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BICYCLE AND PEDESTRIAN

ECONOMIC BENEFITS OF BICYCLE AND PEDESTRIAN FACILITIES

RESOURCE GUIDE

2021

acog

INTRODUCTION

The Association of Central Oklahoma Governments (ACOG) has compiled a list of articles, studies, and tools that may be used to help support and plan for bicycle and pedestrian infrastructure. This Resource Guide mainly focuses on the financial cost and benefits of the infrastructure in terms of financial budgets, business revenue, and health expenses.

RESOURCES

BIKE FACILITIES – COST ANALYSIS TOOL Click to view

- How to use cost analysis tool Click to view

"If your community is considering building a new bicycle facility you can use this tool to estimate costs, the demand in terms of new cyclists, and measured economic benefits (e.g., time savings, decreased health costs, a more enjoyable ride, decreased pollution)."

"This tool provides guidelines for making bicycle facility investment decisions. The first step of the application tool asks if you want to calculate costs, demands, or benefits. You can choose all three if you wish. You will then be presented with a tree of questions regarding the type of facility you are considering as well as information about your geographic area."

BIKE LANES BENEFIT NON-RIDERS MORE THAN RIDERS: NEW RESEARCH (2016)

This article on "TheJournalistsResource.org" explains the findings of the research article below.

THE COST EFFECTIVENESS OF BIKE LANES IN NEW YORK CITY (2016) Click to view

Highlights:

- For every mile the city constructed bicycle ridership increased 0.4 percent.
- "New bike riders gain an average of 0.033 QALYs (Quality-Adjusted Life Years) per year from increased exercise and New Yorkers as a whole gain 0.047 QALYs per year from reduced exposure to pollution." This suggests the average New Yorker benefits from the increase in bicycling even more than the bicyclists do themselves — when the chance of a crash is factored into a bicyclists overall health.
- Each QALY gained cost the city $1,297. The authors consider this "an exceptionally good value." For comparison, HIV/AIDS screening and treatment in at-risk populations costs $50,000 per QALY gained. Bike lanes were cheaper, by this measure, than health insurance or Medicaid.

GUIDELINES FOR ANALYSIS OF INVESTMENTS IN BICYCLE FACILITIES (2006)

This article in the "NCHRP Report 552" provides formulas (p. 39) to give a cost analysis of different types of benefits associated with bicycle facilities. These include mobility, health, and recreation benefits as well as the reduction in automobile usage. These formulas can also be used for cost analysis of pedestrian facilities.

WHITE PAPER: EVALUATING THE ECONOMIC BENEFITS OF NONMOTORIZED TRANSPORTATION (2015)

This guidebook provides a narrative on what can be evaluated in terms of cost when investing in nonmotorized transportation (reduced user costs, direct economic impacts, economic impacts due to health savings, etc.).

"...Researchers from the University of Minnesota surveyed consumers in commercial areas near bike share stations and found that bike share users spent an average of $1.29 more per week than others, which they extrapolated over all bike share users in the city to estimate an additional $150,000 per season generated in sales due to the bike share."

MEASURING THE STREET: NEW METRICS FOR 21ST CENTURY STREETS (2012)

New York City Department of Transportation developed an assessment tool to assess the results of investments into bicycle and pedestrian infrastructure.

Highlights:

- 49% increase in retail sales near the protected bike lanes on 8th and 9th Avenues in Manhattan (compared to a 3% increase borough-wide).
- 49% fewer commercial vacancies near the reconfigured pedestrian plaza at Union Square North (compared to 5% more borough-wide).
- 172% increase in retail sales at Pearl Street in Brooklyn, where an underused parking area was converted to a pedestrian plaza (compared to an 18% increase borough-wide).
- 67% decrease in pedestrian crashes at the site of traffic calming on East 180th Street in the Bronx.
- 37% decrease in injury crashes on 1st and 2nd Avenues in Manhattan where dedicated bus and bike lanes were installed.
- 58% decrease in injuries to all street users on 9th Avenue in Manhattan where a protected bike lane was installed.

ASSESSING THE ECONOMIC IMPACT AND HEALTH BENEFITS OF BICYCLING IN MINNESOTA (2016) Click to view

"In 2014, the bicycle industry in Minnesota supported an estimated $779.9 million of economic activity in the state. This includes an estimated $208.8 million of wages, salaries, and benefits paid to Minnesota workers. In 2014, the industry further supported an estimated 5,519 employees. For context, in 2014, total economic output in Minnesota topped $577.5 billion with a total of 3.5 million jobs in the state."

ASSESSING THE HEALTH BENEFITS OF BICYCLE COMMUTING

This fact sheet discusses the economic impact of bicycling as well as health benefits of bicycle commuting for residents in the Twin Cities Metro Area. Some highlights of this study are listed below.

Highlights:

- Bicycle commuting prevents 12 to 61 deaths per year.
- Bicycle commuting three times per week is linked to 46% lower odds of metabolic syndrome, 31% lower odds of obesity, and 28% lower odds of hypertension.

ECONOMIC IMPACT OF BICYCLING EVENTS IN MINNESOTA

This fact sheet discusses the economic impact of bicycling and bicycle events in the Twin Cities Metro Area. This sheet defines a bicycle event as non-race rides, high school races, mountain bike events, bicycle races, and bicycle tours. Visitors are defined as people who travel more than 50 miles for an event or who stay overnight in the event area away from home.

Highlights:

- In 2015, bicycle event visitors supported $14.3 million of economic activity, including $4.6 million in labor income and 150 jobs.
- Bicycle event visitors spent an estimated $8.5 million while attending events.
- 93.4% of bike tour participants dined out while attending events.

HOW BIKE LANES INCREASE SMALL BUSINESS REVENUE (2013)

This article on "TriplePundit.com" includes several projects that show how bike lanes benefit businesses.

Highlights:

- Ft. Worth Magnolia St. – Once bicycle lanes were added, businesses saw revenues increase by 179%.
- NYC 8th and 9th Ave. – Once bicycle lanes were added, sales income at locally based businesses along 9th Ave. went up as much as 50% between 2006-2010.

PROTECTED BIKE LANES MEAN BUSINESS

This resource provides facts about why bicycle lanes are beneficial for cities and residential areas.

Highlights:

- "For every quarter mile closer to an off-street bicycle trail, the median home value in Minneapolis-St. Paul increases by $510."
- "Homes within a half mile of Indiana's Monon Trail sell for an average of 11% more than similar homes farther away."
- "In Portland, OR people who travel to a shopping area by bike spent 24% more per month than those who traveled by car."

BICYCLING MEANS BUSINESS: THE ECONOMIC BENEFITS OF BICYCLE INFRASTRUCTURE (2012)

This guidebook talks about the benefits of the bicycling industry in the United States. It breaks down costs, but more so in the aggregate by bike popular states.

Highlights:

- Construction and maintenance of bicycle-pedestrian infrastructure projects and programs brought $17 million in funding to the state, resulting in 230 jobs and $10 million in wages.
- Bicycle and pedestrian-related businesses brought in more than $56 million in revenue, generating more than 1,000 jobs and $26 million in wages.

- Forty major events related to biking and walking attracted more than 16,000 participants who brought with them 45,000 additional family and friends, this resulted in $9.5 million in revenue and 160 jobs.
- Using models from the Victoria Transport Policy Institute, Resource System Group, Inc. calculated that vehicle miles avoided by the 68 million miles walked and 28 million miles biked resulted in as much as $85 million in consumer and public health savings.
- The property values of homes in walkable neighborhoods were $6,500 higher than those in car dependent areas. Add all those homes together and walkability added more than $350 million to the local economy.

PROTECTED BIKE LANES STATISITCS

This article on "PeopleforBikes.org" has information about bicycle lanes.

Highlights:

- On Salt Lake City's Broadway, replacing parking with protected bike lanes increased retail sales. A general street upgrade removed 30% of the automobile parking from nine blocks of the major commercial street while improving crosswalks, sidewalks, and adding protected bicycle lanes. In the first six months of the next year, retail sales were up 8.8% over the first six months, compared to 7% increase citywide. After the changes, 59% of business owners on the street said they supported the changes and only 18% opposed.
- The value of properties within one block of the Indianapolis Cultural Trail increased 148% after construction – more than doubling in value from 2008 to 2015. The $63 million public and private investment helped create $1 billion in additional assessed property value.
- A redesign of New York City's Union Square to include a protected bicycle lanes resulted in 49% fewer commercial vacancies, compared to 5% more throughout Manhattan.

THE SOCIETAL COSTS AND BENEFITS OF COMMUTER BICYCLING (2014)

This article on "TheJournalistsResource.org" presents findings from a study done in New Zealand. Researchers from several universities constructed scenarios to look at infrastructure, social norms, and car traffic, and then made projections up to the year 2051 for bicycle use, car use, cycling-related injuries, and economic and environmental benefits. Policy analyzed:

- Creation of a regional cycling network – marked lanes with no physical segregation on 46% of main roads, 25 km of shared foot paths per 100,000 population, and a small number of shared bike/bus routes.
- Arterial segregated bicycle lanes with one way and barrier separated cycling lanes on all main roads.
- Self-explaining roads which slow car traffic through structural changes and visual cues.
- Combination of arterial segregated bike lanes and self-explaining roads. Notable for the use of the causal loop structure that accounts for mutually reinforcing determinants of bike use. i.e., bike injuries can reduce the number of riders due to real or perceived danger.

The four scenarios above each had a positive cost-benefit ratio, ranging from $6-$24 saved for every $1 spent. The number of cyclist deaths and injuries increase under all options, but overall rates fall because of the rise in cycling mode share. The total number of deaths also falls, primarily through a drop in car crash fatalities and an increase in physical activity and health.

- Self-explaining roads policy resulted in the greatest reductions in air pollution and greenhouse gas emissions, the smallest increase in bicyclist deaths and injuries, and a 50% drop in the death and injury rate for bicyclists. Bicycling only increased to 5% of all trips, but the share of trips by car fell to 55%. This option had net benefits of $1.75 billion (NZ), but the lowest cost benefit ratio, $6 for every $1 spent.

PROTECTED BIKE LANES GUARD CYCLISTS FROM POLLUTION (2017) Click to view

Highlights:

- Bicyclists have a 4.3 times higher ventilation rate than an individual in a car, meaning bicyclists inhale more pollutants over the same amount of time compared to an individual at rest in a car.
- The World Health Organization classifies air pollution as carcinogenic and the American Lung Association directly ties air pollution to lung cancer and increased risk of heart disease, asthma, and early mortality.
- Research suggests that bicyclists in bike lanes shared with traffic are exposed to NOx and particle concentrations that are 33% higher than bicyclists in bike paths that are separated from traffic.

"The surface area of the physical barrier between the cyclist and motor vehicles allows deposition of airborne particles and gases. The physical barrier also promotes dispersion or changing the direction of pollutants. Any vegetation or concrete barriers should be close to the pollution source to maximize dilution of the polluted air with cleaner air from above the pollution source. While the extent of deposition and dispersion differs as a function of barrier type (vegetation vs concrete), a solid physical barrier between motor vehicle emissions and cyclists will greatly reduce the amount of inhaled air pollution."