

Geographic Disparities in Pediatric Asthma Control Among Oregon Children on Medicaid



Report produced in partnership with the Oregon Asthma Disparities Leadership Team

Oregon Asthma Program



Oregon Department of Human Services



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Introduction

Asthma is the most common chronic disease among children, and it can have a significant negative effect on a child's quality of life by causing difficulty sleeping, missed school days, and limitations in normal activities. Although asthma management guidelines and effective asthma control medications are available, a considerable gap exists between best practices for asthma care and received asthma care.

Disparities in asthma care and asthma outcomes are well-documented. The 2006 National Healthcare Disparities Report produced by the Agency for Healthcare Research and Quality (AHRQ) summarizes evidence of disparities in asthma care or asthma outcomes on the basis of race, ethnicity, education and income.ⁱ In Oregon, there are indications that income is strongly associated with asthma prevalence in children. For example, asthma is 51 percent more prevalent among children from low-income households (<\$25k/year) than those from higher-income households (12.5 percent and 8.3 percent, respectively; Behavioral Risk Factor Surveillance System [BRFSS], 2006). According to AHRQ's Closing the Quality Gap, people of lower socioeconomic status with asthma "are more likely to be limited by asthma symptoms, to use an emergency department as their usual source of care, and to be hospitalized for asthma."ⁱⁱ

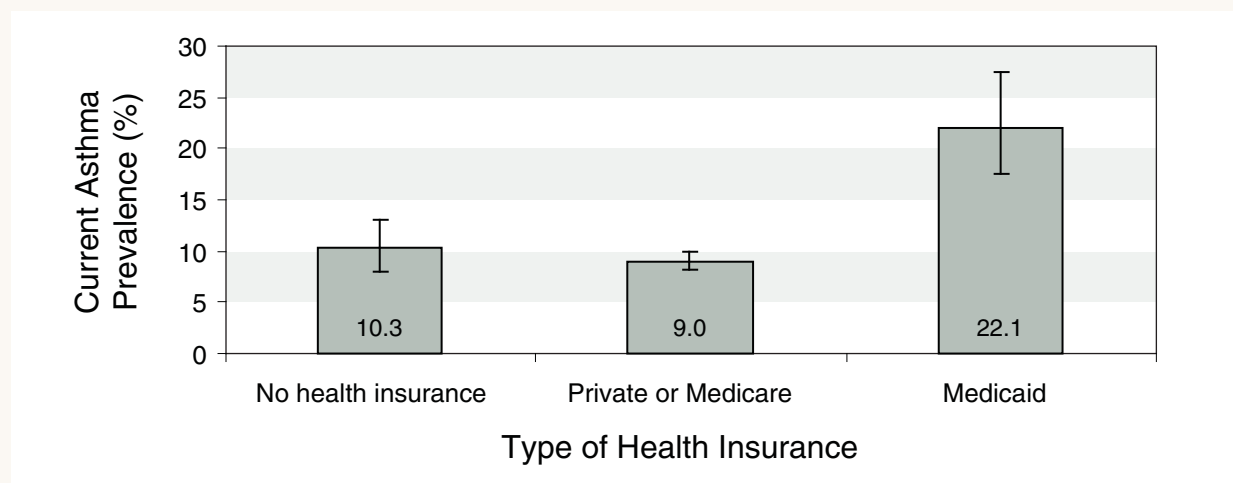
In 2005, the Centers for Disease Control and Prevention (CDC) recommended to AHRQ that Oregon be invited to participate in a new Learning Partnership to reduce disparities in pediatric asthma. One of the main reasons for this recommendation was Oregon's strong history of working with health systems, health care providers, the state Medicaid program and health plans that serve Medicaid recipients. As part of the Learning Partnership, the Oregon Asthma Program convened a state-level Leadership Team that represents several organizations and agencies committed to reducing pediatric asthma disparities in Oregon (see Appendix A for a list of participating organizations and agencies).

Oregon's Leadership Team reviewed the limited data on asthma among Oregon children and decided to focus on income as the factor of interest. Moreover, because children served by Medicaid are generally from low-income households and Oregon's public health programs have a strong relationship with Oregon's Medicaid program, the Leadership Team narrowed the focus to disparities in asthma control among children on Medicaid.

Although data for children on Medicaid are sparse, data from adult Medicaid recipients suggest there are significant asthma disparities related to income. For example, as seen in

Figure 1, asthma prevalence in the adult Medicaid population is more than double that of adults with private insurance, no insurance or Medicare coverage. Adult Medicaid recipients also report more frequent asthma symptoms, more visits to the emergency department (ED) for asthma, poorer health status and higher smoking prevalence (Health Risk and Health Status Survey [HRHSS], 2004).

Among Oregon children ages 0-17 years, 9.0 percent (more than 78,000) currently have asthma (BRFSS, 2006, preliminary). Despite the fact that asthma can be controlled, Oregon children were hospitalized for asthma more than 550 times in 2006 (Hospital Discharge Index). In 2006, data from the Oregon Healthy Teens survey indicate that 14 percent of eighth graders and 9 percent of eleventh graders with asthma missed at least one day of school because of asthma in the past 30 days. Moreover, of Oregon youths with asthma, 48 percent of eighth graders and 39 percent of eleventh graders had difficulty sleeping due to asthma for at least one night in the past 30 days. Overall, these findings suggest that Oregon children shoulder a significant burden due to asthma.



Current asthma prevalence by type of health insurance, Oregon adults, 2006

Source: Oregon Behavioral Risk Factor Surveillance System, 2006

Note: Error bars represent 95% confidence intervals

Furthermore, if the data for adults are any indication, there are likely to be asthma disparities for children related to household income.

In the first step of this Learning Partnership, Oregon's Leadership Team has worked to identify communities with higher rates of poor asthma control among children who are on Medicaid. The sections below outline the methods behind this analysis, the results and a brief discussion of the findings. These findings will be used to inform the intervention activities identified by the Leadership Team.

Methods

Data source

The data used in this report were produced by the Oregon Division of Medical Assistance Programs (DMAP) using medical and pharmacy claims for Oregon Medicaid recipients (i.e., members of the Oregon Health Plan) from calendar years 2004 and 2005. The medical and pharmacy claims were restricted to children who were 0-17 years of age as of December 31 of the respective measurement year. Continuous enrollment in a health plan was not required. Because the data were stratified by county, the address used to identify the county was based on the child's home address rather than the facility from which services were received. Analyses and rate calculations were conducted by the Oregon Asthma Program with guidance from the Leadership Team.

Measures and calculations

Three primary measures were calculated at the county level for the maps included in this report: ED visit rates, hospitalization rates and rates for a low medication ratio*,ⁱⁱⁱ These measures were chosen because each one is indicative of asthma that is either out of control or not optimally controlled. In addition, all three measures were standardized using the z-score transformation and summed into a single asthma control score in which high scores indicate poor asthma control.

Rates were calculated separately for each year and then an average annual rate was calculated by averaging rates across multiple years. For each year, the numerators for the ED visit and hospitalization rates were the total number of ED visits and the total number

of inpatient hospital admissions, respectively, incurred by Medicaid recipients ages 0-17 years in each county of Oregon. The numerators for the medication ratio rates were the total number of Medicaid recipients ages 0-17 years in each county who had a medication ratio <0.33.*

The denominators were calculated similarly. For each year, the denominators for the ED visit rates and hospitalization rates were the number of children on Medicaid who had asthma. The denominator for the medication ratio rate was the number of children on Medicaid who had persistent asthma and had received two or more dispensings of short-acting beta2-agonists.

A child was identified as having asthma in a year if they met any of the following criteria during the period January 1 through December 31 of that year: (1) hospitalization with asthma as the primary discharge diagnosis; (2) ED visit with asthma as the primary discharge diagnosis; (3) three or more asthma medication dispensings (as long as not all dispensings are for leukotriene modifiers); or (4) two or more outpatient visits with asthma listed as any of the diagnoses. A child was identified as having persistent asthma in a year if they met any of the following criteria during the period January 1 through December 31 of that year: (1) hospitalization with asthma as the primary discharge diagnosis; (2) ED visit with asthma as the primary discharge diagnosis; (3) four or more asthma medication dispensings (as long as not all dispensings are for leukotriene modifiers); or (4) four or more outpatient visits with asthma listed as any of the diagnoses and two or more asthma medication dispensings.

*The medication ratio was calculated using the following formula for patients identified as having persistent asthma:

$$\frac{\text{\# of inhaled corticosteroid dispensings}}{\text{\# of inhaled corticosteroid dispensings) + (\# of short-acting inhaled beta2-agonist dispensings)}$$

Inhaled corticosteroids are the gold-standard asthma “controller” medication whereas short-acting inhaled beta2-agonists are the standard asthma “rescue” medication. This medication ratio measure ranges between 0 and 1 and measures the extent to which patients with persistent asthma take controller medication compared to their total controller and rescue medication usage. People with higher medication ratios are less likely to have ED visits or hospitalizations for asthma and are more likely to have better scores for asthma quality of life, asthma control, and asthma symptom severity.

Mapping

The rates for the three measures and the overall asthma control score were calculated by county and then applied to a map of Oregon. For each map, rates were grouped into quintiles and then depicted using color density to indicate degree of asthma control (i.e., light colors for better asthma control, darker colors for poorer asthma control). The maps were created using ArcGIS version 9.1.

Maps were created for all children ages 0-17 years. In addition, because rates often vary with age and different factors may contribute to high rates for different ages, separate maps were generated for age groups of 0-4 years and 5-17 years. Age breakdowns beyond these two groups were not attempted due to small denominators in one or more measures.

The results described on the following pages for all three age groups (0-17, 0-4, and 5-17 years old) focus on the overall asthma control scores; results for the three individual measures are also described. For the individual measures, rates were considered to be unreliable if the annual rate for a county in either year was based on fewer than 20 people in the denominator. Such rates were marked as “Insufficient data” on the maps.

Results

Overall results, ages 0-17 years

Overall, for every 100 children 0-17 years old with asthma who were on Medicaid, there were an average of 19.3 ED visits for asthma and 3.7 hospitalizations for asthma each year. Among children on Medicaid who have persistent asthma, 47 percent have a low medication ratio, which indicates they have too few controller medication dispensings, too many rescue medication dispensings, or both. Note that the analyses of ED visits and hospitalizations were based on total number of events rather than the number of children with these events; therefore, the percentage of children affected would be lower than these numbers since some children have multiple ED visits or hospitalizations for asthma.

Results by county, ages 0-17 years

Asthma control score. The counties with the highest overall asthma control scores (indicating poor asthma control) among children ages 0-17 years who were on Medicaid include Clatsop, Coos, Douglas, Josephine, Linn and Union counties.

ED visits. The counties with the highest rates of ED visits for asthma include Baker, Coos, Multnomah, Polk, Union and Yamhill counties.

Hospitalizations. The counties with the highest rates of asthma hospitalizations include Clatsop, Coos, Grant, Linn, Umatilla and Wallowa counties.

Medication ratio. The counties with the highest rates of children with low medication ratios include Baker, Clatsop, Hood River, Jefferson and Union counties.

Overall results, ages 0-4 years

Overall, for every 100 children 0-4 years old with asthma who were on Medicaid, there were an average of 25.1 ED visits for asthma and 6.2 hospitalizations for asthma each year. Among children on Medicaid who have persistent asthma, 46 percent have a low medication ratio, which indicates they have too few controller medication dispensings, too many rescue medication dispensings, or both.

Results by county, ages 0-4 years

Asthma control score. The counties with the highest overall asthma control scores (indicating poor asthma control) among children ages 0-4 years who are on Medicaid include Baker, Clatsop, Coos, Curry, Linn and Union counties.

ED visits. The counties with the highest rates of ED visits for asthma include Baker, Coos, Polk, Union and Yamhill counties.

Hospitalizations. The counties with the highest rates of asthma hospitalizations include Coos, Curry, Douglas, Linn and Umatilla counties.

Medication ratio. The counties with the highest rates of children with low medication ratios include Clatsop, Lincoln and Union counties.

Overall results, ages 5-17 years

Overall, for every 100 children 5-17 years old with asthma who were on Medicaid, there were an average of 15.8 ED visits for asthma and 2.2 hospitalizations for asthma each year. Among children on Medicaid who have persistent asthma, 48 percent have a low medication ratio, which indicates they have too few controller medication dispensings, too many rescue medication dispensings, or both.

Results by county, ages 5-17 years

Asthma control score. The counties with the highest overall asthma control scores (indicating poor asthma control) among children ages 5-17 years who are on Medicaid include Clatsop, Coos, Josephine, Klamath, Multnomah and Union counties.

ED visits. The counties with the highest rates of ED visits for asthma include Clatsop, Douglas, Multnomah, Union, Wasco and Yamhill counties.

Hospitalizations. The counties with the highest rates of asthma hospitalizations include Clatsop, Coos, Josephine, Klamath, Malheur and Wasco counties.

Medication ratio. The counties with the highest rates of children with low medication ratios include Baker, Clatsop, Coos, Klamath and Union counties.

Discussion

The results of these analyses show that asthma control is highly variable across the state but, on average, asthma control problems are more likely to occur in rural areas of the state. As seen in the map of the overall asthma control scores, the counties with the poorest asthma control scores among children 0-17 years old on Medicaid include Clatsop, Coos, Douglas, Josephine, Linn and Union counties. Most of these counties are indeed rural. Also note that the southwest region of Oregon tends to have high rates whereas the southeast region is relatively spared.

When stratified by age group, the findings for the combined asthma control scores were quite similar. For children 0-4 years old on Medicaid, the counties with the highest rates of poor asthma control included Baker, Clatsop, Coos, Curry, Linn and Union counties. For children 5-17 years old on Medicaid, the counties with the highest rates of poor asthma control included Clatsop, Coos, Josephine, Klamath, Multnomah and Union counties. Thus, four of the six counties with the highest asthma control scores for children ages 0-17 years also have higher rates for the age groups of 0-4 years and 5-17 years.

Overall, the results for individual asthma control measures were similar to those for the combined scores; however, poor asthma control was also evident for children in some urban areas. For example, Multnomah County, which includes much of the Portland metropolitan area, had one of the highest ED visit rates for asthma among children 0-17 years old and one of the highest combined asthma control scores for children 5-17 years old. It is possible that these results may be due in part to the relative ease with which children and families can access an ED in the Portland area or to the relatively higher concentration of racial and ethnic groups in the county that typically experience disparities in asthma control.

Why do some counties have higher rates of poor asthma control among children who are on Medicaid? We suspect that rural settings and access to care play a key role; however, several rural counties do not exhibit asthma control problems. Clearly there are other factors that contribute to pediatric asthma control. Some of these additional factors may include environmental conditions, parent's ability to read and comprehend health information, smoking and secondhand smoke exposure, cultural differences, and geographic isolation and access to transportation. Asthma also has a genetic component that could potentially play a role in the underlying differences between populations. In this analysis of children on Medicaid, secondhand smoke exposure may also play a role; the three counties in southwest

Oregon with poor asthma control scores (Coos, Douglas and Josephine counties) also have three of the five highest adult smoking prevalences in Oregon (all ≥ 27 percent compared to 20 percent for the state; BRFSS, 2002-2005).

The Oregon Asthma Program and Oregon's Pediatric Asthma Disparities Leadership Team is providing technical assistance to support communities that are interested in addressing pediatric asthma disparities. For more information, please contact the Oregon Asthma Program at asthma.ohd@state.or.us or 971-673-0984.

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- i. *National Healthcare Disparities Report, 2006*. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.ahrq.gov/qual/nhdr06/nhdr06.htm>
- ii. Bravata DM, Sundaram V, Lewis R, Gienger A, et. al. Asthma Care. Vol 5 of: Shojania KG, McDonald KM, Wachter RM, Owens DK, editors. *Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies*. Technical Review 9. AHRQ Publication No. 04(07)-0051-5. 2007; 5:13.
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Appendix A: Participating Organizations and Agencies

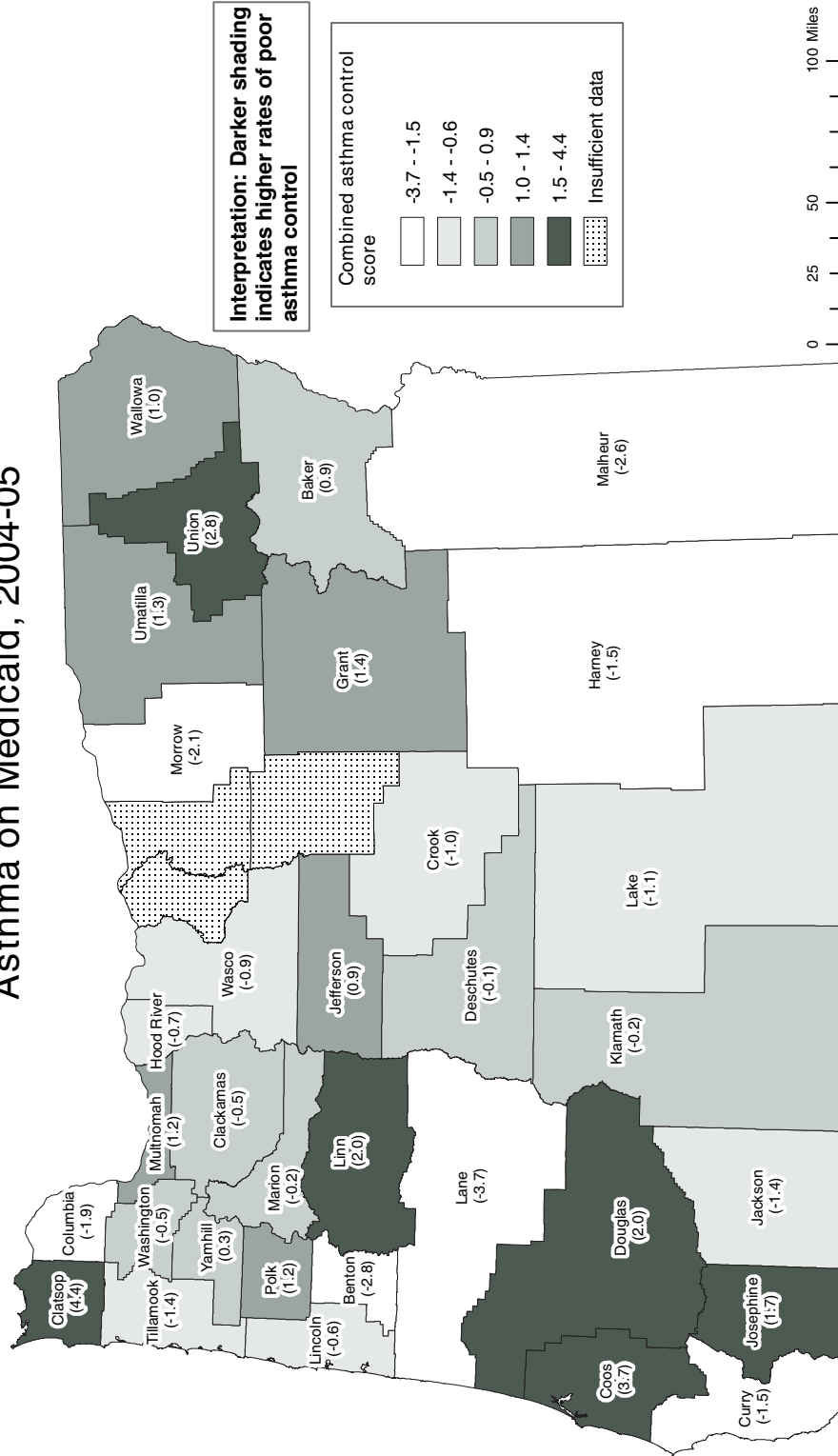
- American Lung Association of Oregon
- CareOregon
- Coos County Health Department
- DHS – Division of Medical Assistance Programs (DMAP; Medicaid)
- DHS – Health Systems Planning
- DHS-Oregon Asthma Program
- DHS – School-Based Health Centers
- Head Start
- McKesson
- ODS Companies
- Office of Rural Practice Based Research Network
- Oregon Academy of Family Physicians
- Oregon Association of Hospitals and Health Systems
- Oregon Coalition of Healthcare Purchasers
- Oregon Department of Education
- Oregon Healthcare Quality Corporation
- Oregon legislators
- Oregon Medical Association
- Oregon Pediatric Society
- Oregon Primary Care Association
- Portland State University

Appendix B: Maps showing results by county and age group

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Maps for Children Age 0-17 Years

Asthma Control Scores: Average Annual Score for Oregon Children with Asthma on Medicaid, 2004-05

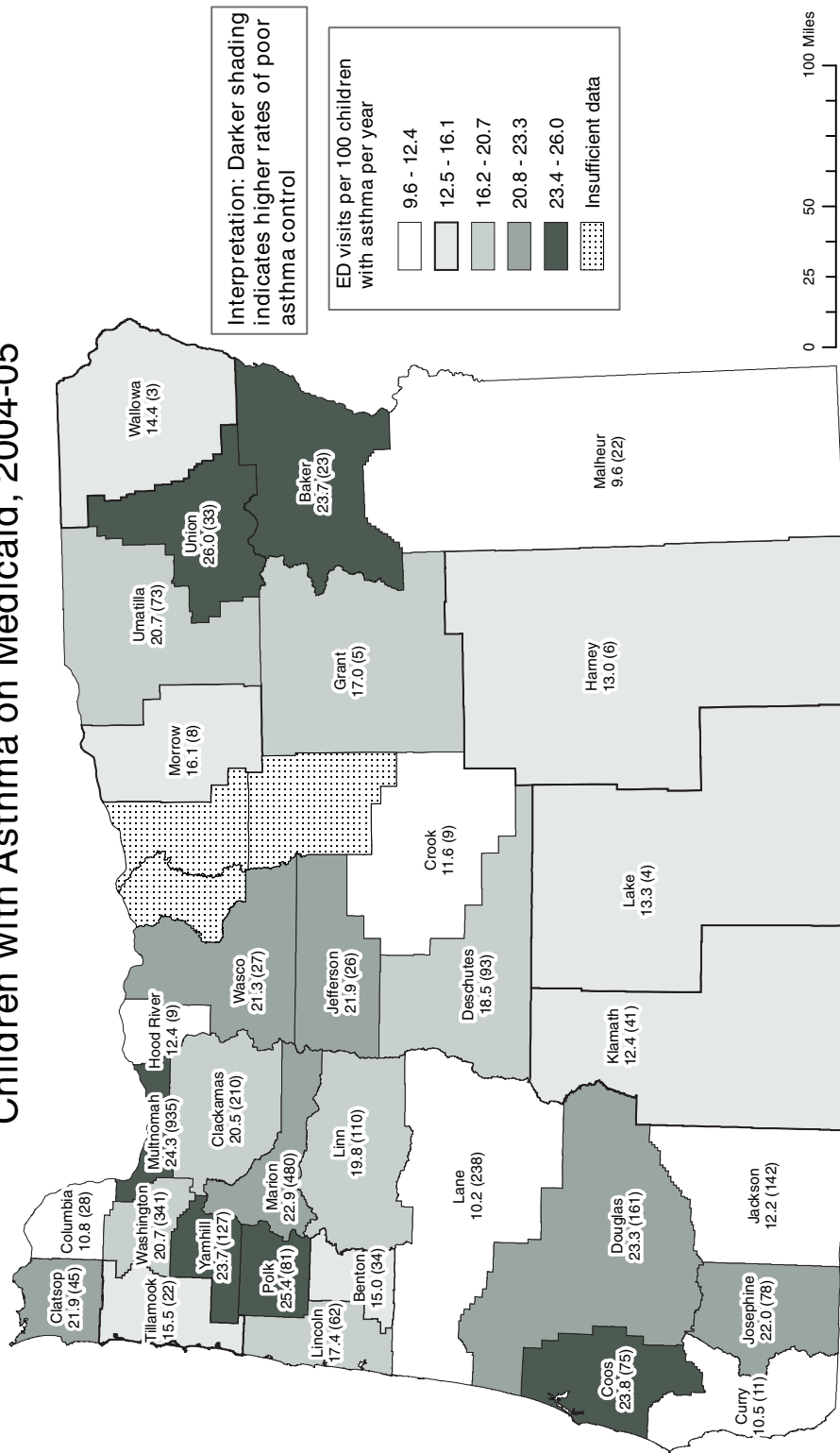


Notes:

- (1) The combined asthma control score was calculated by performing z-score transformations on emergency department visit rates, hospitalization rates, and low medication rates, and then summing these z-scores by county. Counties were required to have reliable rates for at least two of the three measures to be reported here.
- (2) The number in parentheses below the county name indicates the combined asthma control score for children 0-17 years old. Higher numbers represent poorer asthma control.
- (3) Scores were designated as "insufficient data" if fewer than two asthma measures contributed a z-score to the combined score.

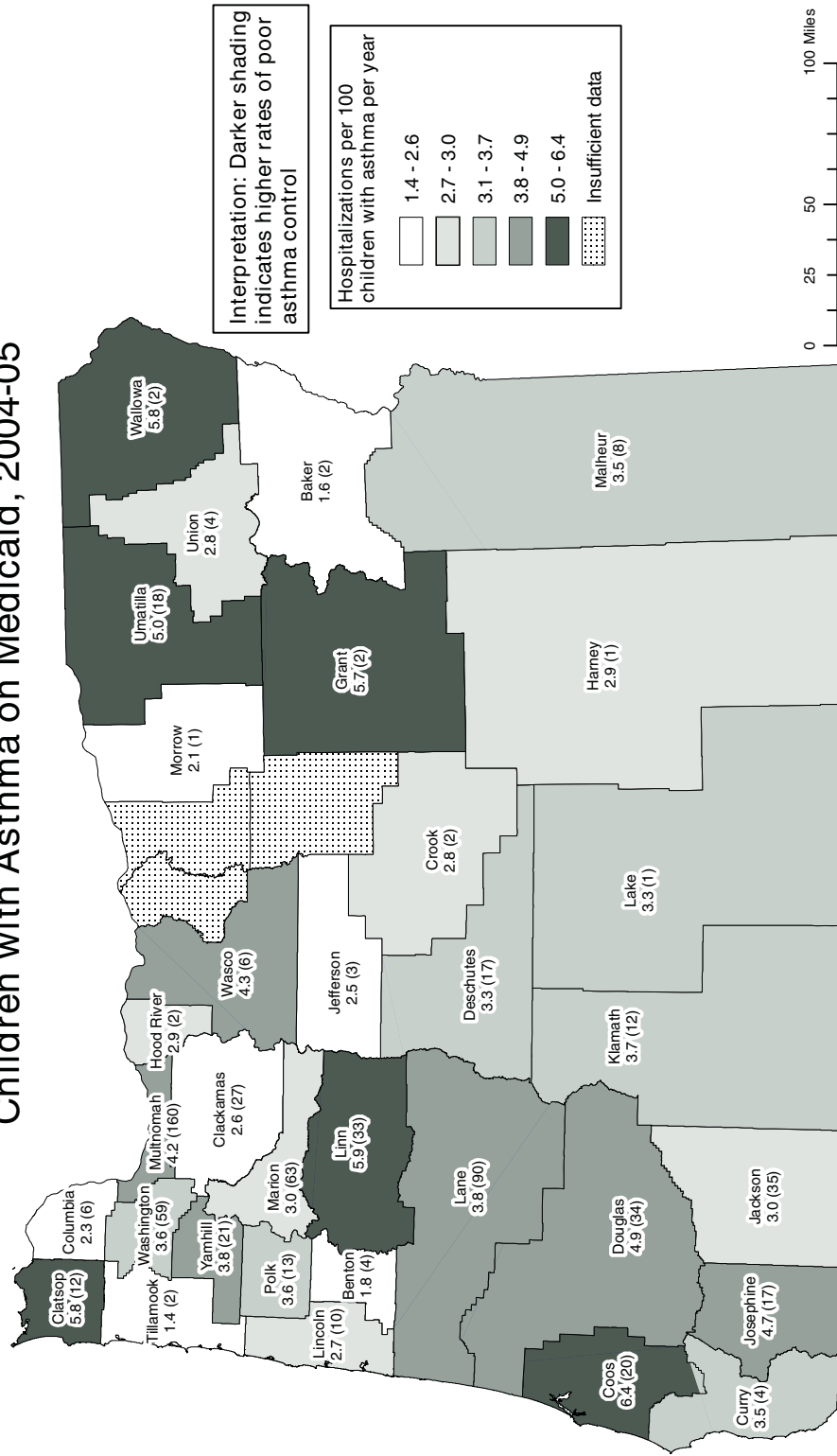
Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program. Last updated: 10/16/2007.

Asthma Emergency Department Visits: Average Annual Rates for Oregon Children with Asthma on Medicaid, 2004-05



Notes:
 (1) Includes emergency department (ED) visits that occurred in 2004 or 2005 in which asthma was the primary discharge diagnosis.
 (2) The number under the name of each county indicates the average annual ED visit rate, and the average annual number of ED visits is provided in parentheses.
 (3) ED visit rates were calculated per 100 children (age 0-17 years) with asthma who are served by Medicaid. Rates were considered to be unreliable and designated as "insufficient data" if the number of children with asthma was <20 in a county in any year of analysis. An individual child may have more than one ED visit represented in these rates.
 Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
 Last updated: 10/16/2007.

Asthma Hospitalizations: Average Annual Rates for Oregon Children with Asthma on Medicaid, 2004-05

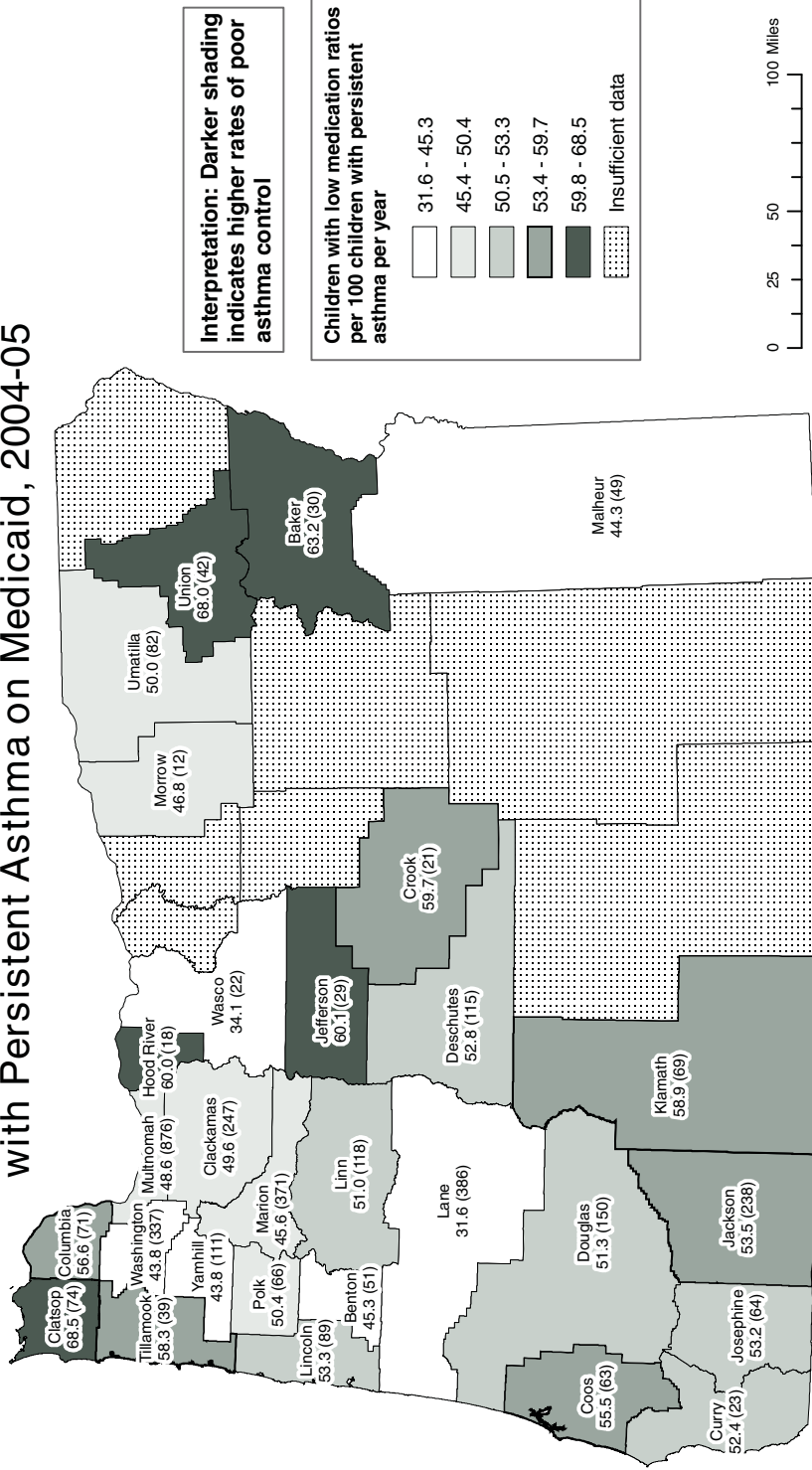


Notes:

- (1) Includes hospitalizations that occurred in 2004 or 2005 in which asthma was the primary discharge diagnosis.
- (2) The number under the name of each county indicates the average annual asthma hospitalization rate, and the average annual number of hospitalizations is provided in parentheses.
- (3) Hospitalization rates were calculated per 100 children (age 0-17 years) with asthma who are served by Medicaid. Rates were considered to be unreliable and designated as "insufficient data" if the number of children with asthma was <20 in a county in any year of analysis. An individual child may have more than one ED visit represented in these rates.

Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
Last updated: 10/16/2007.

Low Asthma Medication Ratios: Average Annual Rates for Oregon Children with Persistent Asthma on Medicaid, 2004-05



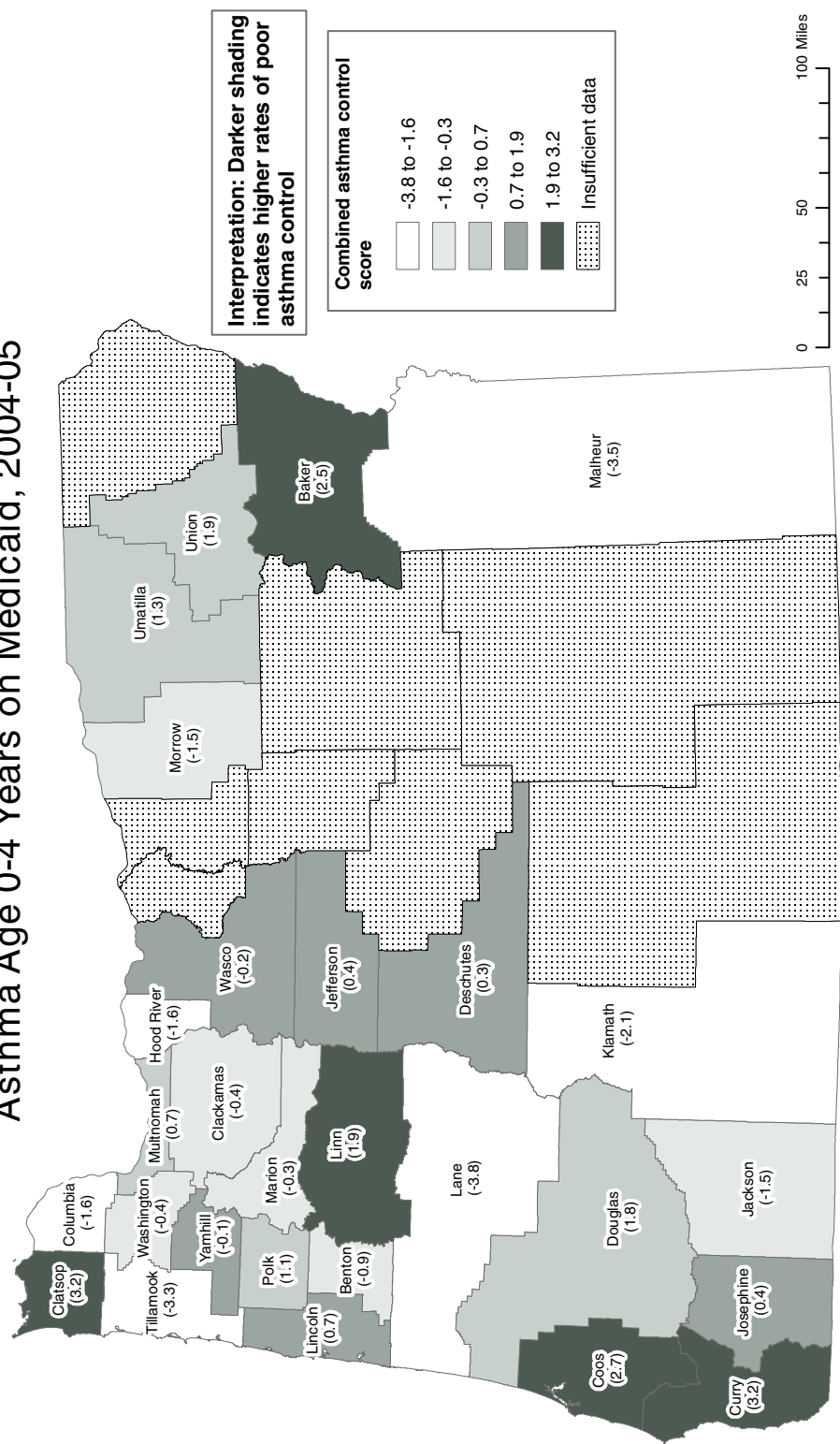
Notes:

- (1) National guidelines for asthma management suggest that people with persistent asthma should take a daily inhaled corticosteroid to control their asthma, and all people with asthma should have an inhaled short-acting beta-agonist (rescue medication) for when asthma symptoms occur. The measure used for this map is a medication ratio for children with persistent asthma. The numerator of the ratio is the number of inhaled corticosteroid prescriptions, and the denominator of the ratio is the sum of inhaled corticosteroid prescriptions and inhaled short-acting beta-agonist prescriptions. Ratios can be from 0 to <1; a medication ratio of <0.33 is associated with poorer health outcomes.
- (2) The number under the name of each county indicates the average annual rate of low medication ratios (<0.33), and the average annual number of children with low medication ratios is provided in parentheses.
- (3) Medication ratio rates were calculated per 100 children (age 0-17 years) with persistent asthma who are served by Medicaid. Rates were considered unreliable and designated as "insufficient data" if the number of children with persistent asthma was <20 in a county in any year.

Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
Last updated: 10/16/2007.

Maps for Children Age 0-4 Years

Asthma Control Scores: Average Annual Score for Oregon Children with Asthma Age 0-4 Years on Medicaid, 2004-05



Interpretation: Darker shading indicates higher rates of poor asthma control

Combined asthma control score

- 3.8 to -1.6
- 1.6 to -0.3
- 0.3 to 0.7
- 0.7 to 1.9
- 1.9 to 3.2
- Insufficient data

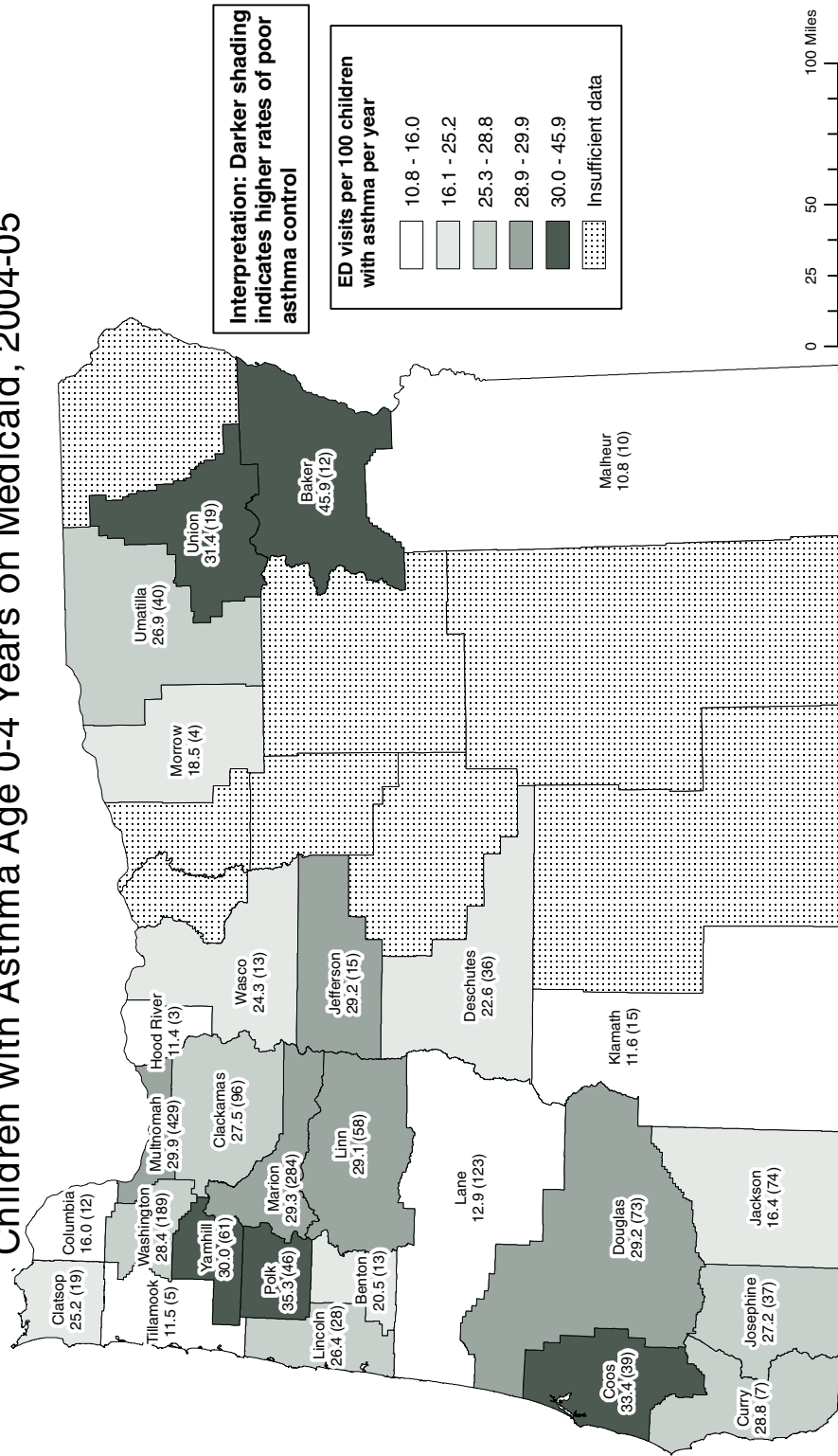


Notes:

- (1) The combined asthma control score was calculated by performing z-score transformations on emergency department visit rates, hospitalization rates, and low medication ratio rates, and then summing these z-scores by county. Counties were required to have reliable rates for at least two of the three measures to be reported here.
- (2) The number in parentheses below the county name indicates the combined asthma control score for children 0-4 years old. Higher numbers represent poorer asthma control.
- (3) Scores were designated as "Insufficient data" if fewer than two asthma measures contributed a z-score to the combined score.

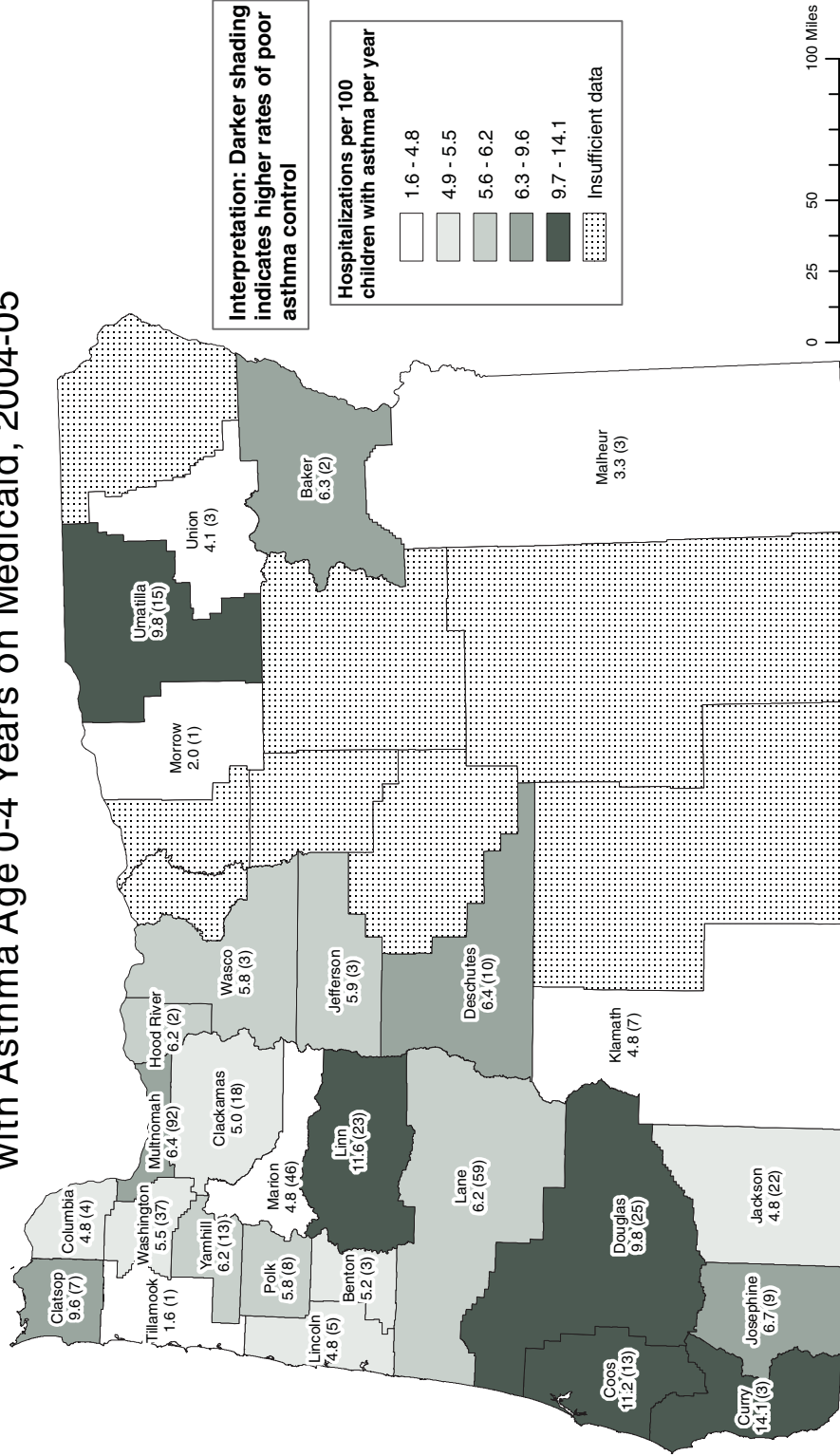
Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
Last updated: 10/16/2007.

Asthma Emergency Department Visits: Average Annual Rates for Oregon Children with Asthma Age 0-4 Years on Medicaid, 2004-05



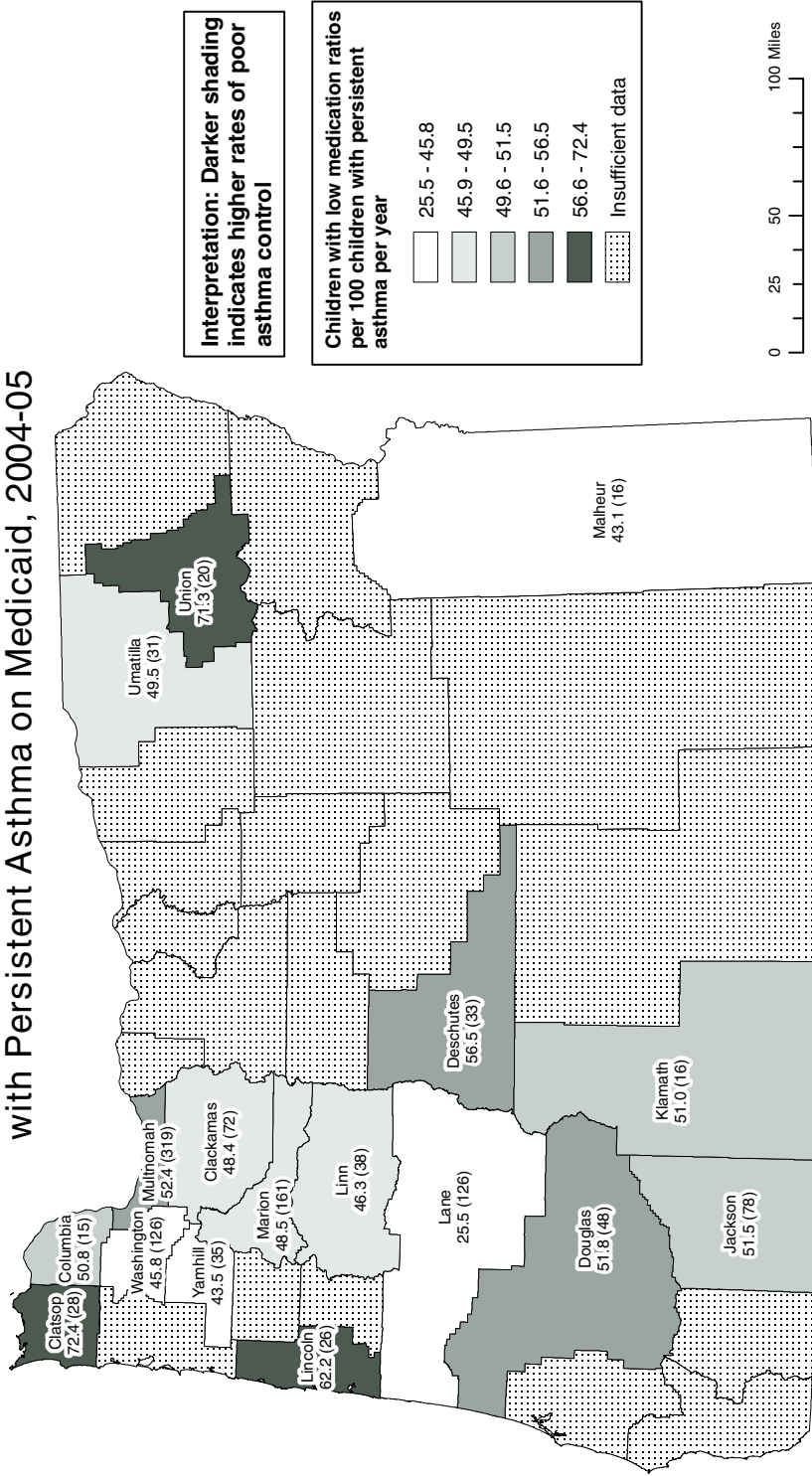
Notes:
 (1) Includes emergency department (ED) visits that occurred in 2004 or 2005 in which asthma was the primary discharge diagnosis.
 (2) The number under the name of each county indicates the average annual ED visit rate, and the average annual number of ED visits is provided in parentheses.
 (3) ED visit rates were calculated per 100 children (age 0-4 years) with asthma who are served by Medicaid. Rates were considered to be unreliable and designated as "insufficient data" if the number of children with asthma was <20 in a county in any year of analysis. An individual child may have more than one ED visit represented in these rates.
 Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
 Last updated: 10/16/2007.

Asthma Hospitalizations: Average Annual Rates for Oregon Children with Asthma Age 0-4 Years on Medicaid, 2004-05

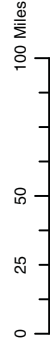
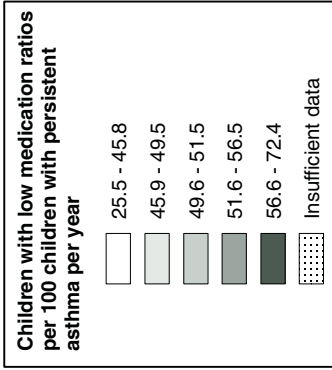


Notes:
 (1) Includes hospitalizations that occurred in 2004 or 2005 in which asthma was the primary discharge diagnosis.
 (2) The number under the name of each county indicates the average annual asthma hospitalization rate, and the average annual number of hospitalizations is provided in parentheses.
 (3) Hospitalization rates were calculated per 100 children (age 0-4 years) with asthma who are served by Medicaid. Rates were considered to be unreliable and designated as "insufficient data" if the number of children with asthma was <20 in a county in any year of analysis. An individual child may have more than one ED visit represented in these rates.
 Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
 Last updated: 10/16/2007.

Low Asthma Medication Ratios: Average Annual Rates for Oregon Children Age 0-4 Years with Persistent Asthma on Medicaid, 2004-05



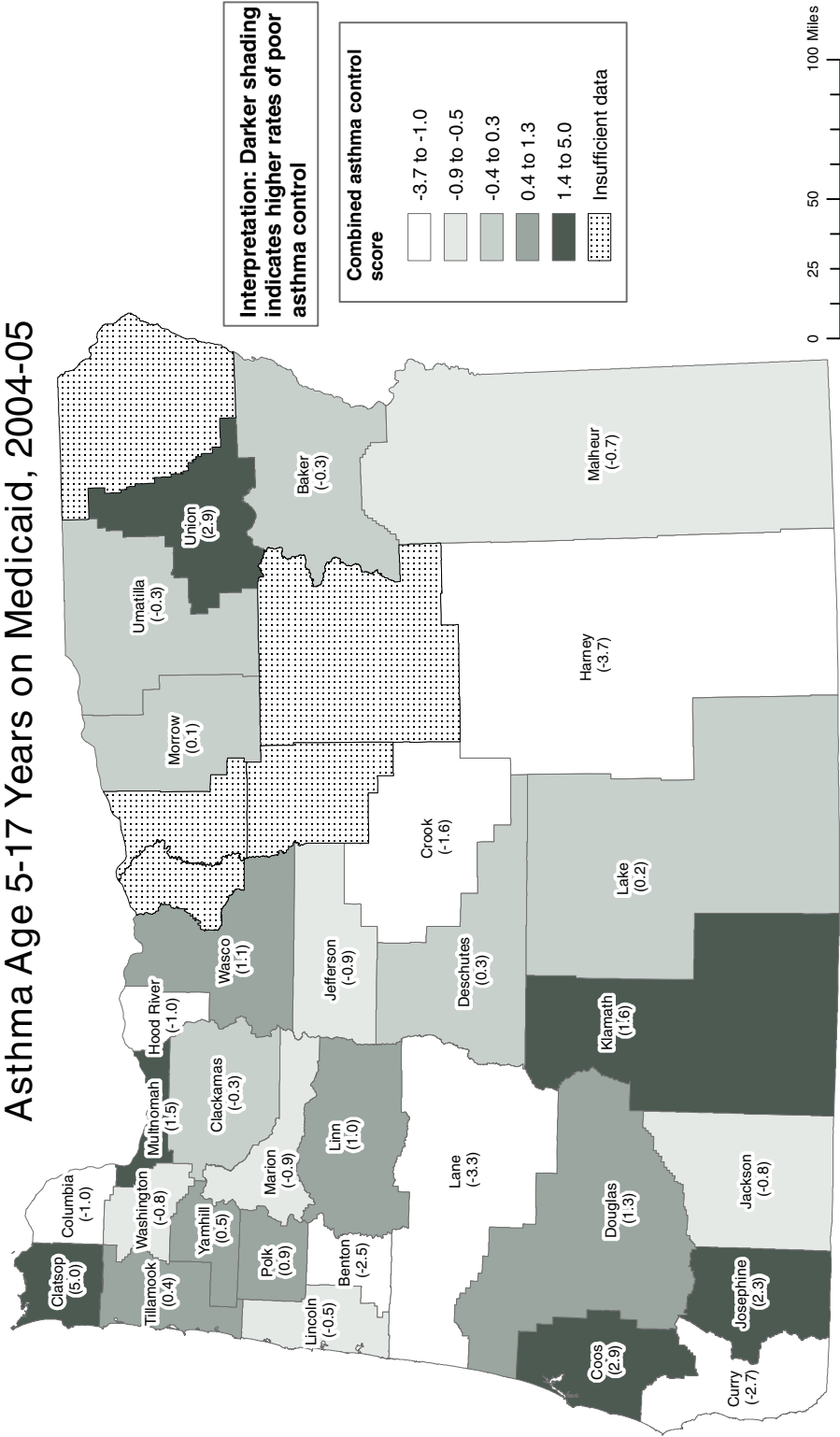
Interpretation: Darker shading indicates higher rates of poor asthma control



Notes:
 (1) National guidelines for asthma management suggest that people with persistent asthma should take a daily inhaled corticosteroid to control their asthma, and all people with asthma should have an inhaled short-acting beta-agonist (rescue medication) for when asthma symptoms occur. The measure used for this map is a medication ratio for children with persistent asthma. The numerator of the ratio is the number of inhaled corticosteroid prescriptions, and the denominator of the ratio is the sum of inhaled corticosteroid prescriptions and inhaled short-acting beta-agonist prescriptions. Ratios can be from 0 to <1; a medication ratio of <0.33 is associated with poorer health outcomes.
 (2) The number under the name of each county indicates the average annual rate of low medication ratios (<0.33), and the average annual number of children with low medication ratios is provided in parentheses.
 (3) Medication ratio rates were calculated per 100 children (age 0-4 years) with persistent asthma who are served by Medicaid. Rates were considered unreliable and designated as "insufficient data" if the number of children age 0-4 years with persistent asthma was <20 in a county in any year.
 Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
 Last updated: 10/16/2007.

Maps for Children Age 5-17 Years

Asthma Control Scores: Average Annual Score for Oregon Children with Asthma Age 5-17 Years on Medicaid, 2004-05

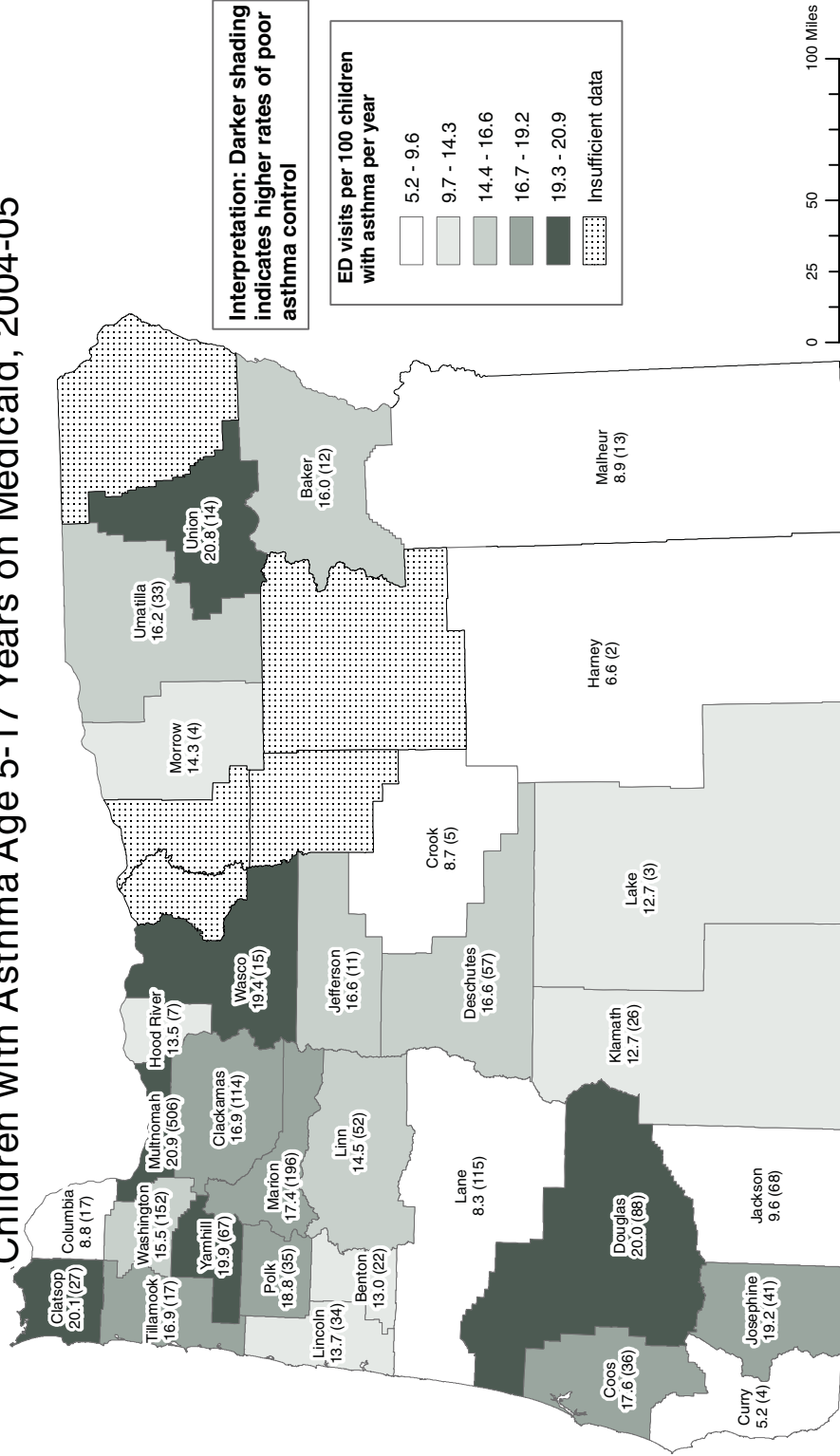


Notes:

- (1) The combined asthma control score was calculated by performing z-score transformations on emergency department visit rates, hospitalization rates, and low medication rates, and then summing these z-scores by county. Counties were required to have reliable rates for at least two of the three measures to be reported here.
- (2) The number in parentheses below the county name indicates the combined asthma control score for children 5-17 years old. Higher numbers represent poorer asthma control.
- (3) Scores were designated as "Insufficient data" if fewer than two asthma measures contributed a z-score to the combined score.

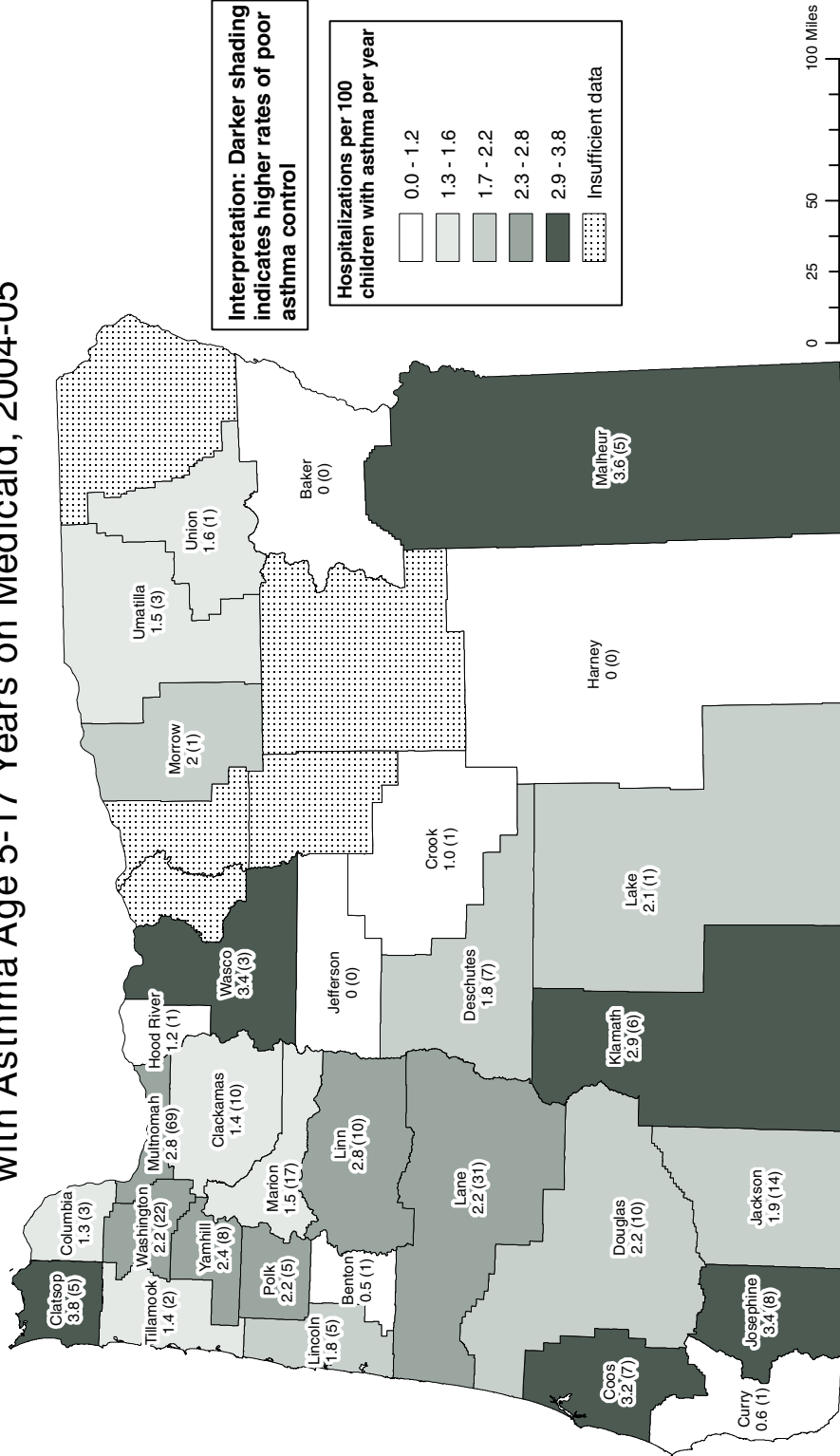
Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
Last updated: 10/16/2007.

Asthma Emergency Department Visits: Average Annual Rates for Oregon Children with Asthma Age 5-17 Years on Medicaid, 2004-05



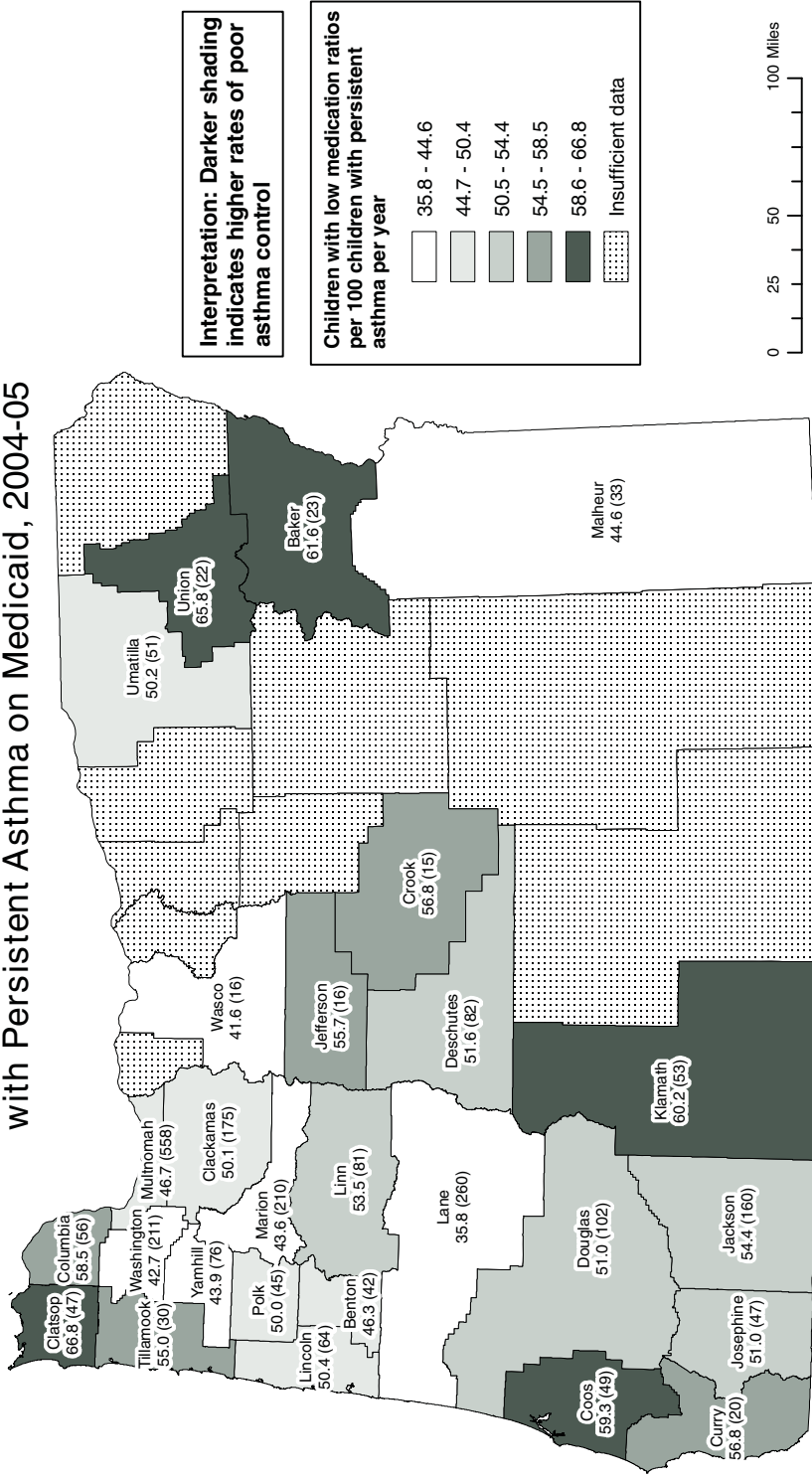
Notes:
 (1) Includes emergency department (ED) visits that occurred in 2004 or 2005 in which asthma was the primary discharge diagnosis.
 (2) The number under the name of each county indicates the average annual ED visit rate, and the average annual number of ED visits is provided in parentheses.
 (3) ED visit rates were calculated per 100 children (age 5-17 years) with asthma who are served by Medicaid. Rates were considered to be unreliable and designated as "insufficient data" if the number of children with asthma was <20 in a county in any year of analysis. An individual child may have more than one ED visit represented in these rates.
 Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
 Last updated: 10/16/2007.

Asthma Hospitalizations: Average Annual Rates for Oregon Children with Asthma Age 5-17 Years on Medicaid, 2004-05



Notes:
 (1) Includes hospitalizations that occurred in 2004 or 2005 in which asthma was the primary discharge diagnosis.
 (2) The number under the name of each county indicates the average annual asthma hospitalization rate, and the average annual number of hospitalizations is provided in parentheses.
 (3) Hospitalization rates were calculated per 100 children (age 5-17 years) with asthma who are served by Medicaid. Rates were considered to be unreliable and designated as "insufficient data" if the number of children with asthma was <20 in a county in any year of analysis. An individual child may have more than one ED visit represented in these rates.
 Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
 Last updated: 10/16/2007.

Low Asthma Medication Ratios: Average Annual Rates for Oregon Children Age 5-17 Years with Persistent Asthma on Medicaid, 2004-05



Notes:

(1) National guidelines for asthma management suggest that people with persistent asthma should take a daily inhaled corticosteroid to control their asthma, and all people with asthma should have an inhaled short-acting beta-agonist (rescue medication) for when asthma symptoms occur. The measure used for this map is a medication ratio for children with persistent asthma. The numerator of the ratio is the number of inhaled corticosteroid prescriptions, and the denominator of the ratio is the sum of inhaled corticosteroid prescriptions and inhaled short-acting beta-agonist prescriptions. Ratios can be from 0 to <1; a medication ratio of <0.33 is associated with poorer health outcomes.

(2) The number under the name of each county indicates the average annual rate of low medication ratios (<0.33), and the average annual number of children with low medication ratios is provided in parentheses.

(3) Medication ratio rates were calculated per 100 children (age 5-17 years) with persistent asthma who are served by Medicaid. Rates were considered unreliable and designated as "insufficient data" if the number of children age 5-17 years with persistent asthma was <20 in a county in any year.

Source: Data provided by Oregon Division of Medical Assistance Programs; analysis and maps generated by the Oregon Asthma Program.
Last updated: 10/16/2007.





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