Discussion: Bicycle Benefits

SALT LAKE COUNTY
PLANNING & TRANSPORTATION

Bicycling has increased in popularity over the last decade as Americans realize its health, transportation, and financial benefits. Cities across the United States and within Utah are finding that attracting (or retaining) a young, active, and educated workforce requires "quality of life" investments that allow residents to walk and bicycle safely in their communities.

HEALTH COST BENEFITS

Bicycling is associated with numerous proven health benefits, including healthy weight, lower stress, and increased exercise. Better health translates into economic savings through reduced health care costs.

Although the risks of bicycling garner much of the media attention, the benefits outweigh those risks. The following list of findings and supporting documentation provide more detail on bicycling's health cost benefits.

Finding: Bicycling promotes physical activity, physical health, healthy weight, and lower stress levels.

Title: "Cycle-commuting the secret to a happy life says New Economic Foundation Report"
Description: Bike commuters report lower stress and greater feelings of freedom, relaxation, and excitement than car commuters.
Author: Appleton, M
Source: Road.cc

Title: "Measuring our progress, the power of well-being"
Description: A New Economic Foundation report "A wealth of literature from researchers studying stress and related effects reveals 'persistent and significant costs associated with a long commute through heavy traffic'"
Source: http://www.neweconomics.org/publications/entry/measuring-our-progress

Title: "Experiences from a randomised controlled trial on cycling to school: Does cycling increase cardiorespiratory fitness?"
Description: Bicycling to school improves children's cardiorespiratory fitness.
Author: Borrestad, L., et. al.
Source: Scandinavian Journal of Public Health

Title: "Cycle to school is associated with lower BMI and lower odds of being overweight or obese in a large population-based study of Danish adolescents"
Description: Cycling to school is associated with lower odds of being overweight or obese for adolescents.
Author: Ostergaard, A.G. et al
Source: Journal of Physical Activity and Health, Volume 9

Title: Children who walk or cycle to school concentrate better.
Author: Dann Vinther
Source: http://sciencenordic.com/children-who-walk-school-concentrate-better

Title: "Evaluation of transportation microenvironments through assessment of cyclists' exposure to traffic-related particulate matter"
Description: Separated bike lanes may reduce exposure to

Photo by Adam Coppola Photography

Photo by Adam Coppola Photography

traffic-related air pollution when compared with traditional bike lanes.
Author: George, L, et. al
Source: OTREC RR-11-16. Portland State University. (2011)

Title: "All-Cause Mortality Associated With Physical Activity During Leisure Time, Work, Sports, and Cycling to Work"
Description: A study in Copenhagen concluded 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 didn't
Source: http://archinte.ama-assn.org/cgi/content/abstract/160/11/1621

Finding: Building bikeways results in more bicycling.

Title: "If you build it, will they come? The health impact of constructing new bike lanes in New Orleans, Louisiana"
Description: After bicycle lanes were installed post-Hurricane Katrina on a New Orleans, LA street, there was a 57% increase in the number of cyclists. The number of female cyclists increased 133%, and the percentage of cyclists riding in the correct direction increased from 73% to 82%.
Author: Parker, K., et al.
Source: http://activelivingresearch.org/files/ALR2010Conf_ConcurrentAbstracts_ActiveTransportAdults.pdf

Title: "BikeGPS: Understanding and Measuring Bicycling Behavior"
Description: A 2009 study by researcher Jennifer Dill used GPS technology to collect information on bicycling behavior from 166 regular Portland (OR) riders. It found that a "disproportionate share of the bicycling occurred on streets with bicycle lanes, separate paths, or bicycle boulevards," indicating that bicycle-specific infrastructure investments were attracting new riders. Dr. Dill also concluded that 1) well-connected low-traffic streets, bicycle boulevards, and separate paths may be more effective than bicycle lanes on busy streets at getting more women and inexperienced adults bicycling, 2) adding bike lanes to more arterials might reduce travel times and distances, particularly for experienced bicyclists, and 3) for many short trips (3 miles or less), the bicycle was time-competitive with the automobile.
Source: http://trec.pdx.edu/research/project/33/Understanding_and_Measuring_Bicycling_Behavior:_A_Focus_on_Travel_Time_and_Route_Choice

Finding: People who bicycle regularly are more physically active, which leads to lower health care costs.

Title: "Physical activity, cardiovascular disease, and medical expenditures in U.S. adults"
Description: It is recognized that bicycling can contribute to achieving recommended levels of physical activity. A national study estimated that the economic burden of inactivity-associated cardiovascular disease (CVD)

estimated as $23.7 billion in 2001.
Author: Wang, G., et. al.
Source: Annals of Behavioral Medicine 28 (2), pp. 88-94.

Title: "Health co-benefits and transportation-related reductions in greenhouse gas emissions in the San Francisco Bay Area"
Description: Results of a model to quantify the health benefits of active transportation found that increases in median daily walking and bicycling (from 4 to 22 minutes) led to reductions in the chronic disease burden and decreased greenhouse gas emissions.
Author: Maizlish, N., et. al.
Source: American Journal of Public Health 103 (4), pp. 703-709.

Title: "Relationship of body mass index and physical activity to health care costs among employees"
Description: One study looked at variations in health care costs between employees of different weight categories and employees with different levels of habitual physical activity. Physically active employees incurred approximately $250 less in health care costs annually compared to sedentary employees. Among obese employees, the difference in health care costs between physically active and sedentary employees was greater ($450/employee).
Source: http://www.ncbi.nlm.nih.gov/ pubmed/15167389

Finding: The health benefits of bicycling outweigh the risks.

Title: "The health risks and benefits of cycling in urban environments compared with car use: health impact assessment study"
Description: One study, in Spain, of users of a bike sharing system showed that the health benefits of using public bicycle share systems (defined as deaths avoided because of increased physical activity) far outweigh the mortality risks (related to traffic crashes and air pollution).
Source: http://www.bmj.com/content/343/bmj.d4521

Title: Health Co-Benefits and Transportation-Related Reductions in Greenhouse Gas Emissions in the Bay Area
Description: A study reported that based on the results of the Integrated Transport and Health Impacts Model (ITHIM), the benefits of bicycling outweigh the risk in terms of an estimated 2,236 fewer premature deaths (accounting for increases in traffic injuries with increased walking and bicycling).
Author: Maizlish, Neil, PhD
Source: Technical Report, 2011

Title: "Do the Health Benefits of Cycling Outweigh the Risks?"
Description: A study from the Netherlands examined benefits of increased cycling (in the form of physical activity) and related risks (in the form of exposure to air pollution and crash risk). The authors concluded that individuals who shift from driving to bicycling gain 3-14 months of decreased mortality while confronting much lower risks related to air pollution (0.8-40 days lost) and traffic crashes (5-9 days lost), resulting in a strong net benefit to individuals.
Source: http://ehp03.niehs.nih.gov/article/info:doi/10.1289/ehp.0901747

Photo by Adam Coppola Photography

TRANSPORTATION SAFETY BENEFITS

Studies show that when more people ride bicycles, the crash risk for cyclists is reduced. Perhaps more importantly, cyclists are not the only people who benefit. Studies also show that bike-friendly areas can be safer for drivers as well. The following list of findings and supporting documentation provide more detail on the transportation savings benefits of cycling.

Finding: More people bicycling results in lower crash risk for bicycling.

Title: "Making Safer Streets"
Description: From 2000-2013, over 470 lane miles were added, the number of bicycle trips increased, and average risk of serious injury has decreased by 72 percent on New York City streets. These data indicate that increases in people bicycling may be associated with reduced crash risk.
Author: NYC DOT
Source: http://www.nyc.gov/html/dot/downloads/pdf/dot-making-safer-streets.pdf

Title: "Understand Bicyclist-Motorist Crashes in Minneapolis, Minnesota."
Description: The City of Minneapolis conducted a detailed study of bicyclist safety and found that the total number of reported crashes was relatively constant, while bicycle mode share increased from 1.6 to 3.4. percent. Additionally, bikeway mileage doubled during the same period (1999-2011).
Author: City of Minneapolis Public Works Department

Title: "Safety in numbers: more walkers and bicyclists, safer walking and bicycling"
Description: A study examining crash data and walking/bicycling rates from five U.S. and international datasets found that walking/bicycling crash risk decreases as walking/bicycling rates increase. This has been called the "Safety In Numbers" principle.
Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1731007/pdf/ v009p00205.pdf

Finding: Streets with bike lanes are safer for all users.

Title: "The impact of transportation infrastructure on bicycling injury crashes: a review of the literature"
Description: A literature review found that the presence of bicycle facilities was associated with reduced crash risk.
Author: Reynolds, C., et. al.
Source: Environmental Health 8, 47.

Title: "The Built Environment and Traffic Safety: A Review of Empirical Evidence"
Description: Installing bike lanes and traffic calming (e.g. road diets and speed humps) results in fewer injuries and fatalities for all road users.
Source: http://jpl.sagepub.com/content/23/4/347. abstract

Finding: Installing bicycle facilities increases cyclist predictability, reduces wrong-way riding and sidewalk riding, and increases traffic control compliance.

Title: "With bike lanes, fewer riders on sidewalk, study says"
Description: Implementing protected bike lanes has been found to lead to decreases in sidewalk riding (an average of 56 percent in New York City and DC) using data from 2010-2014.
Author: Ashley Halsey III
Source: https://www.washingtonpost.com/news/dr-gridlock/wp/2014/08/07/with-bike-lanes-fewer-riders-on-sidewalk/

Title: "A Comparative Analysis of Bicycle Lanes Versus Wide Curb Lanes: Final Report"
Description: One study found that users of bike lanes were much less likely to ride against traffic (in the street as well as on the sidewalk) than users of wide outside lanes (i.e. shared roadways).
Source: https://www.fhwa.dot.gov/publications/research/safety/pedbike/99034/99034.pdf Source:

Photo by Adam Coppola Photography

TRANSPORTATION COST SAVINGS BENEFITS

Bikeways are an economical community transportation investment in relation to other modes. Also, people who bicycle more and drive less save money on household transportation. The following list of findings and supporting documentation provide more detail on the transportation cost savings benefits of cycling.

Finding: Building bikeways is a relatively low-cost transportation investment.

Title: "Portland Mayor Sam Adams says Portland's spent on its bike infrastructure what it would normally spend on a single mile of highway"
Description: The entire bikeway network of Portland (OR) was built for less than the cost of constructing one mile of urban freeway.
Author: Ian K. Kullgren
Source: http://www.politifact.com/oregon/statements/2011/mar/19/sam-adams/portland-mayor-sam-adams-says-portlands-spent-its-/

Title: "Costs for pedestrian and bicyclist infrastructure improvements: A resource for researchers, engineers, planners, and the general public"
Description: Compared with roadway projects, bicycle and pedestrian infrastructure is relatively low-cost.

Photo by Paul Krueger


Photo by Chicago Bicycle Program

Author: Bushell, M. A., Poole, B. W., Zegeer, C. V., Rodriguez, D. A.
Source: UNC Highway Safety Research Center.

Finding: People who bicycle or walk more, and drive less, spend less on family transportation costs and spend more supporting local businesses.

Title: "Bicycling means business: The economic benefits of bicycle infrastructure."
Description: People who bicycle spend less on household transportation and more on local businesses (often repeated trips).
Author: Flusche, D.
Source: http://www.advocacyadvance.org/site_images/content/Final_Econ_Update(small).pdf

Title: "Portland's Green Dividend"
Description: As a result of policies to encourage bicycling and maintain urban density, Portland (OR) residents drive less and consequently spend less on transportation, leaving more money to spend on things they value. Compared to the distance and time spent commuting to work in the median American city, Portlanders travel 2.9 billion fewer miles and spend 100 million fewer hours, saving $2.6 billion a year. Much of that savings is spent at local businesses.
Source: http://www.slideshare.net/otrec/portlands-green-dividend

BUSINESS/ECONOMIC/JOB CREATION BENEFITS

Bicycles are associated with numerous business and economic benefits. The bicycle industry creates jobs and construction of bikeways has been shown to create more jobs per dollar spent than other types of transportation infrastructure. Many areas in Utah have also demonstrated the tourism benefits of bicycling. The following list of findings and supporting documentation provide more detail on the positive economic impacts of cycling.

Finding: Bicycle investments contribute to business revenues and job creation.

Title: "300 South Progress Report: Broadway Protected Bike Lane"
Description: Data from Salt Lake City shows that the installation of a protected bike lane led to an increase in retail sales (8.8 percent increase compared to 7 percent citywide increase).
Author: Salt Lake City Department of Transportation.

Title: "The Economic Significance of Bicycle -Related Travel in Oregon"
Description: The 2013 study found that the bicycle related industry contributes $400 million to the state's economy, supporting 4,600 jobs and local and state tax receipts of over $100 million.
Source: http://www.deanrunyan.com/doc_library/bicycletravel.pdf

Title: "Biking and Walking Improve Maine's Economy By:"
Description: In Maine, a study of the economic impacts of bicycle tourism estimated that over 2 million bicycle tourists visited in 1999, and that they spent $36.3 million.
Author: Bicycle Coalition of Maine
Source: http://www.bikemaine.org/wp-content/uploads/2015/01/Fact-Sheet-Economic-Benefits-1.pdf

Photo by Salt Lake City

Title: "Economic Effects of Traffic Calming on Urban Small Businesses"
Description: After bike lanes were added to Valencia Street in San Francisco (CA), two-thirds of merchants surveyed said that the lanes had a positive overall impact on their business.
Source: http://www.bikewalk.org/2004conference/sessions/28_Business_calm/TrafficCalming_summary.pdf

Finding: Public investments in walking and bicycling infrastructure create more jobs per dollar than road construction projects.

Title: "Pedestrian and Bicycle Infrastructure: A National Study of Employment Impacts"
Description: A study of 11 cities in the U.S. found that, for each $1 million invested in infrastructure projects, roadway projects create 7.8 jobs, pedestrian projects create 9.6 jobs, and cycling projects create 11.4 jobs.
Source: http://www.peri.umass.edu/236/hash/64a34bab6a183a2fc06fdc212875a3ad/publication/467/

Finding: Shifting trips from driving to bicycling results in cost savings for both society and the individual.

Title: "Quantifying the Benefits of Nonmotorized Transportation for Achieving Mobility Management Objectives"
Description: Researcher Todd Litman looked at the benefits of congestion reduction, roadway cost savings, vehicle cost savings, parking cost savings, air pollution reduction, energy conservation, and traffc safety improvements. Litman estimated that replacing a car trip with a bike trip saves individuals and society $2.73 per mile. A typical two-mile bike trip would save $5.46.
Source: http://www.vtpi.org/nmt-tdm.pdf

Finding: Bikeways and shared-use paths increase the property value of adjacent homes.

An Omaha (NE) study concluded that 81% of residents who live near trails feel that the trail would have a neutral or positive effect on their home sale price, and over 63% of those who bought homes after the nearby trail was constructed reported that the trail was a positive influence in their decision to purchase their home.