

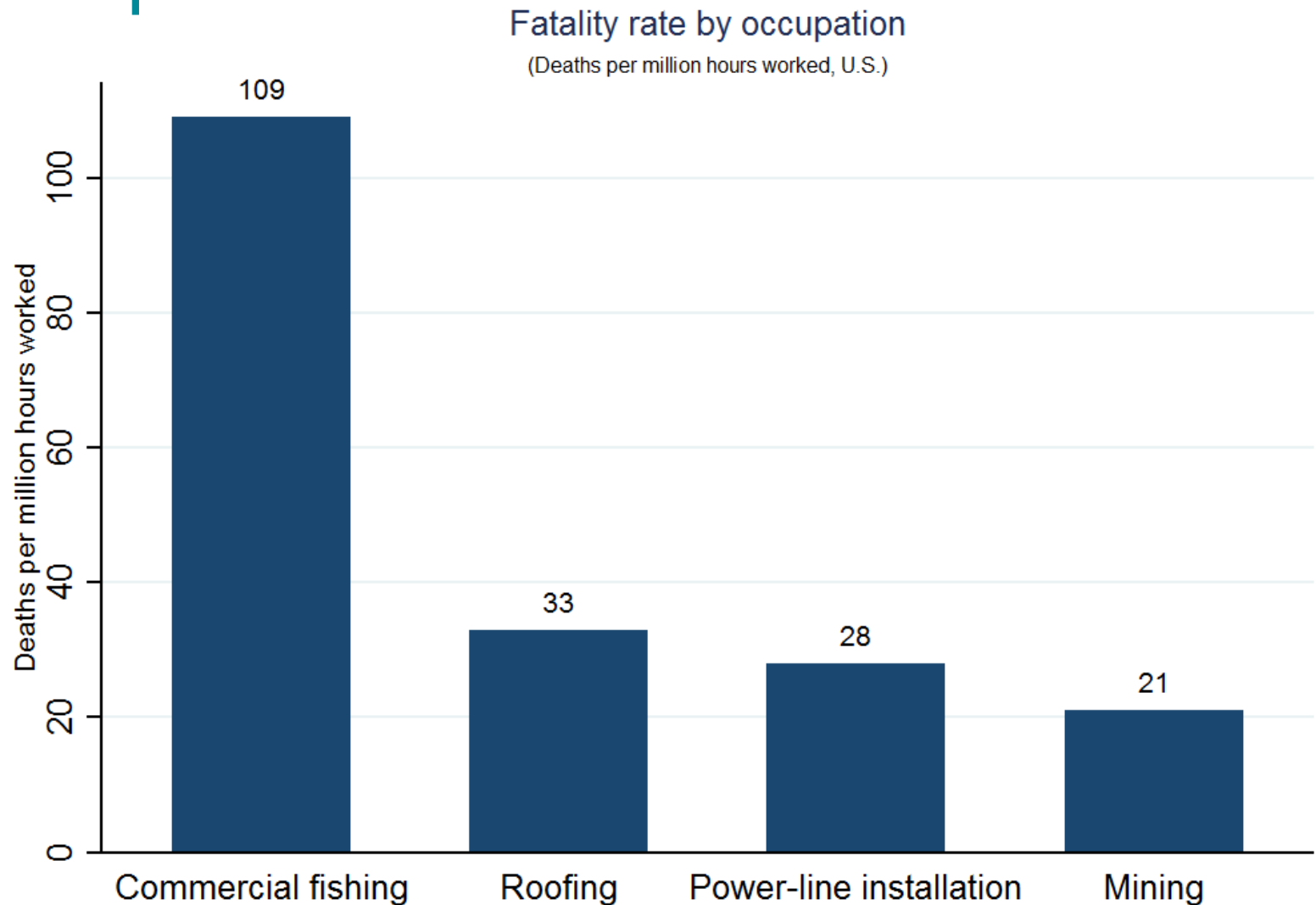


NOAA
FISHERIES

Measuring and managing risk-taking and safety in commercial fishing

IIFET 2016 Special Session
Aberdeen, Scotland

Commercial fishing is one of the most dangerous occupations



SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 2007

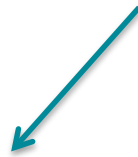
How can safety be measured?

- Incident, injury, fatality *rates*
 - Must be matched to fishery
 - The denominator (crew hours at sea, ideally) is hard to calculate
- Indicators of risk exposure
 - Likely particular to fisheries
 - Days fished in bad weather, number of pots, expenses on safety equipment

Lambert et al. 2015. *"Guidance on Fishing Vessel Risk Assessments and Accounting for Safety at Sea in Fishery Management Design"* NOAA Tech Memo.

How can safety be managed?

“Safety” policy



Reduce the
probability of death or
injury in the event of
an accident



Reduce the
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**Worker health & safety,
Coast Guard organizations**

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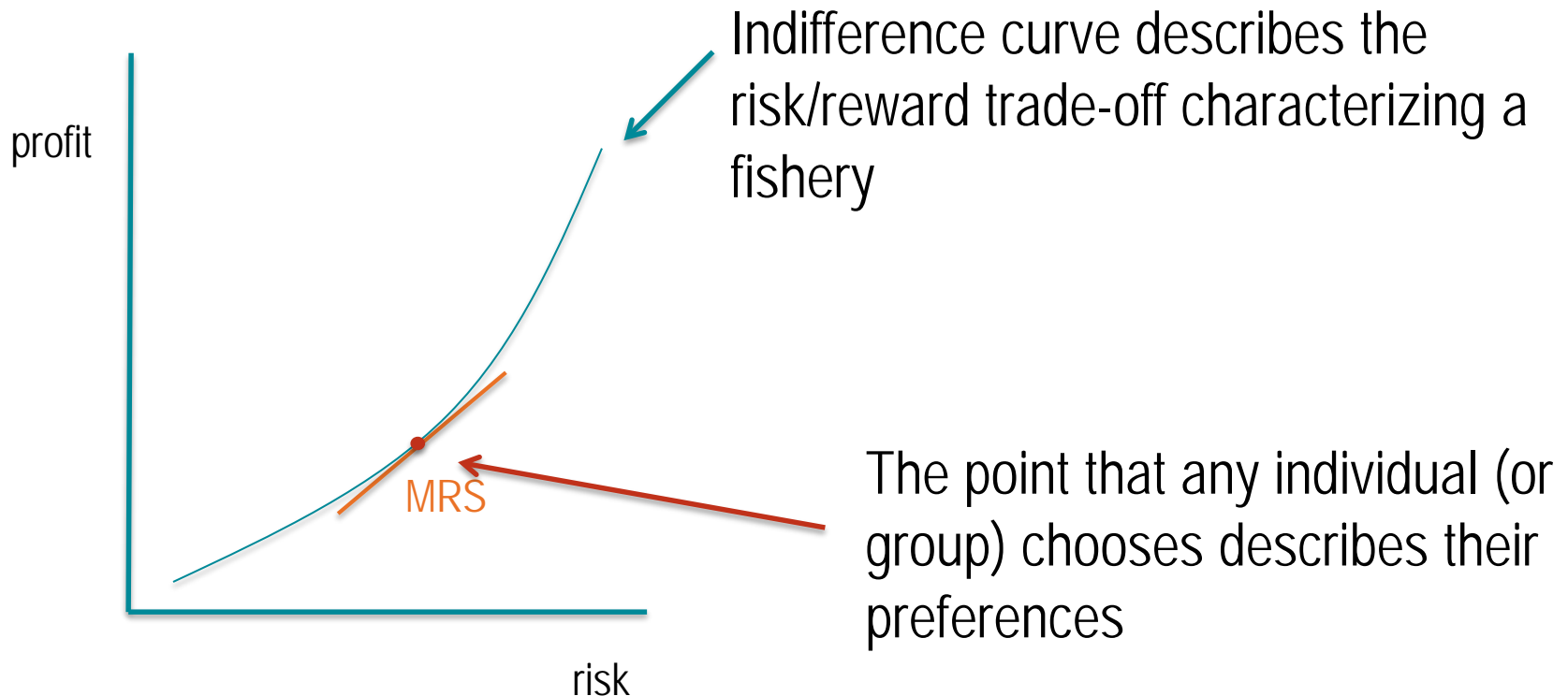
**Worker health & safety,
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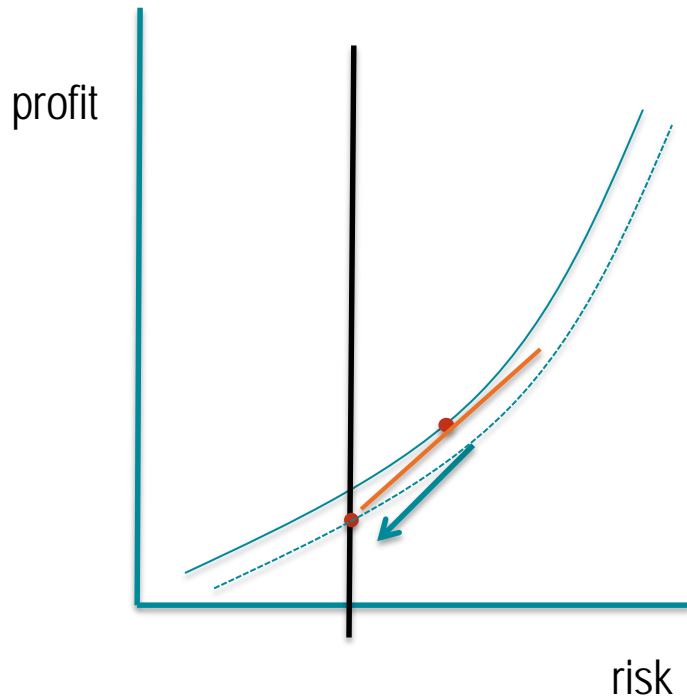
**Worker health & safety,
Coast Guard, Fisheries
Management organizations**

Risk/reward trade-off



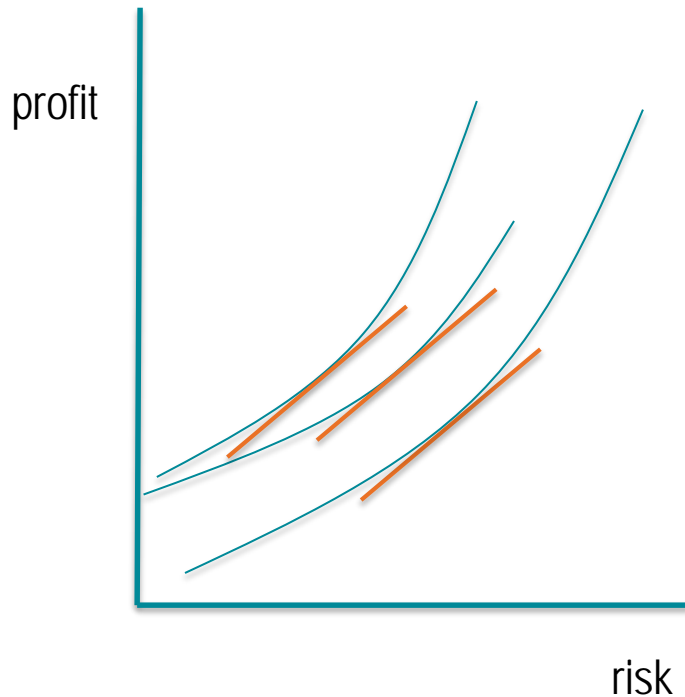
MRS describes the additional profit that would be needed to take on an additional unit of risk

Risk/reward trade-off



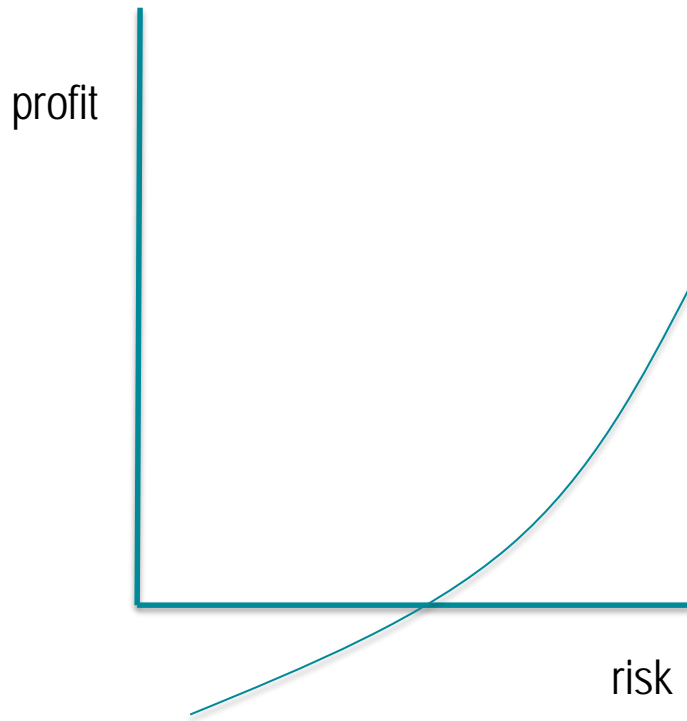
Policy can be used to limit choices to decrease risk

Risk/reward trade-off



Policy can also be used to change the shape of the indifference curve

Risk/reward trade-off



Example: Derby fishery

Risk/reward trade-off



Proposition: Catch
shares fishery

This special session:

- Jennifer Lincoln, National Institute of Occupational Safety and Health
- Akbar Marvasti, NOAA Southeast Fisheries Science Center
- Lisa Pfeiffer, NOAA Northwest Fisheries Science Center
- Florian Diekert, University of Oslo
- Epidemiology of commercial fishing fatalities
- Empirical evaluation of management on the risk/reward trade-offs
- Investigation of policy and management design