



# Setting the Foundation for Work-related Asthma Surveillance in New Mexico



Results from the 2005 New Mexico BRFSS  
New Mexico Occupational Health Registry



**Karen B. Mulloy, D.O., MSCH**

Denver Health Occupational Health and Safety, University of Colorado  
School of Medicine

**Stephanie Moraga-McHaley, MS**

**Denece O. Kesler, MD, MPH**



University of New Mexico Health Sciences Center

**Len Flowers, MS**



New Mexico Department of Health


# Project Goal

- To estimate the percentage of asthma that may be related to work in New Mexico from a survey of adults who report current asthma





# Desired Outcomes

- To inform health care providers and others about the burden of work-related asthma in NM
    - Increase diagnosis of work related asthma
    - Reporting of work-related asthma to the NM Occupational Health Registry
    - Develop interventions
    - Reduce WRA
- 

# Work-related asthma in New Mexico - what is known to date

- Bureau of Labor Statistics - SOII: 0 cases in 10 years
- NM Workers' Compensation Administration 2004 - 2005: 0 cases coded to OIICS 1443 - 'Extrinsic Asthma' - but - 16 cases where 'asthma' appears in the narrative
- Hospital Inpatient Discharge for 2003: 0 cases
- NMOHR - <5 cases reported since 2004



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# Approach

- Modeled on Asthma Surveillance Conducted by NIOSH funded Asthma States: MA, CA & MI
  - Flattery J, Davis L, Rosenman K, Harrison R et.al The proportion of self-reported asthma associated with work in three states: California, Massachusetts, and Michigan, 2001 J. Asthma 43:213-218, 2006

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# Objectives

- Estimate lifetime, current asthma in New Mexican adults by
  - Gender
  - Ethnicity
- Assess possible work-related asthma determined by two questions in BRFSS
- Compare to CA, MA and MI

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# BRFSS

- Behavioral Risk Factor Surveillance System
- World's largest, on-going telephone health survey system
- Survey conducted in all U.S. states and territories - Supported by CDC

-for more info...  
<http://www.cdc.gov/brfss/>



# New Mexico BRFSS



Core asthma questions since 2000




– Current asthma prevalence for 33 New Mexico Counties





Response rate in New Mexicans for 2005 is 58.9%\*



State-added questions 2005 - ASTHMA  
IN THE WORKPLACE



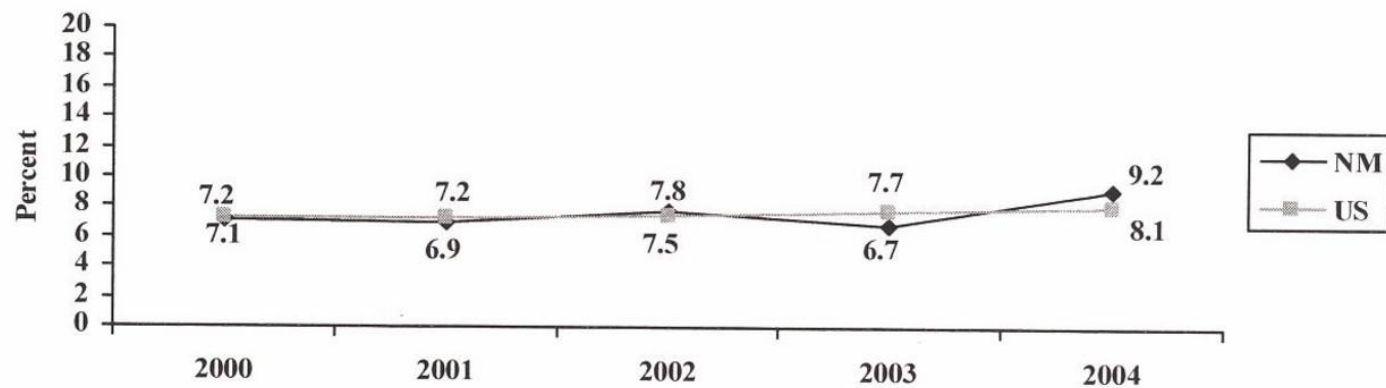
\*2005 BRFSS Summary Data Quality Report  
<http://www.casro.org/>





# Trend for Adult Asthma: NM & US

Figure 2. Current Asthma Prevalence, NM and US Adults, 2000-2004



Source: NM BRFSS 2000-2004

Source: The Burden of Asthma in New Mexico: 2006 Surveillance Report. New Mexico Dept. of Health

# Procedures

- Q 9.1 Have you EVER been told by a doctor, nurse, or other health professional that you had asthma?
  - Q 9.2 Do you still have asthma?
  - Q SAM 10.1 Were you ever told by a doctor or other medical person that your asthma was related to any job you ever had?
  - Q SAM 10.2 Did you ever tell a doctor or other medical person that your asthma was related to any job you ever had?

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# Procedures

- Calculated variable for possible work-related asthma - combination of Q10.1 and Q10.2
- Weighted variables used to calculate estimates of asthma prevalence and percentage asthma due to work.
- Stata version 9

## Estimated Prevalence of Lifetime and Current Asthma - New Mexico 2005

|  | NM 2005    |
|--|------------|
|  | n = 5585   |
| Have you ever been told that you have asthma in your lifetime? | 14.5 ± 1.3 |
| Males  | 13.6 ± 2.0 |
| Females  | 15.4 ± 1.6 |
| White, non-Hispanics   | 16.7 ± 1.8 |
| Hispanics and other races                                      | 12.2 ± 1.8 |
| Do you still have asthma?                                      | 8.9 ± 1.0  |
| Males  | 7.3 ± 1.4  |
| Females  | 10.4 ± 1.4 |
| White, non-Hispanics   | 10.3 ± 1.4 |
| Hispanics and other races                                      | 7.4 ± 1.3  |

## Estimated Prevalence of Lifetime and Current Asthma - NM 2005 and CA, MA & MI, 2001

|  | NM 2005    | CA         | MA         | MI         |
|--|------------|------------|------------|------------|
|  | n=5578     | n=4188     | n=8628     | n=3830     |
| Have you ever had asthma in your lifetime? | 14.5 ± 1.3 | 12.7 ± 1.2 | 13.1 ± 0.9 | 12.4 ± 1.2 |
| Males                                      | 13.6 ± 2.0 | 9.9 ± 1.6  | 11.0 ± 1.3 | 10.5 ± 1.8 |
| Females                                    | 15.4 ± 1.6 | 15.4 ± 1.6 | 14.9 ± 1.2 | 14.1 ± 1.6 |

|                               |            |           |            |            |
|-------------------------------|------------|-----------|------------|------------|
| Do you currently have asthma? | 8.9 ± 1.0  | 7.5 ± 0.9 | 9.5 ± 0.8  | 8.8 ± 1.0  |
| Males                         | 7.3 ± 1.4  | 5.2 ± 1.2 | 7.4 ± 1.1  | 6.7 ± 1.5  |
| Females                       | 10.4 ± 1.4 | 9.8 ± 1.3 | 11.4 ± 1.2 | 10.8 ± 1.5 |

## Work-related responses

New Mexico

n = 519

Have you ever been told that your asthma was related to your work?

6.1 ± 2.3

Males

10.7 ± 5.2

Females

3.1 ± 1.8

White, non-Hispanics

4.4 ± 2.5

Hispanics and other races

8.6 ± 4.4

Have you ever told a doctor that your asthma was related to your work?

6.4 ± 2.2

Males

12.3 ± 5.2

Females

2.6 ± 1.5

White, non-Hispanics

5.4 ± 2.7

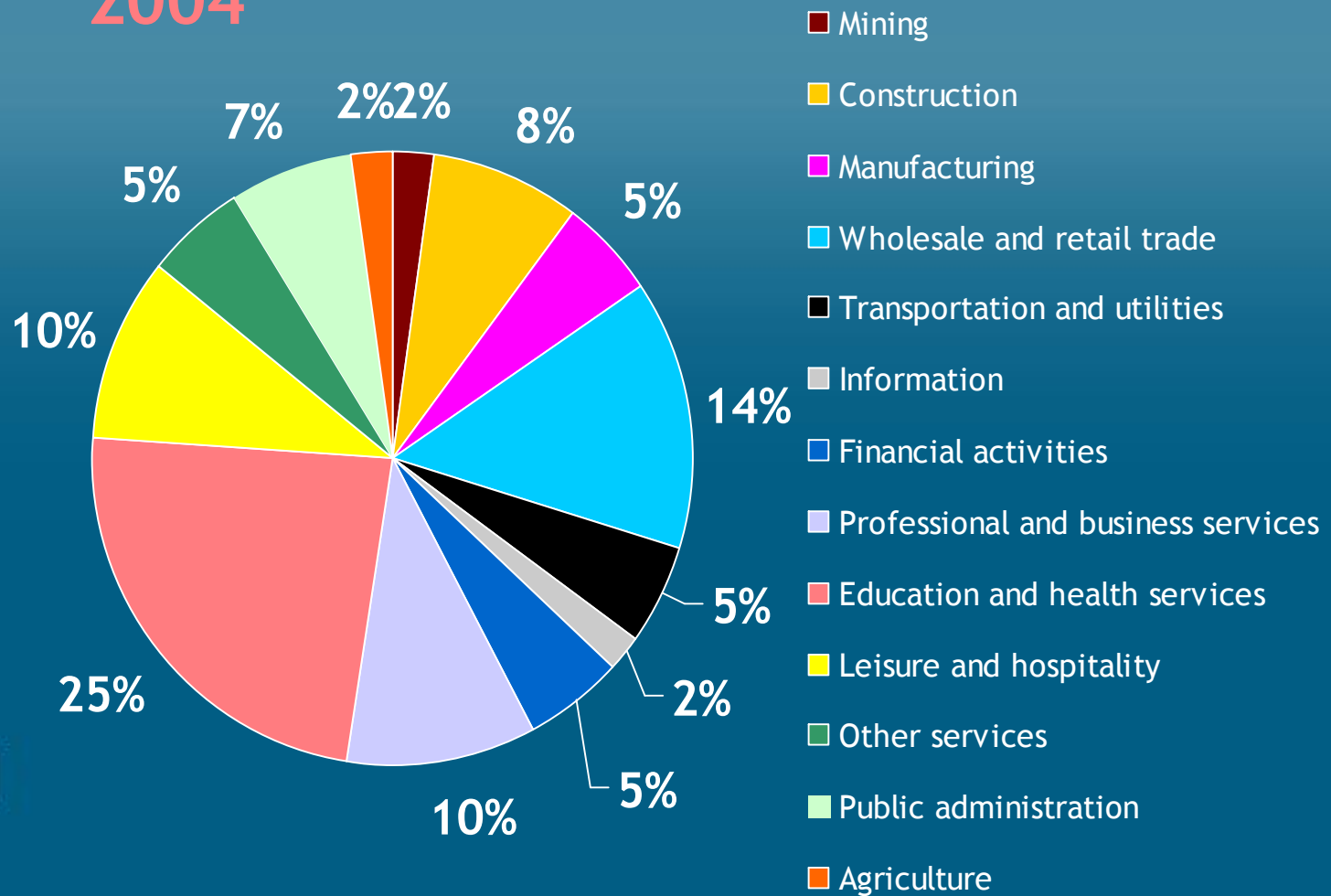
Hispanics and other races

7.7 ± 3.8

## Estimated Percentage of Asthma due to Work NM 2005 and CA, MA & MI, 2001

|                              | NM 2005    | CA 2001   | MA 2001   | MI 2001    |
|------------------------------|------------|-----------|-----------|------------|
|                              | n = 519    | n = 343   | n = 817   | n = 337    |
| Possible work-related asthma | 9.3 ± 2.8  | 7.4 ± 3.5 | 8.5 ± 2.3 | 9.7 ± 3.2  |
| Males                        | 16.9 ± 6.2 | 9.8 ± 7.2 | 7.9 ± 3.6 | 12.6 ± 6.8 |
| Females                      | 4.6 ± 2.2  | 6.1 ± 3.9 | 8.8 ± 3.0 | 8.1 ± 3.3  |

# Employment by Industry - New Mexico 2004





# Known cases in New Mexico - Where are they?

- Manufacturing - MDI
- Construction - roofing tar
- Food manufacturing - chile processing
- Health care - glutaraldehyde



# Industries in New Mexico with Possible Exposure to Asthma Inducers

| <u>Industry</u>                         | <u># employed<br/>NM 2005</u> | <u>Associated asthma inducers</u>                             |
|---|-------------------------------|---|
| Coal Mining                             | 1,489                         | Rhizopus nigricans  |
| Hospitals                               | 27,448                        | Hexachlorophene, Glutaraldehyde, Formaldehyde, Ethylene oxide |
| Bakeries and Tortilla Mfg.              | 933                           | Fungal amyloglucosidase & hemicellulase, Gluten, Flour,       |
| Food Manufacturing                      | 4,671                         | Spices, onion, Soybean lecithin                               |
| Manufacturing polyurethane products     | 100-249                       | Hydrogenated MDI  |
| Foundries                               | 20-99                         | MDI; Diphenylmethane diisocyanate, Furfuryl alcohol           |
| Chemical Manufacturing                  | 40                            | Piperazine dihydrochloride, Hexahydrophthalic anhydrides      |
| Hair, Nail, and Skin Care Services      | 1,871                         | Ammonium persulphate, Ethyl methacrylate, Henna               |
| Janitorial Services                     | 3,511                         | Banzalkonium chloride, chloramine T                           |
| Printing and Related Support Activities | 981                           | Chromium and compounds  |
| Farming                                 | 7,867                         | Chlorothalonil, Farm animals, Grain mite, Wheat weevil        |

Can we quantify workers with asthma exposure in NM?

Too many occupations,  
Too many industries,  
Too many exposures,  
Too many lists!

| Occupation             | Associated occupations                           | BOC code | SOC code | DATA FERRETT               | SOC - LASER | Employment NM 2002 |
|------------------------|--|----------|----------|----------------------------|-------------|--------------------|
| Farmers                | Farmer (OBI 017)                                 | 20       | 11-9011  |                            |             | 7,867              |
|                        | Farmer, OF N...                                  | 20       | 11-9011  |                            |             |                    |
|                        | Engineering technicians, except drafters         | 17       | 302      | LASER                      |             |                    |
| Laboratory workers     | Agricultural and food science technicians        | 19-4010  |          | Agricultural and Food Sc   | 19401       | ***                |
|                        | Biological technicians                           | 19-4020  |          | Biological Technicians     | 194021      | 150                |
|                        | Chemical technicians                             | 19-4030  |          | Chemical Technicians       | 194031      | 456                |
| Teachers               | Primary, secondary & special education teachers  | 25-2000  |          | Primary, Secondary, and    | 252000      | 27,063             |
|                        | Food processors/workers                          | 25-2020  |          | Food Processing (orker)    | 5100        | 3,005              |
|                        | Photographers                                    | 27-4021  |          | Photographers              | 2702        | 40                 |
|                        | Health diagnosing and treating practitioners     | 29-1000  |          | Health Diagnosing and T    | 291000      | 24,693             |
|                        | Medical & clinical lab technicians/technologists | 29-2010  |          | see below                  |             |                    |
|                        |  |          |          | Medical and Clinical Lab   | 292011      | 776                |
|                        |  |          |          | Medical and Clinical Lab   | 292012      | 852                |
|                        |  |          |          | Performer, Practical and L | 292061      | 3,270              |
| Health care workers    | Nursing, psychiatric and home health             | 300      | 31-1000  | Nursing, Psychiatric, anc  | 311000      | 12,025             |
|                        | Animal caretaker, laboratory                     | 390      | 31-9096  | Veterinary Assistants and  | 319096      | 550                |
|                        | Animal control officer                           | 390      | 33-9011  | Animal Control Workers     | 339011      | 284                |
| Food service workers   | Cooks  | 35       | 2010     | Cooks and Food Preparation | 352000      | 18,848             |
| Seafood processors     | Food processors - fish and seafood workers       | 35       | 2021     | cannot code                |             |                    |
| Janitors/cleaners      | Janitors, cleaners, janissal, and janissal       | 422      | 37-2011  | Janitors and Cleaners, E   | 372011      | 13,160             |
|                        |  |          |          | Maids and Housekeeping     | 372012      | 9,434              |
|                        | Animal trainer                                   | 434      | 39-2011  | Animal Trainers            | 392011      | 152                |
| Animal handlers        | Animal caretaker (except farm and                | 435      | 39-2021  | Nonfarm Animal Caretak     | 392021      | 717                |
| Hairdressers           | Hair cutter (barbershop)                         | 450      | 39-5011  | Barbers                    | 395011      | 681                |
|                        | Hair stylist                                     | 451      | 39-5012  | Hairdressers, Hairstylists | 395012      | 2,667              |
| Nail salon workers     | Manicurists & pedicurists                        |          | 39-5092  | Manicurists and Pedicuri   | 395092      | 45                 |
| Daycare providers      | Day care aide, attendant, home care              | 460      | 39-9011  | Child Care Workers         | 399011      | 4,244              |
|                        | Animal breeder                                   | 622      | 45-2020  | Animal breeders            | 45202       | 126                |
| Egg producers          | Grocers and porters and retail products          | 45       | 204      | cannot code                |             | 363                |
|                        | Farmer (GOV or PR 017)                           | 605      | 45-2092  | Farmworkers and Laborer    | 452092      | 11,886             |
|                        | Animal caretaker, farm                           | 605      | 45-2093  | Farmworkers, Farm and      | 452093      | 607                |
| Forest workers         | Forest conservation and logging workers          | 45       | 4000     | Forest, Conservation, an   | 45400       | 266                |
| Carpenters             | Carpenter n.s. or any specified ty               | 623      | 47-2031  | Carpenters                 | 472031      | 7,635              |
|                        | Carpenter, mill                                  | 623      | 47-3022  | Shaper - Paper             | 473012      | 790                |
| Plastic/rubber workers | Rubber & plastics worker                         | 74       | 3040     | cannot code                |             |                    |
| Electronic workers     | Assembler, electronic                            | 772      | 51-2022  | Electrical and Electronic  | 512022      | 653                |
|                        | Baker  | 780      | 51-3011  | Bakers                     | 513011      | 768                |
|                        | Animal killer                                    | 781      | 51-3022  | Slaughterers and Meat F    | 513023      | 445                |
|                        | Bakery worker                                    | 783      | 51-3091  | Food and Tobacco Roas      | 513091      | 180                |
| Hard metal grinders    | Metal grinders                                   | 51       | 4033     | Grinding - Lapping, Polis  | 514033      | 258                |
| Machinists/toolsetter  | Machinists                                       | 51       | 4041     | Machinists                 | 514041      | 1,160              |
|                        | Tool and die makers, tool setters, die           | 51       | 4090     | Machine Tool Se            | 514081      | ***                |
| Welders                | Welders, cutters, solderers and brazers          | 51       | 4121     | Welders, Cutters, Solder   | 514121      | 1,999              |
|                        | laundry dry cleaning wokers                      | 51       | 6011     | Laundry and Dry-Cleanir    | 516011      | 1,142              |

Can we identify  
workplaces and workers  
with specific exposures?

Yes!



**Table 3-1. Industries with the largest number of workers potentially exposed to MWFs\***

| SIC Code | Description                  | Workers exposed full time <sup>†</sup> |     | Workers exposed part time |     |
|----------|------------------------------|--|-----|---------------------------|-----|
|          |                              | Number                                 | %   | Number                    | %   |
| 35       | Machinery, except electrical | 151,300                                | 37  | 286,000                   | 34  |
| 34       | Fabricated metal products    | 70,900                                 | 18  | 117,300                   | 14  |
| 37       | Transportation equipment     | 58,900                                 | 15  | 66,800                    | 8   |
| All      | All industries               | 403,800                                | 100 | 832,800                   | 100 |

\*Source: NIOSH [1983].

<sup>†</sup>Note: Workers exposed to one MWF full time may be exposed to a second MWF part time.

Source: WHAT YOU NEED TO KNOW ABOUT OCCUPATIONAL EXPOSURE TO METALWORKING FLUIDS DHHS (NIOSH) Publication No. 98-116

## Manufacturing in NM - Employees with possible exposures to Metal Working Fluids

| SIC code/<br>NAICS<br>code | Description  | Number<br>Employed<br>(2 <sup>nd</sup> quarter<br>2006) | Number<br>Employers<br>with NAICS<br>code |
|----------------------------|--|---|---|
| 35/333                     | Machinery, except<br>electrical/Machinery<br>Manufacturing | 1294  | 108                                       |
| 34/332                     | Fabricated metal<br>products/Fabricated<br>metal products  | 2,810   | 350                                       |
| 37/336                     | Transportation<br>Equipment/Transportation<br>Equipment    | 2188  | 51  |
| <b>TOTAL</b>               |  | <b>6331</b>   | <b>509</b>                                |

New Mexico LASER: accessed April 3, 2007

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# Conclusions

- Adult males who currently have asthma report a significantly higher percentage of work-related asthma in New Mexico than females who currently have asthma
- Hispanics and non-Whites who currently have asthma report having work-related asthma in higher proportion than White, non-Hispanics - but not statistically significant

# Conclusions

- Current estimated asthma prevalence among New Mexican adults in 2005 was similar to Michigan in 2001
- Percentage of possible work-related asthma in New Mexico for 2005 does not differ significantly from CA, MA or MI for 2001





# Conclusions

- Pattern of possible WRA differs from other states
  - Males in NM have significantly higher possible work-related asthma - not observed in CA, MA or MI
- Minority populations in NM may report more asthma due to work - need further surveillance



# Future activities

- Report findings to health care providers, employers and workers
- Continue with BRFSS analysis - collection of OA data in subsequent years
- Work to get better data from Workers' Compensation, sources



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# Thank you

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