

## **Effectiveness of Interventions to Increase Cycling**

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URL link to full article:

[http://policy.rutgers.edu/faculty/pucher/Pucher\\_Dill\\_Handy10.pdf](http://policy.rutgers.edu/faculty/pucher/Pucher_Dill_Handy10.pdf)

Bicycling is healthy. That is the conclusion of an increasing number of scientific studies assessing the impacts of bicycling on levels of physical activity, obesity rates, cardiovascular health, and morbidity. The combined evidence of all available research indicates that the health benefits of bicycling far exceed the health risks from traffic injuries, contradicting the widespread misperception that bicycling is a dangerous activity. Moreover, as bicycling levels increase, injury rates fall, making bicycling safer and providing even larger net health. Due to the increasing evidence of the health benefits of bicycling, many government agencies and public health organizations have explicitly advocated more bicycling as a way to improve individual health as well as reduce air pollution, carbon emissions, congestion, noise, traffic dangers, and other harmful impacts of car use.

The most effective way to increase bicycling and improve safety is to implement a fully integrated package of strategies. One essential measure for achieving high levels of cycling is the provision of separate cycling facilities along heavily traveled roads and at intersections, combined with traffic calming of most residential neighborhoods. Extensive cycling rights of way must be complemented by ample bike parking, full integration with public transport, comprehensive traffic education and training of both cyclists and motorists, and a wide range of promotional events intended to generate

enthusiasm and wide public support for cycling. It is the coordinated implementation of this multi-faceted, mutually reinforcing set of policies that best explains the success of cities that have increased cycling.

As shown by the experience of cities around the world, it is possible to greatly increase cycling levels while enhancing safety. Even very large cities have dramatically increased cycling. Berlin, for example, almost quadrupled the number of bicycle trips between 1970 and 2001 and doubled the bicycle share of trips from 5% in 1990 to 10% in 2007. In spite of the sharp rise in bicycling, serious injuries in Berlin fell by 38% from 1992 to 2006. In only six years, the bicycle share of trips within the City of Paris more than doubled from 1% in 2001 to 2.5% in 2007. The bicycle share of trips in Bogota quadrupled from 0.8% in 1995 to 3.2% in 2006. The total number of bicycle trips in London doubled between 2000 and 2008, and bicycle trips to school rose by 75%. Over the same period, bicyclist injuries fell by 12%. Amsterdam raised the bicycle share of trips from 25% in 1970 to 37% in 2005; serious bicyclist injuries fell by 40% between 1985 and 2005. From 1995 to 2003, the bicycle share of trips in Copenhagen rose from 25% to 38% among those 40 years and older. Yet, there was a 60% decline in serious injuries.

Between 1990 and 2007, the number of workers commuting mainly by bicycle in Portland, Oregon more than quadrupled (+329%), while the share of workers commuting by bicycle rose from 1.1% to 3.9%. Portland is perhaps the most dramatic American success story, but many other American and Canadian cities have greatly increased cycling. From 1990 to 2009, the share of trips by bike tripled in San Francisco (from 1.0% to 3.0%), and more than doubled in Minneapolis (1.6% to 3.9%) and Washington (0.8% to 2.2%). Between 1996 and 2006, the bike share of trips more than doubled in Montreal (1.0% to 2.4%), Toronto (0.8% to 1.7%), and Vancouver (1.7% to 3.7%).

Some medium-sized cities report large increase in cycling, such as Freiburg, Germany, which almost doubling the bicycle share of trips from 15% in 1982 to 27% in 2007. Modest growth was reported for Muenster, Germany (from 29% to 35% of trips), Odense, Denmark (23% to 25%), and Groningen, Netherlands (stable at around 40%). That suggests that it may be difficult to increase bicycling beyond certain already high levels. In both Odense and Groningen, however, the number of serious bicycling injuries

fell sharply. Boulder, Colorado has been one of the successful small cities in the USA, increasing the share of workers commuting by bicycle rose 3.8% in 1980 to 6.9% in 2000 and 8.8% in 2006 through an aggressive program of bikeway expansion and complementary pro-bicycle measures.

The cities noted above are not necessarily representative, but they illustrate a wide range of policy interventions. With so many measures integrated into the pro-bicycle policy package of each city, it would be virtually impossible to disentangle the impacts of each individual measure. Only in the case of the bike sharing programs in Paris (Velib') and Barcelona (Bicing) can one identify a particular measure that appears to have been most important. Even in Paris and Barcelona, however, several other pro-bicycle interventions were undertaken before and during the bicycle sharing program, including expansion of the bikeway system and bike parking, bicycling education, and traffic calming. Congestion charging in London has been widely credited for increased bicycling there, but London has implemented many other programs since 2000 to encourage more cycling.

All available evidence suggests that a comprehensive approach produces a much greater impact on bicycling than individual measures that are not coordinated. The impact of any particular measure is enhanced by the synergies with complementary measures in the same package. In that sense, the whole package is more than the sum of its parts. Substantial increases in bicycling require an integrated package of many different, complementary interventions, including infrastructure provision and pro-bicycle programs, as well as supportive land use planning and restrictions on car use.

There are many role models for cities to follow. Indeed, Bogota, Colombia became a bicycling success story by importing Dutch bicycle planners and adopting many of the pro-bicycle measures found in the Netherlands. But it added its own particularly South American program of Ciclovias. Cities with successful bicycling policies can be found in many countries, providing experience about the most appropriate package of policies for local conditions.

Virtually all the available evidence indicates that policies make an important difference: not only explicitly pro-bicycle policies but also transport policies in general, housing and land use policies, and car pricing and restraint policies. Designing the

appropriate mix of policies for each city's particular situation requires careful planning and ongoing citizen input, especially from bicyclists. Emphasizing the proven health benefits of bicycling will be crucial for garnering the public and political support necessary to implement a truly comprehensive package of policies. That multi-faceted, coordinated approach offers the promise of substantial growth in bicycling, even in cities with low bicycling levels.