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“Efforts in Occupational Health and Safety”

Targeting Hazardous Employers

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Overview

- **Who Targets, How and Why?**
 - **Loss Control Regulation**
 - **OSHA High-Hazard Effort**
 - **Individual Firms**
- **CHSWC--IAIABC Project**
- **Evaluation of Targeting Methods**

Why Do We Target?

--Limited Resources

Loss Control—Extending government's reach through regulation of insurer

Open rating and insurer investment in loss control—What happened?

OSHA—Focus on most hazardous employers

2400 inspectors, 7 million employers, 100 million workers

Firms—Which operations have preventable safety problems?

Evaluating Loss Control Regulation

- Commission is evaluating effectiveness of regulating loss control
- If Regulation is effective, then to what degree do you regulate? (e.g. dictate targeting methods?)
- And, if you dictate targeting methods, which are the most effective?

OSHA High-Hazard Program

High-Hazard Targeting Approach

- Identify the highest hazard industries (BLS Survey)
- Identify the most hazardous employers within those industries (Establishment Survey)

Conduct inspection

High Hazard Assessment

- Employers with Ex-Mod > 1.25

Evaluation of Program Effect High Hazard and Loss Control

Difference-in-Difference Comparison

LCCU/Insurer Targeted Employers

A: Adjusted average indicator
before intervention

B: Adjusted average indicator
after intervention

A - B = C: Change in adjusted
average indicator

C - Z: Difference in difference between targeted employers and 'next worst'

Insurer's 'Next Worst' Employers

X: Adjusted avg. indicator
before intervention

Y: Adjusted avg. indicator
after intervention

X - Y = Z: Change in adjusted
average indicator

Evaluation of Targeting Methods High Hazard and Loss Control

Target Methodology Evaluation

----- Time ----- 

Target Data Period

Intervening Period

Intervention Period

Evaluation of Targeting Methods

High Hazard and Loss Control

Targeting -- Some Methods

- **OSHA**
 - **Maine 200 (number of claims)**
 - **High-Hazard Industry/High-Hazard Employer**
 - **LWDII incidence at establishment level**
- **Insurers**
 - **Ex-mod**
 - **Number of claims**
 - **Loss ratio**

Evaluation--Data

750 employers

- Same industry (Single construction trade)
- Similar workforce (Unionized)

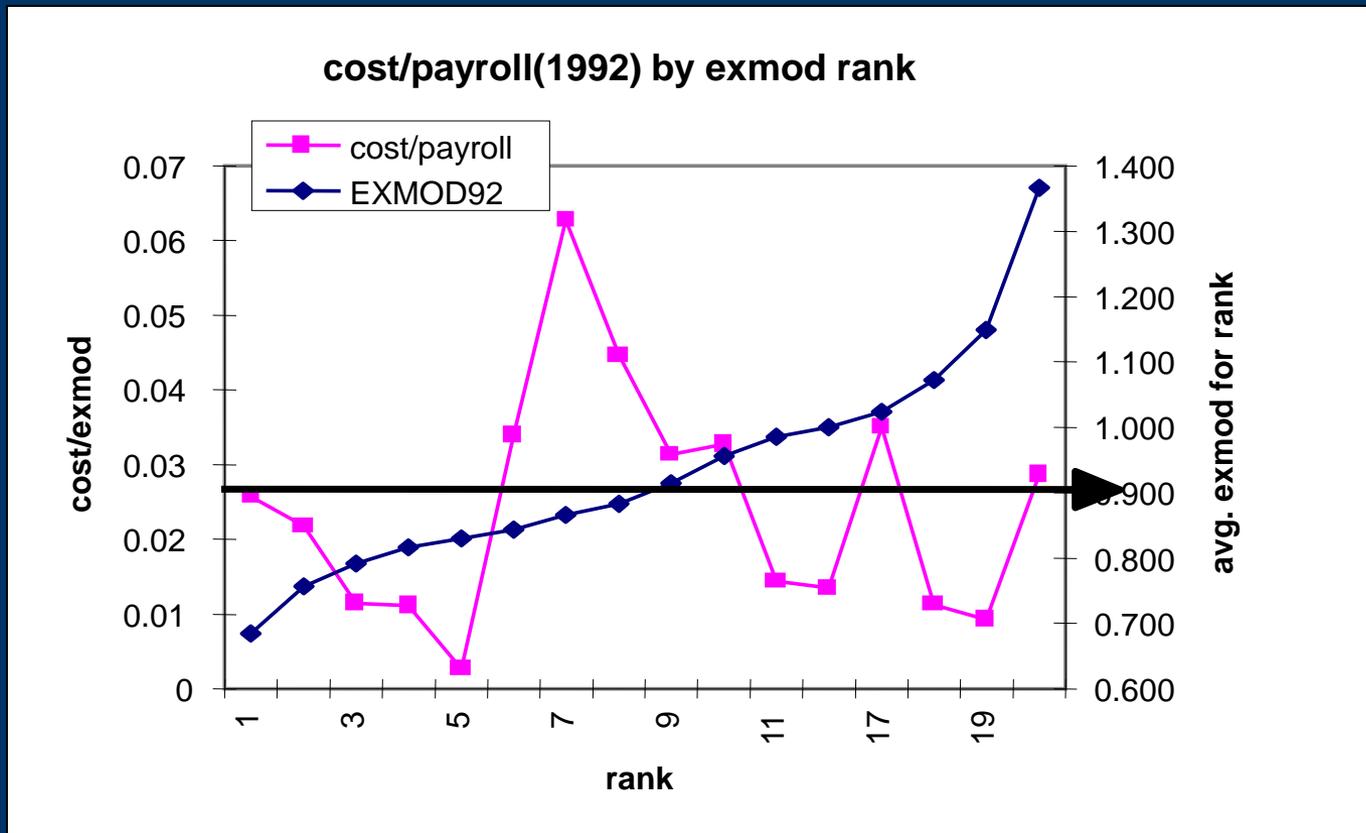
6 years

Insurer data at second report level

- Exposure by class
- Claims by type
- Indemnity and Medical costs

Evaluation of Targeting Methods High Hazard and Loss Control

Ex Mod as a Predictor of Future Experience:



Evaluation of Targeting Methods High Hazard and Loss Control

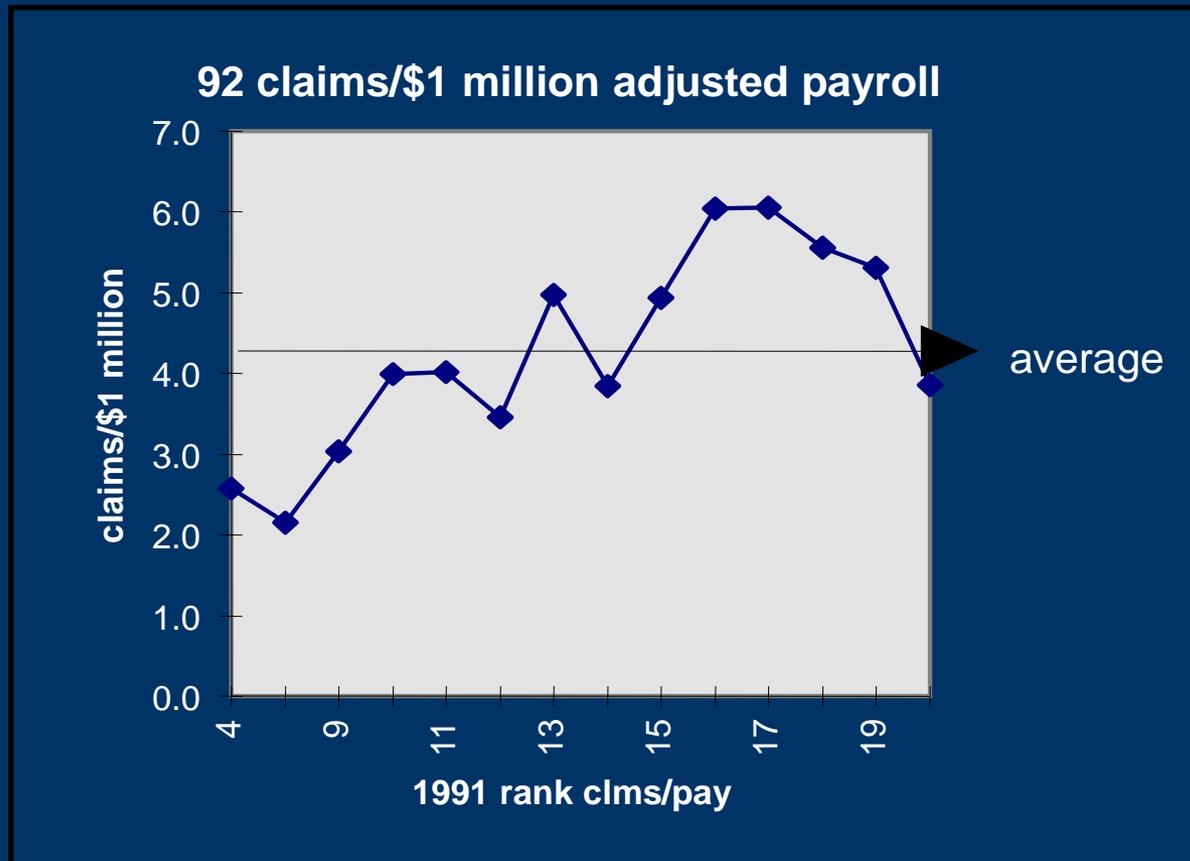
Targeting Method -- Claim Incidence

- **Most important component of Ex-mod.**
- **Considered best predictor within Ex-mod structure.**

Evaluation of Targeting Methods

High Hazard and Loss Control

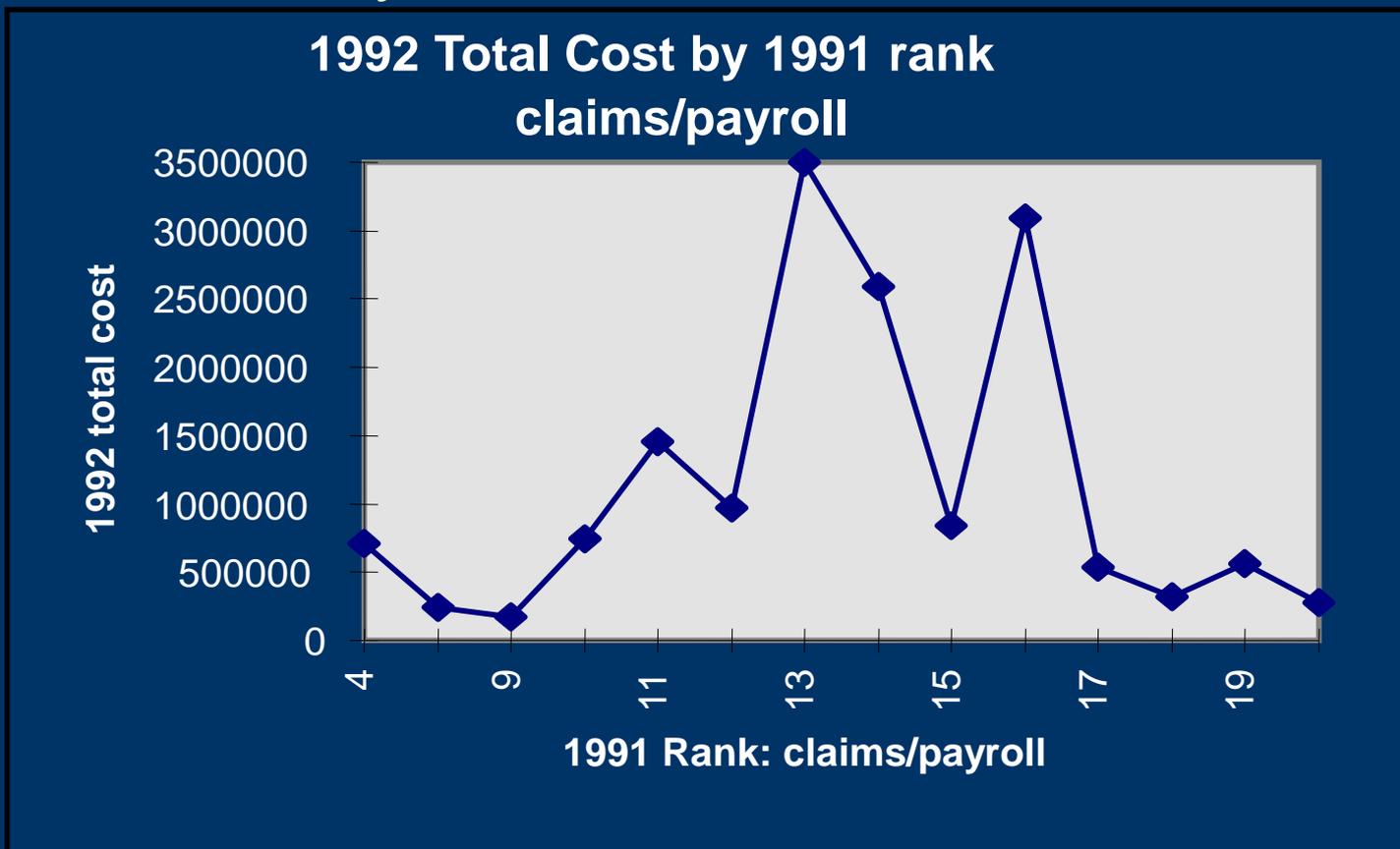
Claim Incidence as Predictor of Future Experience:



Evaluation of Targeting Methods

High Hazard and Loss Control

Distribution of Employer Size by
Safety Measures -- Variance



Claim Frequency--Poisson Distribution

Create annual averages of claim/units of exposure

Adjust for occupation/industry mix

=> Adjusted expectation of each employer

- mean and variance

Number of claims is incidence measure

=> Calculate $P(\geq \text{to number claims})$

Identifying Hazardous Employers--Frequency

Claims/Exposure -- Predicting -- Claims/Exposure		
Years	90th percentile-- 90th percentile	Odds v Random
t1 => t2	24.0%	2.6
t1 => t3	33.6%	3.2
t1=> t4	31.8%	2.9

Disability Claims/Exp. -- Predicting -- Disability Claims/Exp.		
Years	90th percentile-- 90th percentile	Odds v Random
t1 => t2	14.6%	1.7
t1 => t3	26.2%	3.3
t1=> t4	18.9%	2.2

Severity--Adjusting Variance

Loss/payroll leads to over representation of small employers, under for large

Experimenting with estimating variances for range of employers

Identify as hazardous, anyone $x * SD$ above mean for group

Identifying Hazardous Employers--Severity

Cost/Exposure -- Predicting -- Cost/Exposure		
Years	90th percentile-- 90th percentile	Odds v Random
t1 => t2	19.0%	2.6
t1 => t3	22.8%	3.1
t1=> t4	13.8%	1.7

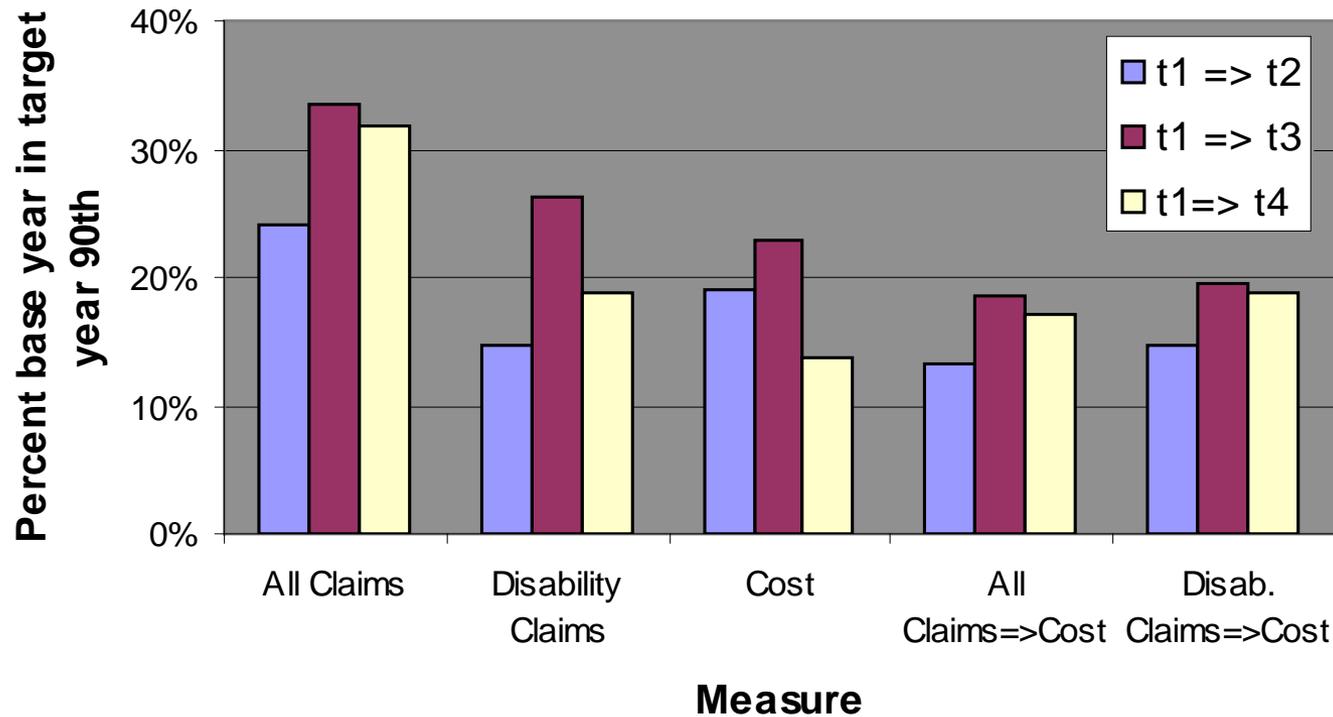
Identifying Hazardous Employers--Do Claims Predict Severity?

All Claims/Exposure -- Predicting -- Cost/Exposure		
Years	90th percentile-- 90th percentile	Odds v Random
t1 => t2	13.3%	1.6
t1 => t3	18.5%	2.2
t1=> t4	17.1%	2

Disability Claims/Exposure -- Predicting -- Cost/Exposure		
Years	90th percentile-- 90th percentile	Odds v Random
t1 => t2	14.6%	1.7
t1 => t3	19.4%	2.3
t1=> t4	18.9%	2.3

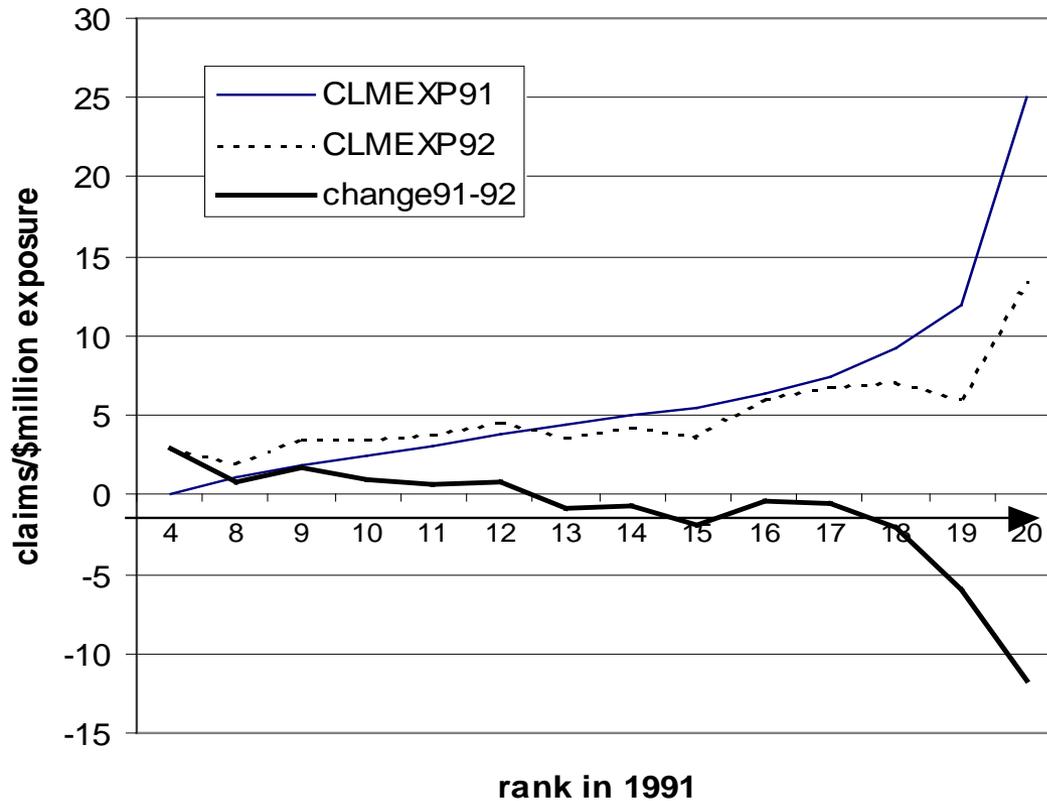
Identifying Hazardous Employers

Comparison of 90th=>90th



Warning on Evaluation

Performance of each rank (by claims/exposure)
relative to 1992



Summary

- ❑ Better techniques allow more successful targeting
- ❑ Claim incidence may have most potential
- ❑ Timing not key issue
- ❑ Data typically available at state agencies
- ❑ Evaluation of intervention impact requires careful analysis

Current Research and Questions

- Evaluating the impact of OSHA inspections
- Evaluating the impact of regulating insurers' loss control services
- Refining targeting approaches
 - E.g., Does adding additional years of data improve targeting?
- How to operationalize techniques for OSHA and insurers