High Blood Pressure Among Upstate New York Adults

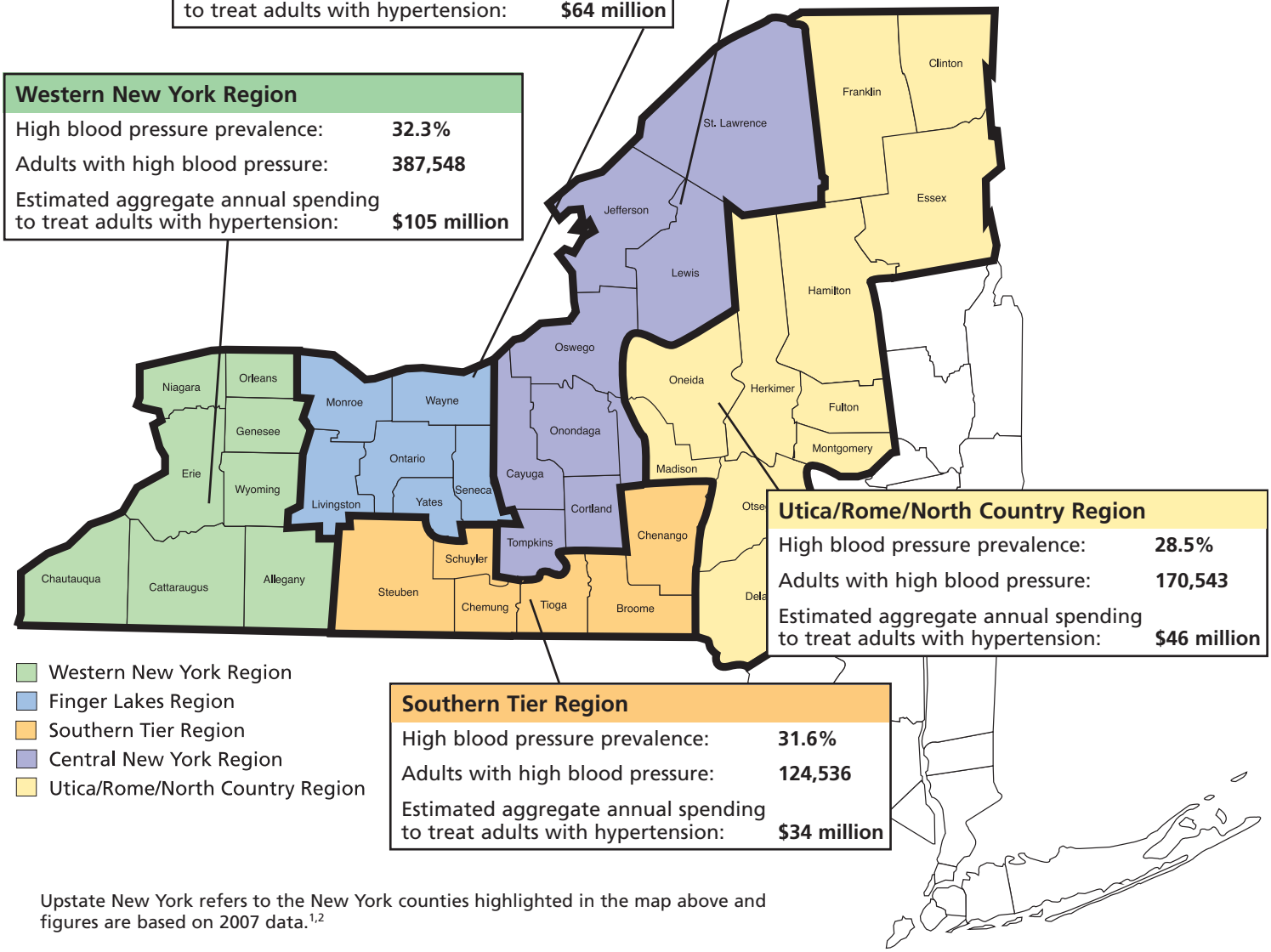
Upstate New York	
High blood pressure prevalence:	**29.4%**
Adults with high blood pressure:	**1.1 million**
Estimated aggregate annual spending to treat adults with hypertension:	**$305 million**

New York State	
High blood pressure prevalence:	**27.2%**
Adults with high blood pressure:	**4 million**
Estimated aggregate annual spending to treat adults with hypertension:	**$1.1 billion**

Finger Lakes Region	
High blood pressure prevalence:	**29.3%**
Adults with high blood pressure:	**237,201**
Estimated aggregate annual spending to treat adults with hypertension:	**$64 million**

Central New York Region	
High blood pressure prevalence:	**24.7%**
Adults with high blood pressure:	**203,946**
Estimated aggregate annual spending to treat adults with hypertension:	**$56 million**

Western New York Region	
High blood pressure prevalence:	**32.3%**
Adults with high blood pressure:	**387,548**
Estimated aggregate annual spending to treat adults with hypertension:	**$105 million**



Utica/Rome/North Country Region	
High blood pressure prevalence:	**28.5%**
Adults with high blood pressure:	**170,543**
Estimated aggregate annual spending to treat adults with hypertension:	**$46 million**

Southern Tier Region	
High blood pressure prevalence:	**31.6%**
Adults with high blood pressure:	**124,536**
Estimated aggregate annual spending to treat adults with hypertension:	**$34 million**

Upstate New York refers to the New York counties highlighted in the map above and figures are based on 2007 data.[1,2]

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High blood pressure or hypertension is the most common chronic condition in the United States, affecting an estimated 72 million Americans.[3] It is a major risk factor for cardiovascular disease (heart disease, stroke and kidney disease) our nation's leading cause of death and contributes more than $66 billion in direct and indirect costs to U.S. health care.[4] With the aging of the population, this already substantial burden will likely increase further.

Approximately one-third of people with elevated blood pressure are unaware of it; and of those diagnosed and treated, less than 40 percent ultimately achieve adequate blood pressure control.[5] Controlling hypertension is critical, since appropriate treatment:

- Reduces stroke incidence by 35 percent to 40 percent;
- Lowers heart attack incidence by 20 percent to 25 percent;
- Cuts the rate of heart failure in half.[6]

This fact sheet reviews high blood pressure prevalence, treatment and costs among adults (ages 18 and older) in upstate New York by first calculating prevalence using data from the New York State Department of Health's 2007 Behavioral Risk Factor Surveillance System (BRFSS). This is an ongoing, annual data collection program administered by individual states that covers high-risk health conditions and behaviors, including high blood pressure diagnosis and treatment. Supported and compiled by the U.S. Centers for Disease Control and Prevention, the BRFSS conducts a telephone survey of randomly sampled, non-institutionalized, civilian adults throughout each year.

Expenses to treat people with hypertension were then extrapolated from a recent cost study of medical conditions in the U.S.[7] Population figures are based on numbers reported by the U.S. Census Bureau.

Blood pressure classification

Blood pressure refers to the force on the arteries as the heart beats. One has hypertension if this measure is equal to or greater than 140/90 mm/Hg (absent diabetes or kidney disease). The top number represents systolic blood pressure (occurs when the heart contracts), the more important number in determining cardiovascular risk. The bottom number indicates diastolic blood pressure (occurs when the heart relaxes between beats). Blood pressure is measured in millimeters (mm) of mercury (Hg) using an instrument called a sphygmomanometer. The following table summarizes the blood pressure levels that result in a diagnosis of prehypertension or hypertension. Treatment options and goals vary according to individual differences, especially when other health risks or conditions are present.[8]

Blood pressure classification summary*

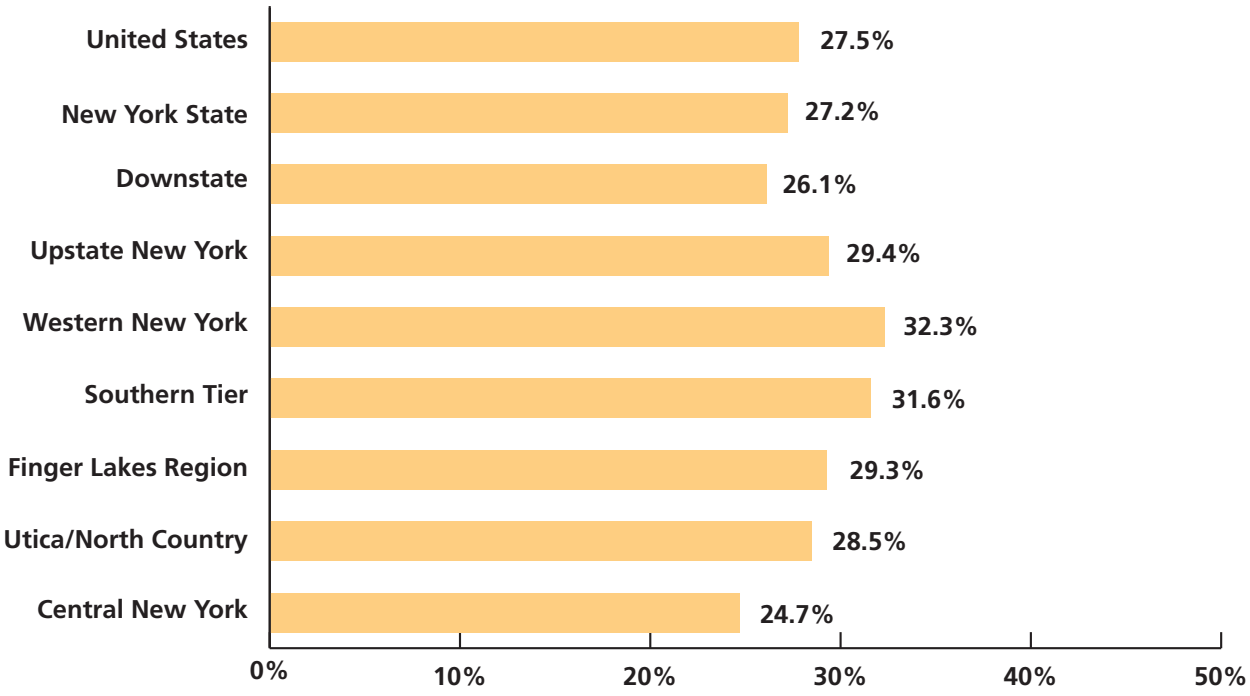
Classification	Systolic Blood Pressure	Diastolic Blood Pressure
Normal	<120	and <80
Prehypertension	120-139	or 80-89
Stage 1 Hypertension	140-159	or 90-99
Stage 2 Hypertension	≥160	or ≥100

*Absent diabetes or kidney disease.

Blood pressure is measured in millimeters (mm) of mercury (Hg) using an instrument called a sphygmomanometer.

Source: National Heart, Lung and Blood Institute: *The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure*. December 2003, pages 2-3. http://www.nhlbi.nih.gov/guidelines/hypertension/express.pdf.

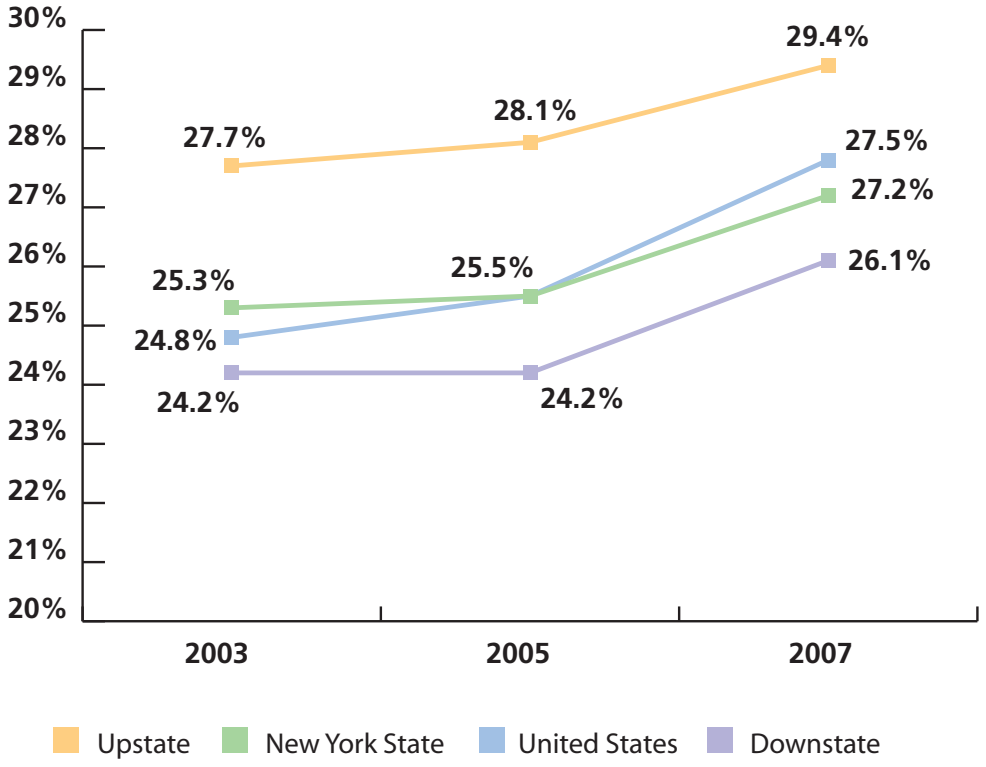
Adults with high blood pressure



Sources: Obtained from The New York State Department of Health, Behavioral Risk Factor Surveillance System, 2007. To request access: http://www.health.state.ny.us/nysdoh/brfss/ and the Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System: http://apps.nccd.cdc.gov/BRFSS/

- Close to one-third of upstate New York adults (ranging from 24.7 percent in Central New York to 32.3 percent in Western New York) have been diagnosed with high blood pressure.
- The percentage of those diagnosed was lower in downstate New York (26.1 percent) and nationally (27.5 percent), than in upstate (29.4 percent).

High blood pressure trends: upstate and downstate New York, New York state, and United States; adults (ages 18+), 2003-2007

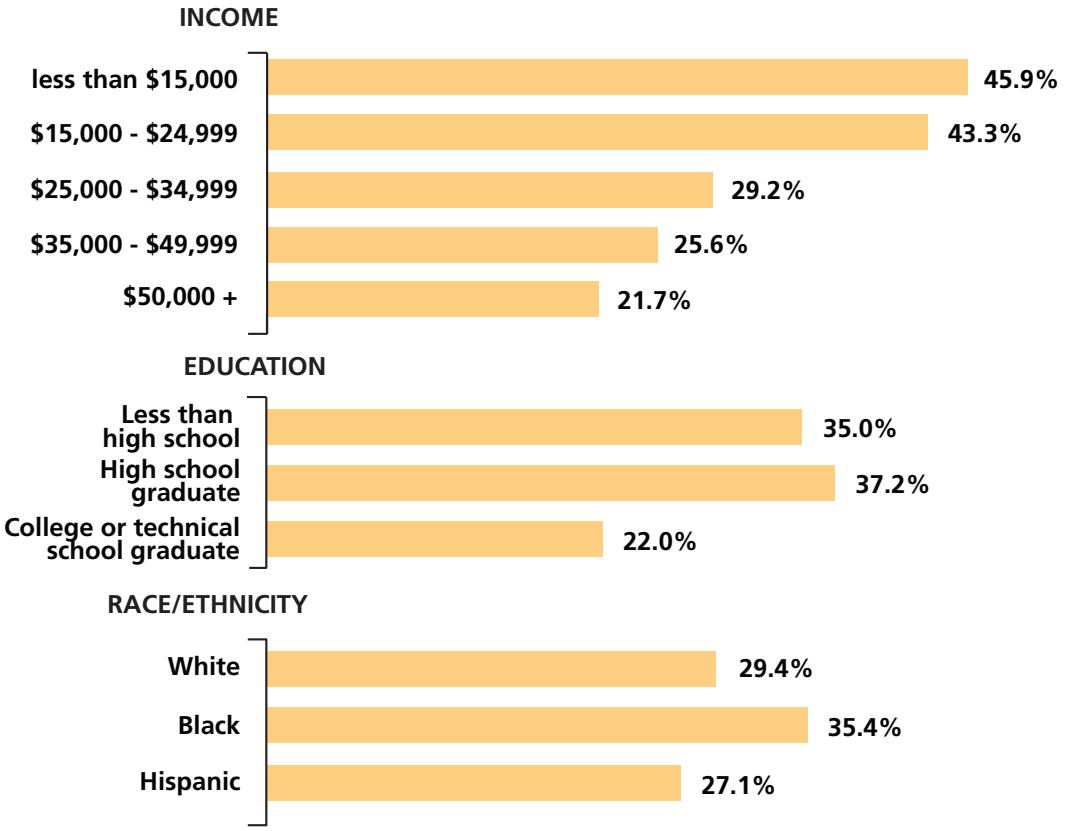


Sources: Obtained from The New York State Department of Health, Behavioral Risk Factor Surveillance System, 2007. To request access: http://www.health.state.ny.us/nysdoh/brfss/ and the Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System: http://apps.nccd.cdc.gov/BRFSS/

- High blood pressure prevalence in upstate and downstate New York, and in New York state as a whole has risen by almost two percentage points in recent years: from 27.7 percent in 2003 to 29.4 percent in 2007 upstate; from 24.2 percent to 26.1 percent downstate; and from 25.3 percent to 27.2 percent statewide.
- Nationwide, prevalence rose almost three percentage points from 24.8 percent in 2003 to 27.5 percent in 2007.[9]

Socioeconomic disparities in high blood pressure

High blood pressure prevalence by socioeconomic factors (ages 18+): upstate New York, 2007



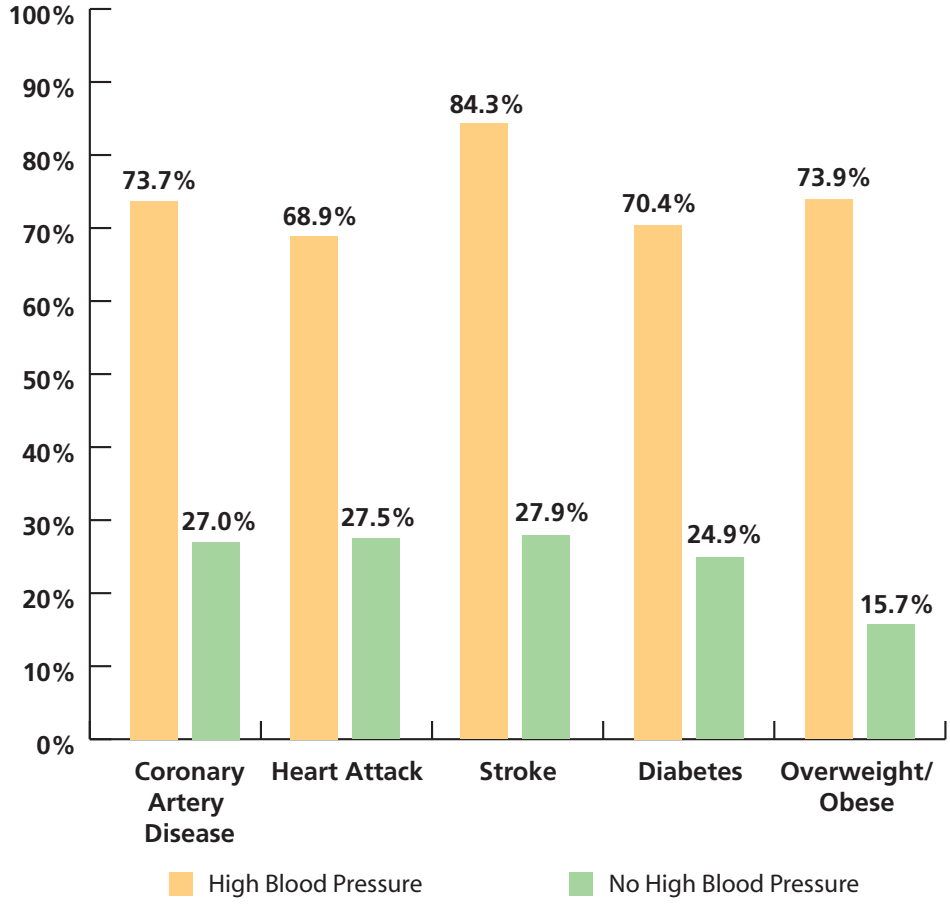
Source: Obtained from The New York State Department of Health, Behavioral Risk Factor Surveillance System, 2007. To request access: http://www.health.state.ny.us/nysdoh/brfss/.

Among upstate New York adults, high blood pressure varies by economic and socio-demographic factors. Generally, high blood pressure prevalence:

- **Decreases with rising income.** Close to 46 percent of adults with an annual household income below $15,000 have high blood pressure; more than double the percentage among adults earning $50,000 or more (21.7 percent).
- **Decreases with increasing education.** More than 37 percent of high school graduates have high blood pressure, compared with 22 percent of college/technical school graduates.
- **Is higher among blacks (non-Hispanic), compared with whites (non-Hispanic) and Hispanics.** The prevalence of high blood pressure among blacks is 35.4 percent compared with 29.4 percent among whites and 27.1 percent among Hispanics.

High blood pressure and the risk of other chronic conditions

Occurrence of other high-cost conditions in upstate New York adults (ages 18+) by blood pressure status, 2007



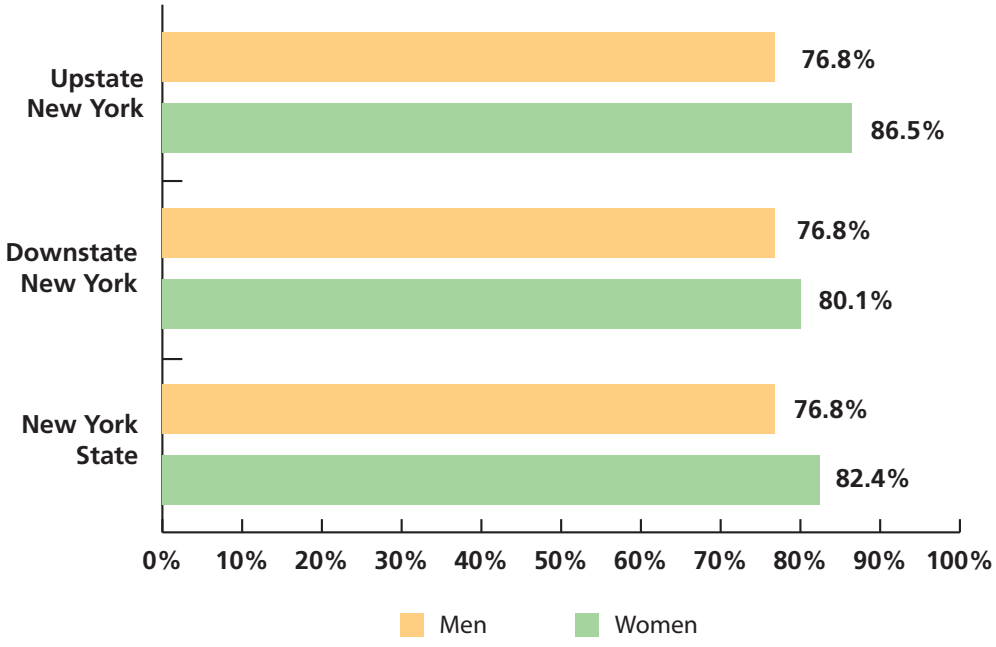
People with high blood pressure are at considerably higher risk for other serious health conditions. The presence of multiple chronic conditions is costly in terms of pain and suffering, lost productivity and health service use. Compared to those without high blood pressure, people with high blood pressure are more likely to have other chronic ailments:

- Coronary artery (heart) disease (73.7 percent of those with high blood pressure also have coronary artery disease compared to 27 percent of those without high blood pressure who have this disease);
- Heart attack (68.9 percent versus 27.5 percent);
- Stroke (84.3 percent versus 27.9 percent);
- Diabetes (70.4 percent versus 24.9 percent); and
- Overweight/obesity (73.9 percent versus 15.7 percent).

Source: The New York State Department of Health, Behavioral Risk Factor Surveillance System, 2007. To request aceess: http://www.health.state.ny.us/nysdoh/brfss/.

High blood pressure treatment and gender

Medication rates in adults with high blood pressure by gender: upstate, downstate and New York state, 2007



Source: Obtained from The New York State Department of Health, Behavioral Risk Factor Surveillance System, 2007. To request access: http://www.health.state.ny.us/nysdoh/brfss/.

- The vast majority of upstate adults diagnosed with hypertension also report taking blood pressure medication (82 percent, data not shown).
- The difference between genders in medication use is greater upstate compared with the remainder of the state. In upstate, 86.5 percent of women with high blood pressure take medication, whereas 76.8 percent of men with high blood pressure take medication.
- Similarly, statewide women with high blood pressure have higher medication rates than men (82.4 percent versus 76.8 percent).

Health care costs for people with high blood pressure

Aggregate and per adult resident costs to treat those with hypertension in upstate New York

Region	Estimated aggregate annual health spending	Estimated annual spending per adult resident
Central New York	$56 million	$67
Finger Lakes Region	$64 million	$80
Southern Tier	$34 million	$85
Utica/Rome/North Country	$46 million	$77
Western New York	$105 million	$87
Upstate New York	**$305 million**	**$80**

Health service spending categories include: hospital care, physician and clinical services, prescription drugs, home health care, nursing home care, dental care, and other professional services.

Source: U.S. health spending: Roehrig C., Miller G., Lake, C., Bryant J.: *National Health Spending by Medical Condition*, 1996-2005. Health Affairs, February 24, 2009.

Hypertension ranks among the most expensive medical conditions to treat, largely due to its associated chronic conditions.[10] On average, annual health costs to treat hypertension in the U.S. are an estimated $262 per resident.[11] This figure, applied to population and prevalence figures for upstate New York, translates to aggregate annual health spending of $305 million. Across upstate regions, estimated aggregate annual costs range from $34 million in the Southern Tier to $105 million in Western New York. Annual health spending on hypertension per adult upstate resident averages $80.

Lifestyle modifications to control/reduce blood pressure

The ultimate goal of treating hypertension is to prevent or reduce the disease burden in its wake. Along with an appropriate medication regimen, healthy lifestyle choices are effective prevention and control measures, as shown in the table below:[12]

Modification	Specific Recommendations
Reduce weight if overweight or obese.	Maintain body mass index within a range of 18.5 kg/m^2 to 24.9 kg/m^2.
Adopt the Dietary Approaches to Stop Hypertension (DASH) eating plan (http://www.health.gov/dietaryguidelines/dga2005/document/html/AppendixA.htm#appA1).	Consume a diet rich in produce and low-fat dairy products and low in saturated and total fat.
Reduce dietary sodium.	Reduce sodium intake to no more than 2.4g of sodium (or 6g of sodium chloride) daily.
Engage in regular physical activity.	Engage in regular aerobic activity for 30 minutes or more on most days.
Consume alcohol in moderation, if at all.	Limit alcohol to no more than two drinks per day for most men and one drink per day for most women.

Source: The National Heart, Lung and Blood Institute: *The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure,* August 2004. Page 26 http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.pdf.

End Notes

[1] The Behavioral Risk Factor Surveillance System (accessed by request through: http://www.health.state.ny.us/nysdoh/brfss/) was used to calculate prevalence estimates. These prevalence estimates were then combined with inflation-adjusted hypertension health care spending figures from a recent national study[2] to calculate costs for upstate New York and New York state. Relevant population bases were obtained from the U.S. Census Bureau, American Community Survey: http://www.census.gov/acs/www/index.html and the Empire State Data Center: http://www.empire.state.ny.us/nysdc/popandhous/ESTIMATE.asp.

[2] Roehrig C., Miller G., Lake C., Bryant J.: *National Health Spending by Medical Condition, 1996-2005*. Health Affairs, February 24, 2009. The cost estimates in this fact sheet assume that the 9 percent average annual inflation (1996-2005) found in this study occurred in 2006 and 2007. The resulting figures were applied to hypertension prevalence in each region. Aggregate costs equal national per capita costs multiplied by the number of affected residents. Per capita (per adult resident) costs for a region are equal to the region's aggregate costs divided by its adult population. To account for the inclusion of children in the cost study but not in the BRFSS prevalence data, aggregate costs were inflated by 3.7 percent of the number of residents under age 18, consistent with the estimated prevalence of hypertension in children.[13] The complete study is at: http://content.healthaffairs.org/cgi/content/abstract/hlthaff.28.2.w358v1 (subscription required for full access). Its methodology is at: http://www.academyhealth.org/files/2009/tuesday/RoehrigC.pdf

[3] Fitch K, Iwasaki K, Pyenson B. (Milliman Consultants and Actuaries): *Uncontrolled Hypertension: Cost to Payers and Employers*. February 21, 2007. http://www.milliman.com/expertise/healthcare/publications/rr/pdfs/uncontrolled-hypertension-costs-novartis-RR02-21-07.pdf. Page 2.

[4] Ibid., page 2.

[5] National Heart, Lung and Blood Institute: *The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure*, August 2004. http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.htm, Page 1.

[6] National Heart, Lung and Blood Institute: JNC 7 Express: The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure, December 2003. http://www.nhlbi.nih.gov/guidelines/hypertension/jncintro.htm. Page 3.

[7] Roehrig C., et al., February 24, 2009.

[8] National Heart, Lung and Blood Institute, December 2003. Pages 7-20.

[9] State and national BRFSS data can be accessed through the Centers for Disease Control and Prevention at: http://apps.nccd.cdc.gov/BRFSS/.

[10] Fitch, et al., Pages 23-26.

[11] Roehrig C., et al., February 24, 2009. http://content.healthaffairs.org/cgi/content/abstract/hlthaff.28.2.w358v1 (subscription required for full access). Page w361.

[12] Adapted from the National Heart, Lung and Blood Institute, August 2004. Page 26.

[13] Din-Dzietham R, Liu Y, Bielo MV, Shamsa F: *High Blood Pressure Trends in Children and Adolescents in National Surveys,* 1963-2002. Circulation, v116. Page 1492. The work cited indicates that the prevalence of hypertension in those under age 18 is 3.7 percent; therefore excluding this age group may tend to understate costs: http://circ.ahajournals.org/cgi/reprint/116/13/1488.