



Pueblo Heart Study Fact Sheet

About the Study:

- ▶ The Pueblo Heart Study was an observational, scientific research effort designed to assess the potential impact of a newly enacted smoke-free ordinance on heart attack admissions in Pueblo, Colo.
- ▶ The study evaluated the number of heart attacks in Pueblo, Colo., during a three-year period from January of 2002 to December of 2004. This time frame covered the year and a half before the Smoke-Free Air Act went into effect on July 1, 2003, as well as a year and a half afterward.
- ▶ Findings of the Pueblo study were presented at the American Heart Association's Scientific Sessions 2005 conference in Dallas on Nov. 14.

Key Findings:

- ▶ The study showed that heart attack rates in Pueblo decreased by 27 percent after implementation of the city's smoke-free ordinance.
- ▶ In the year and a half before Pueblo's smoke-free ordinance went into effect, **399** heart attack patients were admitted to Pueblo's two primary hospitals. In the year and a half following enactment of the ordinance, the number of heart attack admissions dropped to **291**, representing **108 fewer heart attack patients or a decrease of 27 percent**.
- ▶ Pueblo, Colo., is the second U.S. community to examine data on hospital admissions for heart attacks following the institution of a comprehensive indoor smoke-free ordinance.
- ▶ The Pueblo study's findings are similar to a study done in Helena, Mont., which noted a 40 percent drop in hospital admissions for heart attacks during a six-month period when Helena first implemented its smoking ordinance. Pueblo's study reinforces the Helena findings based on similar but improved methodology, including a sample size that was three times the one used in Helena.

- ▶ The Pueblo study didn't distinguish between smokers and non-smokers; it represented the entire population. These numbers represent a combination of both smokers and those impacted by secondhand smoke.

Pueblo Heart Study Fact Sheet, 2/2/2/2

Interview Opportunities:

To speak with a researcher involved with the Pueblo Heart Study or a public health official in Pueblo or Denver, please contact Jenny Atchley or Barb Jones at (303) 292-6655.

Other possible interview sources:

- ▶ Dave Feamster, Pueblo businessman and owner of Little Caesar's restaurants, (719) 564-9611
- ▶ Thomas Carr, political analyst, American Lung Association, (202) 785-3355, tcarr@lungusadc.org
- ▶ Michelle Sawatka, director media relations, American Lung Association, (212) 315-8727, msawatka@lungusa.org
- ▶ Annie Tegen, senior program manager, Americans for Non-Smokers Rights, (206) 545-7175
- ▶ Charles Hodges, American Heart Association, (202) 785-7900, charles.hodges@heart.org
- ▶ Jennifer Friedman, associate director media relations, Campaign for Tobacco Free-Kids, (215) 247-7971, jfriedman@tobaccofreekids.org
- ▶ Kat Porter, media advocacy coordinator, American Cancer Society, (202) 585-3202, kathryn.porter@cancer.org
- ▶ Julie Cartwright, vice president communications, American Legacy Foundation, (202) 454-5596, jcartwright@americanlegacy.org

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Updated November 8, 2005

Pueblo Heart Study 2005



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Center

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Parkview Medical Center

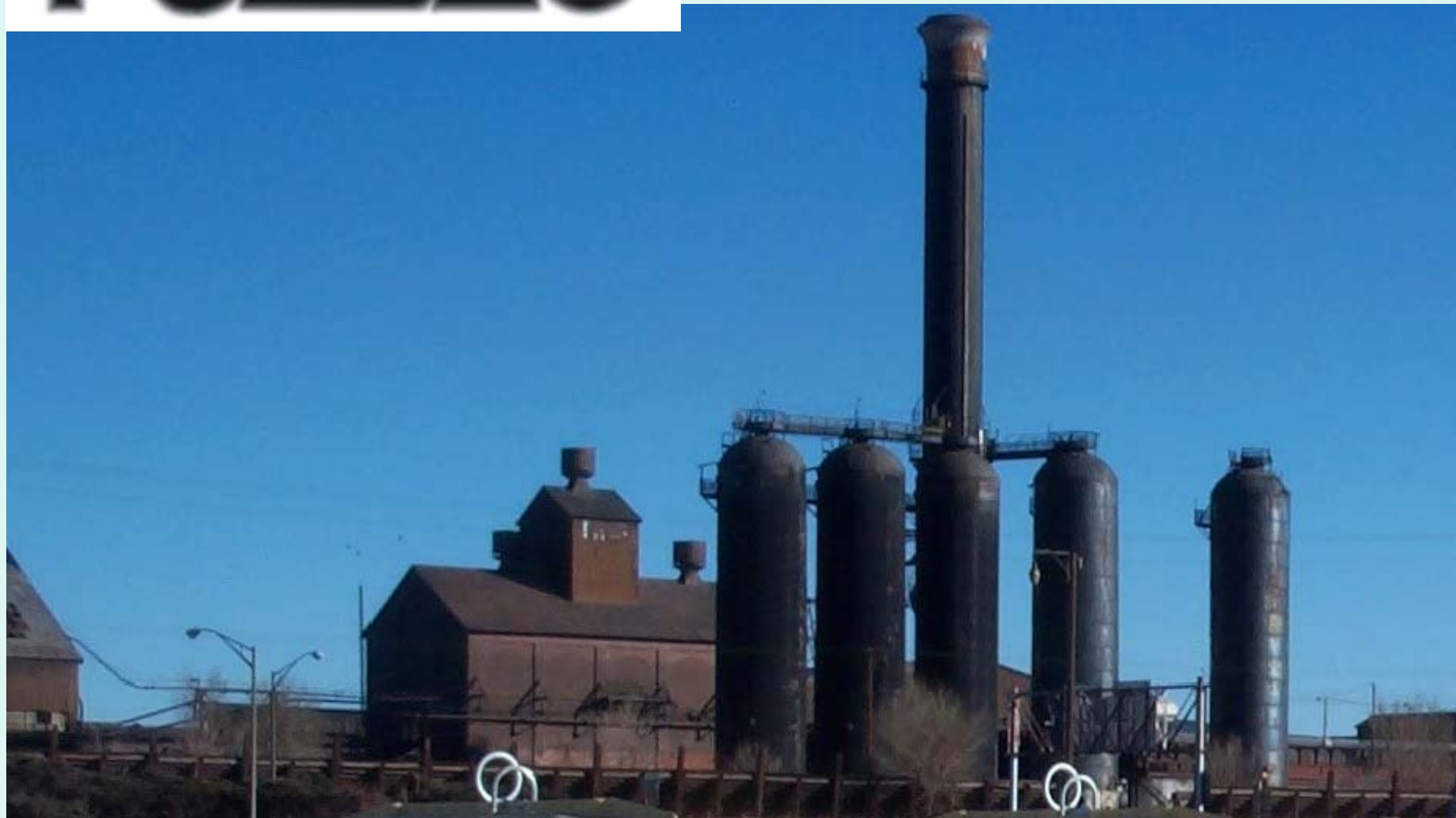
Reneè Beauvais, BS

Pueblo City-County Health Department

Presentation Overview

- **Description of Pueblo**
- **Saga of Smoking Ordinance**
- **Review of research on secondhand smoke on cardiac function**
- **Pueblo Heart Study**

PUEBLO



Description of Pueblo

- Population: City – 104,300
County – 44,400
- Traditionally blue collar town becoming more progressive
- Number of bars per/capita is high
- Economic development is a major goal

Saga of Smoke-Free Pueblo

CAMPAIGN #1 Educational/Policy

- 1998-2002:** Community education
- December 9, 2002:** Council passed 100% ordinance
- February 2003:** Opposition filed petitions
Repeal sent to the ballot (with recall)

CAMPAIGN #2 *Vote FOR!*

- May 22, 2003:** Ordinance passed!
- July 2003:** Opposition filed petitions again
New ordinance sent to the ballot

CAMPAIGN #3 *Vote Against 2C!*

- November 4, 2003:** Smoke-free Pueblo wins again!

Campaign # 1 *Education & Policy*

Goal:

Educate the public on the hazards of secondhand smoke

Activities:

- **Public presentations**
- **Smoke-free dining guide**
- **News articles**
- **Mailings to businesses**

Result:

December 9, 2002

City Council passed a 100% smoke-free indoor air ordinance.

January 1, 2003

**Pueblo Becomes
Smoke-Free!!**

**Pueblo remains smoke-free for 14
days!**

Ordinance Suspended through petition drive

Campaign # 2 *Vote For*

Goal:

Educate the community on the health benefits for the public and workers by reinstating the ordinance

Activities:

- Developed a Campaign Plan
- Created Budget & Fundraising Plan
- Set up volunteer database
- Developed Media Campaign

Voter Outreach

- Phone calls
- Neighborhood walks
- Distributed educational literature



The Opposition

*Puebloans for Common Sense
in Government*

The Opposition

Opposition Activities

- Radio ads
- Print ads
- Yard signs, banners
- Fundraising events

Opposition Messaging

- “Freedom of Choice”
- “Its About Jobs”



**The kids turned the table on the
opposition
and held a rally in support of the
ordinance!!**



The Opposition

Successfully petitions to put the ordinance back on the ballot in November, 2003

Campaign #3: *Vote Against 2C*

Goal:

Repeat activities from Campaign #2



November 4, 2003

**Pueblo Remains
Smoke-Free**

Purpose of Pueblo Heart Study

- The Pueblo Heart Study was an observational study designed to assess the impact of a smoke-free ordinance on the number of hospital admissions for heart attacks in Pueblo.

Collaboration

Reflected a collaboration of:

University of Colorado Health Sciences Center

Parkview Medical Center

Pueblo City-County Health Department

St. Mary Corwin Medical Center

Colorado Prevention Center

Secondhand Smoke and the Heart

5 minute exposure stiffens the aorta, the main artery carrying blood from the heart to the body. Makes the heart work harder to pump blood.

20 minutes exposure activates blood platelets involved in the clotting process. Activated platelets are more likely to form a blood clot in the blood stream. If the clot blocks the artery in the heart this causes a heart attack.

30 minutes exposure compromises the coronary arteries and their ability to dilate and lead to a heart attack.

2 hours exposure disturbs the heart rhythm.

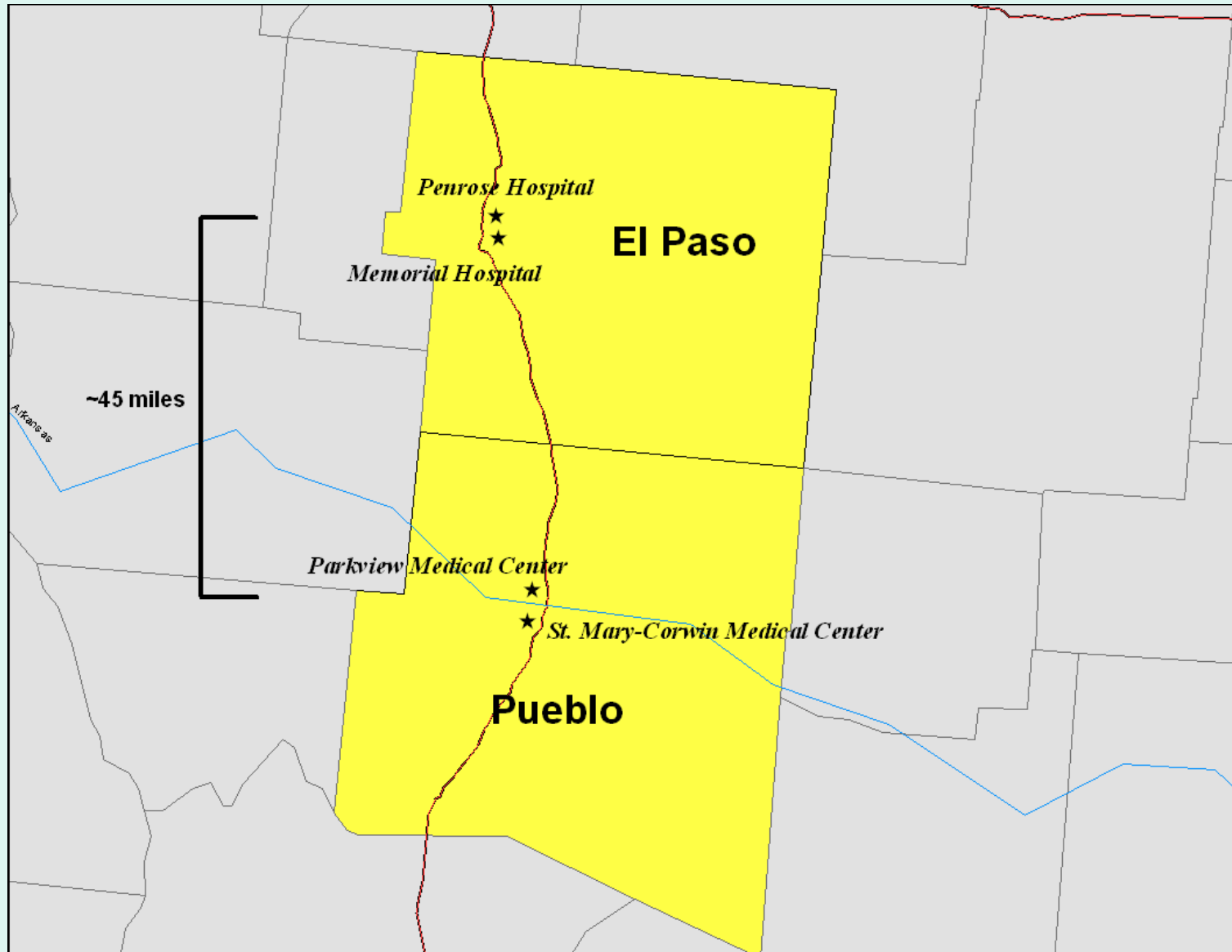
What is a heart attack

- A heart attack results from a lack of blood supply due to a coronary blockage to a portion of the heart muscle. It results in permanent damage or scarring of the muscle.
- This can lead to death or significant heart dysfunction and the inability to do the work needed to pump blood and oxygen to the rest of the body.

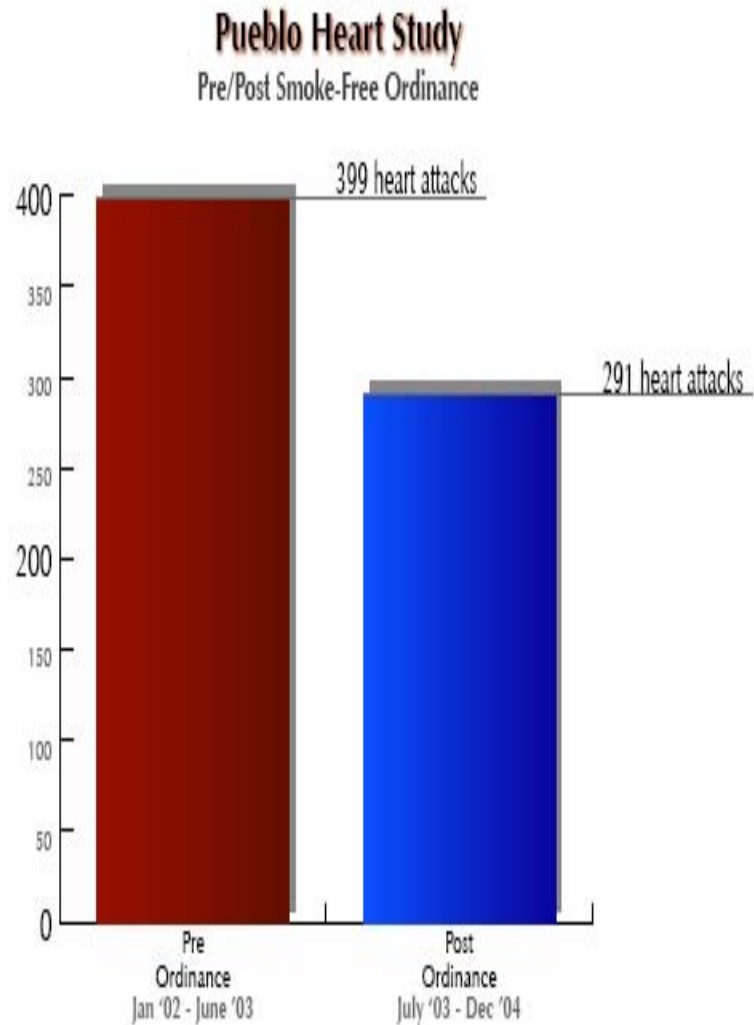
Study Design

- All heart attacks in Pueblo admitted to either Parkview Medical Center or St. Mary-Corwin Medical Center.
- Time frame covered the year and a half before the Smoke-Free Air Act went into effect on July 1, 2003, as well as a year and a half afterward.
- Residence determined by patient's zip code.

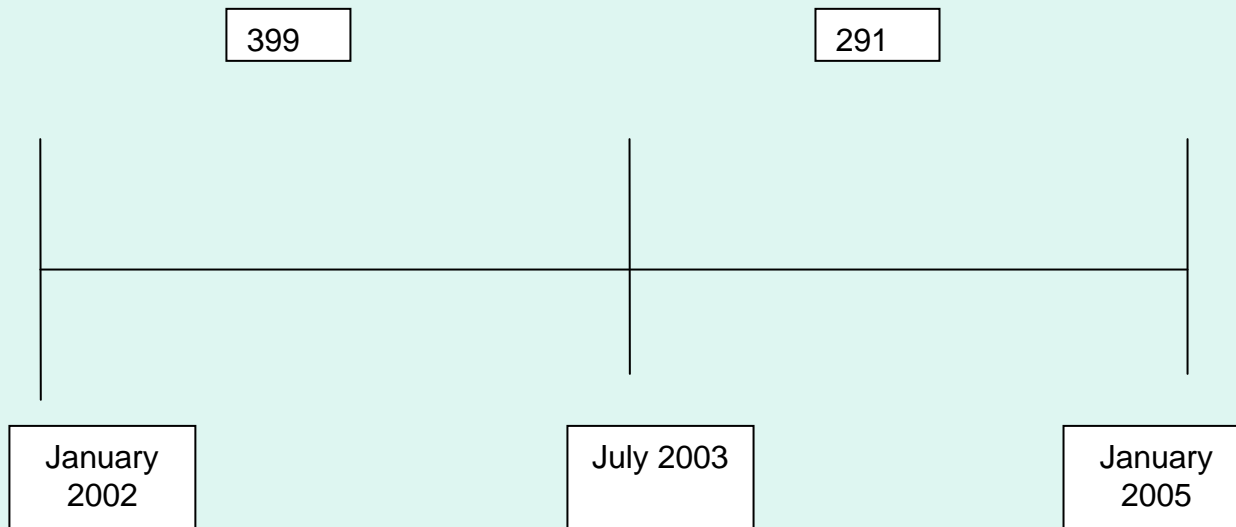
Pueblo and El Paso County



Results



Results



Number of heart attacks were
reduced by 108

Savings

- Initial heart attack estimated at several million dollars up to 4.5 million in health care costs.
- Ancillary costs of missed work, loss of livelihood, rehabilitation and follow-up medical care.

Benefit

The Pueblo Heart Study is adding to the growing body of knowledge that shows indoor smoke-free environments have the potential to rapidly improve a community's overall health while reducing the number of heart attacks.

Bottom Line

Pueblo is a community in action that continues to provide cities across the country the support needed to help in their efforts to become smoke-free.

Our study may be the **tipping point** for changing public opinion nationally.

Thank-you

- Dr. Bartecchi
- Dr. Alsever
- Jennifer Beasley - American Lung Association
- Reneè Beauvais - Pueblo Tobacco Prevention
- 2002 City Council - Dr. Bill Sova, Ted Lopez, Bob Schilling, Mike Occhiato
- Citizens for a Healthier Pueblo
- Pueblo Medical Society
- Board of Health
- Parkview Medical Center
- St. Mary Corwin Medical Center
- Youth of Pueblo

A City-wide Smoking Ordinance Reduces the Incidence of Acute Myocardial Infarction

Carl Bartecchi MD, Nick Alsever MD, Chris Nevin-Woods MD, William Thomas PhD, Raymond Estacio MD, Becki Bucher Bartelson PhD, Mori Krantz MD

Pueblo City-County Health Department, Parkview Medical Center, St. Mary Corwin Medical Center and the Colorado Prevention Center

BACKGROUND & OBJECTIVE

Epidemiologic data links exposure to secondhand smoke with acute myocardial infarction (AMI). The effects of a public smoking ordinance on AMI rates has been described previously in only one study (Helena, Montana). We sought to confirm the impact of a public smoke free ordinance on AMI in a geographically isolated community, Pueblo, Colorado.

METHODS

We assessed the number of AMIs in Pueblo during a 1.5 year period before and after implementing the Smoke-Free Air Act July 1, 2003. To ascertain effects of the ordinance, we compared the number of incident AMIs among individuals residing within city limits versus those outside city limits. All patients with a primary diagnosis of AMI (ICD-9 codes 410.xx) admitted between 1/1/2002 and 12/31/2004 were identified. Residence was ascertained by patient's zip code.

To account for secular trends, we compared AMI incidence during a similar time period in another geographically isolated community, El Paso County, Colorado without a similar ordinance (Figure 1).

ANALYSES

Poisson regression models were used to compare monthly AMI hospitalization counts before and after the ordinance among Pueblo city limit residents, non-city limit residents, and residents of El Paso County (external control). A series of regression models were fit to the monthly count data to best model the covariates of seasonality and linear trend. The best models included fixed effects for time (pre or post ordinance), location, the interaction of time and location, a linear trend, and two harmonics.

FINDINGS

We identified 2794 patients hospitalized in Pueblo and El Paso County with a principal diagnosis of AMI during the 3-year study period. Of the total patients, 1939 were residents of El Paso County and 855 were residents of Pueblo City and County. Patient characteristics are shown in Table 1. Temporal changes in monthly AMI rates are shown in Figure 3. Relative risk for AMI post to pre-ordinance are shown in Table 2. Expected counts per 100,000 person years are shown in Figure 2. The Poisson regression model adjusting for seasonal trends and linear decrease showed a significant difference in pre to post ordinance changes across locations (p=0.004).

Figure 1

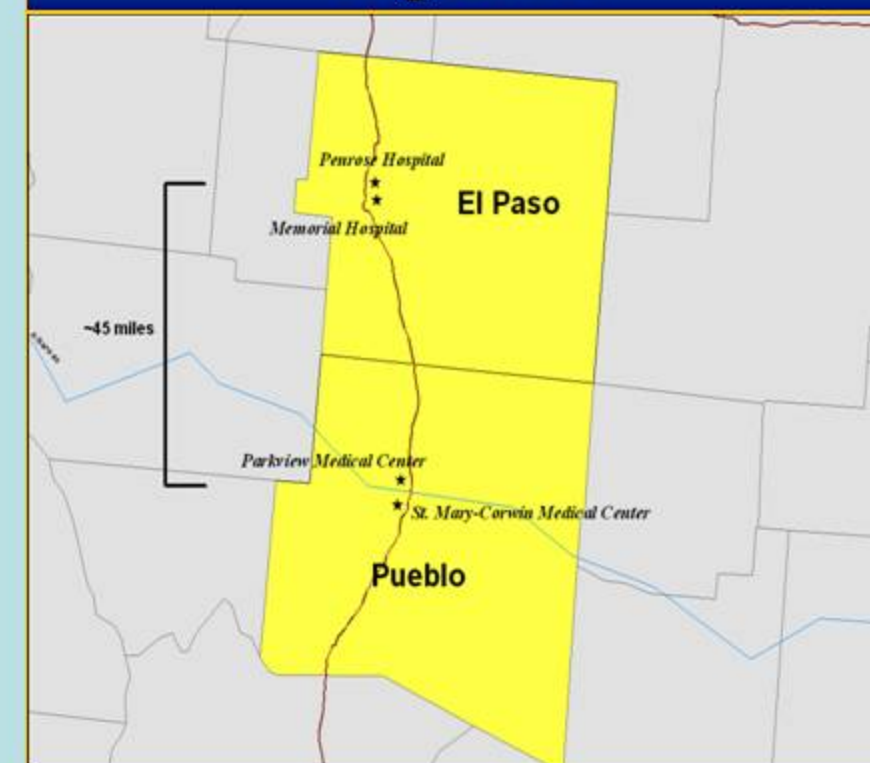


Figure 2

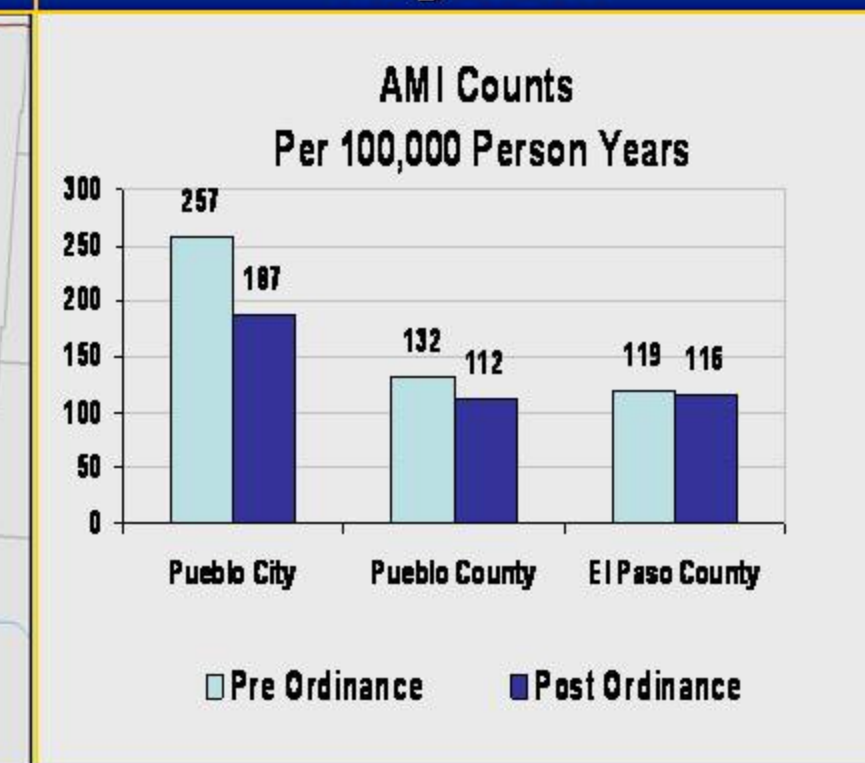
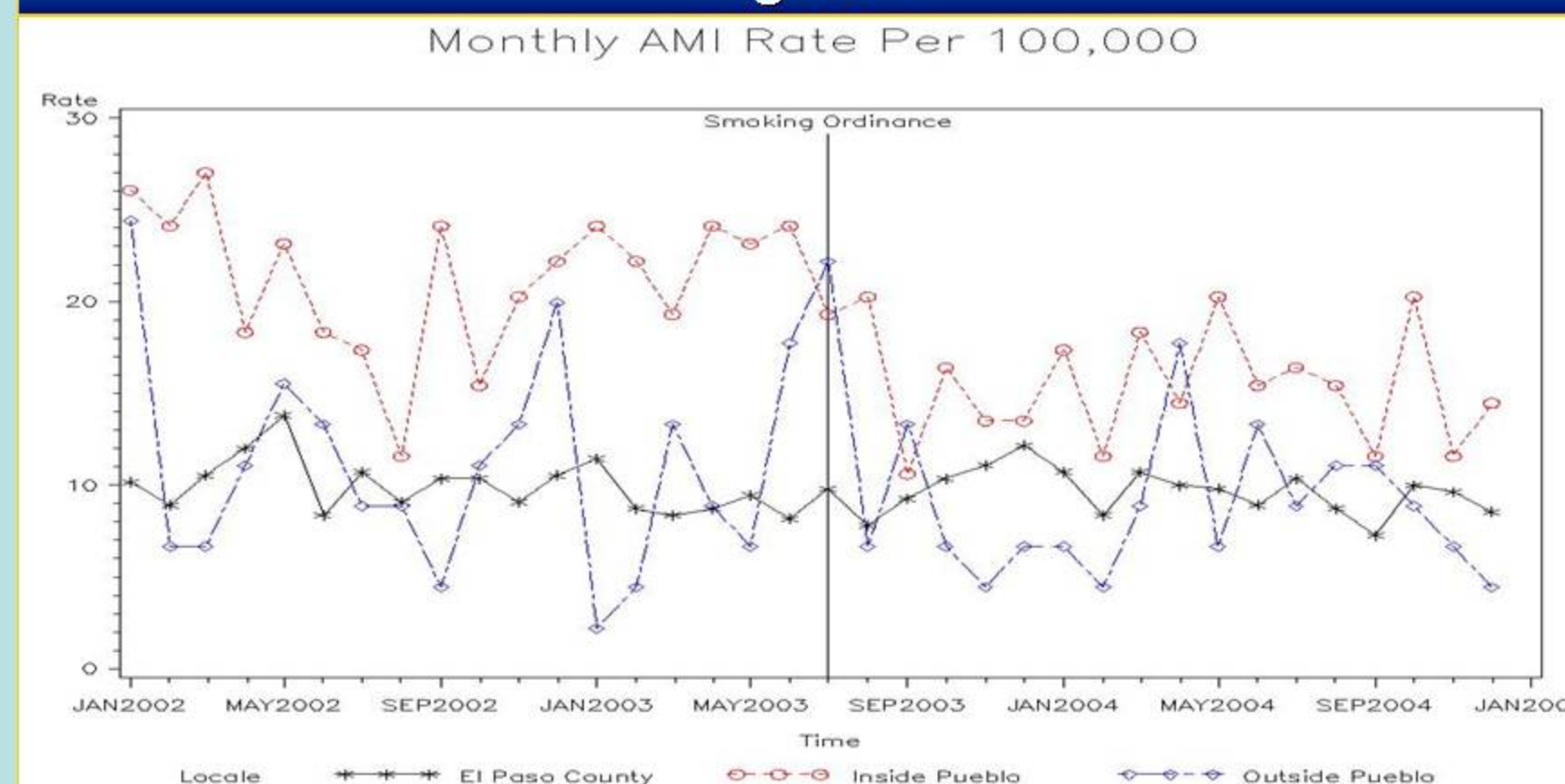


Table 2

Location	Pre (Rate)*	Post (Rate)*	RR for AMI Post Ordinance (95% CI)
Inside Pueblo City Limits	399 (257)	291 (187)	0.73 (0.63 – 0.85)
Outside Pueblo City Limits	89 (132)	76 (112)	0.86 (0.63 – 1.16)
El Paso County	984 (119)	955 (116)	0.97 (0.89 - 1.06)

* Rate/100,000 Patient Years

Figure 3



LIMITATIONS & STRENGTHS

Limitations

- Observational study
- No chart level (medical record) data
- Limited sociodemographic & clinical information

Strengths

- Assessed primary ICD-9 coded AMIs
- Evaluated nearly 3 times as many AMIs in Pueblo vs. the Helena study
- Strong local collaborative effort between Colorado stakeholders

CONCLUSIONS

- Our study confirms data reported previously from Helena, Montana, suggesting that a public smoking ordinance is associated with a 27.1% decline in AMI rates.
- Reduction in AMI rates from a smoking ordinance appear to occur within months and were sustained through the 1.5 year post ordinance study period.
- This underscores the potential benefits of a national smoke free policy.

Table 1

	Inside Pueblo City Limits N = 690	Outside Pueblo City Limits N = 165	El Paso County N=1939
Male, N (%)	408 (59%)	110 (67%)	1285 (66%)
Female, N (%)	282(41%)	55 (33%)	654 (34%)
Age, (Mean ± SD)	68.7 ± 14.4	66.5 ± 12.6	64.8 ± 12.2





Pueblo Heart Study

A City-Wide Smoking Ordinance Reduces the Incidence of Acute Myocardial Infarction

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Mori J. Krantz, MD
Raymond O. Estacio, MD
Colorado Prevention Center



St. Mary-Corwin
Medical Center





Pueblo Business Journal, May 2003

Pueblo Smoke-free Air Act 2002

The ordinance was passed in May 2003 with the intent and purpose to protect the public health and welfare by prohibiting smoking in enclosed public places and places of employment.

Why is a heart attack dangerous?

A heart attack results from a lack of blood supply due to a coronary blockage to a portion of the heart muscle. It results in permanent damage or scarring of the muscle. This can lead to death or significant heart dysfunction and the inability to do the work needed to pump blood and oxygen to the rest of the body.

What does secondhand smoke do to the heart?

5 minute exposure stiffens the aorta, the main artery carrying blood from the heart to the body. Makes the heart work harder to pump blood.

20 minutes exposure activates blood platelets involved in the clotting process. Activated platelets are more likely to form a blood clot in the blood stream. If the clot blocks the artery in the heart causes a heart attack.

30 minutes exposure compromises the coronary arteries and their ability to dilate and lead to a heart attack.

2 hours exposure disturbs the heart rhythm.



What is the Pueblo Heart Study?

The Pueblo Heart Study was a controlled observation study designed to assess the impact of a smoke-free indoor air ordinance on the number of hospital admissions for heart attacks. The study sought to prove (or disprove) a connection between a reduction in heart attacks and the enactment of a smoke-free indoor air ordinance.



How was the study conducted?

The Pueblo Heart Study was an observational, scientific research effort designed to assess the potential impact of a newly enacted smoke-free ordinance on heart attack admissions in Pueblo.

The study evaluated the number of heart attacks in Pueblo during a three-year period from January of 2002 to December of 2004. The time frame covered the year and a half before the Smoke-Free Air Act went into effect on July 1, 2003, as well as a year and a half afterward.

The study compared the number of heart attack hospitalizations among individuals living within city limits, to those living outside the city limits.

The study also compared heart attack hospitalizations during the same time period in El Paso County, another geographically isolated but nearby community that doesn't have a smoke-free indoor air ordinance.

Why are the results of the Pueblo Heart Study so important?

Pueblo, Colorado is now one of only a handful of U.S. communities to have documented a significant decline in hospital admissions for heart attacks following the institution of a comprehensive smoke-free indoor air ordinance.

The Pueblo Heart Study suggests the immediate benefits of smoke-free indoor air laws may persist for many months (perhaps years) - well beyond the initial implementation of the law.

The Pueblo Heart Study offers important insights and additional factual data to inform and assist decisions involving public health policy in communities across the state of Colorado and the Nation.

Results of the study

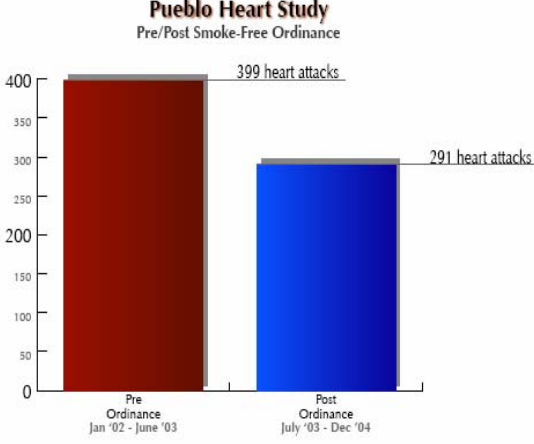
The study showed that heart attack rates in Pueblo decreased by **27** percent after implementation of the city's smoke-free ordinance.

In the year and a half before Pueblo's smoke-free ordinance went into effect, **399** heart attack patients were admitted to Pueblo's two primary hospitals.

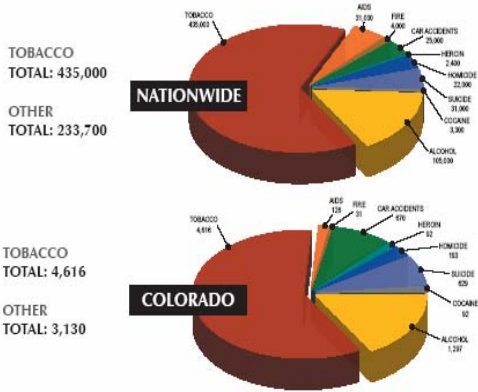
In the year and a half following enactment of the ordinance, the number of heart attack admissions dropped to **291**, representing **108 fewer heart attack patients or a decrease of 27 percent**.

The average charge for a heart attack during the year and a half of the study were \$42,000 per patient.

Total estimated savings **\$4,536,000**



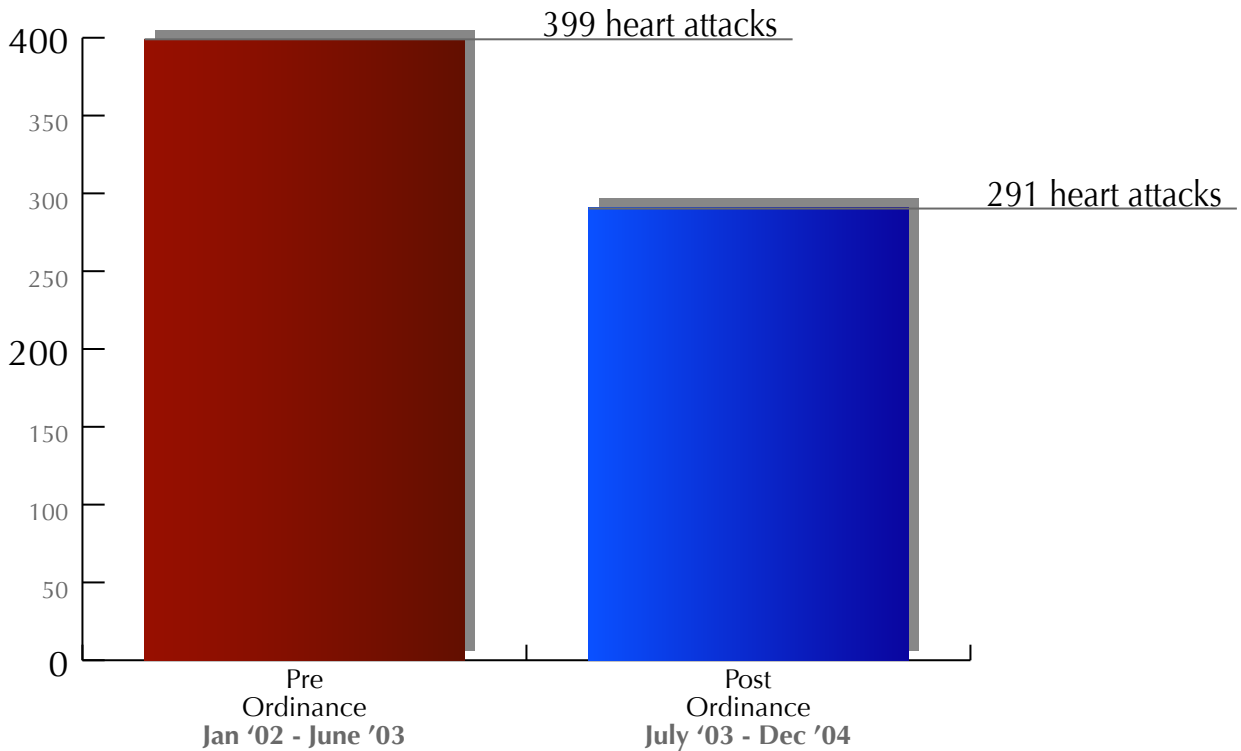
Tobacco Kills More Americans Each Year Than...



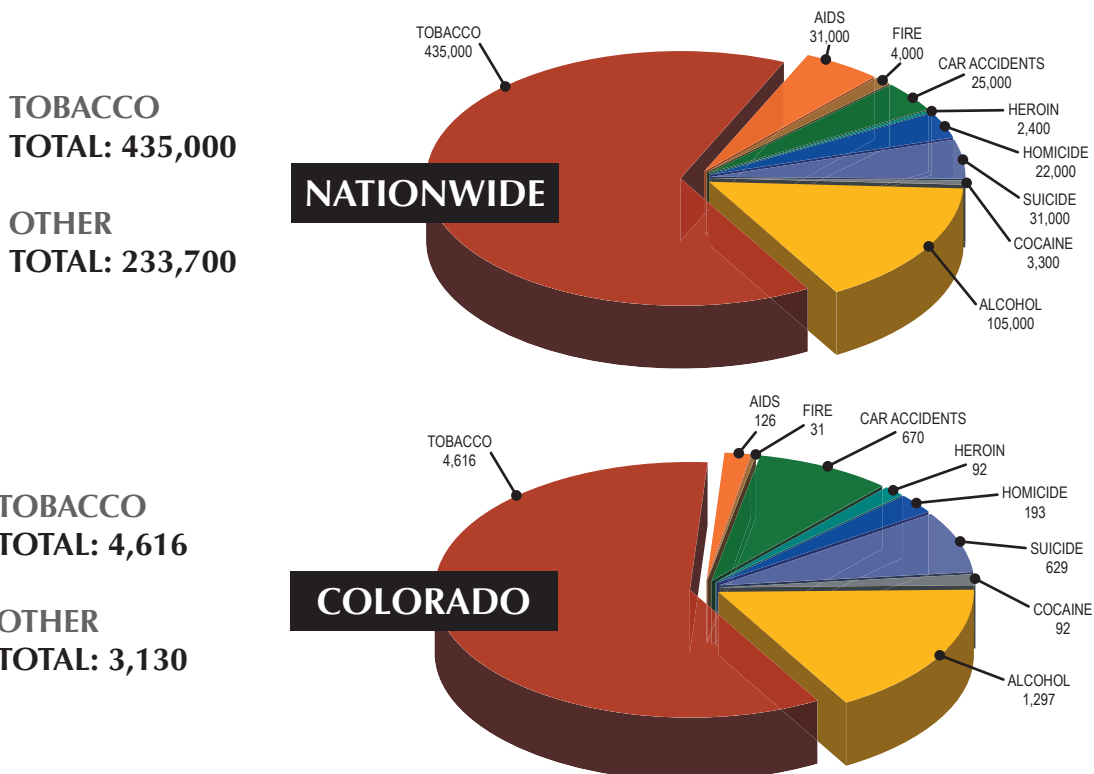
Source: U.S. Centers for Disease Control, U.S. Environmental Protection Agency, National Center for Health Statistics, National Safety Council and Smokefree Educational Services and Colorado Department of Public Health and Environment

Pueblo Heart Study

Pre/Post Smoke-Free Ordinance



Tobacco Kills More Americans Each Year Than...



Sources: U.S. Centers for Disease Control, U.S. Environmental Protection Agency, National Center for Health Statistics, National Safety Council and Smokefree Educational Services and Colorado Department of Public Health and Environment