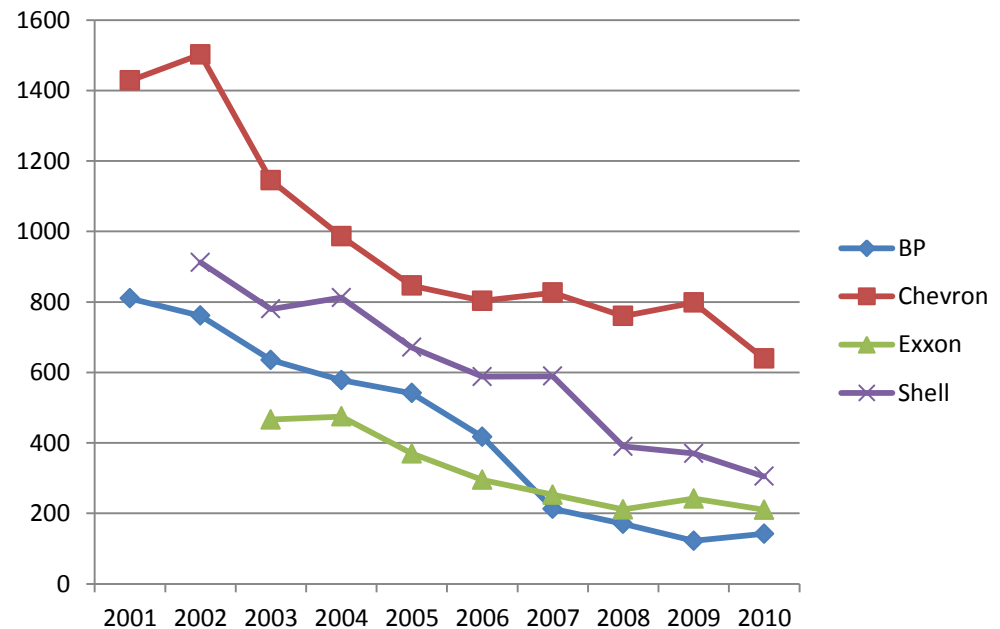
Risk and Regulation!?

Industry Regulation Index



Shapiro et al., 2013

Number of self-reported oil spills by selected companies, 2001-2010



Jedrzej, 2012

False sense of compliance

Risk acceptability

Who are the stakeholders?

What is the acceptable level of Risk?

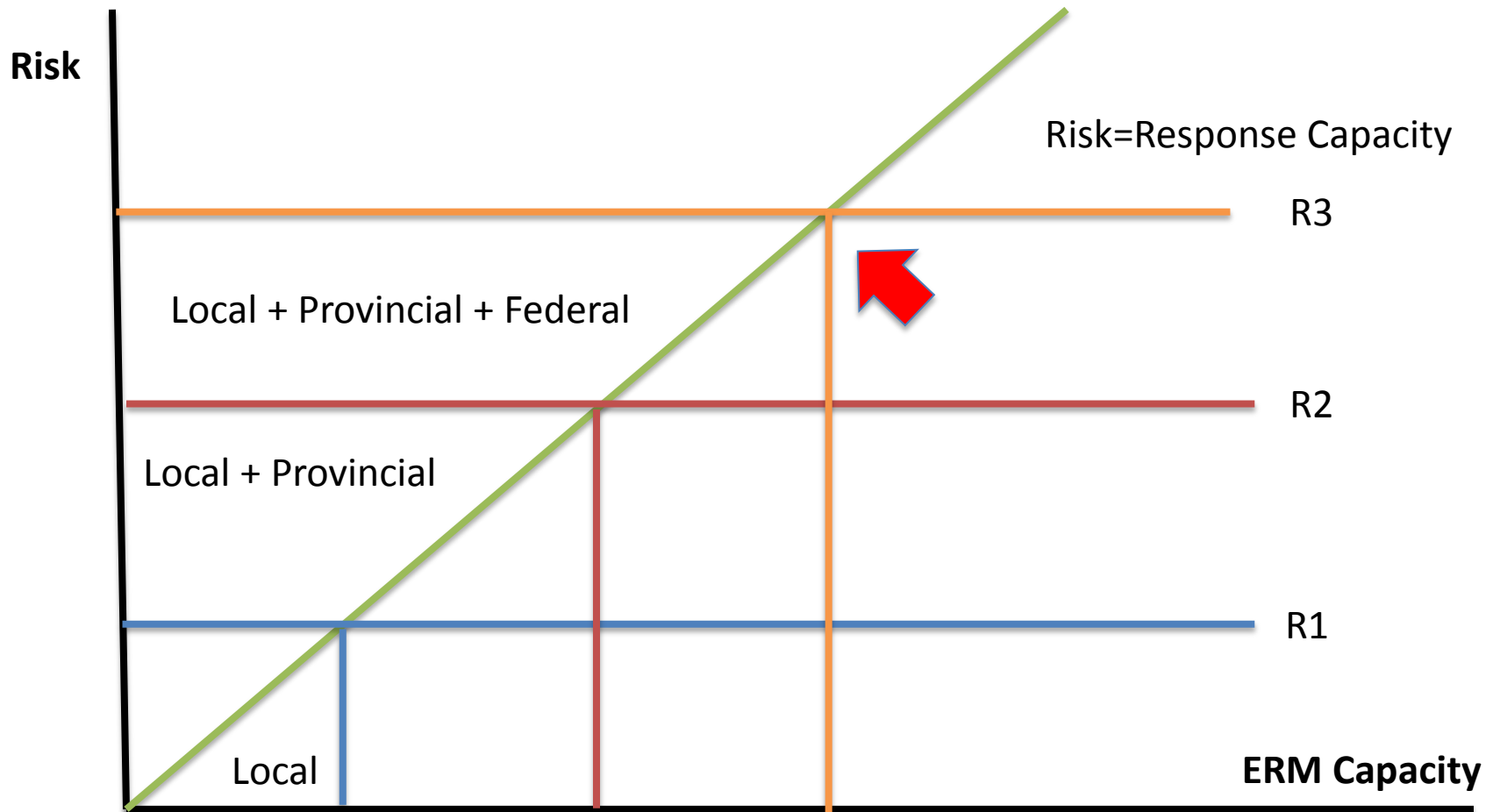


Oil Spills: The Response Problems

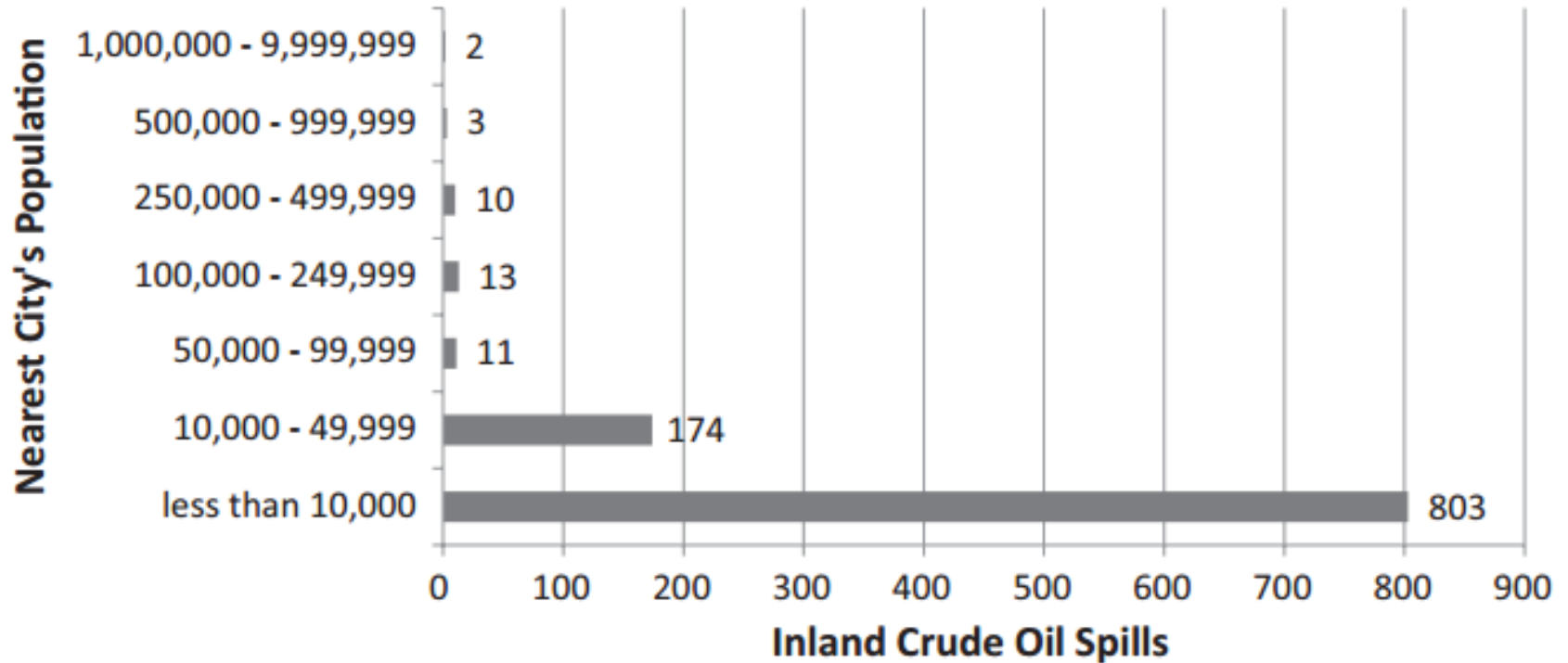
- Large risks versus limited capacities
- Small communities facing large risks
- Response Time
- Location of response equipment and teams
- Corporate Response plans
- Confusion in disaster response
- Coordination

Large risks versus limited capacities

“Internal government audits of the Canadian Coast Guard’s capacity to monitor and respond to a marine oil spill found a system that was **outdated**, **disorganized** and in need of **an overhaul**. 2012

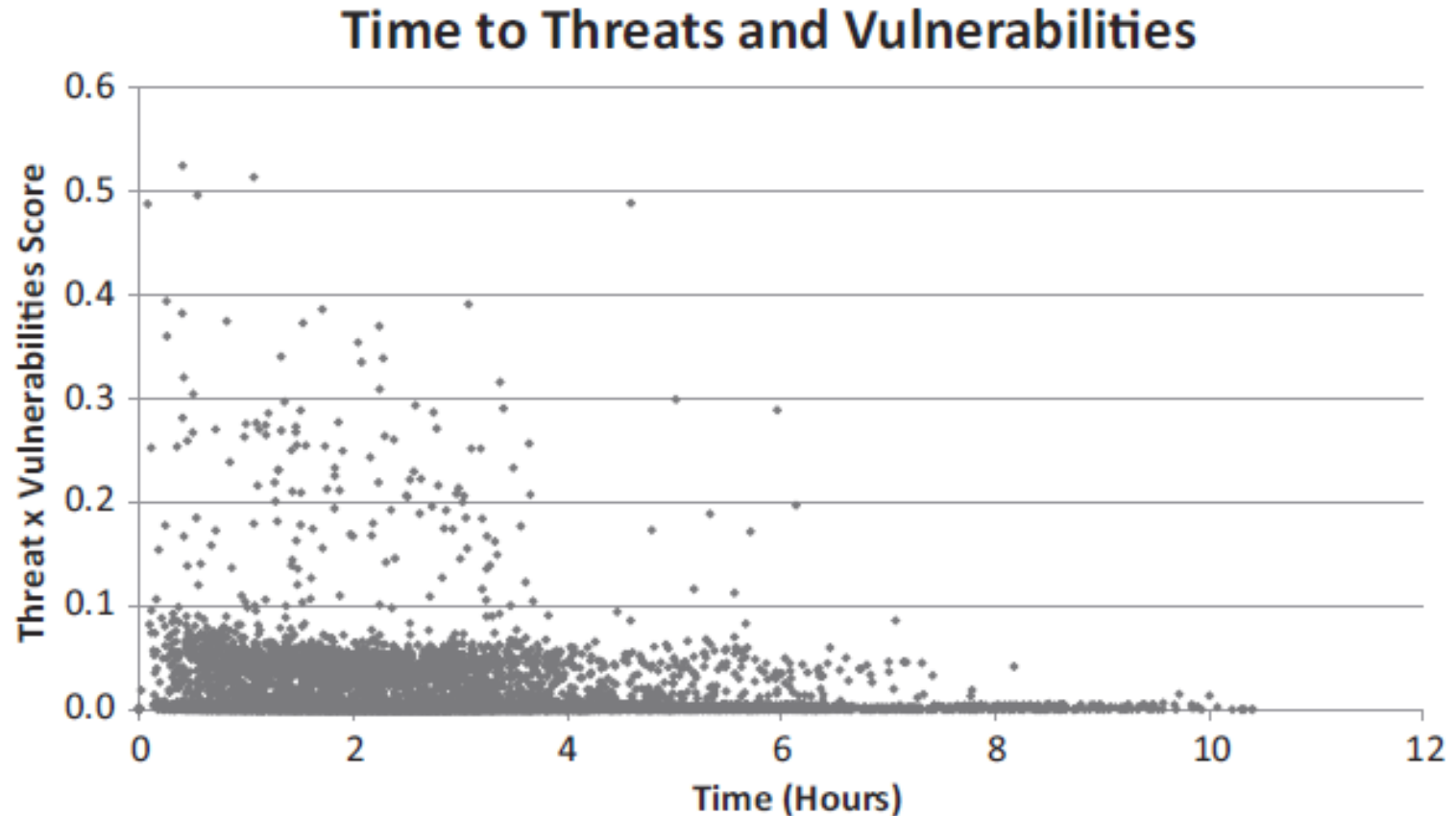


Big risks small communities



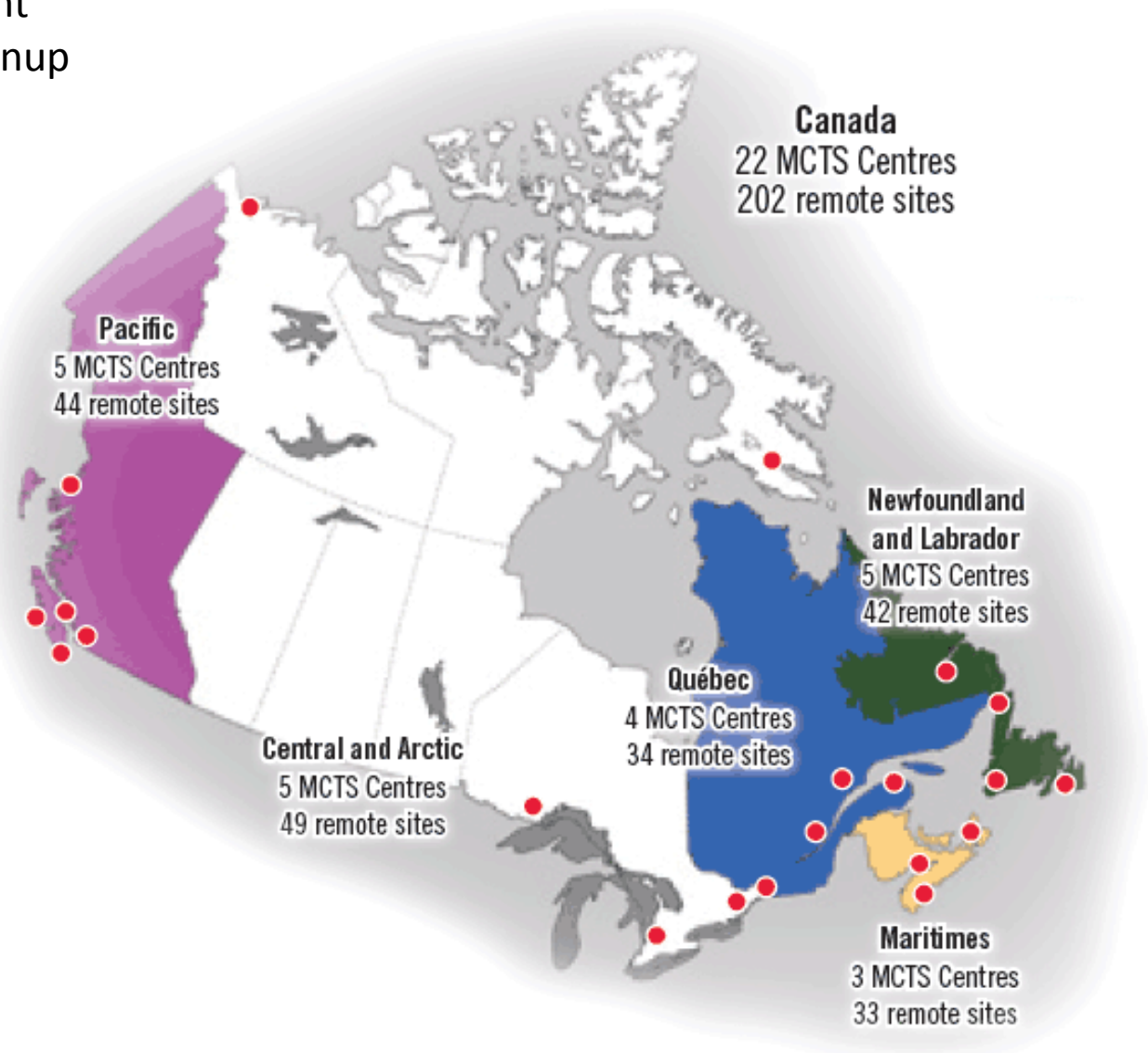
Response Time

Still many highly vulnerable areas out of reach in timely manner (US regions)



Location of response equipment and teams CCG

the most important
factor oil spill cleanup
costs is location



complex factor
involving
geographical,
political, and legal
considerations

Location of response equipment and teams-ENBRIDGE



Corporate spill response plans?!

- Errors in response plans
- Boilerplate
 - BP response plan in the gulf area: “walruses, sea otters, sea lions, and seals”—none of which live in the Gulf—as “sensitive biological resources,” (Mohr, Pritchard, and Lush 2010).
- Too optimistic
 - BP plan “predicting” that no oil would come ashore
- Unsound spill-volume measurement techniques
- Underestimated impacts
 - This plan was unchallenged by the MMS.

Confusion in disaster response

- Too many regulations
- Too many stakeholders
- Which laws and regulation is applied?
 - The states seemed to be confused by the two regulatory regimes. In Louisiana, “Governor Bobby Jindal’s advisors reportedly spent days determining whether the Stafford Act or the NCP applied” (National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling 2010, 19).

Coordination system

- Who should be consulted?
 - First, Governor Jindal and others complained that the federal government insufficiently coordinated with and consulted state governments.
- Federal government's “bureaucracy” on state/provincial and local self-help efforts
- Boom wars (a visible evidence of action)
- Who is in charge?
- Declare state of emergency or not?



(National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling 2010, 20).

**Thank you for your
attention**

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