

North Carolina's Secondhand Smoke Healthcare Cost Burden

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- Blue Cross Blue Shield of Minnesota (BCBSMN) and Johns Hopkins Bloomberg School of Public Health (JHBSPH) collaborated to build a model that estimated the economic burden of secondhand smoke exposure in the state of Minnesota for 2006. The results were recently published in the American Journal of Public Health¹.
- The NC Division of Public Health approached BCBSNC to replicate the study.
- Clinical Informatics replicated the methodology used by BCBSMN and JHBSPH:
 - BCBSNC data were used to estimate disease prevalence and healthcare costs.
 - US census and Medical Expenditure Panel Survey data were used to extrapolate prevalence and cost from BCBSNC members to the entire state of North Carolina.
- Dr. Hugh Waters of JHBSPH reviewed the BCBSNC methodology and approved the methodology and results.
- It is estimated that second hand smoke resulted in \$288.8 million (Table 1) in excess medical costs in North Carolina in 2006 (adjusted to 2008 dollars).
- This estimate does not consider other costs such as lost productivity, long-term care and disability services not covered by BCBSNC, or the impact on quality of life.

Table 1. Medical Costs of Health Conditions Caused by Secondhand Smoke Exposure in North Carolina, 2006

Condition ²	Number of North Carolinians Treated for Conditions Caused by Secondhand Smoke ³	Total Cost (in 2008 dollars) ⁴
Birth to Age 17		
Low Birth Weight (under 5.5 lbs.) ⁵	2,087	\$75,976,172
Acute Lower Respiratory Illness (birth to age 3 only)	14,158	\$7,678,715
Otitis Media and Middle Ear Effusion	50,092	\$14,561,054
Asthma	30,289	\$25,972,081
Ages 18+		
Lung Cancer	559	\$32,269,388
Heart Attacks and Other Heart Diseases	9,883	\$132,378,807
TOTAL	107,067	\$288,836,216

¹ Hugh R. Waters, Steven S. Foldes, Nina L. Alesci, and Jonathan Samet. The Economic Impact of Exposure to Secondhand Smoke in Minnesota. *Am J Public Health, Feb 2009*; doi:10.2105/AJPH.2008.137430.

² The US Surgeon general determined a causal link between these conditions and secondhand smoke exposure in a 2006 report, The Health Consequences of Involuntary Exposure to Secondhand Smoke Available online at <http://www.surgeongeneral.gov/library/secondhandsmoke/>.

³ See Table 2 for calculations to derive these numbers.

⁴ Based on BCBSNC allowed amounts for episodes of care related to these conditions occurring in 2006.

⁵ NC Vital Statistics 2006, BCBSNC data not used for this estimate.

Table 2. Treated Prevalence of Conditions Causally Related to Secondhand Tobacco Smoke Exposure: North Carolina, 2006

Condition	North Carolina Susceptible Population ⁶	Treated Prevalence ⁷	Number with Episodes	PAR ⁸	No. of Episodes Attributable to SHS
Birth to Age 17					
Low Birth Weight (under 5.5 lbs.)	127,646	9.084%	11,595	18.0%	2,087
Acute Lower Respiratory Illness (birth to age 3 only)	473,306	11.965%	56,629	25.0%	14,158
Otitis Media and Middle Ear Effusion	2,151,548	16.630%	357,798	14.0%	50,092
Asthma	2,151,548	4.022%	86,528	35.0%	30,289
Ages 18-64					
Lung Cancer	5,660,468	0.077%	4,369	4.9%	214
Heart Attacks and Other Heart Diseases	5,660,468	1.874%	106,095	6.9%	7,332
Ages 65+					
Lung Cancer	1,057,639	0.664%	7,028	4.9%	344
Heart Attacks and Other Heart Diseases	1,057,639	3.496%	36,973	6.9%	2,551

⁶ U.S. Census Bureau, *Housing and Household Economic Statistics Division* Available at: http://www.census.gov/hhes/www/cpstc/cps_table_creator.html

⁷ BCBSNC prevalence of episodes of care for members who were residents of NC in 2006.

⁸ PAR = Population Attributable Risk indicates the proportion of disease incidence due to secondhand smoke using the following sources:

U.S. Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office of Smoking and Health, 2006 . Available online at <http://www.surgeongeneral.gov/library/secondhandsmoke/> .

Zollinger TW, et al. (2004) Estimating the Economic Impact of Secondhand Smoke on the Health of a Community. *Am J Health Promotion*; 18: 232-238.