Approaches to Assessing Worker Mental Health Using Existing Population Health Data

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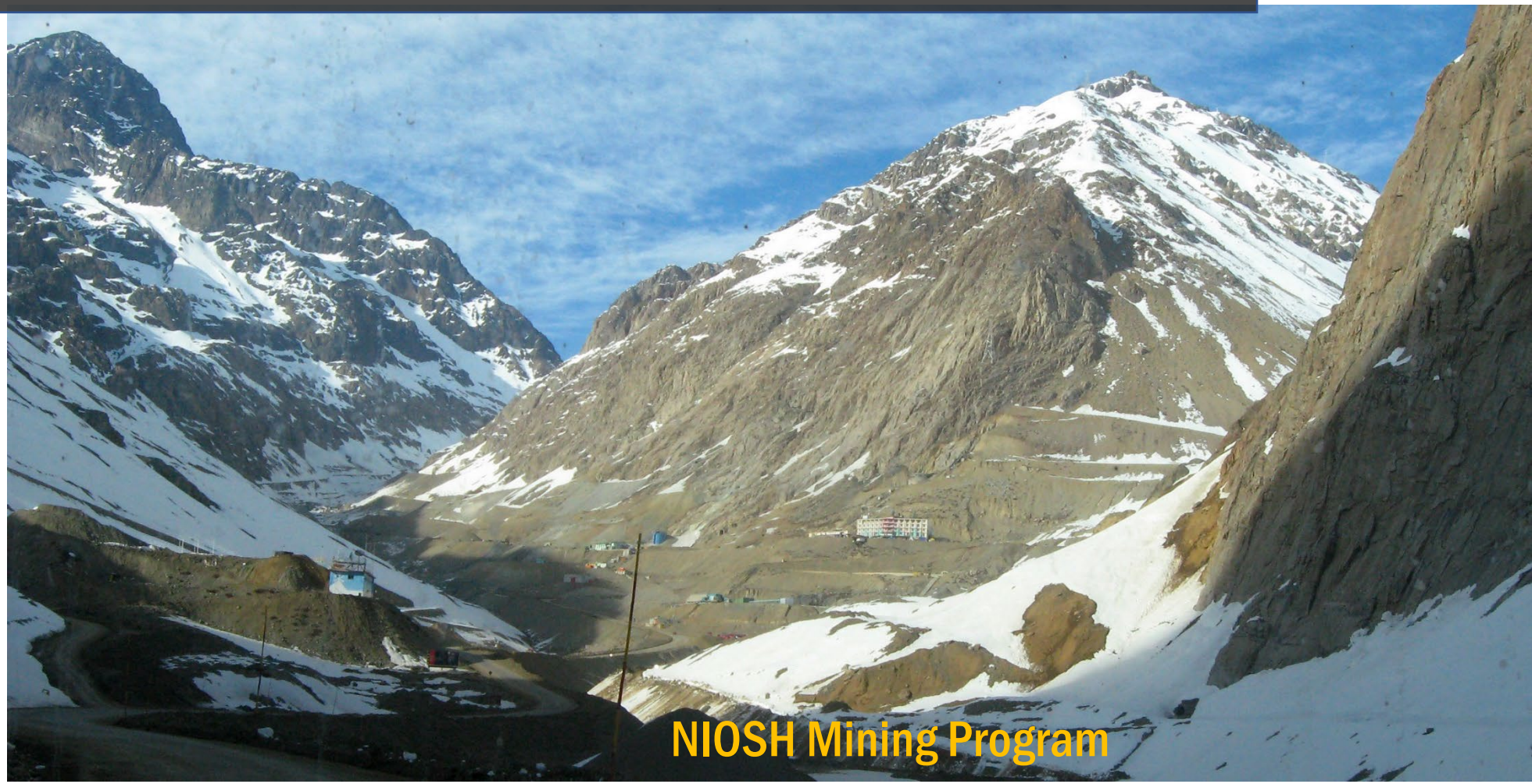


Objectives

Related sectors – Mining and Oil and Gas Extraction
Social determinants of health
Psychosocial hazards
Suicides and drug overdoses among workers
Using indicators to assess workers' mental health
Preliminary findings
Some lessons learned

NIOSH Miner Health Program (MHP)

EBF project leverages existing health data to compare miners' health to other workers

CDC systems are our primary data sources for health, health behaviors & deaths in the adult population

Multi-disciplinary approach (2-3 project FTEs)

Epidemiology
Industrial Hygiene
Statistics
Health Communication
Behavioral Science

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official positions of the National Institute for Occupational Safety and Health or the Centers for Disease Control and Prevention.

National Occupational Research Agenda - 10 industry sectors[1]

- Agriculture, Forestry and Fishing
- Construction
- Healthcare and Social Assistance
- Manufacturing
-
  Mining*
  Oil and Gas Extraction
- Public Safety
- Services
- Transportation, Warehousing and Utilities
- Wholesale and Retail Trade

*(except oil and gas)

[1]from NAICS Sectors

Mining Sector
(21)

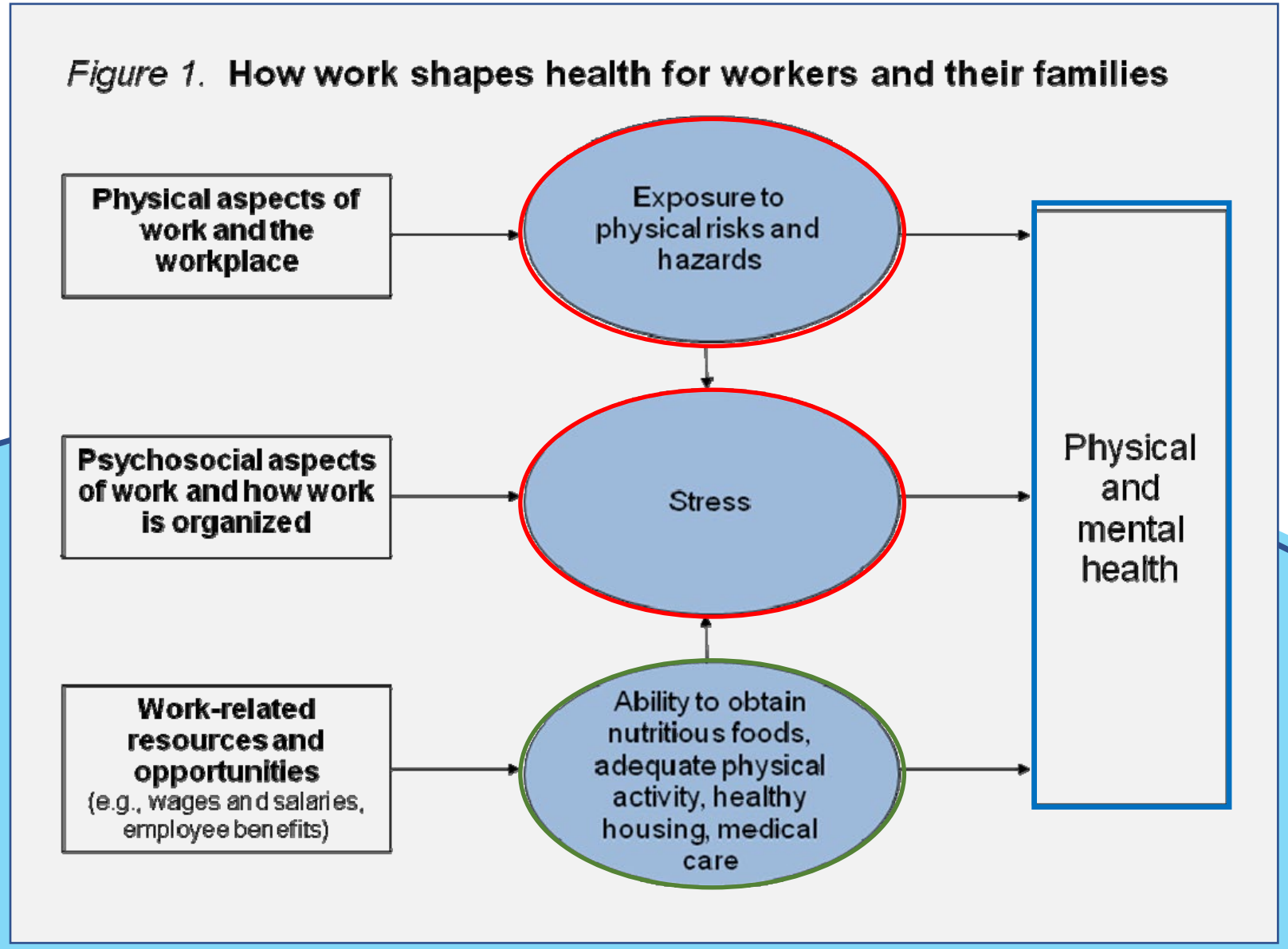
N=582K*

Mining, except oil and gas
186K*

Oil and gas extraction (117K)
Support activities for mining (279K)
396K*

*Bureau of Labor Statistics Current Employment Survey, Dec 2022

Work as a social determinant of health



Source: ROBERT WOOD JOHNSON FOUNDATION. Commission to Build a Healthier America. Issue Brief 4: Work and Health, December 2008.

Managing Stress and Mental Health

Psychosocial hazards and exposures at work (some examples)

- Unemployment or underemployment (i.e., job insecurity)
- Fatigue, burnout, loneliness
- Wages
- Lack of benefits/paid sick leave
- Transportation and commuting assistance
- Working conditions that can predispose to chronic health problems or pain
- Industry, Occupational, cultural, and geographic differences

Increasing suicide rates among workers

Males in Mining sector and **Females in Construction & Extraction occupations** have the highest suicide rates among all industries and occupations, by sex[1]

2017 - **7 times more working-age persons died by suicide (38,000) than from fatal on-the-job injuries.**

Suicides have increased 40% since year 2000.

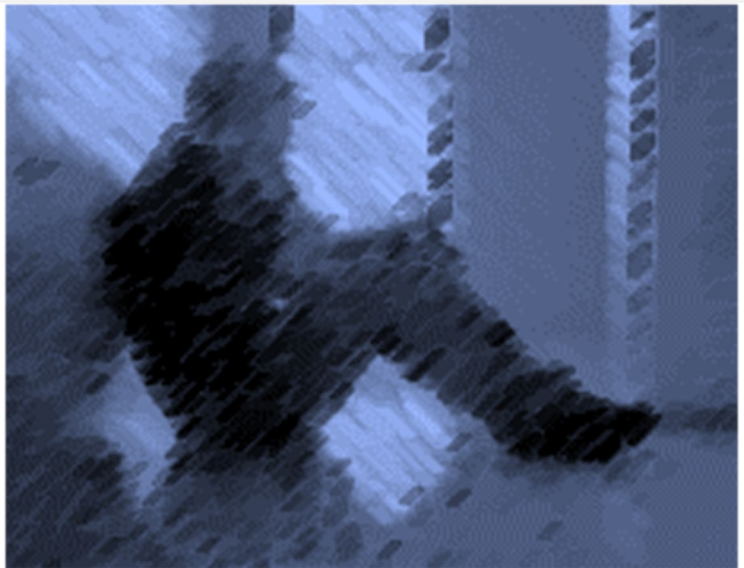
[1](Peterson C et al 2020) MMWR

An epidemic of drug overdose

2007 - 2012 **workers in Extraction Occupations had elevated mortality from both drug and prescription opioid overdose**[2]

2021 **had 108,000 drug overdose deaths (all ages). A 15% annual increase, as in previous two years.**

CDC: Disparities by age, race/ethnicity, and other factors.



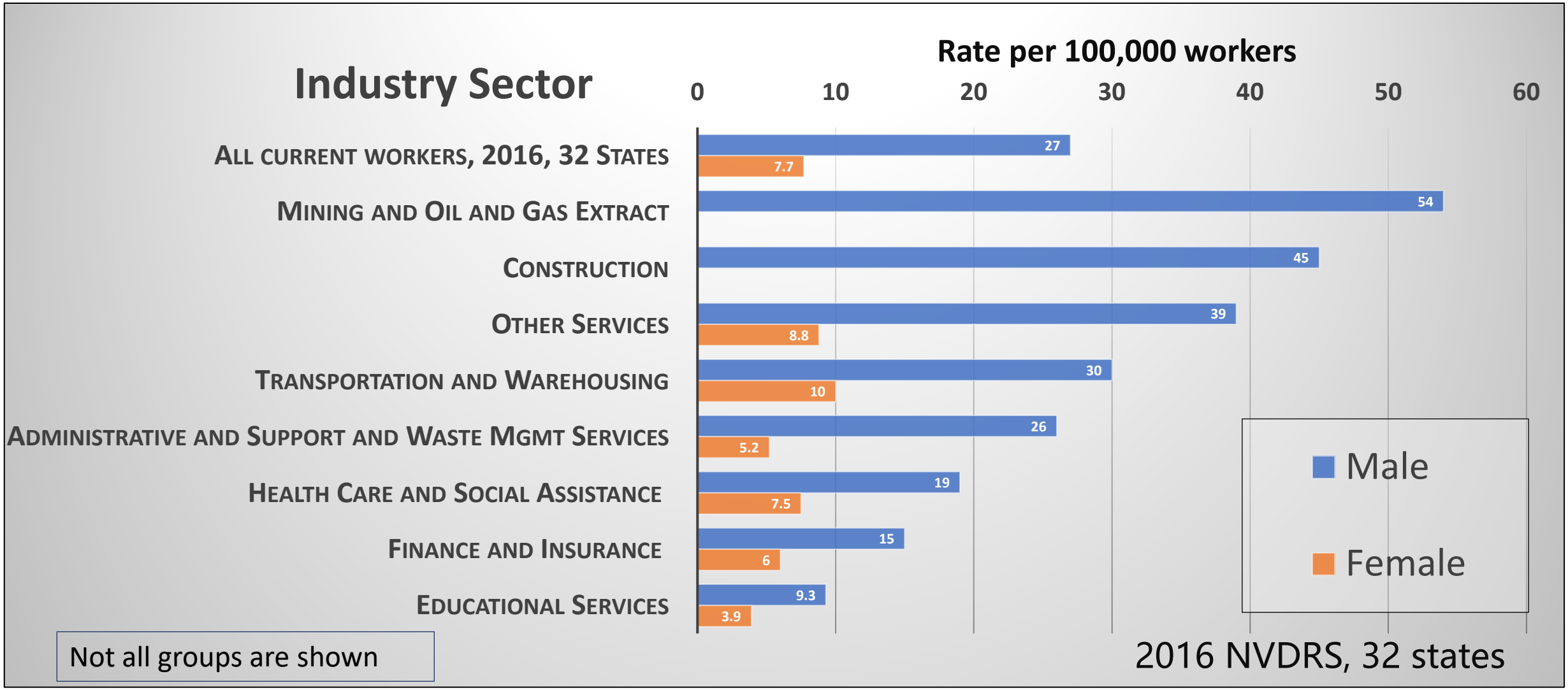
[2](Morano L et al 2018) MMWR

Analyzing suicide rates by industry and occupation using vital statics

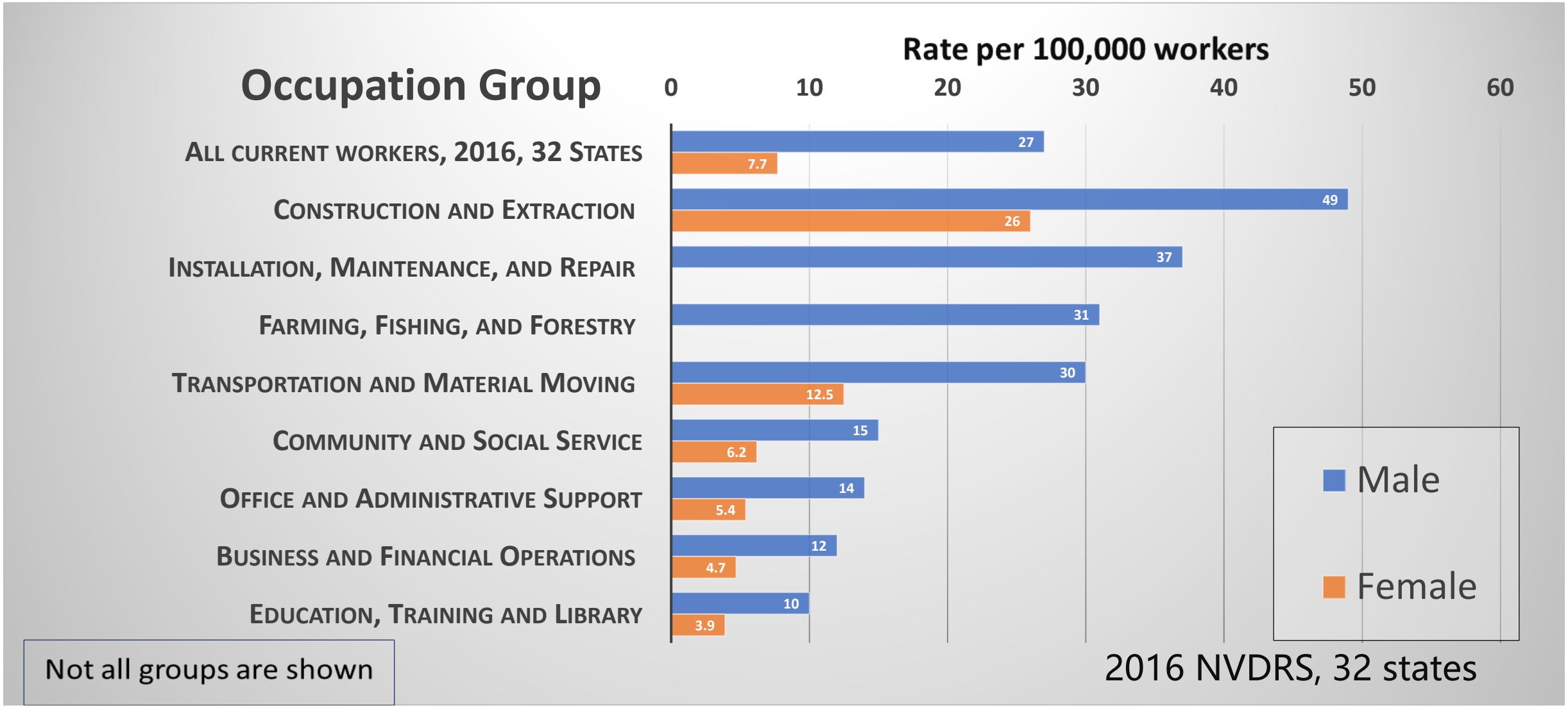
Completed: National Violent Death Reporting System (NVDRS), 2016
32 States collected usual industry and occupation for people who died

In progress:
National Vital Statistics System (NVSS), 2021
49 States collected usual industry and occupation for people who died

Analyzing suicide rates by industry and occupation



Analyzing suicide rates by industry and occupation



Mental health is an important part of worker well-being

Poor mental health is a major source of disability, social and health burden

Suicide – the worst outcome = tip of the iceberg

Relevant and common mental health conditions:

- Suicide ideation
- Depression
- Anxiety
- Frequent mental distress

Google images

Using the Behavioral Risk Factor Surveillance System to analyze workers' mental health by industry and occupation

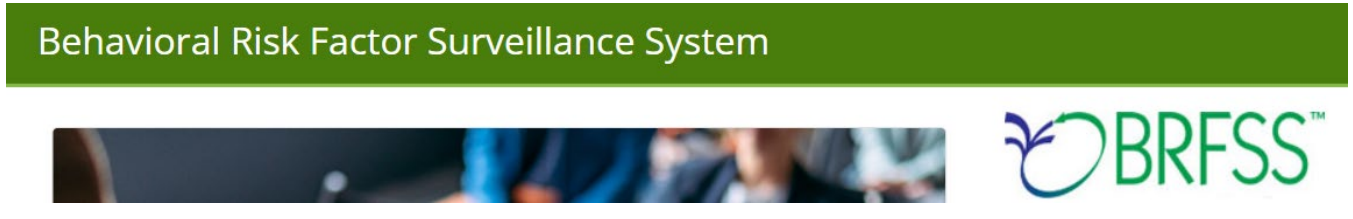
>400K telephone interviews annually, CDC and the states
Industry and Occupation Optional Module added by NIOSH in 2013

39-year history; Core questions are changed very infrequently

Complex survey design – respondents are weighted to adjust for the sampling design

Mental health indicators - ever diagnosed, and current self-assessment

https://www.cdc.gov/brfss/index.html



Mental health indicators in the BRFSS core survey

(Ever) Diagnosed Depression

have you ever been told by a licensed health care professional that you have…?

(asked to recall a clinical diagnosis)

Mentally Unhealthy Days (MUD)

how many days in the past 30 days has your mental health not been good?

Calculated indicators - from MUD

Frequent mental distress (FMD) ≥ 14 days of past 30

Extreme mental distress (ExD) 30 of past 30

Mean unhealthy days (groups)

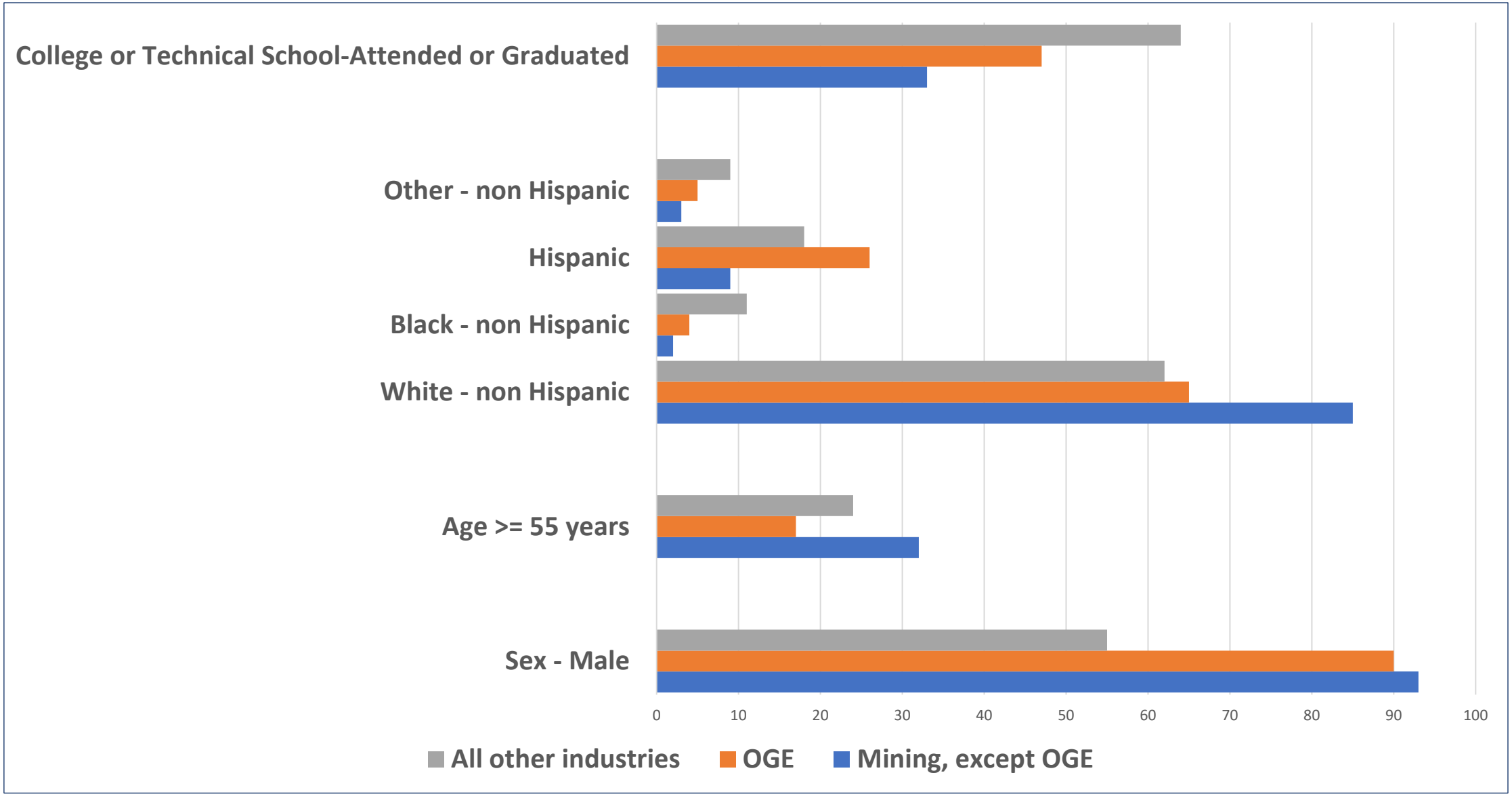
Behavioral Risk Factor Surveillance System (BRFSS)

2015-2019, 37 states, Currently employed adults

Sample size 452,767

<1% of sample was Mining

Demographic estimates, Behavioral Risk Factor Surveillance System 2014-2018, 38 states



Mental health outcomes – BRFSS 2015-2019, 37 states

	Males (%, 95% CL)*		
	Mining	**OGE**	**All other industries**
Total N, unweighted	849	2464	248,581
(Ever) Diagnosed depression	5.7 (3.2, 8.2)	9.1 (4.4, 13.8)	9.9 (9.6, 10.2)
Freq. Mental Distress	10.6 (3.7, 17.5)¥	9.0 (4.2, 13.8)	8.0 (7.7, 8.2)
Extreme Distress	--	5.3 (1.0, 9.5)¥	3.4 (3.3, 3.6)
Mean MUD	3.3 (1.2, 5.3)¥	2.8 (1.5, 4.0)	2.7 (2.6, 2.8)

*Weighted estimates

¥ CV > 0.30, interpret with caution

--CV >0.50, not reportable

Mental health indicators – BRFSS 2015-2019, 37 states

	Females (%, 95% CL)*		
	Mining	**OGE**	**All other industries**
Total N, unweighted	120	252	246,085
(Ever) Diagnosed depression	19.4 (2.0, 36.7) ¥	18.1 (2.0, 34.3) ¥	19.6 (19.2, 20.0)
Freq Mental Distress	4.7 (0.3, 9.0) ¥	--	11.5 (11.2, 11.9)
Extreme Distress	--	--	4.8 (4.6, 5.0)
Mean MUD	2.3 (0.9, 3.8) ¥	5.5 (0.7, 10.2) ¥	3.9 (3.8, 4.0)

*Weighted estimates

¥ CV > 0.30, interpret with caution

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Limitations, the BRFSS mental health indicators

Self-reported mental health measures may be underreported
-recall and social desirability bias

A clinical diagnosis of depression requires the worker seeking care

Usually not possible to report estimates for detailed industry and occupation groups.

Misclassification of industry and occupation is possible

Resources (some examples)

- ✓ Mental Health | CDC
- ✓ Suicide Prevention | Suicide | CDC
- ✓ Total Worker Health | NIOSH | CDC
- ✓ Let's Get Started - Total Worker Health | NIOSH | CDC
- ✓ Opioids in the Workplace | NIOSH | CDC
- ✓ Center for Health, Work & Environment | Colorado School of Public Health (cuanschutz.edu)
- ✓ Newsroom Feature: Health Worker Mental Health | NIOSH | CDC

Lessons learned

There is more that we don’t know than what we know.

A lot more research is needed.

Suicide rates by industry and occupation are useful for showing trends and targeting prevention efforts.

The self-reported MH indicators are useful to identify patterns among industry and occupation groups.

There are good resources available now to assist employers.

Miner Health Program

Questions?

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