



## The Return on Bicycle Investment: Community Health

There is a widespread misperception in Virginia that investing in bicycle infrastructure is an uneconomical expenditure of money that diverts scarce resources from bridges, roads and highways. Such a view is based on a narrow accounting of the benefits of cycling: It entirely overlooks the public health benefits.

The Richmond metropolitan region has one of the highest obesity rates in the country -- 29.4% of the population compared to 26.1% nationally, according to the 2012 Gallup-Healthways Well Being Index. The resulting health care treatment costs the region \$520 million a year. Bringing that rate down to the national average would save \$65 million a year. And that's just one chronic illness. Heart disease, though somewhat lower than statewide norms, results in thousands of hospitalizations and costs hundreds of millions of dollars each year as well.

One way to reduce the rate of obesity and heart disease is to get people to exercise more. And one way to create a regional culture of fitness and exercise is to encourage people to walk and to ride bicycles – not just for recreational

exercise but in the daily course of their lives. That conclusion is not just common sense. It's backed by up a growing body of scientific literature.

### Health benefits of cycling

There isn't much dispute on this point: Cycling is healthy. According to a 2012 article in the *University of British Columbia Medical Journal*, "Bicycling: Health Risk or Benefit?", walking and biking improves health outcomes. Summing up the research, the authors wrote:

*People who commuted by bike or on foot experienced significant improvements in cardiovascular indicators of fitness compared to those who used motorized modes. Men who cycled at least 24 km per week had less than half the risk of non-fatal and fatal coronary heart disease of those who were not physically active. A study of physical activity and type 2 diabetes showed a 35% reduction in risk with at least 30 minutes per day of commuting by bike or on foot, a greater reduction than with physical activity during leisure time or at work. A recent meta-analysis concluded that cycling or walking to work was associated with an 11% reduction in cardiovascular disease risk.*

"The more active you are, the healthier you are," says Matt Marchal, an avid cyclist and physician at Altius Family & Sports Medicine in Henrico County. The problem he runs into is that patients' lives are sedentary. Some don't have the motivation to go to the gym; others don't have access to one. "Cycling and walking," he says, are good ways for citizens to integrate exercise into their daily lives and improve their health in the process."

## What about cycling accidents?

| Bicycle Accidents (2011) |         |          |        |
|--------------------------|---------|----------|--------|
|                          | Crashes | Injuries | Deaths |
| Chesterfield             | 17      | 18       | 0      |
| Hanover                  | 9       | 7        | 1      |
| Henrico                  | 24      | 23       | 0      |
| Richmond                 | 71      | 68       | 1      |
| Total                    | 121     | 116      | 2      |

The main drawback to cycling at present is the risk of injury from accidents, which by some measures is higher than that of automobiles. According to Division of Motor Vehicles data, 121 bicycle accidents involving 116 injuries and two deaths occurred in the City of Richmond and the counties of Chesterfield, Henrico and Hanover in 2011.

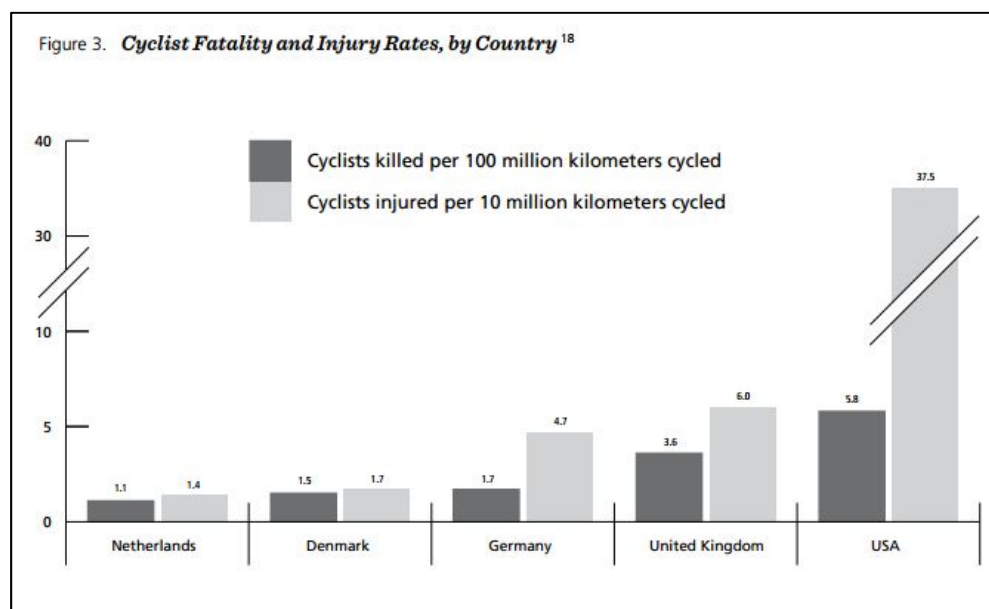
It's not as if the alternative of driving automobiles is entirely safe, though. In 2011 there were 144 times the number of accidents, 72 times the number of injuries and 42 times the number of fatalities involving automobiles. Adjusted for traveled (VMT), the injury and fatality rate per cyclist may be higher, although it impossible to say how exactly much so.

(Statewide, 62 times as many people drive to work as cycle to work and, on average, they drive longer distances to get there.)

However, experience has shown in European and North American cities that accident, injury and fatality rates decline markedly as more cyclists take to the roads, acclimating motorists to sharing streets with two-wheeled vehicles, and as communities invest in creating safer bicycle routes.

"There is a safety-in-numbers effect. If you play by the rules, cycling is extremely safe," says Tom Bowden, chairman of the Bike Virginia five-day biking tour. "Bicycles are like guns. If you handle them safely, the risk of accidents is very low."

While the Richmond region is not likely to replicate the safety record of seriously bicycle-friendly nations like Denmark and the Netherlands any time soon, the experience of Germany and the United Kingdom – and of bicycle-friendly U.S. cities like Portland -- suggest that it should be possible to slash injury rate by a four-fifths and the fatality rate by half.



Source: "Walking, Bicycling and Health"; Susan L. Handy; published in "Healthy, Equitable Transportation Policy."

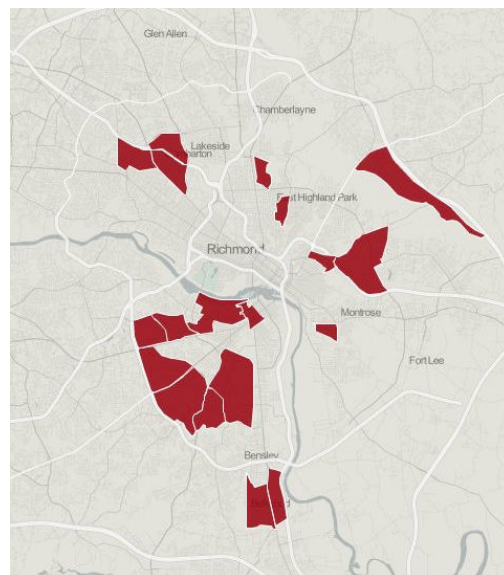
## Biking and food deserts

The health profile of the Richmond region's population is shaped like a barbell, observes Jon Lugbill, executive director of Richmond Sports Backers. Higher-income groups are very active and very healthy while lower-income groups are less active and far more likely to suffer from obesity, diabetes, hypertension and other chronic diseases that could be ameliorated by more exercise.

As it happens, lower-income Richmonders suffer another problem: a dearth of transportation options. In the City of Richmond, 19% of all households have no car; in Henrico County 5% go carless. As a result, tens of thousands of inner-city residents in "food deserts" – neighborhoods where they cannot access retail outlets selling fresh fruits, vegetables and other nutritious foods – cannot reach grocery stores in more affluent neighborhoods.

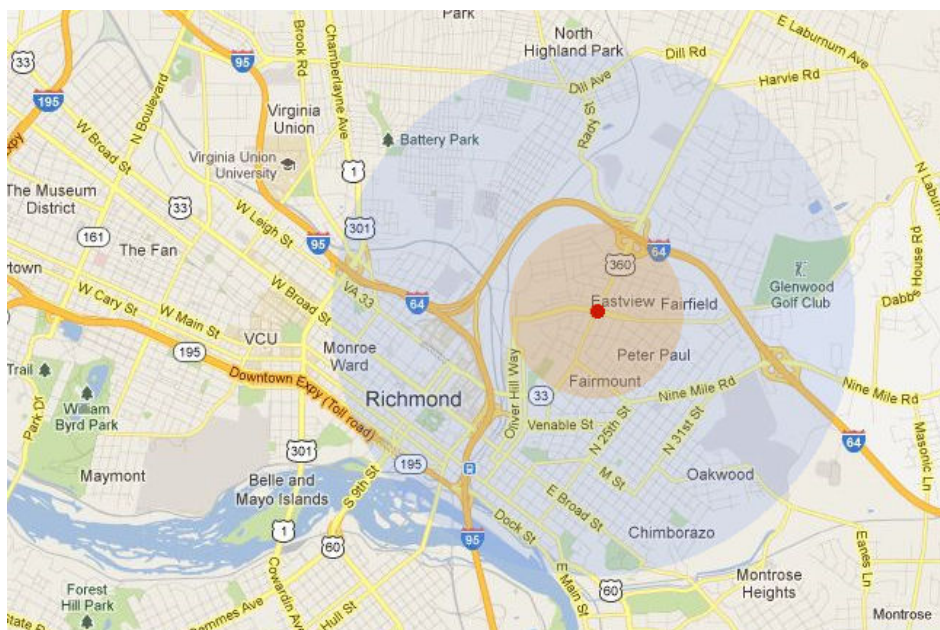
Bicycles extend the distances that people can cover on foot by four or five times. Urban planners consider 20 minutes to be the outer threshold of time that people are willing to

*Richmond region food deserts*



expend on routine trips. That implies a range of a mile for someone walking at three miles per hour and more than three miles for someone biking at 10 miles per hour. The potential area covered, and the number of destinations within it, increases geometrically with a bicycle.

The ability to cover a much wider area opens up options that make grocery stores, farmers markets and other sources of fresh food more accessible. Thus, cycling offers a double-barreled health benefit for Richmond's poor.



*The circles show approximate area that can be covered in 20 minutes by walking (in orange) from an origination point (red dot) in the East End of Richmond, and by biking (in blue). The biking range assumes bicycle-friendly streets and lane, which do not yet exist at present.*

## **A good return on investment**

Improving the health of the region's population entails a lot more than building a few recreational bike trails. It demands the creation of an interconnected network of trails, lanes and shared roads that provide bicyclists safe access to the same wide range of destinations that motorists enjoy. But building a bicycle-friendly region need not be exceedingly expensive.

Biking trails can be built on existing right of way found on abandoned railroad tracks, pipelines and electric transmission lines. They can be supplemented by "sharrows" – bike lanes cut out of existing streets – and integrated with bicycle paths in parks, universities, corporate campuses, and commercial areas. Bike lanes can run through subdivision streets and they can be upgraded from suburban sidewalks. Likewise, bike lanes can be incorporated at modest expense into re-development projects and into periodic road maintenance.

It is possible to build a comprehensive bicycle network inexpensively if changes are implemented piece by piece over time. The key is to adopt a vision of "complete streets" – streets that accommodate the needs of pedestrians and bicycles as well as automobiles – and to maintain that commitment for the long haul.

Building walkable and bikable communities is a critical part of creating a culture of fitness in the Richmond region. But the payback to businesses and other major employers is potentially immense: a healthier workforce and lower health care costs.

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