

# Addressing Obesity in Rural Pennsylvania

Center for Schools and Communities

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Obesity is a major health issue for millions of individuals in the United States. Seventeen percent of children aged 2-19 are obese (i.e., having a body mass index (BMI) of 30 or above<sup>1</sup>) and certain subpopulations have higher rates.<sup>2</sup> The Centers for Disease Control (CDC) reports that obese children and adolescents suffer serious health consequences, including type II diabetes, hypertension, high cholesterol as well as psychological risks resulting from social stigmatization that may accompany obesity.<sup>3</sup> Compounding these health issues, are the economic consequences of being overweight, which account for 9.1 percent of all medical expenses nationwide.<sup>4</sup> Even more alarming is the rise of obesity in youth. Among youth aged 12-19, obesity rates increased roughly three times between 1976 (5.5%) and 2008 (16.9%).<sup>5</sup>

Obesity is more common in rural areas,<sup>6</sup> and given Pennsylvania's large rural population, responses to address obesity must consider community characteristics that are unique to rural areas. Furthermore, obesity is known to be associated with poverty, and rural counties in Pennsylvania have higher poverty rates than non-rural counties. To focus on the interplay between rural communities, poverty and obesity, the Center for Schools and Communities (CSC) conducted an analysis of BMI and Census data, as well as national data to highlight obesity related issues that are more prevalent in rural areas.

## Methods

This Research Brief uses state and national data, respectively, to analyze obesity rates among the school age population and to examine elementary school nutritional practices. The state data consists of BMI-for-age percentiles data from all 500 Pennsylvania school districts at the county level.<sup>7</sup> If a student is ranked at the 95 percentile or above, he or she is considered obese. These

data are compared to the percentage of county population that is rural and the percentage of residents 17 and younger who are in poverty, based on U.S. Census Bureau estimates. Counties are designated as rural when 50 percent or more of their population lives outside urban centers and areas.<sup>8</sup> National statistics from the U.S. Department of Education's nationally representative Fast Response Survey System (FRSS) data on elementary school nutrition are then used to provide comparisons of nutritional practices in a sample of 1,198 of rural and non-rural schools.<sup>9</sup>

## Obesity Among Rural and Impoverished Pennsylvania Students

Data show that obesity in Pennsylvania is associated with the proportion of the population living in rural areas and the proportion of children in poverty. Overall, about 19 percent of K-12 children are obese.<sup>10</sup> On average, about 49 percent of Pennsylvania's population lives in a rural area, and 31 of Pennsylvania's 67 counties have at least 50 percent of their residents living within rural areas (designating those counties as rural for this analysis). Many of these rural counties have the highest poverty rates for children 17 years old and younger. Figure 1 shows the average obesity rate of K-12 students by county. Rural populations form a band of several counties that stretches along Pennsylvania's northern tier and its central region. The highest quartile obesity rates (blue) are in rural (dark outline) counties in all but a few instances, while all of the non-rural counties have the lowest obesity rates. *Counties with the highest obesity rates are also the same counties with the highest poverty rates;* while none of the lower poverty counties have the highest obesity rates. When controlling for the effects poverty has on obesity rates, a 10 percentage point increase in rural population is associated with a mere 0.4 percentage point

increase in obesity rates at the county level. However, controlling for the rural population, a 10 percentage point increase in county level poverty is associated with a 2.2 percentage point increase in obesity rates.

## The National Context

Examining nationally representative data on rural community resources helps us make greater sense of high obesity rates in rural Pennsylvania. Elementary schools' practices related to health and well-being, particularly their approaches to nutrition, are one community resource. FRSS data tell us that in rural schools, unhealthy nutritional practices are more common than in non-rural schools, although not in large measure. For instance, rural elementary schools are more likely to offer soda in their cafeterias and less likely to prohibit vending machines than non-rural schools. When they provide vending machines, rural schools are more likely to offer candy than non-rural schools. In their school stores, elementary rural schools more often offer candy and soda to their students than non-rural schools.<sup>11</sup>

Beyond schools, other rural characteristics directly or indirectly impact obesity. For example, rural residents have access to fewer health care workers per capita than their peers in non-rural areas,<sup>12</sup> and they are less likely to receive preventative services and make fewer visits to their doctor.<sup>13</sup> The physical environment is known to have some bearing on obesity as well. In one study, greater commuting distances in rural areas are associated with obesity rates<sup>14</sup> while another study shows that the availability of more food options (uncommon in rural areas) correlates with lower obesity rates.<sup>15</sup> In terms of their medical resources, rural areas have clinician shortages, few medical specialists, and hospitals that lack professional resources to handle complex disabilities. Residents in these areas more frequently receive lower



## References

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- <sup>3</sup> Centers for Disease Control. (2011a). *Overweight and Obesity: Consequences*. Washington, D.C., Centers for Disease Control.
- <sup>4</sup> Centers for Disease Control. (2011b). *Overweight and Obesity: Economic Consequences*. Washington, D.C., Centers for Disease Control.
- <sup>5</sup> Ogden and Carrol (2010), *op. cit.*
- <sup>6</sup> Blankenau, J. (2009). *Nutrition, physical activity, and obesity in rural America: a series examining health care issues in rural America*. Wayne, NE, Wayne State College.
- <sup>7</sup> Pennsylvania Department of Health. (2010). *Growth Screens and BMI-for-Age Percentile*. 12-9-2010.
- <sup>8</sup> U.S. Census Bureau. (2011). Census 2000 Urban and Rural Classification. 1-1-2011.
- <sup>9</sup> National Center for Education Statistics. (2011). *Public-Use Data Files and Documentation (FRSS 87): Foods and Physical Activity in Public Elementary Schools, 2005*. National Center for Education Statistics. 12-2-2010.
- <sup>10</sup> Pennsylvania Department of Health (2010), *op. cit.*
- <sup>11</sup> Significance tests for categorical comparisons were analyzed with a chi-square statistic; design effects and confidence intervals computed with Wesvar.
- <sup>12</sup> vanDis, J. (2011). Where we live: health care in rural vs urban America. *Journal of the American Medical Association* 287[1], 108.
- <sup>13</sup> Larson, S. L. & Fleishman, J. A. (2003). Rural-urban differences in usual source of care and ambulatory service use: analyses of national data using Urban Influence Codes. *Medical Care* 41[7], III65-III74.
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- <sup>15</sup> Zick, C., Smith, K., Fan, J., Brown, B., Yamada, I., & Kowaleski-Jones, L. (2009). Running to the store? The relationship between neighborhood environments and the risk of obesity. *Social Science and Medicine*, 69, 1493-1500.
- <sup>16</sup> Iezzoni, L., Killeen, M., & O’Day B. (2006). Rural residents with disabilities confront substantial barriers to obtaining care. *Health Services Research*, 41, 1258-1275.
- <sup>17</sup> Kahn, L., Sobush, K., Keener, D., Goodman, K., Lowry, A., Kakietek, J. et al. (7-24-2009). *Recommended Community Strategies and Measurements to Prevent Obesity in the United States*. Centers for Disease Control.
- <sup>18</sup> National Network of Statewide Afterschool Networks. (2-2-2011). Afterschool as a Vehicle for Youth Obesity Prevention.
- <sup>19</sup> Kahn, et al. (2009) *op. cit.* See also the Robert Wood Johnson Foundation’s Center to Prevent Childhood Obesity at [www.reversechildhoodobesity.org](http://www.reversechildhoodobesity.org)
- <sup>20</sup> Additional information about the Pennsylvania Parent Information and Resource Center (PIRC) and the Pennsylvania Statewide Afterschool Youth Development Network are available at: <https://www.center-school.org/initiatives.php>