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From the Selected Works of Michael E Lewyn

Winter 2018

Bicycle-Friendly Policies

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Available at: <https://works.bepress.com/lewyn/175/>

Zoning and Land Use Planning

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BICYCLE-FRIENDLY POLICIES

I. Introduction

Bicycling was once irrelevant to national debates over transportation policy. But in recent years, cycling has become more popular; the number of persons cycling to work has more than tripled in New York, Chicago, Washington, Portland, Denver and Minneapolis, and increased more modestly in many other cities.¹ Cities are beginning to build infrastructure to serve cyclists: for example, the United States now has 292 “protected” bicycle lanes (that is, bike lanes where there is a physical barrier between automobile and bicycle traffic) up from 78 in 2011.² In addition, 55 cities have bike-share systems,³ which allow users to rent a bicycle at a self-service station and return the bike at any other station.⁴

However, bicycle use in even the most bike-friendly American cities lags behind that of major European cities. In Am-

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Review, *Copenhagenize: The Definitive Guide to Global Bicycle Urbanism*, Mikael Colville-Andersen (Island Press 2018).

¹See Ralph Buehler and John Pucher, *The Rise of Cycling in Smaller and Mid-Size U.S. Cities*, Citylab, May 8, 2014, at <https://www.citylab.com/transportation/2014/05/rise-bicycling-smaller-and-midsize-us-cities/9059/>.

²See People for Bikes, Green Lane Project, at <https://peopleforbikes.org/green-lane-project/inventory-protected-bike-lanes/bicycling-smaller-and-midsize-us-cities/9059/>. Of course, there are many unprotected lanes as well.

³See National Association of City Transportation Officials, *Bike Share in the U.S.: 2010–16*, at <https://nacto.org/bike-share-statistics-2016/>.

⁴See Pedestrian and Bicycle Information Center, *Bike Sharing*, at http://www.pedbikeinfo.org/programs/promote_bikeshare.cfm.

sterdam and Copenhagen, roughly 30 percent of commuters use bikes- five times the mode share of Portland (the most bike-friendly U.S. city).⁵ In Copenhagenize, Mikavel Colville-Andersen, a Danish consultant,⁶ explains why cities should encourage cycling, shows how other cities can achieve Copenhagen-like results, and responds to anti-cycling myths. However, he fails to address the crucial role of land use regulation in creating conditions hostile to cycling in the United States.

II. Why Promote Cycling?

Colville-Andersen does not devote a significant amount of space to defending cycling; however, he does point out the benefits of cycling here and there. In particular, he contends that widespread cycling is good for taxpayers, because a car is “16,000 times more destructive to asphalt than bikes are.”⁷ Thus, pro-cycling policies reduce public expenditure on road maintenance.

Cycling also benefits public health, because according to Danish academic Lars Bo Andersen, “at current levels of cycling to work in Denmark, we prevent around 10,000 new cases of cancer, heart disease, and type 2 diabetes- and 2,500 premature deaths- every single year.”⁸ Another study from the University of Glasgow “found that cycling to work reduces the risk of cancer by 45 percent, the risk of heart disease by 46 percent, and the risk of premature death caused by these illnesses by 41 percent.”⁹ These benefits far

⁵See City Clock Magazine, *Cycling Mode Share Data for 700 Cities*, March 19, 2015, at <http://www.cityclock.org/urban-cycling-mode-share/#.W2yZsNJKhdg> (noting range of estimates for Amsterdam and Copenhagen; various studies show a Copenhagen mode share of somewhere between 26 and 37 percent, and an Amsterdam share of between 22 and 40 percent); Buehler and Pucher, *supra* note 1 (“With a bike share of commuters at 6 percent in 2012, Portland led all large American cities . . .”).

⁶See Mikael Colville-Andersen, *Copenhagenize: The Definitive Guide to Global Bicycle Urbanism* 277 (2018) (“About the Author” page at end of book).

⁷*Id.* at 167.

⁸*Id.*

⁹*Id.*

outweigh the health costs of cycling; in 2008, for example, only 54 Danish cyclists were killed by automobile traffic.¹⁰

Moreover, these health benefits are most significant in societies that promote cycling. The nations where cycling is the most widespread tend to have the lowest death rates from cycle/automobile collisions, while cycling is dangerous where it is rare. Table 1 below compares countries' miles traveled per cyclist and their cycling death rates.

TABLE 1

	Bicycle travel per inhabitant per year	Cyclists killed per billion kilometers of travel (kilometers) ¹¹
Netherlands	864	10
Denmark	513	14
Germany	368	15
Switzerland	261	18
Finland	267	20
France	88	27
United Kingdom	75	28
United States	47	44

By contrast, automobiles create significant health hazards from air pollution. In Denmark, 4000 people die every year from respiratory illnesses caused by auto-induced air pollution- twenty times the number of people killed in car

¹⁰See Cycling Embassy of Denmark, Bicycle Statistics of Denmark, at <http://www.cycling-embassy.dk/wp-content/uploads/2010/03/Bicycle-statistics-from-Denmark.pdf>. See also Bicycle Helmet Research Foundation, Cycling Deaths in Selected Countries, at <http://www.cyclehelmet.org/1258.html> (in no year since 1970 have Danish cycling deaths exceeded 152) ("Cycling Deaths"). These statistics are typical; in recent years only about 200 or so people were killed on Danish roads- a figure that includes not only cyclists, but drivers and pedestrians. See Fewer killed on Danish roads in 2017, CPH Post, Jan. 26, 2018, at <http://cphpost.dk/news/fewer-killed-on-the-danish-roads-in-2017.html> (183 deaths in 2017, 211 in 2016).

¹¹See Niall McCarthy, The More Cyclists in a Country, The Fewer Fatal Crashes- Report, at <https://www.forbes.com/sites/niallmccarthy/2015/02/24/the-more-cyclists-in-a-country-the-fewer-fatal-crashes-report-in-fographic/>.

crashes.¹² Because bicycles do not emit pollutants, bicycles obviously do not create such health risks.

On the other hand, Colville-Andersen seems to focus on the differences between automobiles and bicycles- which makes sense in a medium-density city where new cyclists are likely to be substituting bicycles for automobiles. But in Manhattan where I live, there are far fewer car commuters than in other U.S. cities,¹³ so new bike commuters are likely to be persons who had previously used relatively non-polluting transit modes, such as walking or public transit. I wish Colville-Andersen had addressed whether a city should be promoting cycling in transit-oriented cities such as Manhattan.

III. How to Promote Cycling

Colville-Andersen focuses primarily on one strategy (at least on the busiest roads):¹⁴ "curb-separated cycle track that physically protects cyclists from motorized vehicles."¹⁵ In Copenhagen, there are 233 miles of these protected bike lanes,¹⁶ thus reducing the likelihood of automobile/bicycle conflict. Denmark even has bike lanes on limited-access highways; these lanes are shielded from motorists by trees and medians.¹⁷ Motorists as well as cyclists benefit from this separation, because they do not have to watch out for cyclists as they would on most American streets. Moreover, these bicycle lanes should be part of a citywide network; Colville-Andersen points out that "a train line that forces you to get off and then walk two kilometers to a station on another

¹²See Colville-Andersen, supra note 6, at 57.

¹³Only 7.8 percent of Manhattan residents drive to work. See American Fact Finder, <http://factfinder.census.gov>. By contrast, 85.7 percent of all Americans drive to work. *Id.*

¹⁴He adds that bike lanes are not necessary on low-volume streets with slow car traffic, Colville-Andersen, supra note 6, at 179-80, presumably because on those streets there is less likelihood of a fatal automobile/bicycle collision.

¹⁵*Id.* at 180.

¹⁶*Id.*

¹⁷*Id.*

train line . . . is not a good rail network. The same applies to a bicycle network.”¹⁸

Colville-Andersen notes that the most pro-bike cities have adopted numerous innovative strategies to facilitate cycling. For example:

* On some streets, Copenhagen has adopted the “Green Wave”-coordination of green and red traffic light signals in order to allow bicycles to stop less frequently.¹⁹

* On some Copenhagen streets, traffic lights for bicycle lanes will turn green before the lights for motor vehicles.²⁰ This innovation ensures that cyclists are already in motion when drivers take their feet off the brake, thus making cyclists more visible and reducing the risk of automobile/bicycle collisions.²¹ Another way to make cyclists more visible is to place the automobile stop line a few feet behind the cyclist stop line, so that drivers always see moving bicycles.²²

* Some European cities allow cyclists to turn right on a red light, thus facilitating bicycle speed.²³ Similarly, the American state of Idaho allows cyclists to treat stop signs as yield signs, thus allowing the cyclists to maintain their momentum if no other vehicles are approaching.²⁴

* At some busy intersections, Copenhagen has installed two bike lanes instead of one- one on the left for faster traffic, and another for slower cyclists.²⁵

* Some Danish cities have created sensors that are activated by rain, snow or cold weather. When the sensors are activated, “cyclists are prioritized with an increased number of light signals, helping them get home more quickly in the nasty weather.”²⁶

¹⁸*Id.* at 186.

¹⁹*Id.* at 218.

²⁰*Id.*

²¹*Id.*

²²*Id.* at 219.

²³*Id.* at 221.

²⁴*Id.* at 144.

²⁵*Id.* at 223.

²⁶*Id.* at 226.

* Some Copenhagen streets have set aside space for on-street bike parking.²⁷

* Copenhagen installs countdown clocks to inform cyclists when a light will change from red to green, and digital traffic signs showing travel time to major destinations.²⁸

Colville-Andersen also discusses what cities should *not* do. He heaps scorn upon unprotected bike lanes- that is, lanes that are so close to automobile traffic that there is a high risk of automobile/bicycle collisions. For example, some cities place bike lanes between moving traffic and parked cars, in what the author describes as “the door zone.”²⁹ In the door zone, motorists open their car doors while exiting their cars, which means that there is a high risk that these cyclists will be hit by these moving car doors.³⁰ Another form of failed bike lane is the center-running lane- that is, a bike lane in the center of the road.³¹ This sort of lane fails to serve cyclists’ needs, both because cyclists using such a lane are flanked by high-speed traffic on both sides and because they cannot reach their destination from the middle of a block.³²

Some cities seek to substitute “bicycle boulevards” for bike lanes. These “boulevards” are curvy paths that may be useful for a recreational cyclist. Colville-Andersen points out that these paths are useless for bike commuters, because a commuter wants to get from point A to point B as quickly as possible, rather than meandering gracefully from left to right.³³

Finally, Colville-Andersen takes on bicycle helmet laws. In Australia and New Zealand, legislatures passed laws in the 1990s requiring helmet use; shortly thereafter, cycling

²⁷*Id.* at 223.

²⁸*Id.* at 219–20 (countdown clocks), 220–21 (travel time signs).

²⁹*Id.* at 77.

³⁰*Cf.* Ken McLeod, *Bicycle Laws in the United States- Past, Present and Future*, 42 *Fordham Urb. L.J.* 869, 906 (2015) (in the United States “dooring . . . [is] a major contributor to bicyclist crashes, accounting for twenty percent or more of bicyclist crashes”).

³¹*See* Colville-Andersen, *supra* note 6, at 78 (showing example).

³²*Id.* at 78–79.

³³*Id.* at 70.

declined.³⁴ Colville-Andersen suggests that this result should have been foreseeable; he notes that if people come to believe “that cycling is so dangerous that you need to dress up like a warrior in order to do so, you can’t expect many people to ride.”³⁵ Since 1990, cycling deaths have fallen more rapidly in Denmark (which lacks helmet laws) than in Australia. In Denmark, deaths fell by almost 80 percent (from 110 to 25), while in Australia, deaths fell by about 60 percent (from 80 to 31).³⁶ Thus, the impact of helmet laws on safety is unclear.

IV. Myths About Cycling

In addition to showing how cities can promote cycling, Colville-Andersen responds to a wide variety of myths that get in the way of such efforts. I have listed a few of these myths, and Colville-Andersen’s response to them, below.

Myth 1: “Copenhagen is so culturally unique that its progress cannot be replicated elsewhere.”

Response: As Colville-Andersen notes, Copenhagen was not always a bike-friendly city. In 1970, almost four times as many drivers as bicyclists commuted into Copenhagen’s city center. In 2015, the number of bicyclists exceeded the number of drivers.³⁷ If Copenhagen can change, so can other cities.

Myth 2: “Bicycles are useful for single people commuting to work, but not for transporting groceries or children.”

Response: As Colville-Andersen notes, the delivery functions of automobiles and trucks can often be taken over by large bicycles called cargo bikes, which have areas in front of the wheels that can be used for seating or storage.³⁸ Cur-

³⁴*Id.* at 256. *Cf.* Chris Gillman and Chris Rissell, Australian per capita cycling participation in 1985/86 and 2011, World Transport Policy and Practice, May 2012, 5, 11–12 (showing that bicycle commuting declined in absolute terms in 1990s, and that in 2000s bicycle use increased, but did so less rapidly than Australia’s population).

³⁵Colville-Andersen, *supra* note 6, at 256.

³⁶*See* Cycling Deaths, *supra* note 10.

³⁷*See* Colville-Andersen, *supra* note 6, at 71.

³⁸*Id.* at 236 (showing examples).

rently, there are 40,000 cargo bikes in daily use in Copenhagen.³⁹

Myth 3: “Bicycles are only useful in flat cities like Amsterdam, not in cities with hills.”

Response: Colville-Andersen notes that some European cities, such as Aarhus (Denmark’s second-highest city) and Oslo, Norway have rolling landscapes and almost as much bicycle use as Copenhagen.⁴⁰ But because he does not supply readers with any data to back up his contention that these cities are in fact hilly, his claim might not be persuasive to non-Scandinavian readers.

On the other hand, American data supports Colville-Andersen’s view that city elevation is not a major factor in bicycle use. San Francisco is notoriously hilly⁴¹ yet among the 70 largest U.S. cities, only two have higher bicycle commuting rates.⁴² Portland, the city with even higher levels of bicycle use,⁴³ also has some steep hills.⁴⁴

Myth 4: “Some cities are too hot for cycling.”

Response: Colville-Andersen points out that Seville, Spain, a city that occasionally experiences triple-digit heat, went

³⁹*Id.* at 234.

⁴⁰*Id.* at 100.

⁴¹*See* San Francisco Unified School Dist. ex rel. Contreras v. First Student, Inc., 224 Cal. App. 4th 627, 168 Cal. Rptr. 3d 832, 302 Ed. Law Rep. 725 (1st Dist. 2014) (vehicle “operated daily on the steep hills of San Francisco obviously will require much more frequent attention to both the services brakes and the parking brake” than vehicles in other places); Robinson v. Chin & Hensolt, 98 Cal. App. 4th 702, 707, 120 Cal. Rptr. 2d 49 (1st Dist. 2002), as modified on denial of reh’g, (June 21, 2002) (referring to “the steep hills of San Francisco”).

⁴²*See* League of American Bicyclists, Where We Ride: Analysis of Bicycle Commuting in American Cities 9 at [https://bikeleague.org/sites/default/files/LAB Where We Ride 2016.pdf](https://bikeleague.org/sites/default/files/LAB%20Where%20We%20Ride%202016.pdf) (“American Cities”) (3.9 percent of San Francisco residents bike to work; only cities with higher bicycle mode shares are Portland and Washington, DC).

⁴³*Id.* (6.3 percent of Portland residents commute by bike, more than in any other large U.S. city).

⁴⁴*See* Multnomah County v. Department of Revenue, 13 Or. Tax 147, 148, 1994 WL 548891 (1994) (referring to Portland “apartment project on a steep hillside”).

from a 0.2 percent bicycle mode share to a 7 percent share in just four years, by building bicycle infrastructure.⁴⁵

Myth 5: “Some cities are too cold for cycling.”

Response: Colville-Andersen notes that cities far colder than Copenhagen have significant bicycle use. For example, in Oulu, Finland, near the Arctic Circle, 14 percent of the population uses their bicycles regularly⁴⁶—far more than in any large U.S. city.⁴⁷

V. Land Use Policy and Cycling

Perhaps because Colville-Andersen is writing for an international audience, he doesn’t fully address the low cycling rates in the United States, and the regulatory obstacles to increased cycling. Most American cities and their suburbs are far more automobile-dependent than northern European countries such as Denmark, in part because American metropolitan areas are so spread out. Colville-Andersen denies that such sprawl is particularly important, writing that Copenhagen “has the third-worst sprawl in Europe [and that] [p]eople can commute for an hour and a half or more by car to get to the city, as in many other places.”⁴⁸ But in fact, Copenhagen has 18,000 people per square mile,⁴⁹ more than all but two major U.S. cities.⁵⁰

Low-density American sprawl discourages cycling because where population is thinly spread, fewer people live within biking distance of jobs of other destinations; as Colville-Andersen admits, “few people are going to ride long distances.”⁵¹ Table 2 below compares the most bike-friendly cities (where more than 1/40 of commuters use bikes) to the

⁴⁵ See Colville-Andersen, *supra* note 6, at 103.

⁴⁶ *Id.*

⁴⁷ See *supra* note 43 (no major U.S. city has bike mode share over 7 percent).

⁴⁸ See Colville-Andersen, *supra* note 6, at 110.

⁴⁹ See Copenhagen Population 2018, at <http://worldpopulationreview.com/world-cities/copenhagen-population/>.

⁵⁰ See Sarah Janssen, ed., *The World Almanac and Book of Facts 2017* at 595–605 (only cities with higher density are San Francisco and New York).

⁵¹ See Colville-Andersen, *supra* note 6, at 110.

least bike-friendly (where fewer than 1/400th of commuters do so).

TABLE 2 – Bike friendly vs. bike hostile

	Bicycle commute share ⁵²	Population per square mile ⁵³	Percent of commuters walking to work or using public transit ⁵⁴
Bike-friendly			
Portland	6.3	4738	18.1
Washington	4.6	10,994	50.5
San Francisco	3.9	18,442	44.2
Minneapolis	3.7	7608	20.8
Seattle	3.5	8164	30.1
New Orleans	3.3	2300	12.4
Oakland	3.0	7501	24.8
Pittsburgh	2.6	5497	28.2
Bike-hostile			
Kansas City	0.2	1509	5.2
Tulsa	0.2	2050	2.8
Corpus Christi	0.2	1857	3.4
Dallas	0.2	3808	6.2
Newark	0.1	11,654	34.5
San Antonio	0.1	3186	5.0
Memphis	0.1	2066	4.0
Ft. Worth	0.1	2447	2.1
Plano	0.1	3957	2.3
Aurora	0.1	2341	7.3
Charlotte	0.1	2711	5.9

Only one of the bike-friendly cities has fewer than 4000 people per square mile—New Orleans, whose historic population was artificially reduced by Hurricane Katrina.⁵⁵ Such unusually low densities tend to discourage any form of transportation other than automobiles. In all but one (New-

⁵² Data comes from American Cities, *supra* note 42.

⁵³ Data comes from Janssen, *supra* note 50, at 595–605.

⁵⁴ Data comes from American Factfinder, *supra* note 13.

⁵⁵ See Allison Plyer, *Facts for Figures- Katrina Impact*, at <https://www.datacenterresearch.org/data-resources/katrina/facts-for-impact/> (describing impact of storm upon New Orleans population).

ark) of the bike-hostile cities,⁵⁶ fewer than 8 percent of commuters walked to work or relied on public transit. By contrast, none of the bike-friendly cities (not even low-density New Orleans) had such low mode shares for walking and public transit.

These low densities are in large part a result of American land use policy. Local zoning almost everywhere limits population density—often to levels so low that they discourage non-automotive transport. For example, a typical residential zone requires houses to sit on 0.4 acres of land, thus allowing only 2.5 houses per acre.⁵⁷ Because there are 640 acres in a square mile,⁵⁸ this means that even if every single block of a typical square mile was covered by houses, it would have only 1600 households. Because some urban land is either unbuildable or covered by commercial structures, the real density of a typical zone is even lower.

American land use regulation also reduces density in other ways. Cities usually require apartment buildings to supply their tenants with parking; if such parking is aboveground, it takes up land that could be used for housing, and thus reduces density beyond what zoning codes require.⁵⁹ Municipal zoning also requires such buildings to be set back far from sidewalks, thus taking up more land that could be used for housing.⁶⁰

Minimum parking requirements and setback regulations have anti-bike side effects unrelated to density. If a cyclist lives in an apartment building separated from sidewalks by a large surface parking lot, he/she may have to ride through

⁵⁶It is not clear to me why Newark has so few cyclists. It may be that Newark has less bicycle infrastructure than other dense cities. See New Jersey Department of Transportation, New Jersey Bicycle Map and Resource Guide, at <https://www.state.nj.us/transportation/commuter/bike/pdf/njbicyclemapandguidenewark.pdf> (Newark has almost no bicycle lanes, and fewer streets suitable for cycling than nearby Jersey City).

⁵⁷See Michael Lewyn, Government Intervention and Suburban Sprawl: The Case for Market Urbanism 100 (2017) (citations omitted). I note that many residential zones require even lower densities. *Id.* at 101 (citing examples of two-acre zoning).

⁵⁸See Calculateme at <https://www.calculateme.com/area/acres/to-square-miles/640>.

⁵⁹*Id.* at 108–10.

⁶⁰*Id.* at 109.

a parking lot on the way to a street or bike lane. Because this parking lot is shared with cars, it creates some risk of automobile/cyclist collisions.

American subdivision regulation sometimes promotes dead-end, or “cul-de-sac” residential streets and extremely wide commercial streets.⁶¹ The former type of design makes it difficult for nondrivers to reach one residential street from another residential street, thus forcing nearly all traffic into commercial streets. The latter policy encourages motorists to drive more rapidly, thus increasing the harmful effects of any collision.⁶²

In the absence of adequate bicycle infrastructure, the combination of dead-end, disconnected residential streets and huge commercial streets is especially toxic for cyclists: they can reach a commercial destination only by riding on major streets that they must share with cars going 40 or 50 miles an hour. Obviously, the risk-averse cyclist will not feel comfortable riding on such streets. So by encouraging the construction of these high-speed streets, American municipalities systematically discourage cycling.

VI. Conclusion

Colville-Andersen skillfully describes the best practices of bike-friendly cities, and rebuts some anti-cycling myths. However, I wish he had devoted more space to public policies that disfavor cycling, such as zoning regulation that artificially spreads out cities and subdivision regulation that forces traffic into wide, high-speed streets.

⁶¹*Id.* at 114–15, 119–20.

⁶²*Id.* at 115–16.