

Wildfire and Ozone Impact on Health

Colorado All Payer Claims Database Analysis

Presentation to the Legislative Wildfire Committee July 30, 2024



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Wildfire and Ozone Impact on Health Analysis

Purpose of the Study

- Investigate the impact of air quality on emergency department (ED) visits
- Provide data-driven insights to inform legislative and public health discussions
- Support general public understanding of health impact of spike pollutant events

Study Design

- 2018 and 2019 (high frequency of wildfires, not exacerbated by COVID)
- Isolated to cost and utilization of ED visits for principle diagnosis of respiratory and cardiovascular conditions
- Geographic county trends, age group breakouts, payer variation
- Air quality data from the EPA for wildfire and ozone pollutants



General Findings

Seasonal Variation:

- Increases in ED visits are often correlated with time of year
- Air quality may exacerbate seasonal jumps in incidents, especially for young and elderly

Age Group Vulnerability:

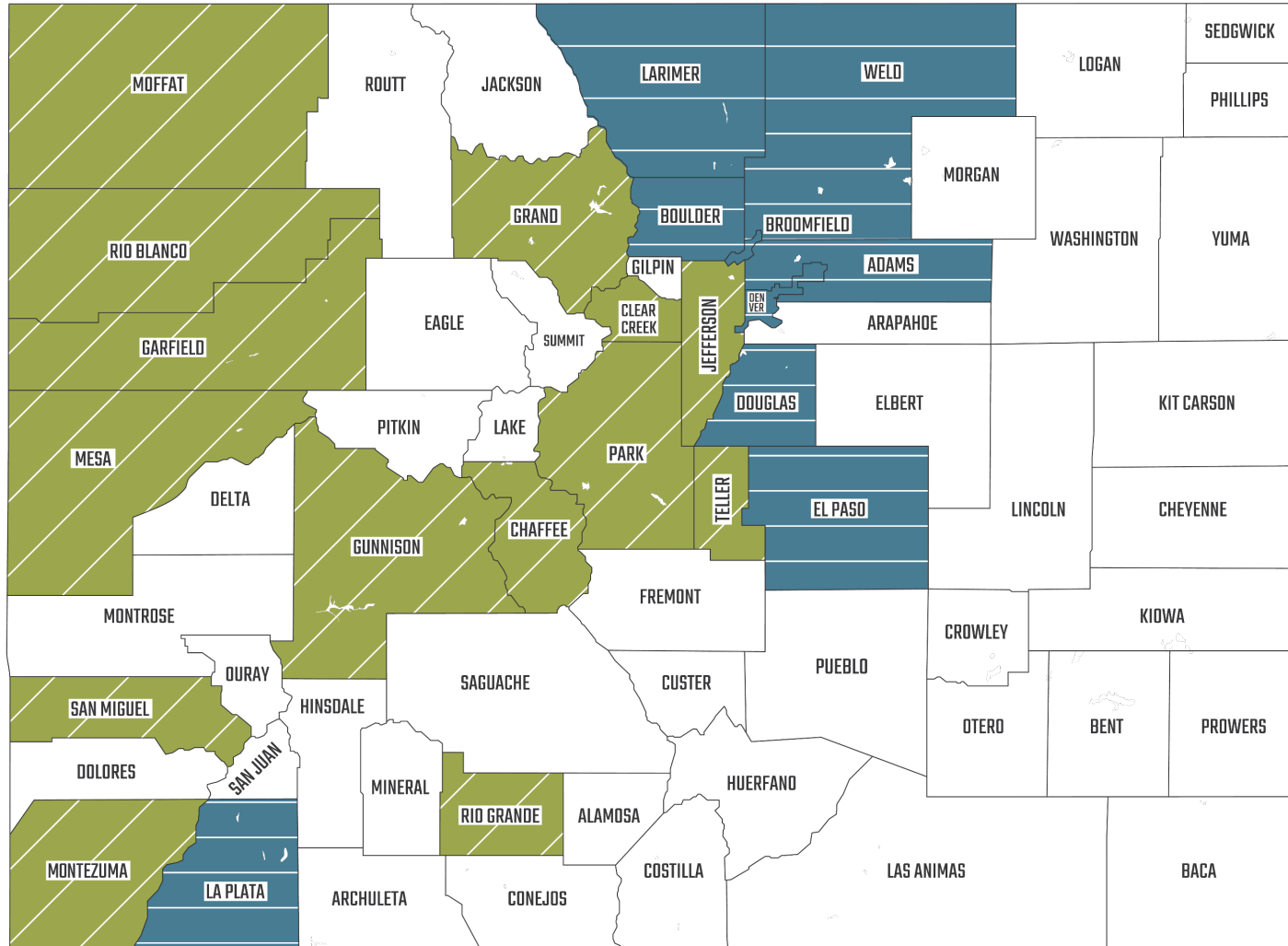
- 0-17 and over 65 impacted the most for both types of poor air quality
- Higher incidents of ED visits for 0-17 age group, regardless of air quality

Wildfires vs. Ozone:


- Stronger patterns for Wildfire and ED visits compared to Ozone and ED visits



Counties Impacted in 2018/2019



 Counties Impacted by **Wildfires** (High PM2.5 Concentration)

 Counties Impacted by **Ozone** (High Max Mean Concentration)

36% of all counties

*Note, this analysis is limited to counties and months that had available EPA data for wildfire and ozone in 2018 and 2019, and does not indicate all counties that may have been impacted by poor air quality as a result.

Wildfire Impact on ED Visits

2019 Findings: Higher rates of ED visits in counties during months above wildfire air quality threshold

Vulnerable Age Groups: Children under 17 and Adults over 65+

- Higher ED visit rates in 6/8 (75%) of the impacted counties during above-threshold months

County Specific Spikes:

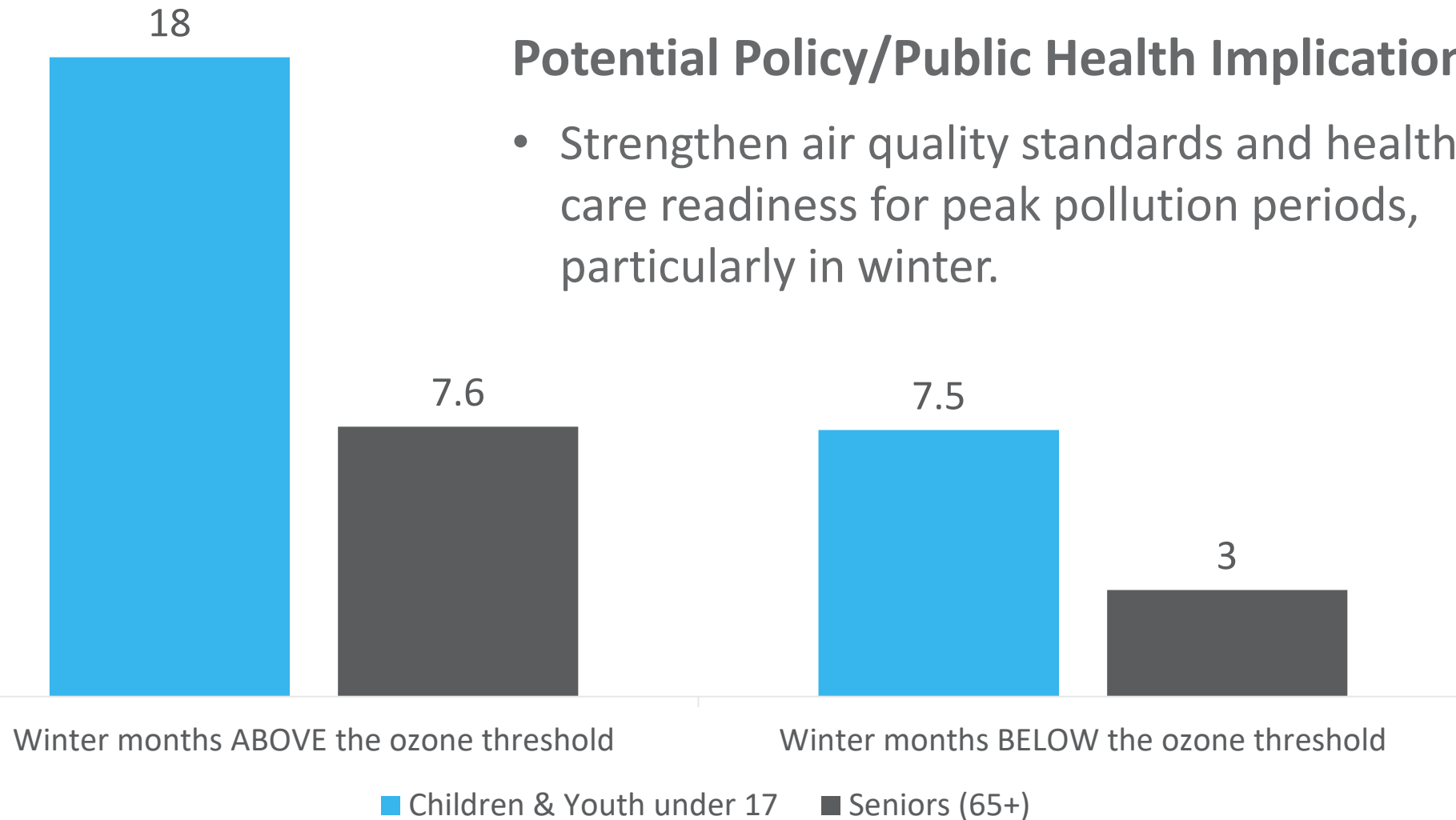
- **Denver, La Plata, and Weld** had repeated occurrences of higher ED visits related to wildfires, suggesting geographic areas where air quality could be a significant health concern

Potential Policy/Public Health Implications:

- Focus on protecting vulnerable age groups through targeted health interventions and support services
- Ensure medical professionals and facilities in rural and underserved areas are equipped with staff and resources to respond to wildfire emergencies



ED Visit Rate/1,000 lives More than Double in Winter Months Above Ozone Threshold



Potential Policy/Public Health Implications

- Strengthen air quality standards and health care readiness for peak pollution periods, particularly in winter.



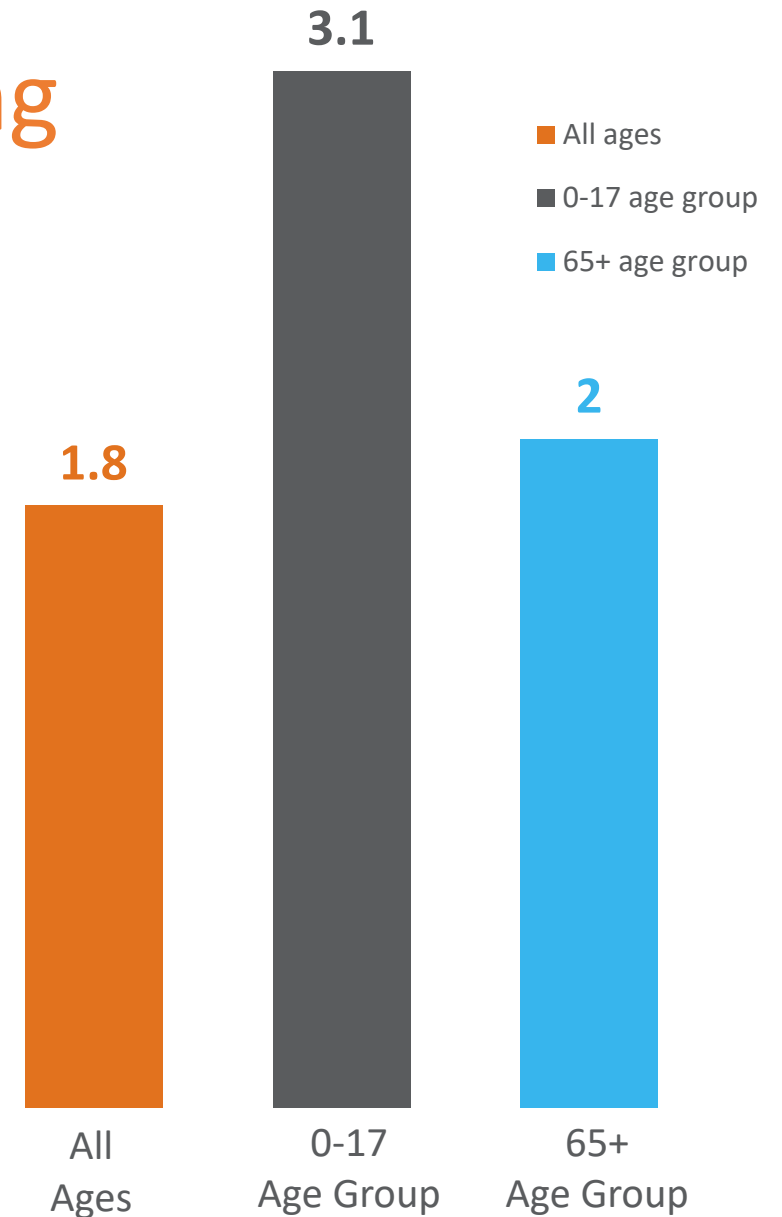
ED Visit Rates by Age Group During Ozone Spike Events

Average ED rate per 1,000 lives during spike events:

- All ages: ~ **1.8**
- 0-17 age group: **3.1**
- 65+ age group: **2.0**

Potential Policy/Public Health Implications

- Allocate resources to health care facilities in high-risk areas to handle increased ED visits.
- Educate vulnerable populations to prepare for spike ozone events



2018

		Total cost	Cost per visit
Commercial	<h2>Over \$1B Cost Impact of ED Visits</h2> <p>(Respiratory and Cardiovascular Disease-Related)</p> <p>Statewide cost by year and line of business</p>	\$380,636,171	\$29,174
Medicaid		\$132,235,846	\$2,044
Medicare Advantage		\$169,977,890	\$19,599
Medicare FFS		\$353,913,622	\$17,974
All Payers		\$1,036,763,529	\$9,784

2019

		Total cost	Cost per visit
Commercial		\$417,464,568	\$31,787
Medicaid		\$154,157,341	\$2,213
Medicare Advantage		\$221,241,509	\$20,520
Medicare FFS		\$347,652,156	\$18,705
All Payers		\$1,140,515,574	\$10,177



Next Steps

- This study was limited to ED visits for specific conditions
- Did not include extensive regression/correlation analysis
- Additional analyses could inform broader impact on health
 - Increases in primary care, urgent care, and telehealth visits
 - Evaluation of prescription drug fills for asthma and respiratory conditions

Additional CO APCD Environmental Studies

- **Researchers at CU studied health impact of living near oil and gas sites:**
“...found strong evidence that **older adults and women with AFib, atrial fibrillation,** living near oil and natural gas wells may experience a **worsening of their condition during development of those sites.**”
- **Colorado Public Radio Coverage with link to study:**
<https://www.cpr.org/2024/06/27/living-near-colorado-oil-gas-sites-make-symptoms-worse/>
- **Additional studies using CO APCD data:**
 - Prevalence of asthma in 6-7 year old children in Denver county
 - Health impact of living near Rocky Flats



Access the Full Excel Dataset

- Visit the Publications page at civhc.org:
<https://civhc.org/get-data/publications/>
- Fill out a short Google form



Contact Information



Reach out to Cari Frank cfrank@civhc.org, or Clare Leather cleather@civhc.org



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