

What's Work Got to do With It? Incorporating Occupational Health in Community Health Assessment

Alison Grace Bui, MPH
Meredith Towle, MPH

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Colorado Department
of Public Health
and Environment

Overview

- Colorado 2008 Public Health Improvement Act
 - Is it possible/helpful to integrate occupational health and safety?
- Goal
 - Compile available data and describe how use it to improve the health and safety of workers in a community
- Case study
 - Northeast Colorado Health Dept (**Region 1:** Logan, Morgan, Phillips, Sedgwick, Washington, Yuma)
- The Tool
 - Data examples with explanation in the notes
 - Fact sheets describing resources

Colorado passed the Public Health Improvement Act in 2008, which drastically changed the landscape of public health practice across the state. This legislation requires that every public health agency, both local and state government, conduct a comprehensive community health assessment and improvement plan every 5 years. Because of the necessary work of the community health assessment, many agencies are looking closely for data that can help describe their community best and the demand for community health data has never been higher.

In an effort to integrate occupational health into this effort, we are creating resources for local health departments to help them learn about various sources of occupational health outcomes and employment data for their communities. Our case study example for this effort is the Northeast Colorado Health Department, which covers Logan, Morgan, Phillips, Sedgwick, Washington and Yuma counties.

Our presentation today will cover many various data sources. We will focus our discussion more on the resources and opportunities (the “Tool”), and less on the actual data findings. Facts sheets developed include:

- Resources to Ensure Worker Health and Safety in Colorado (Who to call or refer people to with questions)
- State and Federal Occupational Health and Safety Programs & Offices in Colorado (Quick reference contact list)
- Funding for Occupational Health and Safety Programming (Grant and fellow-hosting opportunities)

CDPHE Occupational Health and Safety Surveillance Program

Characterize and monitor
work-place hazards, injuries,
illnesses and fatalities
throughout Colorado



Occupational Health is Public Health

- To understand convergent issues in public health
- To compliment regulatory activities
- To address occupational health needs of underserved and minority workers
- To keep the focus on prevention in all economic climates and for all workers
- To foster integrated public health approaches, including environmental, occupational and the social determinants of health



Occupational health is an essential component of comprehensive and integrated public health programs.

It helps us respond to convergent issues, when the health concerns of the public health intersect with an exposed workforce (e.g. Salon-grade hair-straightening product resulting in formaldehyde exposure (Brazilian Blow-out), adults exposed to lead at work can potentially bring lead dust home on their clothes and expose other family members)

It also compliments regulatory activities by monitoring the burden of injury and illness, identifying disparities, and identifying sentinel cases and emerging hazards. OSHA makes and enforces workplace rules, but it is not able to inspect every workplace. It also does not cover 20% of the workforce in Colorado that is self employed or an employee of a state or local government. OSHA also does not cover farms with 10 or fewer employees.

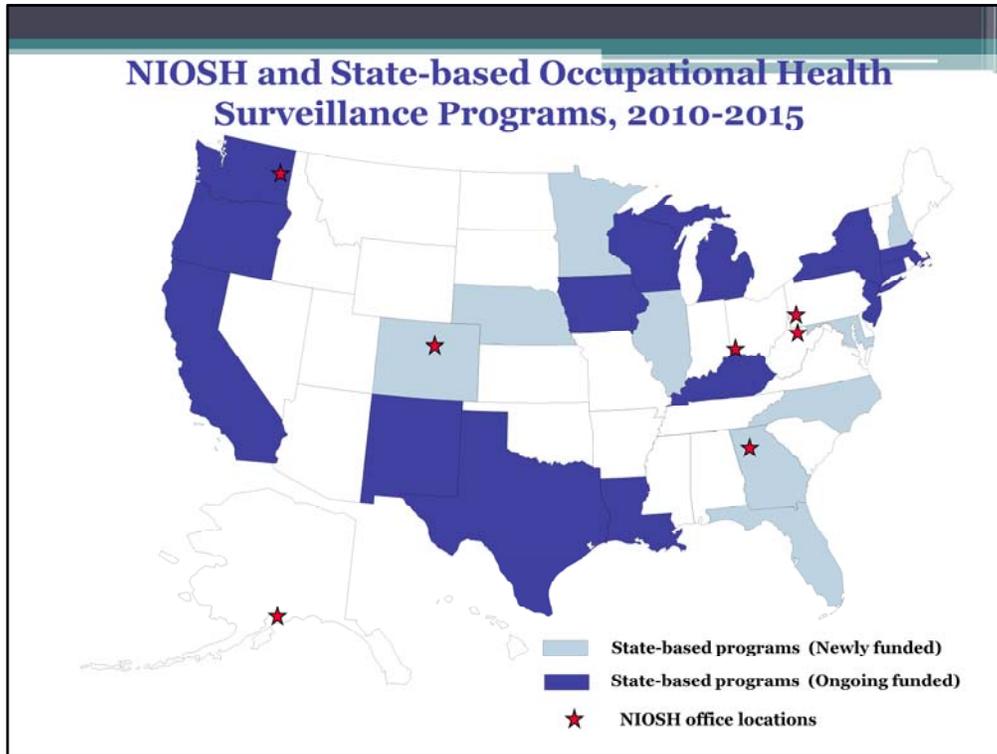
Occupational public health programs can also work to address unique needs of the more vulnerable workforce. Migrant workers, youth workers, and non-English speaking workers may be often disproportionately represented in occupations with higher risk for injury, such as agriculture, service jobs, and construction.

In poor economic times, when productivity and job security become paramount, occupational health and safety is at risk to be overlooked/downsized in the workplace. Public health is a safety net to elevate and maintain awareness of potential issues.

It fosters integrated public health activities. The social determinants of health indicate that where people live, learn, work and play affects their health as much as things like access to healthcare and healthy foods, mental and physical health status, and adoption of healthy behaviors.

Work-related injuries, illnesses and fatalities are preventable, and reducing their occurrence will lead to healthier and safer communities.

OSHA makes and enforces workplace rules, but it is not able to inspect every workplace. It



Colorado is one of 23 states conducting OH surveillance in accordance with the guidelines set forth by NIOSH and the Council of State and Territorial Epidemiologists (CSTE). Several states receive additional funding for enhanced surveillance of specific events/conditions such as fatalities, work related asthma, pesticide poisonings, and lead poisoning.

Occupational Health Indicators (OHI)

State-level Measures:

Fatal work-related injuries

Non-fatal work-related injury & illness (All, Amputations, Carpal Tunnel)

Work-related hospital discharges (All, Pneumoconiosis, Burns, Back)

Pneumoconiosis mortality

Acute work-related pesticide poisonings

Malignant mesothelioma

Elevated adult blood lead tests (*Reportable condition*)

Workers employed in industries with high risk morbidity

Workers employed in occupations with high risk morbidity

Workers employed in high risk mortality industries and occupations

Occupational safety & health professionals

OSHA enforcement activities

Workers' compensation award costs

NIOSH-funded state surveillance systems are required to collect a core set of measures including a demographics profile, 13 health effects indicators, 4 exposure and hazard indicators, 2 intervention indicators, and 1 socio-economic impact indicator. Colorado state-level Occupational Health Indicator data are published annually in a CDPHE surveillance report: <http://www.colorado.gov/cs/Satellite/CDPHE-DCEED/CBON/1251607754915>

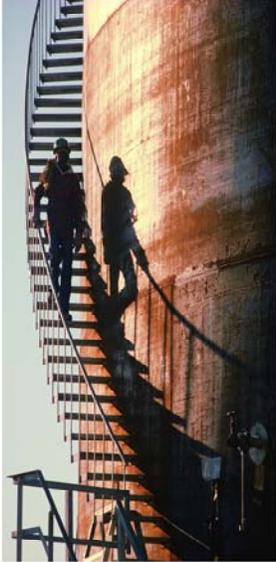
These Occupational Health Indicators are compiled using existing public health and other state-level agency data. Collection methods are standardized across states and nationally, so data is comparable with others.

Colorado Status

- **112 fatalities per year** (*BLS CFOI, 2000-2010*)
 - 5 deaths/100,000 employed
 - 1 work-related death every 3 days
- **Over 2,600 hospital admissions each year** (*Colorado Hospital Association, 2001-2010*)
 - 107 admissions per 100,000 employed
- **Over 28,000 lost-time workers' compensation claims per year** (*Colorado DOLE, 2001-2010*)
 - Additional 90,000+ med-only claims annually
 - 83% labor force covered by workers' compensation

Note: Data shown here on workers compensation claims counted may have been admitted or denied (It is estimated that about 25% ultimately may be denied). A lost time claim is one in which the worker misses more than three days or three shifts of work because of the work-related injury or illness.

Colorado Status



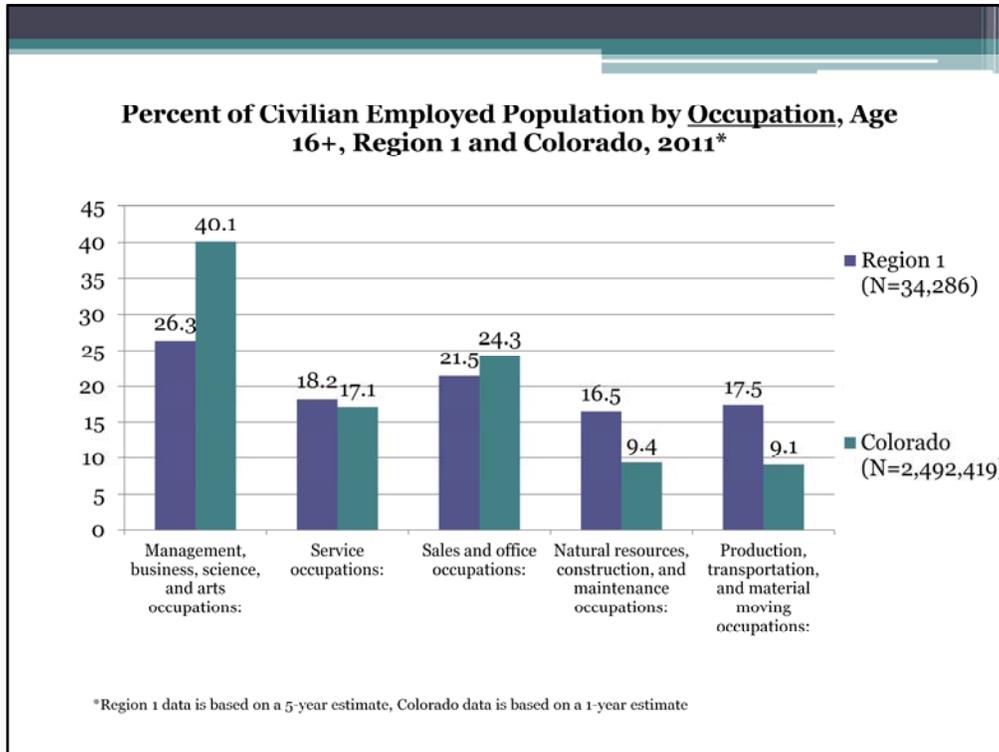
- Average \$810 million paid annually in Workers' Compensation claims (*National Academy of Social Insurance, 2001-2008*)
 - Average benefit paid per covered worker in Colorado is \$373
 - \$52 billion nation wide
- Less than 1% (1,421) of eligible establishments, and less than 3% of eligible workers are inspected by OSHA each year. (*OSHA Denver Regional Office, 2001-2011*)

Employment Demographics Data

What do people in my community do for work?
Who do they work for?
How is my community different compared to the rest of Colorado?

The industry and occupation data showcased in this presentation comes from the American Community Survey (via American Fact Finder). These data are available online for customizable queries including factors such as zip-code level estimates, worker education levels, commuting data, citizenship status of the workforce. CDPHE staff do not have protocols for all of these queries, but there are several guidance tools available online: factfinder2.census.gov

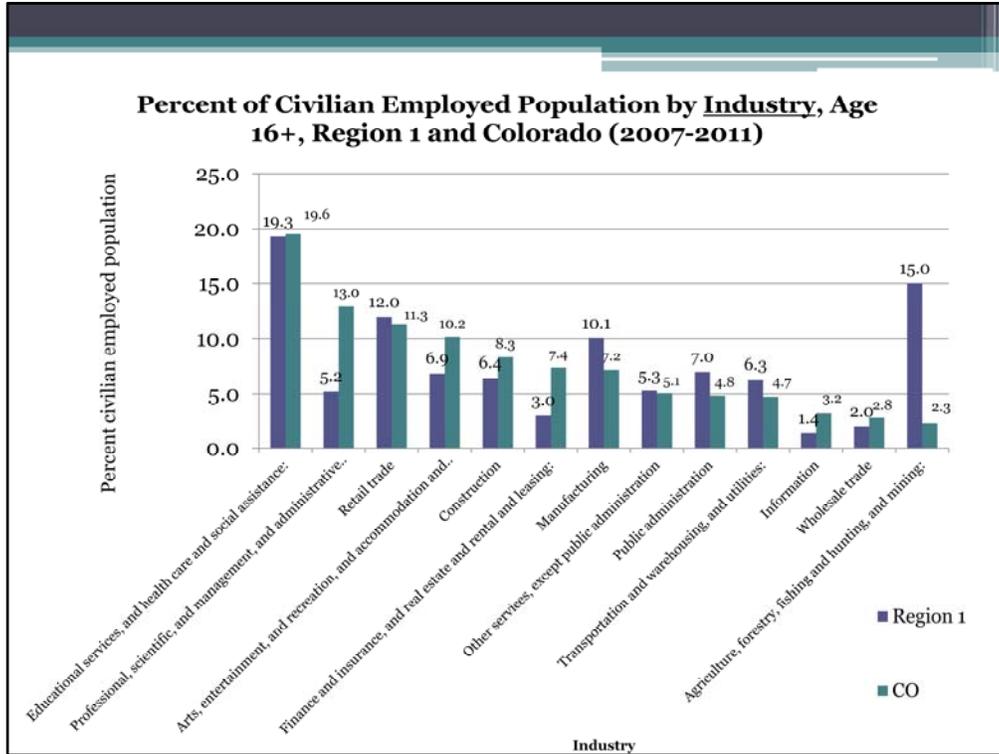
Other sources of county-level employment statistics (also available online) are the Bureau of Labor Statistics (BLS) Current Population Survey (CPS) (<http://www.bls.gov/cps/>), the BLS Quarterly Census of Employment and Wages (<http://www.bls.gov/cew/>), and the BLS Local Area Unemployment Statistics (<http://www.bls.gov/lau/home.htm>).



This figure compares the overall mix of occupations in Region 1 to Colorado. Region 1 has a higher proportion of workers in Natural resources, construction, and maintenance occupations (16.5%) and Production, transportation and material moving occupations (17.5%). These types of jobs tend to involve higher risk for injury and fatality.

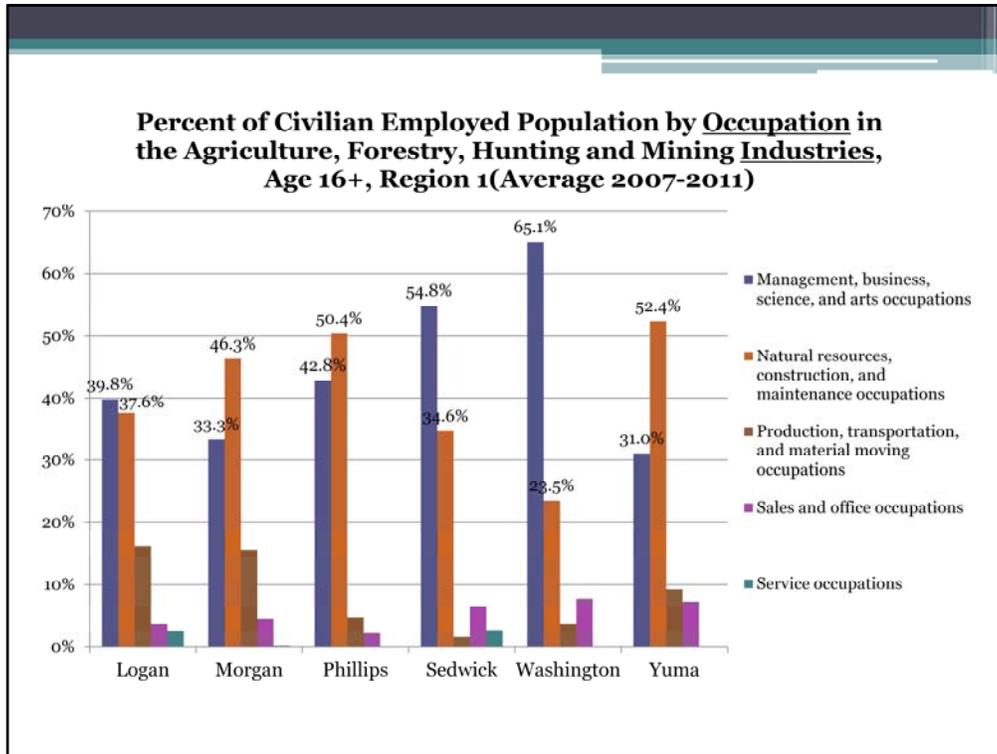
Source: US Census Bureau American Community Survey

Available online: factfinder2.census.gov



Region 1 (15%) has a higher percentage of employed persons working in the Agriculture, forestry, fishing and hunting, and mining industry compared to the state (2.3%). Other industries in Region 1 that were larger than the state were retail trade (12.0%), manufacturing (10.1%), public administration (7.0%), and transportation and warehousing, and utilities (6.3%).

Source: US Census Bureau American Community Survey
Available online: factfinder2.census.gov



Focusing in on the Region 1 workers in the Agriculture, Forestry, Fishing and Hunting, and Mining industries, this figure shows the types of jobs held in these industries in Region 1 counties. There is some variation by county in the distribution of these occupations. Most workers in this industry in Washington County have Management, Business, Science occupations (65.1%), while most of those in Yuma county hold potentially higher-risk occupations of Natural Resources, Construction, and Maintenance (52.4%).

Source: US Census Bureau American Community Survey

Available online: factfinder2.census.gov

Labor Market Information: Yuma County Employers - Keyword "Grain"

Home Register/Sign in Services for Individuals Services for Employers Labor Market Analysis Products

Colorado LMI Gateway

Here are the 13 employers selected in Yuma County. Click a company's name in the list below to see details about that company, including a map of its location (if available).

To sort on any column, click a column title.

Company Name	Partial Address	City	State	Key Match	Select
Grainland Cooperative Feedmill	S Colorado Ave	Haxtun	CO	2	<input type="checkbox"/>
Grainery	US Highway 36	Idalia	CO	2	<input type="checkbox"/>
Bartlett Grain Co LP	N Kamala St	Yuma	CO	3	<input type="checkbox"/>
Yuma County Grain Co	US Highway 34	Yuma	CO	3	<input type="checkbox"/>
M & M Co-Op Grain	E Railroad Ave	Yuma	CO	3	<input type="checkbox"/>
Andrews Brothers Custom Seed	County Road M	Yuma	CO	5	<input type="checkbox"/>
Colorado Agri Products	County Road H	Yuma	CO	5	<input type="checkbox"/>
Wray Feed Co Inc	County Road Ff	Wray	CO	5	<input type="checkbox"/>
Donald C & Peggy E Brown	County Road 36	Yuma	CO	5	<input type="checkbox"/>
Beecher Island Farms LLC	Clay St	Wray	CO	5	<input type="checkbox"/>
M & M Co-Op	County Road Dd	Idalia	CO	5	<input type="checkbox"/>
Stratton Equity Co-Op	County Road 11	Idalia	CO	5	<input type="checkbox"/>
Stratton Equity Co-Op	County Road M	Kirk	CO	5	<input type="checkbox"/>

[Map](#)

Excel

Key Match: 1 1 Employer name matches keyword exactly 1 2 1 Employer name has one with keyword 1 3 1 Employer name contains full

As an example, perhaps we wanted to reach out to Yuma county agriculture employers and workers about the hazards associated with grain handling activities.* Searching the LMI Gateway by the keyword "grain" returns the names and addresses of 13 employers in Yuma county. This search can be expanded to include key word terms such as "farm" or "ranch". You can also simply obtain a list of all employers in a single county.

Source: Colorado Labor Market Information

Available online: www.colmigateway.com – Click on "Employer Database"

**The grain handling industry is a high hazard industry where workers can be exposed to numerous serious and life threatening hazards. These hazards include: fires and explosions from grain dust accumulation, suffocation from engulfment and entrapment in grain bins, falls from heights and crushing injuries and amputations from grain handling equipment.*

Hospital Discharge & Emergency Department Data

What is the burden of serious work-associated injuries and illnesses in my community compared to the rest of Colorado?
What types of injuries and illnesses are people hospitalized for?
Is there variation by county?

Notes about hospital discharge and emergency department (ED) data:

ED visits and hospital discharge data are provided to CDPHE by the Colorado Hospital Association (CHA).

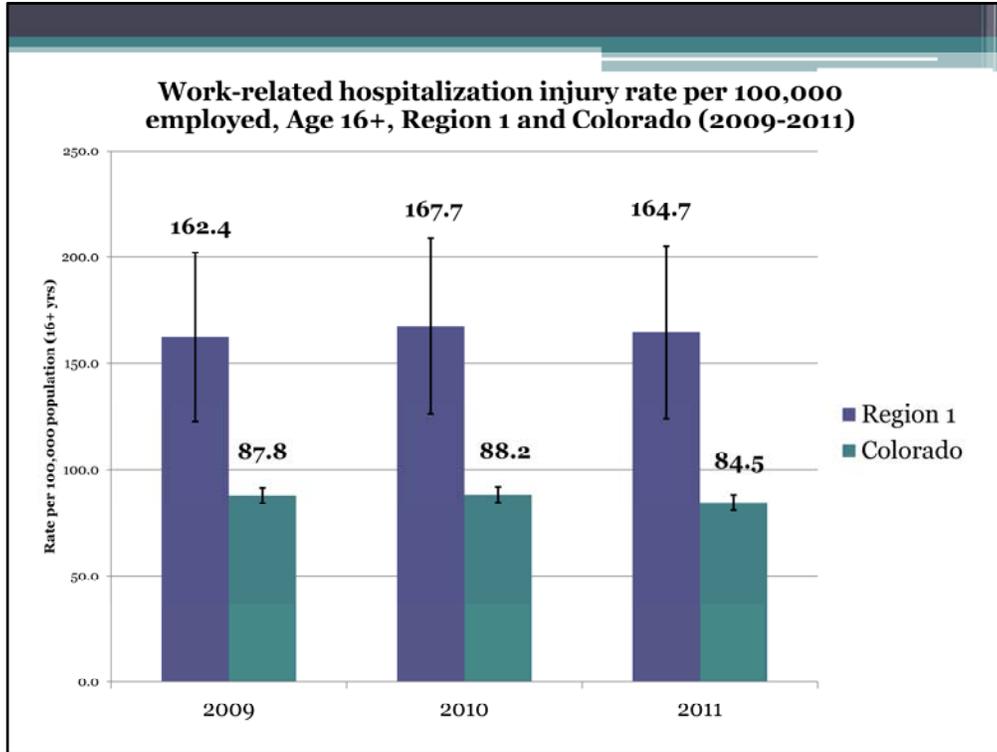
Data are geo-coded based on patient residence (not location of hospital or injury sustained).

The CHA data do not contain any information about employment or occupation.

Inclusion criteria are: Age 16 and over, Workers' compensation insurance is the primary payer, State of residence is Colorado

Data are un-duplicated (no exclusions for readmissions)

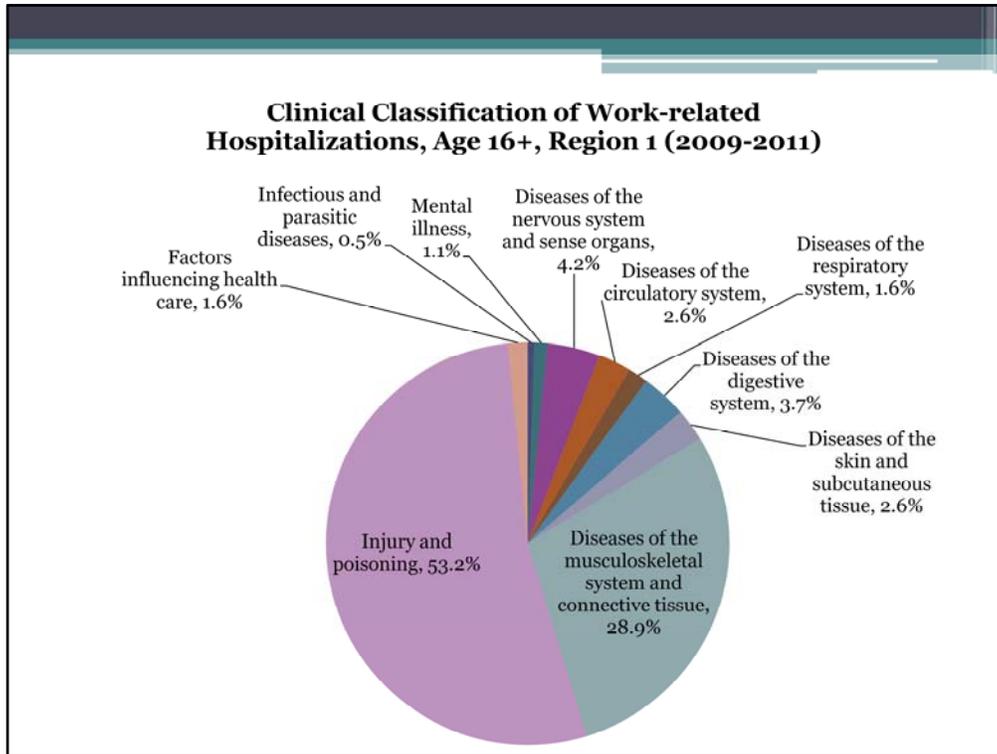
Discharge or ED visit data occurred in the calendar year.



The work-related hospitalization rates are statistically significantly higher in Region 1 compared to the state for each year; 2009-2011.

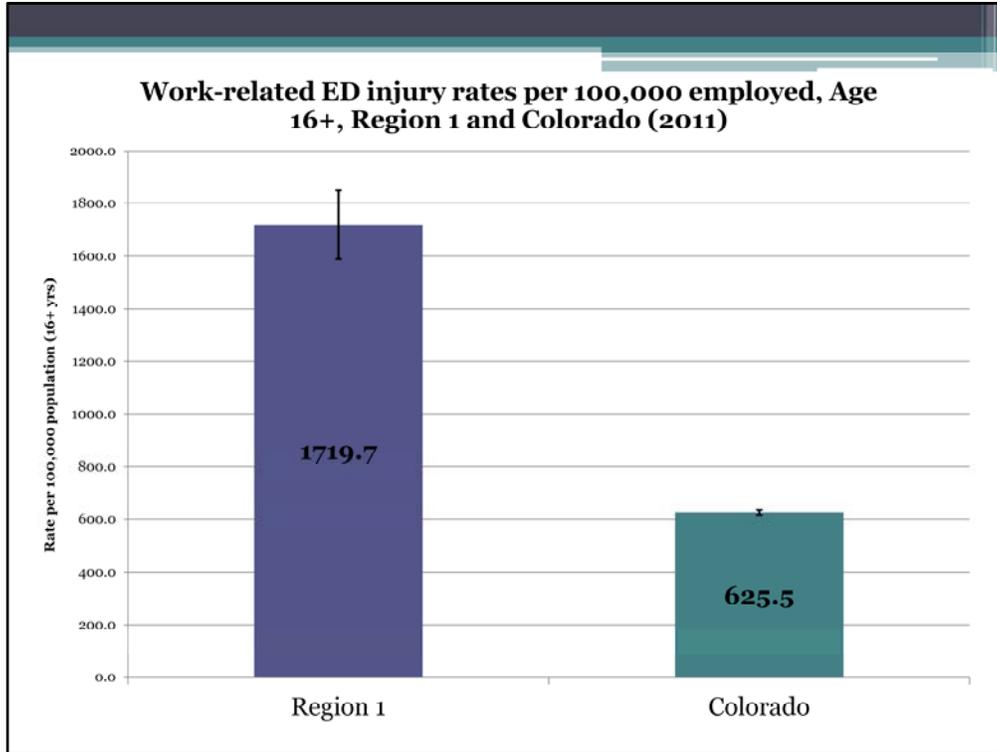
Source: Colorado Health and Hospital Association (Discharge Dataset)
Available from CDPHE Health Statistics Unit

Numerator: Hospital discharges in the calendar year, ages 16 and over, workers compensation is the payer. Geography assigned based on patient residence.
Denominator: Employed population, ages 16 and over, available from the Bureau of Labor Statistics (BLS) Local Area Unemployment Statistics (LAUS) (<http://www.bls.gov/lau/home.htm>). Data is obtained through household surveys, meaning it pertains to individual residence.



Most work-related hospitalizations in Region 1 are due to injury and poisoning (53.2%) and diseases of the musculoskeletal system and connective tissue (28.9%). The background data show that poisonings comprise less than 1% of the injury category, and back disorders 47.3% of the musculoskeletal system category.

Source: Colorado Health and Hospital Association (Discharge Dataset)
 Analysis using the Agency for Healthcare Research and Quality (AHRQ) Clinical Classification Software (CCS), version 2011. Available online at: <http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp>



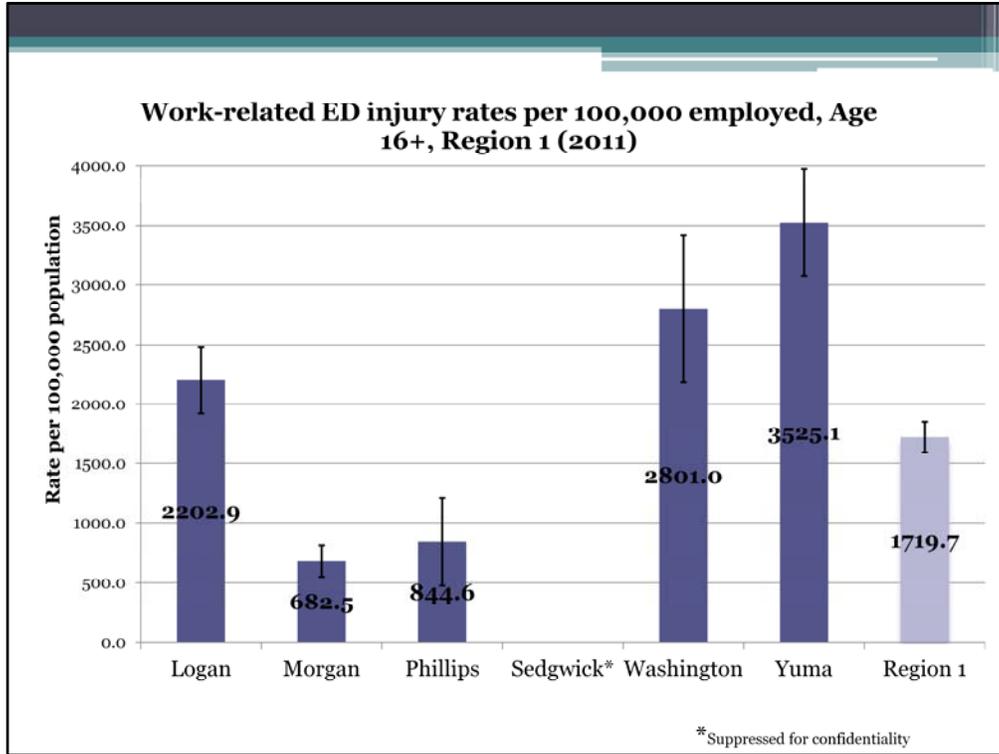
The work-related emergency department hospitalization rate for Region 1 is 1719.7 per 100,000 population and statistically significantly higher than for Colorado (625.5).

Source: Colorado Health and Hospital Association (Emergency Department Dataset)
Available from CDPHE Health Statistics Unit

Numerator: ED visits in the calendar year, ages 16 and over, workers compensation is the payer. Geography assigned based on patient residence.

Denominator: Employed population, ages 16 and over, available from the Bureau of Labor Statistics (BLS) Local Area Unemployment Statistics (LAUS)

(<http://www.bls.gov/lau/home.htm>). Data is obtained through household surveys, meaning it pertains to individual residence.



The work-related ED hospitalization rates for Logan (2202.9 per 100,000 population), Washington (2801.0) and Yuma (3525.1) Counties are statistically significantly higher compared to Region 1 (1719.7). Morgan (682.5) and Phillips (844.6) Counties are statistically significantly lower compared to Region 1.

Source: Colorado Health and Hospital Association (Emergency Department Dataset)
Available from CDPHE Health Statistics Unit

Numerator: ED visits in the calendar year, ages 16 and over, workers compensation is the payer. Geography assigned based on patient residence.

Denominator: Employed population, ages 16 and over, available from the Bureau of Labor Statistics (BLS) Local Area Unemployment Statistics (LAUS)

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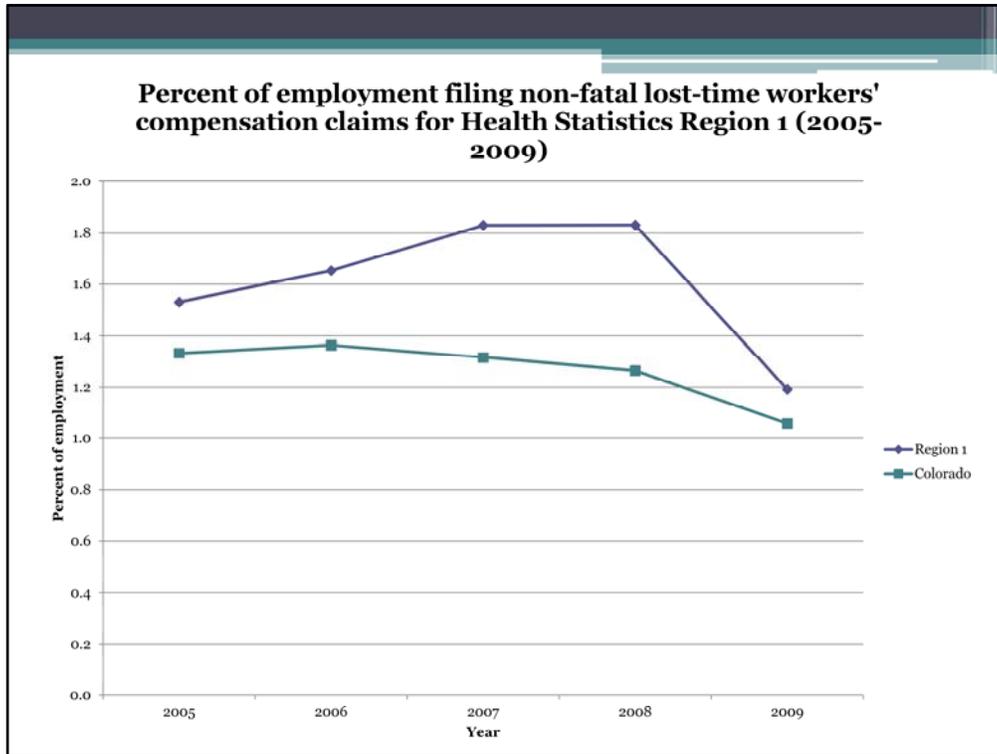
Workers' Compensation

Are workers in my community filing claims for occupational injury or illness?

Does the frequency of these claims vary by county?

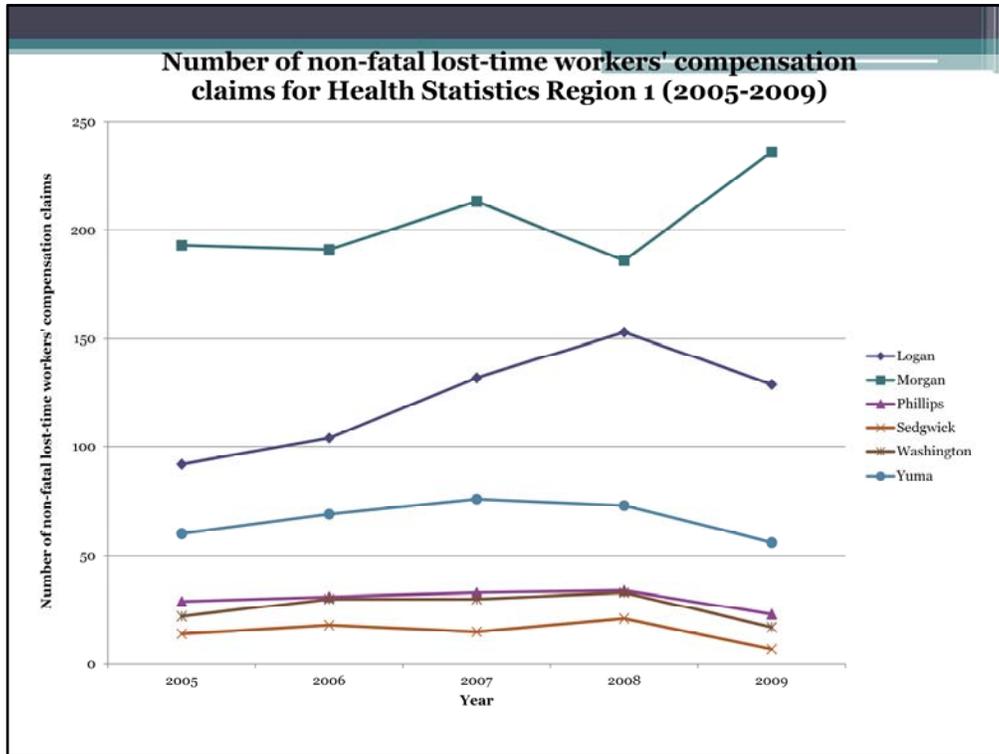
The Colorado Department of Labor and Employment (CDLE) Workers' Compensation Division collects and reports claims data from all insurers covering Colorado workers. County-level data on fatal and non-fatal lost-time claims, and costs are available through online reports: <http://www.colorado.gov/cs/Satellite/CDLE-WorkComp/CDLE/1248095316069>.

Some workers' compensation claims data is provided by CDLE to CDPHE for analysis, monitoring trends and reporting in surveillance programs. Because claims need to be adjudicated to be eventually be admitted or denied, claims count data can vary slightly over time depending on when the data were pulled for analysis and whether all claims or only closed claims were included in the analysis.



The percent of employment filing non-fatal lost-time workers' compensation claims was higher for Region 1 compared to Colorado from 2005-2009.

Source: Colorado Department of Labor and Employment, analyzed by CDPHE



Morgan, Logan and Yuma counties had the highest numbers of non-fatal lost-time workers' compensation claims each year from 2005-2009.

Source: Colorado Department of Labor and Employment, analyzed by CDPHE

Workers' Compensation Claim Costs*, Region 1 counties and Colorado, 2009

Geography	Mean Cost per Claim	Total Reported Cost
Statewide	\$ 39,201	\$ 837,826,774
Region 1 Total	n/a	\$ 15,111,788
Logan	\$ 38,878	\$ 4,976,361
Morgan	\$ 33,013	\$ 4,753,897
Phillips	\$ 43,346	\$ 953,617
Sedgwick	\$ 35,947	\$ 539,203
Washington	\$ 19,418	\$ 446,037
Yuma	\$ 51,383	\$ 3,442,673

*Includes fatal and non-fatal claims

Both Phillips (\$43,346) and Yuma (\$51,383) counties experienced a higher average cost per workers' compensation claim compared to the statewide average (\$39,201) in 2009. Workers' compensation costs across all Region 1 counties are substantial, with an estimate totaling well over \$15 million dollars.

Source: Colorado Department of Labor and Employment, Workers' Compensation Division Cost data available online: <http://www.colorado.gov/cs/Satellite/CDLE-WorkComp/CDLE/1248095316069>, Workers' Compensation Costs in Colorado, 2009 annual report

National Poison Data System

What types of occupational poisoning exposures occur in my community?

The National Poison Data System (NPDS) aggregates data from 57 poison centers located throughout the U.S. Colorado data is collected and uploaded by the Rocky Mountain Poison and Drug Center (RMPDC). Approximately 1.7% of all toxic exposure calls to RMPDC are deemed work-related. It is estimated that, for every 1 poisoning exposure, there are a median 4 days away from work (*BLS SOII, 2010*).

A complete report of occupational exposures is available on the CDPHE website:

<http://www.colorado.gov/cs/Satellite/CDPHE-DCEED/CBON/1251607754915>

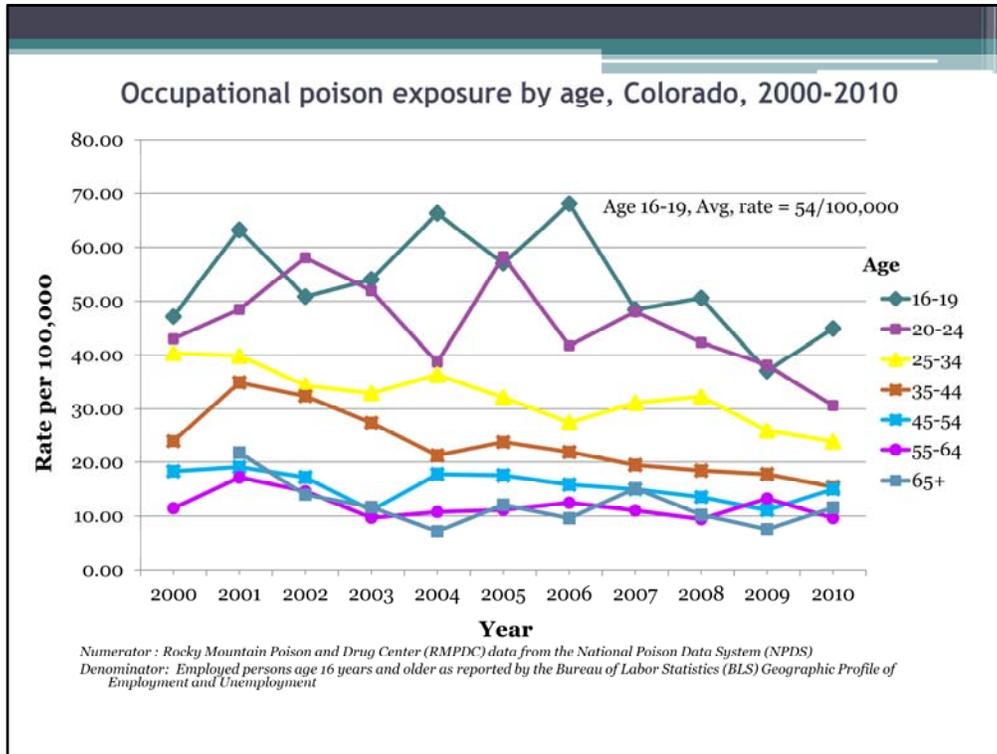
Top 10 exposure substances, Colorado, 2000-2010

Occupational N=8,367	% of total cases	Non-occupational N=70,665	% of total cases
Chemicals	17.44	Pharmaceuticals	41.49
Fumes/Gases/Vapors	11.43	Cleaning Substances, Household	10.22
Cleaning Substances, Household	10.95	Pesticides/Fertilizers	6.85
Hydrocarbons	9.02	Fumes/Gases/Vapors	6.68
Pharmaceuticals	8.80	Other/Unknown Non-drug/Missing Substances	5.63
Pesticides/Fertilizers	8.52	Cosmetics/Personal Care Products	5.44
Other/Unknown Non-drug/Missing Substances	7.33	Hydrocarbons	5.29
Other Industrial-use Substance	5.84	Chemicals	3.88
Industrial Cleaners	5.29	Other Industrial-use Substance	3.80
Other Miscellaneous Substance	3.63	Plant-based Substances	2.39

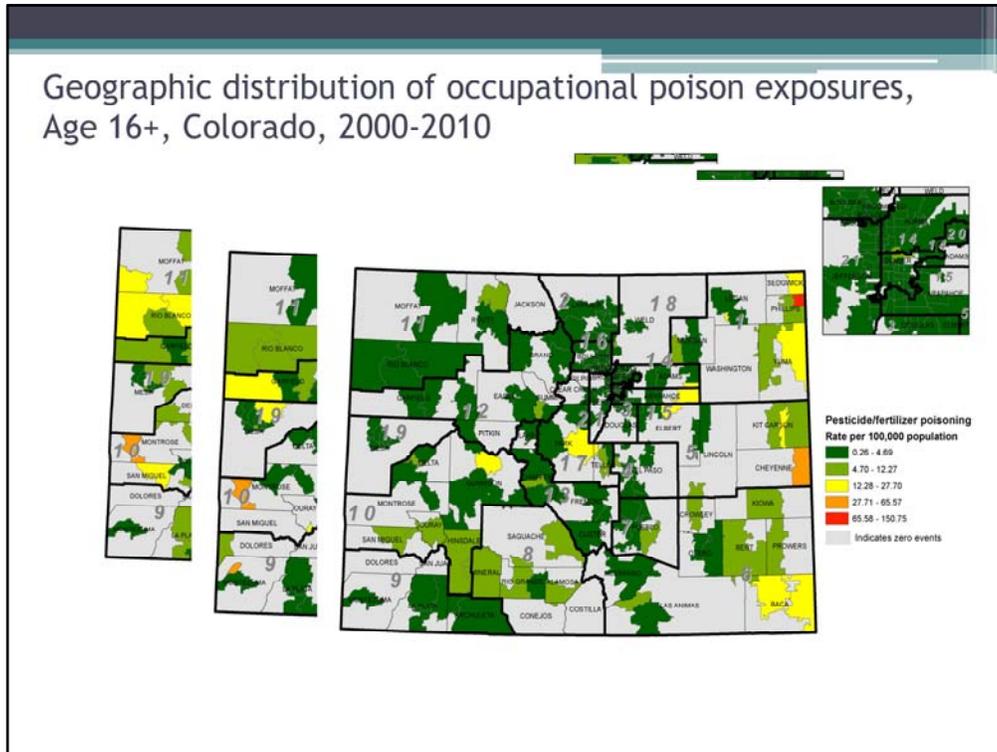
When an exposure call is made to the RMDPC, one of about 500,000 specific products is recorded as the source of exposure. These include both pharmaceutical and non-pharmaceutical products, and are grouped into 900 generic substance codes in NPDS, which are further consolidated into approximately 65 broad categories (e.g. heavy metals). For ease of analysis, in this study, 16 substance groupings were created and analyzed based on the 65 broad NPDS categories.

This table lists the top ten poison exposure substances in occupational and non-occupational settings. Almost ¼ of occupational exposures were to chemicals, fumes/gases/vapors, household cleaning substances, hydrocarbons, pharmaceuticals, and pesticides/fertilizers. Although the types of substances implicated in non-occupational exposures were similar to the occupational group, pharmaceuticals accounted for almost half of non-occupational exposures.

When broken into age groups, it was found that chemicals were found to be the most common source of occupational exposure in most of the groups. Interestingly though, the 16-19 group were most commonly exposed to household cleaning substances and the 65+ group were most commonly exposed to pesticides/fertilizers.



Although the 16-19 age group reported one of the lowest frequencies of work-related poisonings, the crude rates in this group were significantly higher than rates of older age groups, with an average annual rate of 54 poisonings per 100,000 employed ($p < .0001$)



These data indicate the potential that rural Colorado areas may have higher exposure report rates to certain substances compared to urban areas.

Source: National Poison Data System collected by the Rocky Mountain Poison and Drug Center

Numerator: Work-related exposures reported from RMPDC, Age +

Denominator: ZIP code populations based on 2010 ESRI, multiplied by 11 (for # of years in the study). Includes all ages.

Note on limitations: Though these data reflect the best possible geographic representation of reported occupational poison exposure in Colorado, geo-coding with only zip code

information presents some challenges to interpretation. Zip codes are assigned according to the

caller's address and may not necessarily reflect site of the workplace exposure. Zip code boundaries

are a construct of the United States Postal Service used to facilitate mail delivery and frequently

change. Although occupational poison exposure events occurred over a period of 11 years, the maps

included in this report were generated using recent 2010 zip code boundary estimates. Furthermore,

the only available population denominator data for the 2010 zip code boundaries included all ages

Behavioral Risk Factor Surveillance Survey (BRFSS)

Do people who drive for a living always wear their seatbelt?
What types of jobs do current smokers have?
Do influenza vaccination rates vary by occupation?
What kind of workers will need health insurance exchange information?

Overview of the Colorado 2012 BRFSS Survey:

Annual telephone survey

Includes: Adults (18+), CO residents

Two versions (A & B)

6,000 sampled for each version (total 12,000)

Same core questions, differing state-added modules

120 questions on each split, ~19 min to complete

25% of the sample cell phone respondents

Answered core, module, state-added

In-house call-center

Bilingual interviewers (English & Spanish only)

3% of interviews completed in Spanish

10 Combined Census Occupation Groups

- Management, Business and Financial Operations(001-095)
- Professional and related occupations (100-354)
 - Computer and Mathematical; Architecture and Engineering; Life, Physical, & Social Services; Community & Social Services; Legal; Education, Training, & Library; Arts, Design, Entertainment, Sports, & Media; **Healthcare Practitioners & Technical**
- Service occupations (360-465)
 - **Healthcare Support**; Protective Service; Food Preparation & Serving; Building & Grounds Cleaning/Maintenance; Personal Care & Service
- Sales and Related (470-496)
- Office and Administrative Support (500-593)
- Farming, Forestry, and Fishing (600-613) AND Construction and Extraction (620-694)
- Installation, Repair, and Maintenance (700-762)
- Production (770-896)
- Transportation and Material Moving (900-975)

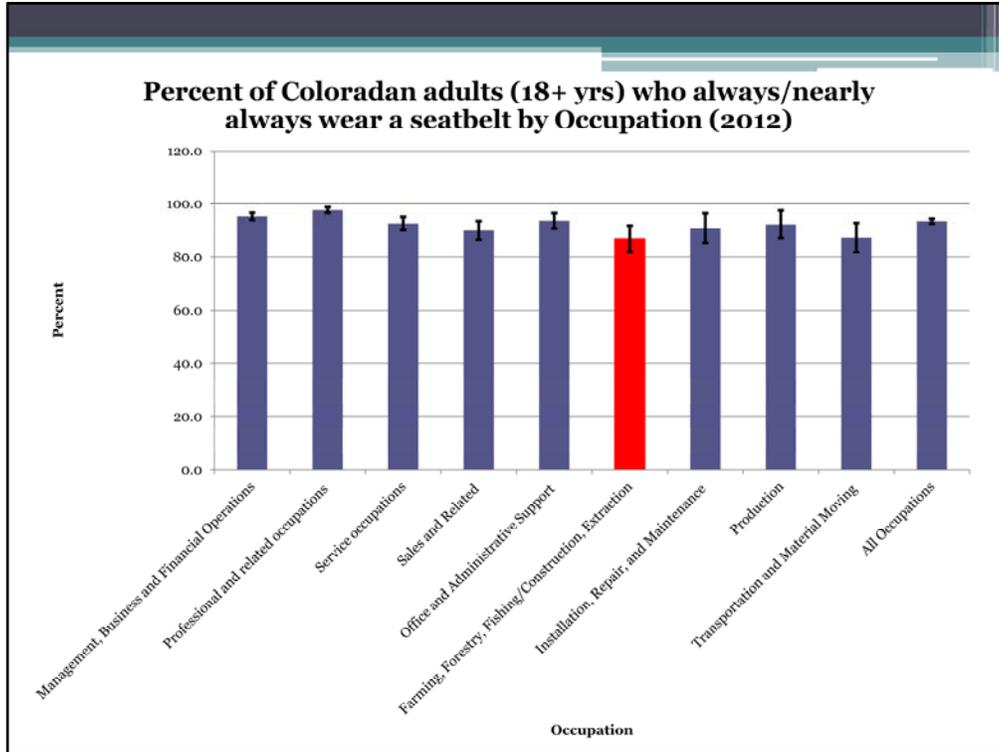
Our final analysis structure:

Grouped into 10 occupation codes due to small sample size and to more easily present such broad summary data.

Needed to combine FFF & CE due to small sample size as well.

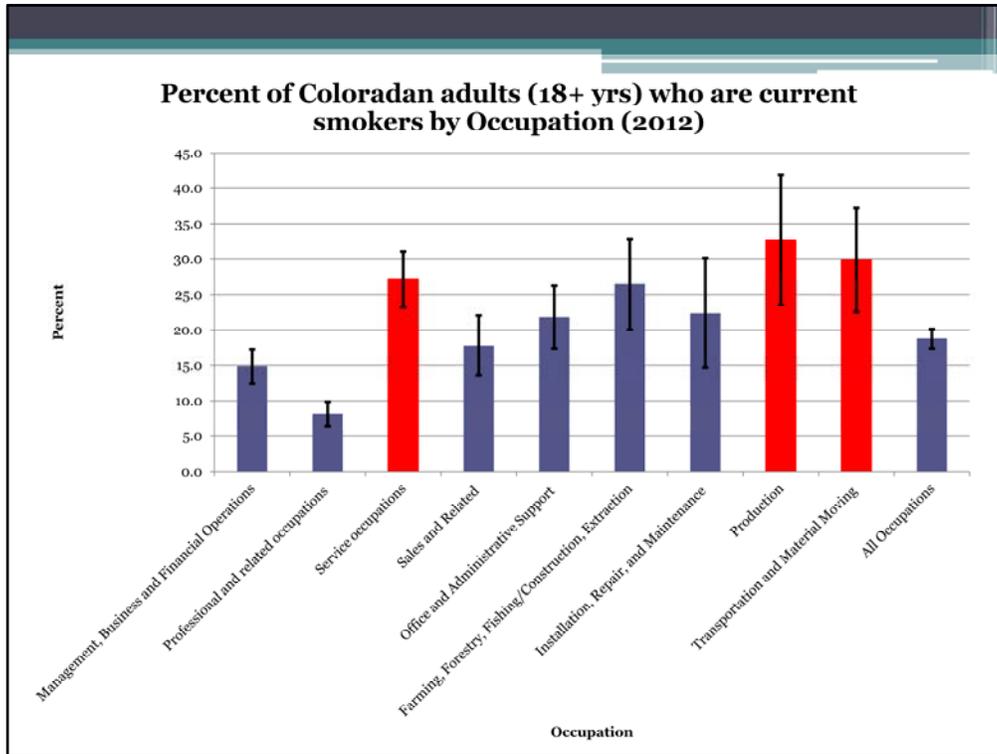
Note, as example, health care workers may be captured in two different occupation groups.

Analysis could drill down to more detailed industry/occupation levels, depending on program interest and sample size needed to draw conclusions.



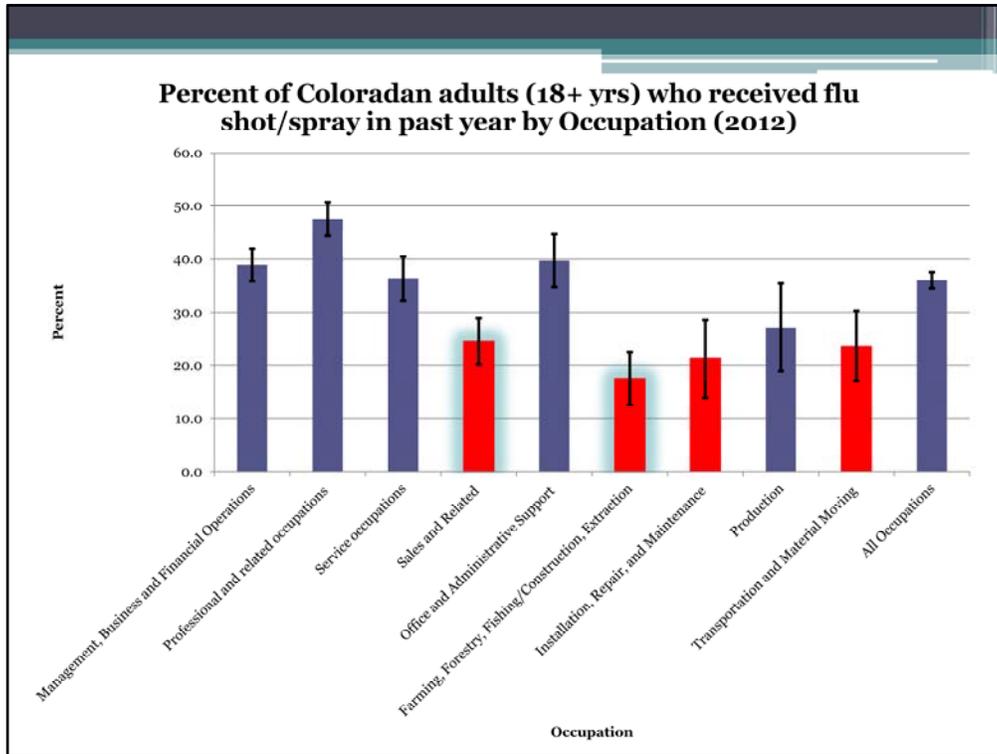
The percent of Colorado adults working in the farming, forestry, fishing/construction, extraction occupation (87.0%) are statistically significantly lower for always/nearly always wearing a seatbelt compared to all occupations (93.6%).

Source: Colorado Behavioral Risk Factor Surveillance System



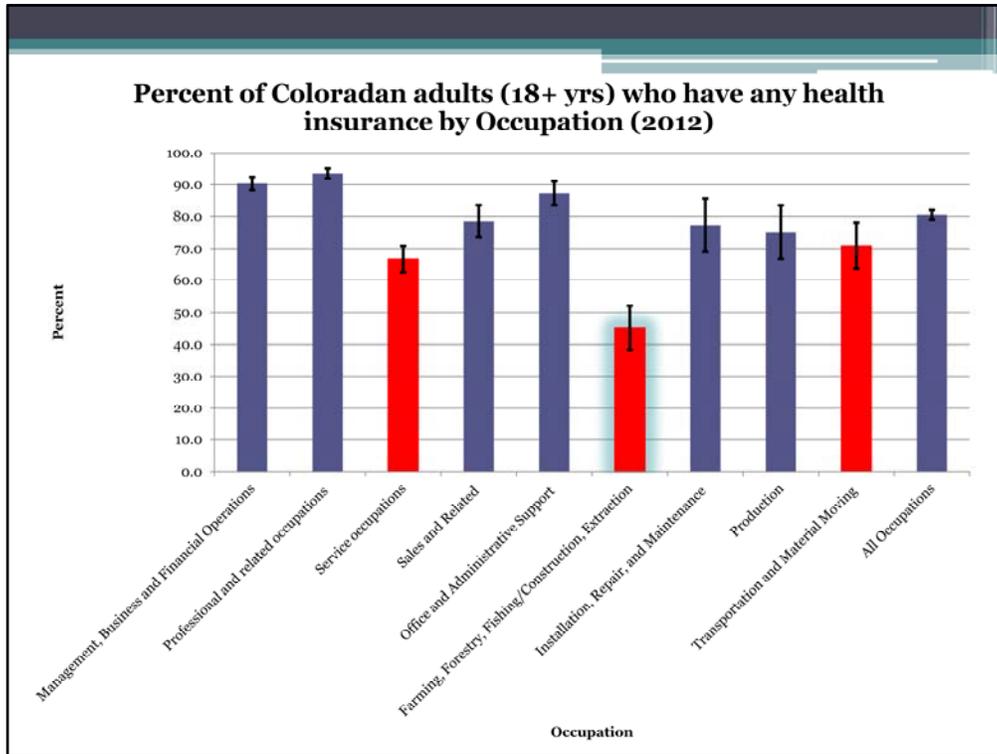
The percent of Colorado adults who are current smokers and working in the occupations of production (32.7%), transportation and material moving (29.9%) and service occupations (27.2%) are statistically significantly higher compared to all occupations (18.8%).

Source: Colorado Behavioral Risk Factor Surveillance System



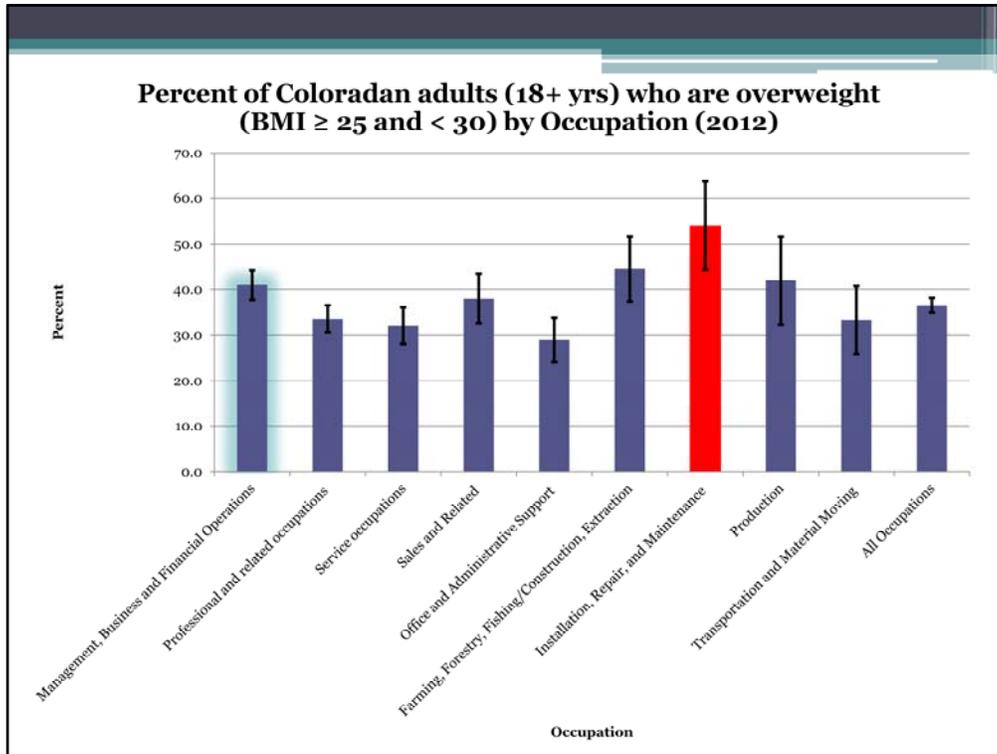
The percent of Colorado adults who received their flu vaccination in the occupations of sales and related (24.6%), transportation and material moving (23.7%), installation, repair, and maintenance (21.3%), and farming, forestry, fishing/construction, extraction (17.6%) are statistically significantly lower than for all occupations (36.0%). Similarly, among adults living in rural Colorado working in the occupations of sales and related (20.5%) and farming, forestry, fishing/construction, extraction (14.1%) are also statistically significantly lower compared to all occupations.

Source: Colorado Behavioral Risk Factor Surveillance System



The percent of Colorado adults with any health insurance who work in the occupations of transportation and material moving (70.9%), service occupations (66.7%) and farming, forestry, fishing/construction, extraction (45.3%) are statistically significantly lower than all occupations (80.5%). For adults living in Colorado, the percent of adults who work in farming, forestry, fishing/construction, extraction (53.6%) are statistically significantly lower than all occupations.

Source: Colorado Behavioral Risk Factor Surveillance System



The percent of Colorado adults who are overweight and work in the installation, repair, and maintenance (54.0%) occupation are statistically significantly higher compared to all occupations (36.6%). Adults in rural Colorado who work in the management, business and financial operations (51.5%) occupations are statistically significantly higher compared to all occupations.

Source: Colorado Behavioral Risk Factor Surveillance System

In Summary

- A view of the universe to draw conclusions relevant to your community
- Data availability varies (online vs. by request)
- Strengths & limitations - Recommend checking the documentation for any online sources
- Tools available as hand-outs and on CDPHE website:

www.colorado.gov/cs/Satellite/CDPHE-DCEED/CBON/1251610703528

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Contact us!

Alison Grace Bui

alison.bui@state.co.us

(303) 692 – 2139

Meredith Towle

meredith.towle@state.co.us

(303) 691-4938

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