

## **DRAFT\*DRAFT\*DRAFT\*DRAFT**

### **CPPW Built Environment Partnership Resource Guide Benefits & Costs of Healthy, Active Communities**

<b>I.</b>	<b>Top Resources &amp; Tools.....</b>	<b>1</b>
<b>II.</b>	<b>Demand for Healthy, Active Communities.....</b>	<b>1</b>
<b>III.</b>	<b>Benefits of Healthy, Active Communities: Property Values.....</b>	<b>3</b>
<b>IV.</b>	<b>Benefits of Healthy, Active Communities: Infrastructure &amp; Services Cost Savings.....</b>	<b>5</b>
<b>V.</b>	<b>Benefits of Healthy, Active Communities: Job Creation &amp; Economic Development from Tourism.....</b>	<b>7</b>
<b>VI.</b>	<b>Benefits of Healthy, Active Communities: Savings on Healthcare Costs.....</b>	<b>7</b>
<b>VII.</b>	<b>Benefits of Healthy, Active Communities: Savings on Personal Transportation Spending.....</b>	<b>9</b>
<b>VIII.</b>	<b>Benefits of Healthy, Active Communities: Safer Streets &amp; Reduced Fatalities.....</b>	<b>10</b>
<b>IX.</b>	<b>Benefits of Healthy, Active Communities: Improved Health Outcomes &amp; Employee Productivity.....</b>	<b>11</b>
<b>X.</b>	<b>Benefits of Healthy, Active Communities: Increased Energy Efficiency &amp; Reduced Fuel Consumption.....</b>	<b>12</b>
<b>XI.</b>	<b>Costs of Healthy, Active Communities: Walkable, Smart Growth Development.....</b>	<b>13</b>
<b>XII.</b>	<b>Costs of Healthy, Active Communities: Walking &amp; Bicycling Infrastructure..</b>	<b>13</b>
<b>XIII.</b>	<b>Benefits of Healthy, Active Communities: Case Studies.....</b>	<b>14</b>

## I. Top Resources

Evaluating Non-Motorized Transportation Benefits and Costs, Victoria Transportation Policy Institute (2011). <http://www.vtpi.org/nmt-tdm.pdf>

Smart Growth and Economic Prosperity: A Sourcebook Part I, Smart Growth America (2010).

Smart Growth is Smart Business: Boosting the Bottom Line and Community Prosperity, NALGEP and Smart Growth Leadership Institute (2004).  
<http://www.smartgrowthamerica.org/documents/smart-growth-is-smart-business.pdf>

Walking the Walk: How Walkability Raises Housing Values in U.S. Cities, Joseph Cortright (2009), <http://www.ceosforcities.org/work/walkingthewalk>

## Tools

The Robert Wood Johnson Foundation's Active Leadership Program has developed an online tool to determine the annual health savings, including worker productivity, that could be derived from reducing physical inactivity rates in communities.  
<http://www.ecu.edu/picostcalc/>

This website, sponsored by the National Cooperative Highway Research Program has an online calculator for estimating the costs of different types of bicycling infrastructure, the demand in terms of new cyclists, and measured economic benefits (e.g., time savings, increased livability, decreased health costs, a more enjoyable ride) in metropolitan areas throughout the U.S.  
[www.bicyclinginfo.org/bikecost](http://www.bicyclinginfo.org/bikecost)

## II. Demand for Walkable, Healthy Communities

- According to the 2009 *National Household Travel Survey*, 10.9% of personal trips are by walking and 1.0% are by bicycle, a 25% increase since 2001, and about twice as much as indicated by most travel surveys. Source: Evaluating Non-Motorized Transportation Benefits and Costs, Todd Litman, VTPI (2011). <http://www.vtpi.org/nmt-tdm.pdf>
- According to a survey of 2,000 representative home-buying U.S. households, 27% would like to be able to walk to more places from their homes and rated either *important* or *very important* jogging/bike trails (36%), sidewalks (28%), and shops within walking area (19%). Source: Consumers' Survey on Smart Choices for Home Buyers, National

Association of Realtors & National Association of Homebuilders (2002).

[https://www.powershow.com/view/ae4b0-OWViZ/Consumers\\_Survey\\_on\\_Smart\\_Choices\\_for\\_Home\\_Buyers\\_flash\\_ppt\\_presentation](https://www.powershow.com/view/ae4b0-OWViZ/Consumers_Survey_on_Smart_Choices_for_Home_Buyers_flash_ppt_presentation)

- A RCLCO Consumer Research report demonstrates that younger Americans from ‘Generation Y’ (defined as those born from 1970 on) want walkable, urban communities; according to their survey:
  - 77% of Generation Y plans to live in an ‘urban core’
  - 2/3 of Generation Y said that living in a walkable community is important
  - More than half of Generation Y would trade on a larger lot size for proximity to shopping or work
  - Even among families with children, 33% would trade on a larger lot size for walkable, more diverse communities
 Source: The Growing Market for Smart Growth: Consumer Demand and Demographic Drivers, RCLCO (2010) [http://www.rclco.com/pdf/Market\\_for\\_Smart\\_Growth.pdf](http://www.rclco.com/pdf/Market_for_Smart_Growth.pdf)
- In 2002, the National Highway Transportation Safety Administration surveyed Americans on their behaviors and attitudes towards bicycling and walking. 84% of people polled agreed (strongly or somewhat agreed) that bicycling is “a great form of exercise” for them. Seven in ten said that they would like to bike more than they do now. But less than half of those surveyed were satisfied by how their communities were designed for bicycling. The most popular changes for bicyclists were additional bike lanes, paths, and trails, followed by improvements to existing facilities. Source: National Survey of Bicyclist and Pedestrian Attitudes and Behavior: Final Report, Volume II Findings Report, NHTSA (2008). <http://www.nhtsa.dot.gov/staticfiles/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/810972.pdf>
- Trails are the top-ranking outdoor community asset according to the National Association of Home Builders, which found that 57% of prospective homebuyers would like to see trails in their new community. Source: From Kitchen to the Wild in 30 Seconds, The New York Times (September 7, 2006) <http://www.nytimes.com/2006/09/07/fashion/07FITNESS.html>

*More in-depth information:*

Smart Growth: The Business Opportunity for Developers and Production Builders, EPA Sustainable Communities Office (2010). [http://www.epa.gov/dced/sg\\_business.htm#p2](http://www.epa.gov/dced/sg_business.htm#p2)

The Market Acceptance of Single-Family Housing Units in Smart Growth Communities, Mary J. Eppli and Charles C. Tu (2011).

[http://www.epa.gov/smartgrowth/pdf/market\\_acceptance.pdf](http://www.epa.gov/smartgrowth/pdf/market_acceptance.pdf)

The Growing Market for Smart Growth: Consumer Demand and Demographic Drivers, RCLCO (2010) [http://www.rclco.com/pdf/Market\\_for\\_Smart\\_Growth.pdf](http://www.rclco.com/pdf/Market_for_Smart_Growth.pdf)

### III. Benefits of Healthy, Active Communities: Property Values

- In a study that analyzed data from 94,000 real estate transactions in 15 major markets, higher levels of walkability (measured by WalkScore) were linked to higher home values in 13 of the 15 markets. In the typical metropolitan area, a one point increase in WalkScore was associated with an increase in home value ranging from \$700 to \$3,000; the gains were larger in more urban, dense markets and smaller in less dense markets. In the typical metropolitan area, the premium commanded for neighborhoods with above average WalkScores compared to those with average scores ranged from \$4,000 to \$34,000. Source: Walking the Walk: How Walkability Raises Housing Values in U.S. Cities, Joseph Cortright (2010). <http://www.ceosforcities.org/work/walkingthewalk>
- According to an EPA report comparing the resale prices of single family homes and townhouses in walkable smart growth developments with equivalent units in conventional developments, smart growth developments more frequently had higher resale appreciation; from the 18 examples of smart growth developments and 18 examples of conventional developments, smart growth communities had higher resale appreciation in 10 of the comparisons; the conventional suburban communities showed higher resale appreciation for six of the comparisons; in two cases, there was equivalent performance and in three cases there was inadequate data to reach conclusions. Source: Market Acceptance of Smart Growth, EPA (2011), [http://www.epa.gov/dced/market\\_acceptance.htm](http://www.epa.gov/dced/market_acceptance.htm)

*More in-depth information:*

Market Acceptance of Smart Growth, EPA (2011), [http://www.epa.gov/smartgrowth/pdf/market\\_acceptance.pdf](http://www.epa.gov/smartgrowth/pdf/market_acceptance.pdf)

Walking the Walk: How Walkability Raises Housing Values in U.S. Cities, Joseph Cortright (2009). <http://www.ceosforcities.org/work/walkingthewalk>

#### IV. Benefits of Healthy, Active Communities: Infrastructure & Services Cost Savings

- According to the seminal study Costs of Sprawl-2000 and the follow up book, Sprawl Costs: Economic Impacts of Unchecked Development, modest increases in housing density of projected new development from 2000 to 2025 to increase the walkability of some neighborhoods in the U.S. would:
    - Save \$122 billion in water, sewer, and road infrastructure costs (2000 dollars), or 8.9% of total projected costs. This translates into a 10.1% savings in capital costs for roads and a 6.6% savings in capital costs for water and sewer infrastructure. *(see chart below)*
- Source: Sprawl Costs: Economic Impacts of Unchecked Development, Robert W. Burchell, Anthony Downs, Barbara McCann and Sahan Mukherji (2005).

	Water & Sewer Laterals Required	Water & Sewer Costs (billions)	Road Lane Miles Required	Road Land Miles Costs (billions)
Sprawl Growth Scenario	45,866,594	\$189.8	2,044,179	\$927.0
Compact Growth Scenario	41,245,294	\$177.2	1,855,874	\$817.3
Savings	4,621,303	\$12.6 (10.1%)	188,305	\$109.7 (6.6%)

Sprawl Costs: Economic Impacts of Unchecked Development, Robert W. Burchell, Anthony Downs, Barbara McCann and Sahan Mukherji, Island Press, 2005

- 18 visioning studies conducted by U.S. metropolitan areas that assessed the impacts of projected significant infrastructure cost savings for more compact future growth scenarios versus conventional sprawl development scenarios of future growth. Source: The Best Stimulus for the Money: Briefing Paper IX, Compact Development, Sprawl, and Infrastructure Costs, Bartholomew, Keith, et. al., Smart Growth America and the University of Utah (2009).  
<http://www.smartgrowthamerica.org/documents/thebeststimulus.pdf>
- An analysis by Envision Utah concluded that municipal infrastructure costs for a 16 unit per acre development on raw land is about 26% less than for a 4 unit per acre development. A 16 unit per acre infill or reuse project is even less expensive in terms of infrastructure costs, 40% to 42% less costly than a 4 unit per acre development on raw land. Source: Envision Utah, FHWA (2011).  
[http://www.fhwa.dot.gov/planning/toolbox/utah\\_methodology\\_infrastructure.htm](http://www.fhwa.dot.gov/planning/toolbox/utah_methodology_infrastructure.htm)

- School busing costs about \$640/student/year, or between 5 and 10% of the typical school budget, costs that can be reduced by locating schools in walkable communities. Source: “Why Johnny Can’t Walk to School, Historic Neighborhood Schools in the Age of Sprawl,” National Trust for Historic Preservation (2002). [http://www.preservationnation.org/issues/historic-schools/additional-resources/schools\\_why\\_johnny\\_1.pdf](http://www.preservationnation.org/issues/historic-schools/additional-resources/schools_why_johnny_1.pdf)
- Driving requires about 15 times as much roadway space as bicycling, and about 100 times as much space as walking. Source: Evaluating Non-Motorized Transportation Benefits and Costs, Victoria Transportation Policy Institute (2011). <http://www.vtpi.org/nmt-tdm.pdf>
- Roadway facility costs average about \$700 annually per capita in the U.S., about half of which is funded through general taxes rather than user fees. Although roads are used by both motorized and non-motorized modes, walking and cycling require less road space and impose less wear, and so cost less per mile of travel. Roadway costs average about 4¢ per mile for automobiles, and more for heavier vehicles. Shifts from driving to walking or bicycling provide roadway facility and traffic service cost savings of approximately 5¢ per mile for urban driving and 3¢ per mile for rural driving, including indirect travel reductions leveraged by non-motorized transport improvements. As a result, shifting travel from motorized to bicycling or walking modes generally reduces total roadway costs. Source: Evaluating Non-Motorized Transportation Benefits and Costs, Victoria Transportation Policy Institute (2011). <http://www.vtpi.org/nmt-tdm.pdf>
- A typical urban parking space has land and construction costs worth \$5,000 to \$50,000, resulting in annualized costs (including land, construction and operating expenses) ranging from about \$500 to more than \$3,000. Bicycle parking costs much less. Typically 10-20 bicycles can be stored in the space required for one automobile, and bicycles are often stored in otherwise unused areas. Shifting from automobile to non-motorized travel is estimated to provide parking savings of \$2-4 per urban-peak trip (a typical commute has \$4-8 per day parking costs), \$1-3 per urban off-peak trip, and about \$1 per rural trip. Source: Evaluating Non-Motorized Transportation Benefits and Costs, Victoria Transportation Policy Institute (2011). <http://www.vtpi.org/nmt-tdm.pdf>

*More in-depth information:*

Smart Growth and Economic Prosperity: A Sourcebook Part I, Smart Growth America (2010)

Evaluating Non-Motorized Transportation Benefits and Costs, Victoria Transportation Policy Institute (2011). <http://www.vtpi.org/nmt-tdm.pdf>

## V. Benefits of Healthy, Active Communities: Job Creation & Economic Development from Tourism

- Because bicycling and walking facility construction is relatively labor intensive, especially relative to land costs required, it tends to create more employment and regional business activity than other capital projects. One 2010 analysis found that \$1 million spent to build bicycle lanes directly creates 11.0 to 14.4 total jobs, compared with approximately 7.0 total jobs created by the same expenditure on roadway projects. (*see chart below*) Source: Estimating the Employment Impacts of Pedestrian, Bicycle, and Road Infrastructure Case Study: Baltimore, Political Economy Research Institute University of Massachusetts, Amherst (2010).  
<http://www.scribd.com/doc/46947554/2010-12-Heidi-Garrett-Peltier-Estimating-the-Employment-Impacts-on-Pedestrian-Bicyclwe-Nd-Road-Infrastructure-Case-study-Baltimore>

EMPLOYMENT PER \$1 MILLION EXPENDITURES					
Direct jobs per \$1 million	Indirect jobs per \$1 million	Induced jobs per \$1 million	Total jobs per \$1 million	Employment multiplier	
Pedestrian projects	6.0	2.2	3.1	11.3	1.9
Bike lanes (on-street)	7.9	2.5	4.0	14.4	1.8
Bike boulevard (planned)	6.1	2.4	3.2	11.7	1.9
Road repairs and upgrades	3.8	1.5	2.0	7.4	1.9
Road resurfacing	3.4	1.5	1.9	6.8	2.0

- The national bicycling industry contributes an estimated \$133 billion a year to the U.S. economy. It supports nearly 1.1 million jobs and generates \$17.7 billion in federal, state, and local taxes. Another \$46.9 billion is spent on meals, transportation, lodging, gifts and entertainment during bike trips and tours. Source: The Economic Benefits of Bicycle Infrastructure Investments, League of American Bicyclists (2009).  
[http://www.bikeleague.org/resources/reports/pdfs/economic\\_benefits\\_bicycle\\_infrastructure\\_report.pdf](http://www.bikeleague.org/resources/reports/pdfs/economic_benefits_bicycle_infrastructure_report.pdf)

## VI. Benefits of Healthy, Active Communities: Savings on Healthcare Costs

- The annual medical costs of physical inactivity have been estimated at \$76 billion, or close to 10 percent of all medical expenses. Source: *Overweight and Obesity: Economic Consequences*, Centers for Disease Control and Prevention (2007).  
[http://www.cdc.gov/Pcd/issues/2005/oct/pdf/04\\_0118.pdf](http://www.cdc.gov/Pcd/issues/2005/oct/pdf/04_0118.pdf)

- In 2000, the total direct and indirect health care costs attributable to obesity in the United States were estimated to be \$117 billion. The Surgeon General’s Call to Action to Prevent and Decrease Overweight and Obesity, U.S. Department of Health and Human Services. [http://www.surgeongeneral.gov/topics/obesity/calltoaction/1\\_3.htm](http://www.surgeongeneral.gov/topics/obesity/calltoaction/1_3.htm)
- If the current rate of increase in obesity continues, the total health care costs attributable to obesity are anticipated to double every decade, reaching \$860 to \$960 billion by 2030. Source: “Will all Americans become overweight or obese: Estimating the progression and cost of the US obesity epidemic,” *Obesity*. 16(10): p. 2323–2330 (2008).
- A 2010 report by Urban Design 4 Health and the American Public Health Association analyzed the national health costs of transportation-related health outcomes, including the costs of inactivity and obesity, which totaled \$142 billion due to healthcare costs, lost wages due to illness and disability, and lost future earnings due to premature death. (*see chart below*) Source: The Hidden Health Costs of Transportation, Urban Design 4 Health and the American Public Health Association (2010). <http://www.apha.org/NR/rdonlyres/F84640FD-13CF-47EA-8267-E767A1099239/0/HiddenHealthCostsofTransportationShortFinal.pdf>

TABLE 2 THE COST OF TRANSPORTATION-RELATED HEALTH OUTCOMES			
The consequences of inactivity, obesity, exposure to air pollution, and traffic crashes in the U.S. are staggering when viewed in terms of cost. Fortunately, with certain policy changes, these costs are largely preventable.			
The National Health Costs of...	\$\$ (Billions)	Estimate Includes	Source
Obesity and overweight	\$142	<ul style="list-style-type: none"> <li>• Healthcare costs</li> <li>• Lost wages due to illness &amp; disability</li> <li>• Future earnings lost by premature death</li> </ul>	National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Statistics Related to Overweight and Obesity: The Economic Costs. Available at: <a href="http://win.niddk.nih.gov/statistics/index.htm">http://win.niddk.nih.gov/statistics/index.htm</a>
Air pollution from traffic	\$50-80	<ul style="list-style-type: none"> <li>• Health care costs</li> <li>• Premature death</li> </ul>	Federal Highway Administration. 2000. Addendum to the 1997 Federal Highway Cost Allocation Study Final Report, May 2000. Available at: <a href="http://www.fhwa.dot.gov/policy/hcas/addendum.htm">www.fhwa.dot.gov/policy/hcas/addendum.htm</a>
Traffic crashes	\$180	<ul style="list-style-type: none"> <li>• Healthcare costs</li> <li>• Lost wages</li> <li>• Property damage</li> <li>• Travel delay</li> <li>• Legal/administrative costs</li> <li>• Pain &amp; suffering</li> <li>• Lost quality of life</li> </ul>	AAA. Crashes vs. Congestion? What's the Cost to Society? Cambridge, MD: Cambridge Systematics, Inc.; 2008. Available at: <a href="http://www.aaanewsroom.net/assets/files/20083591910.crashesVscongestionfullreport2.28.08.pdf">www.aaanewsroom.net/assets/files/20083591910.crashesVscongestionfullreport2.28.08.pdf</a>

All cost estimates adjusted to 2008 dollars.

Source: Urban Design 4 Health and the American Public Health Association, February 2010

- An economic evaluation of the health benefits of walking and bicycling infrastructure concluded that the incremental costs of residential sidewalk construction is usually repaid by the health benefits of increased physical fitness and reduced vehicle air pollution. The

study projected that if sidewalks were built on all city streets, the increased walking and cycling would provide an average of 15 kcal/day per capita in additional physical activity and offset weight gain in about 37% of the population, providing substantial healthcare cost savings. Source: An Economic Evaluation of Health-Promotive Built Environment Changes, Preventive Medicine, 50, S44-S49, (2010).

*More in-depth information:*

The Hidden Health Costs of Transportation, Urban Design 4 Health and the American Public Health Association (2010). <http://www.apha.org/NR/rdonlyres/F84640FD-13CF-47EA-8267-E767A1099239/0/HiddenHealthCostsofTransportationShortFinal.pdf>

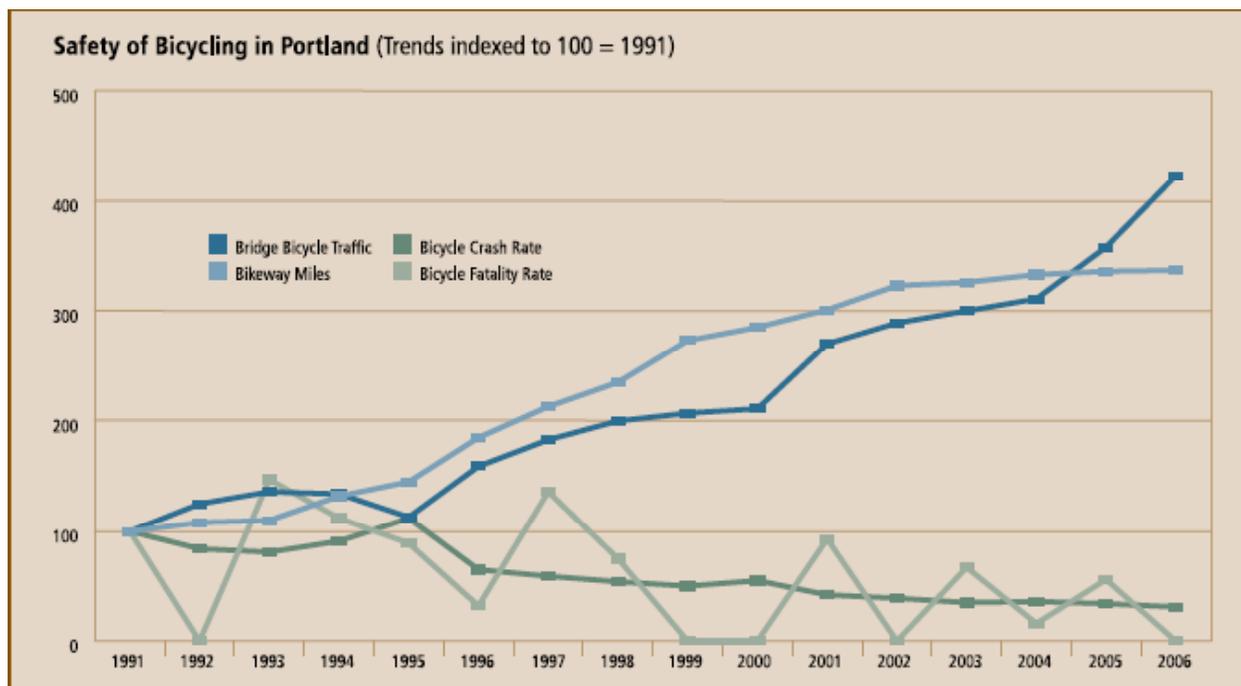
## **VII. Benefits of Healthy, Active Communities: Savings on Personal Transportation Spending**

- Increasing the availability of lower cost transportation options, including walking, bicycling, and public transportation, allows people to reduce their spending on gasoline costs, as well as potentially reduce the number of household cars owned. Vehicle ownership on average costs \$2,000 to \$3,000 per year. Residential parking costs \$100-\$1,200 per vehicle year. Source: Evaluating Non-Motorized Transportation Benefits and Costs, Victoria Transportation Policy Institute (2011). <http://www.vtpi.org/nmt-tdm.pdf>
- In the 51 largest U.S. metro areas, the average person drives about 24.9 miles per day. If the average person drove 1 mile less per day (about 4 percent), 156 million Americans would collectively drive 156 million fewer miles per day, or about 57 billion fewer miles per year. At \$3.50 per gallon for gasoline, the nation would save \$10 billion per year on fuel. Including the expense of purchasing and maintaining vehicles, the total savings from this level of reduced vehicle miles driven would amount to \$28.6 billion per year. Source: The Green Dividend, CEOs for Cities. [http://www.ceosforcities.org/work/city\\_dividends](http://www.ceosforcities.org/work/city_dividends)
- Nationally, transportation is the second largest household expenditure after housing, and ranges from less than 10 % in walkable and transit-rich areas to almost 25% of the average household's expenditures in areas where there are few transportation options. Source: Preserving and Promoting Diverse Transit-Oriented Neighborhoods, Center for Transit Oriented Development (2006). <http://www.reconnectingamerica.org/assets/Uploads/fordreport.pdf>
- Gas expenditures alone (one part of transportation spending) as a portion of the average household budget, which averaged 3.4 percent from 1996 to 2006, were approaching 9

percent in the summer of 2008. Source: Consumer Expenditure Survey Report, Bureau of Labor Statistics (1996–2006).

### VIII. Benefits of Healthy, Active Communities: Safer Streets & Reduced Fatalities

- Increased levels of walking and bicycling lead to decreased traffic collision rates. A study in *Injury Prevention* found that the risk of a pedestrian being hit by a car declines by about a third if walking and cycling double in an area. A 2005 study in Australia found similar results: doubling bicycle travel reduces cyclist risk per kilometer by about 34%; and conversely, halving bicycle travel increases risk per kilometer about 52%. Source: Safety in numbers: more walkers and bicyclists, safer walking and bicycling, *Injury Prevention* 9:205-209 (2003). <http://injuryprevention.bmj.com/content/9/3/205.abstract>
- From 1991 to 2006, Portland increased its network of bicycle facilities, which resulted in a fourfold increase in the number of bicyclists, while the crash rate was reduced by more than 69%. (*see chart below*) Source: Active Transportation for America: The Case for Increased Federal Investment in Bicycling and Walking, Rails-to-Trails Conservancy (2008). [http://www.railstotrails.org/resources/documents/whatwedo/atfa/ATFA\\_20081020.pdf](http://www.railstotrails.org/resources/documents/whatwedo/atfa/ATFA_20081020.pdf)



*More in-depth information:*

Evaluating Non-Motorized Transportation Benefits and Costs, Victoria Transportation Policy Institute (2011). <http://www.vtpi.org/nmt-tdm.pdf>

## **IX. Benefits of Healthy, Active Communities: Improved Health Outcomes & Employee Productivity**

- Today, 32% of American adults are obese, and 67% are overweight or obese. 19% of all teenagers and 17% all children between ages 6 and 11 are overweight. Source: Overweight and Obesity, Centers for Disease Control and Prevention (2008) <http://www.cdc.gov/nccdphp/dnpa/obesity/>
- The number one cause of death is heart disease, and five of its six risk factors are associated with obesity: excessive weight, inactivity, high blood pressure, high cholesterol and diabetes. Diabetes is the sixth leading cause of death in the United States. More than 21 million Americans (7% of the population) have Type II diabetes. Obesity is the number one risk factor for this dramatically expanding disease which had 1.5 million new diagnoses in 2005. Source: National Diabetes Fact Sheet: General Information, Centers for Disease Control and Prevention (2005). [http://www.cdc.gov/diabetes/pubs/pdf/ndfs\\_2005.pdf](http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2005.pdf)
- The underlying causes of obesity—namely, physical inactivity and unhealthy diet—are second only to tobacco as the major causes of premature death. Source: Actual causes of death in the United States, *Journal of the American Medical Association*. 291(10): p. 1238–1245. (2004).
- In 2007, less than half of all Americans met the CDC’s recommendations for physical activity from work, transportation or leisure time exercise, and 13.5 percent did not get any physical activity at all. Source: Behavioral Risk Factor Surveillance System: 2007 Codebook Report, Centers for Disease Control and Prevention (2008). <http://www.dhh.state.la.us/offices/?ID=245>
- Children in neighborhoods lacking access to sidewalks or walking paths, parks, or playgrounds, or recreation or community center have 20-45% higher odds of becoming obese or overweight compared to children who have access to these amenities. This impact is particularly strong for younger children and for girls; girls aged 10-11 years living in neighborhoods with fewer of these amenities have on average 121-276% higher odds of being obese or overweight. Source: White House Task Force on Childhood Obesity: Report to the President (2010). [http://www.letsmove.gov/sites/letsmove.gov/files/TaskForce\\_on\\_Childhood\\_Obesity\\_May2010\\_FullReport.pdf](http://www.letsmove.gov/sites/letsmove.gov/files/TaskForce_on_Childhood_Obesity_May2010_FullReport.pdf)
- Businesses also benefit from walking or bicycling commuting by improved employee fitness and health, which increases worker productivity, reduces sick leave, and lowers healthcare costs. A meta-analysis of employee wellness programs, indicates an average benefit/cost ratio of 6.3/1 suggesting large potential benefits to businesses from improved

walking and cycling. Source: “Meta-Evaluation of Worksite Health Promotion Economic Return Studies: 2005 Update,” *The Art of Health Promotion*, part of the *American Journal of Health Promotion* (2005)

[http://fhs.mcmaster.ca/ceb/community\\_medicine\\_page/docs/meta%20evaluation%20of%20worksite%20health%20promotion.pdf](http://fhs.mcmaster.ca/ceb/community_medicine_page/docs/meta%20evaluation%20of%20worksite%20health%20promotion.pdf)

- A study of 30,604 people in Copenhagen showed that people who commuted to work by bike had 40 percent lower risk of dying over the course of the study period than those who did not bike to work. Bike commuters average a day fewer absences due to illness each year than non-bike commuters. Source: Companies Continue To Add Wellness Programs, Watson Wyatt/National Business Group On Health Survey Finds Watson Wyatt/National Business Group On Health (2009).  
<http://www.watsonwyatt.com/news/press.asp?ID=20961>

*More in-depth information*

Active Design Guidelines (2010). <http://www.nyc.gov/adg>

## **X. Benefits of Healthy, Active Communities: Increased Energy Efficiency & Reduced Fuel Consumption**

- Bicycling and walking can provide relatively large energy savings because they tend to substitute for short urban trips that have high emission rates per mile due to cold starts (engines are inefficient during the first few minutes of operation) and congestion. As a result, each 1% shift from automobile to bicycling or walking travel typically reduces fuel consumption 2-4%. Source: The Environmental Benefits of Bicycling and Walking, National Bicycling and Walking Study Case Study No. 15, USDOT (2003).  
<http://atfiles.org/files/pdf/BikePedBen.pdf>
- Currently only 31% of all trips of one mile or less are made by bicycling or walking, while two-thirds are made by car. Ninety percent of all trips between one and three miles are taken by car. An analysis by Rails-to-Trails Conservancy projected the fuel savings and greenhouse gas reductions of increasing the mode share of bicycling and walking mode share from 9.6% (status quo) to a Modest Scenario (13%) or a Substantial Scenario (25%) for the future. These modest increases in bicycling and walking could lead to fuel savings of an additional \$6 to \$17 billion under these future scenarios of increased bicycling and walking. The overall amount that could be saved on gasoline expenditure is in the range of \$10 to \$35 billion annually. Source: Active Transportation for America, Rails-to-Trails Conservancy (2008). [www.railstotrails.org/atfa/](http://www.railstotrails.org/atfa/)

## **XI. Costs of Healthy, Active Communities: Walkable, Smart Growth Development**

- An analysis of the construction costs of building smart growth developments versus conventional suburban developments revealed that in almost all cases, the smart growth product is either cost neutral or more cost efficient than production-built conventional suburban units. Source: Production-Built Homes: The Cost Advantages of Smart Growth, Jason Miller (2008). <http://www.epa.gov/smartgrowth/pdf/miller.pdf>

*More in-depth information:*

Production-Built Homes: The Cost Advantages of Smart Growth, Jason Miller (2008).  
<http://www.epa.gov/smartgrowth/pdf/miller.pdf>

## **XII. Costs of Healthy, Active Communities: Walking & Bicycling Infrastructure**

- Portland, Oregon has developed a network of bicycle infrastructure at an average per mile cost of \$300,000, with bicycle boulevards and lanes at a fraction of that cost (\$30,000 to \$40,000 per mile). The cost of one mile of sidewalk is about \$100,000. Source: Recommended Guidelines/Priorities for Sidewalks and Walkways, U.S. Department of Transportation (2002).
- Multi-use trails typically cost between \$50,000 and \$300,000 per mile, depending on acquisition costs of rights-of-way and the surface material used. Source: Trail Costs per Mile, Rails-to-Trails Conservancy (2008).  
<ftp://ftp.dot.state.fl.us/LTS/CO/Estimates/CPM/summary.pdf>
- The costs for a bike rack that parks two bikes is about \$200, compared to the average costs of car parking: \$3,500 to \$12,000 for each space of surface parking and \$10,000 to \$31,000 for each space of garage parking. Source: TCRP Synthesis 62: Integration of Bicycles and Transit: A Synthesis of Transit Practice, Transit Cooperative Research Program (2005). [http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp\\_syn\\_62.pdf](http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_syn_62.pdf)
- A 2008 VTPI report summarized the typical facility costs of bicycling and walking infrastructure from various studies; (*see chart below*) Source: Evaluating Non-Motorized Transportation Benefits and Costs, Victoria Transportation Policy Institute (2011).  
<http://www.vtppi.org/nmt-tdm.pdf>

**Table 15** Typical Facility Costs (FDOT 2003; Zegeer, et al 2002; Krizek, et al. 2006)

Measure	Typical Costs (2000 U.S. Dollars)
Bike lanes	\$10,000-50,000 per mile to modify existing roadway (no new construction).
Bicycle parking	\$50-500 per bicycle for racks and lockers
Center medians	\$150-200 per linear foot
Curb bulbs	\$10,000-20,000 per bulb
Marked crosswalk	\$100-300 for painted crosswalks, and \$3,000 for patterned concrete.
Path (5-foot asphalt)	\$30-40 per linear foot
Path (12-foot concrete)	\$80-120 per linear foot
Pedestrian refuge island	\$6,000-9,000, depending on materials and conditions.
Sidewalks (5-foot width)	\$20-50 per linear foot
Speed humps	\$2,000 per hump
Traffic signals	\$15,000-60,000 for a new signal
Traffic signs	\$75-100 per sign.
Traffic circles	\$4,000 for landscaped circle on asphalt street and \$6,000 on concrete street.

*More in-depth information:*

Bicyclepedia. [www.bicyclinginfo.org/bikecost](http://www.bicyclinginfo.org/bikecost)

Guidelines for Analysis of Investments in Bicycle Facilities, NCHRP Report 552, TRB (2006). [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_552.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_552.pdf)

### XIII. Benefits of Healthy, Active Communities: Case Studies

- Colorado:** A study commissioned by the Colorado Department of Transportation in 2000 determined that bicycling contributed \$1 billion to the economy from manufacturing, retail, tourism and bike races. Retail and manufacturing employ 1,213 people with an annual payroll of \$34.1 million. Half of all summer visitors at Colorado ski resorts spend time bicycling. Of those 699,000 people, 70 percent are from out of state and 40 percent said they would have altered their vacation destination if bicycling were not available. Source: [http://www.bikeleague.org/resources/reports/pdfs/economic\\_benefits\\_bicycle\\_infrastructure\\_report.pdf](http://www.bikeleague.org/resources/reports/pdfs/economic_benefits_bicycle_infrastructure_report.pdf)
- New York, New York:** In 2003, a study by Ernst & Young and New Yorkers for Parks looked at the results of investment in six city parks, with supplemental data from 30 additional parks. The study found that real estate values were higher on blocks closest to well-managed and maintained parks, such as Prospect Park in Brooklyn. Source: The Economic Benefits of Parks, American Society of Landscape Architects. <http://dirt.asla.org/2009/08/28/the-economic-benefits-of-parks/>

- Pittsburgh, Pennsylvania:** In a 2006 report on employment centers outside Pittsburgh, 30% of employers responded that transportation was the number one barrier to hiring and retaining qualified workers. Although bus routes serve a portion of the center, more than 50% of employees responded that there was no bus stop convenient to home or work. Other employees noted that they didn't use public transportation because bus stops in the area had no sidewalks to safely reach their destination. The lack of a network of complete streets in and around this activity center makes it difficult to attract and retain employees. Source: National Complete Streets Coalition <http://www.completestreets.org/complete-streets-fundamentals/factsheets/>
- Portland, Oregon:** A 2011 study assessed how the costs of Portland's past and planned investments in bicycling relate to health and other benefits. This analysis indicated that by 2040, investments in the range of \$138 to \$605 million will result in healthcare cost savings of \$388 to \$594 million, fuel savings of \$143 to \$218 million, and savings in value of statistical lives of \$7 to \$12 billion. The benefit-cost ratios for health care and fuel savings are between 3.8:1 and 1.2:1, and an order of magnitude larger when value of statistical lives is used. Source: Costs and Benefits of Bicycling Investments in Portland, Oregon, *Journal of Physical Activity and Health*, 2011, 8(Suppl 1), S49-S58 (2011) <http://journals.humankinetics.com/jpah-supplements-special-issues/jpah-volume-8-supplement-january/costs-and-benefits-of-bicycling-investments-in-portland-oregon>
- San Francisco, California:** When Valencia Street in San Francisco's Mission District slimmed its traffic lanes to slow down cars and accommodate other users, merchants reported the street changes enhanced the area. Nearly 40 percent of merchants reported increased sales, and 60 percent reported more area residents shopping locally due to reduced travel time and convenience. Overall, two-thirds of respondents described the increased levels of pedestrian and bicycling activity and other street changes improved business and sales. Source: National Complete Streets Coalition <http://www.completestreets.org/complete-streets-fundamentals/factsheets/>
- Washington, DC:** Washington, DC's Barracks Row was experiencing a steady decline of commercial activity due to uninviting sidewalks, lack of streetlights, and speeding traffic. After many design improvements, which included new patterned sidewalks, more efficient public parking, and new traffic signals, Barracks Row attracted 44 new businesses and 200 new jobs. Economic activity on this three-quarter mile strip (measured by sales, employees, and number of pedestrians) has more than tripled since the inception of the project. Source: National Complete Streets Coalition <http://www.completestreets.org/complete-streets-fundamentals/factsheets/>
- Wisconsin:** The study, Valuing Bicycling's Economic and Health Impacts in Wisconsin estimated the economic value of bicycling in the state of Wisconsin, including economic activity from bicycle manufacturing and sales (\$593 million), tourism and recreational value (\$924 million), health benefits of increased physical activity (\$320 million) and pollution emission reductions (\$90 million). Total estimated benefits average about \$360 per resident. Source: Valuing Bicycling's Economic and Health Impacts in Wisconsin,

The Nelson Institute for Environmental Studies Center for Sustainability and the Global Environment University of Wisconsin-Madison (2010).

[http://www.sage.wisc.edu/IGERT/download/bicycling\\_Final\\_Report.pdf](http://www.sage.wisc.edu/IGERT/download/bicycling_Final_Report.pdf)

*More in-depth information:*

Economic Development and Smart Growth: 8 Case Studies on the Connections between Smart Growth Development and Jobs, Wealth, and Quality of Life in Communities, International Economic Development Council (2006).

[http://www.iedconline.org/Downloads/Smart\\_Growth.pdf](http://www.iedconline.org/Downloads/Smart_Growth.pdf)