

Greenhouse Gas Reduction in the New York Metropolitan Region

Bicycle-Pedestrian Strategies

Prepared by Rebecca Bernstein, Graduate Student Assistant

Under the supervision of Larry McAuliffe, Sustainability Manager
New York Metropolitan Transportation Council

New York Area: Current Commuting Patterns

	NYC	Westchester	Nassau	Rockland	Suffolk	Putnam
Subway/Train	37%	14.8%	12.8%	1.9%	4.9%	6.6%
Bus	11%	5.7%	3.3%	6.8%	1.0%	0.5%
Drive Alone	21%	59.9%	69.3%	71.8%	79.5%	76.6%
Carpool	4.9%	7.6%	7.5%	9.8%	8.5%	9.3%
Walking	9.2%	5.0%	2.7%	3.7%	1.4%	1.4%
Biking	0.6%	0.1%	0.3%	0.1%	0.2%	0.1%

By Encouraging Increased Walking and Biking, Complete and Safe Streets Reduce Green House Gas Emissions

Facts and Figures:

Transportation produces **approximately 31%** of national CO₂ emissions each year. The National Complete Streets Coalition estimates that **walking and bicycling** in place of driving for trips of less than 1 mile could reduce CO₂ by 12 to 22 million metric tons per year in the US.



Intersection in Charlotte, NC

This is an **approximately 1%** reduction in CO₂ emissions.

An Action Plan of many strategies, **working in harmony**, may have much greater impact.

Developing an Action Plan for Increasing Bike-Ped Share

- Create Safe and Complete Street Networks within a ½ mile radius for walking and a 3 mile radius for biking of each downtown center
- Create Safe and Complete Street Networks within ½ mile radius for walking and a 3 mile radius for biking of each transit stop.
 - Establish Safe and Complete Bike-Ped Access to commuter rail stations and bus stops.
- Establish bike lanes on commuter routes.
 - Install Bike Stations near transit hubs and Indoor Bike Parking in offices.
 - Establish Bike Corrals at Commercial Locations
- Build strong Walking Networks on the street grid, including greater sidewalk development



Map of Manhattan Waterfront Greenway

Developing an Action Plan for Increasing Bike-Ped Share Continued...

- Incorporate **Safe and Complete Networks** into new developments and projects.
 - Routine inclusion of **Safe and Complete Bicycle and Walking Networks** in new developments.
 - Encourage **TOD** by integrating walking/biking into TOD zoning and codes.
- Provide more off street bike lanes, such as the **NYC Waterfront Greenways** designated/mixed-use bike lanes.
- Reduce accidents and increase walking by improving **Bike-Ped Safety** through design interventions, traffic calming measures and signage.
- Accelerate **Bike-Ped Programs** on the Master Plan.
- Increase community participation and support by offering a large program of **Walkable Communities Workshops** and developing **Public Outreach Campaigns**.
- Promote the development of **Bike Share Programs**.



Eastbound Market Street bike lane at Octavia in San Francisco, CA



Velib Bike-Share Station in Paris, France

Source:

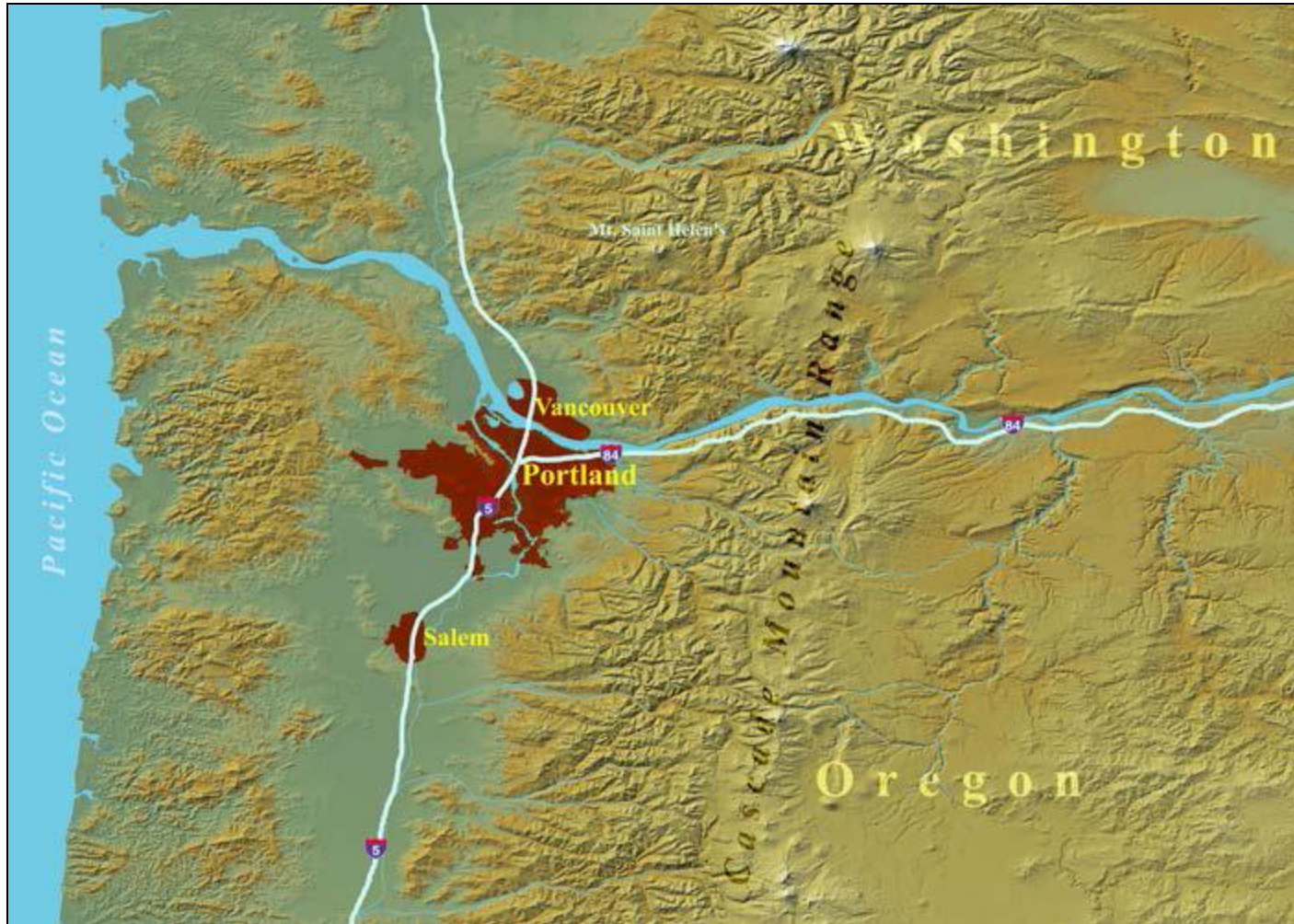
Photo: Goebel, Bryan. "MTA Board Backs Plan to Eliminate Bike Lane at Market/Octavia ."

SF. Streetblogs.org. 01/07/09.

Fried, Ben. *Reports of Vélib's Demise Greatly Exaggerated.*

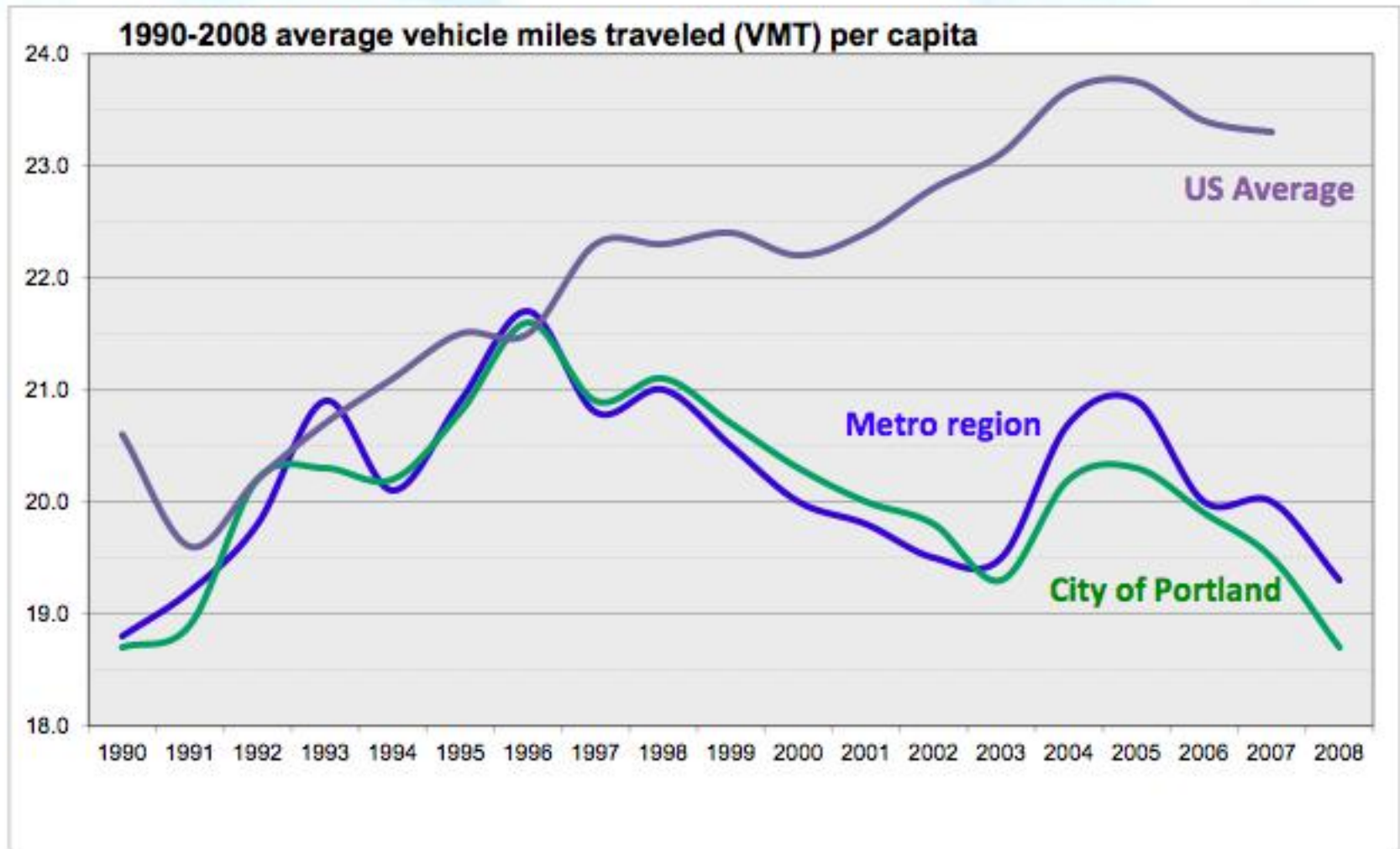
<http://www.streetblog.org>. 12/12/09.

National Example: Portland Proves it is Possible to Increase Walking and Biking



Map of Portland, OR

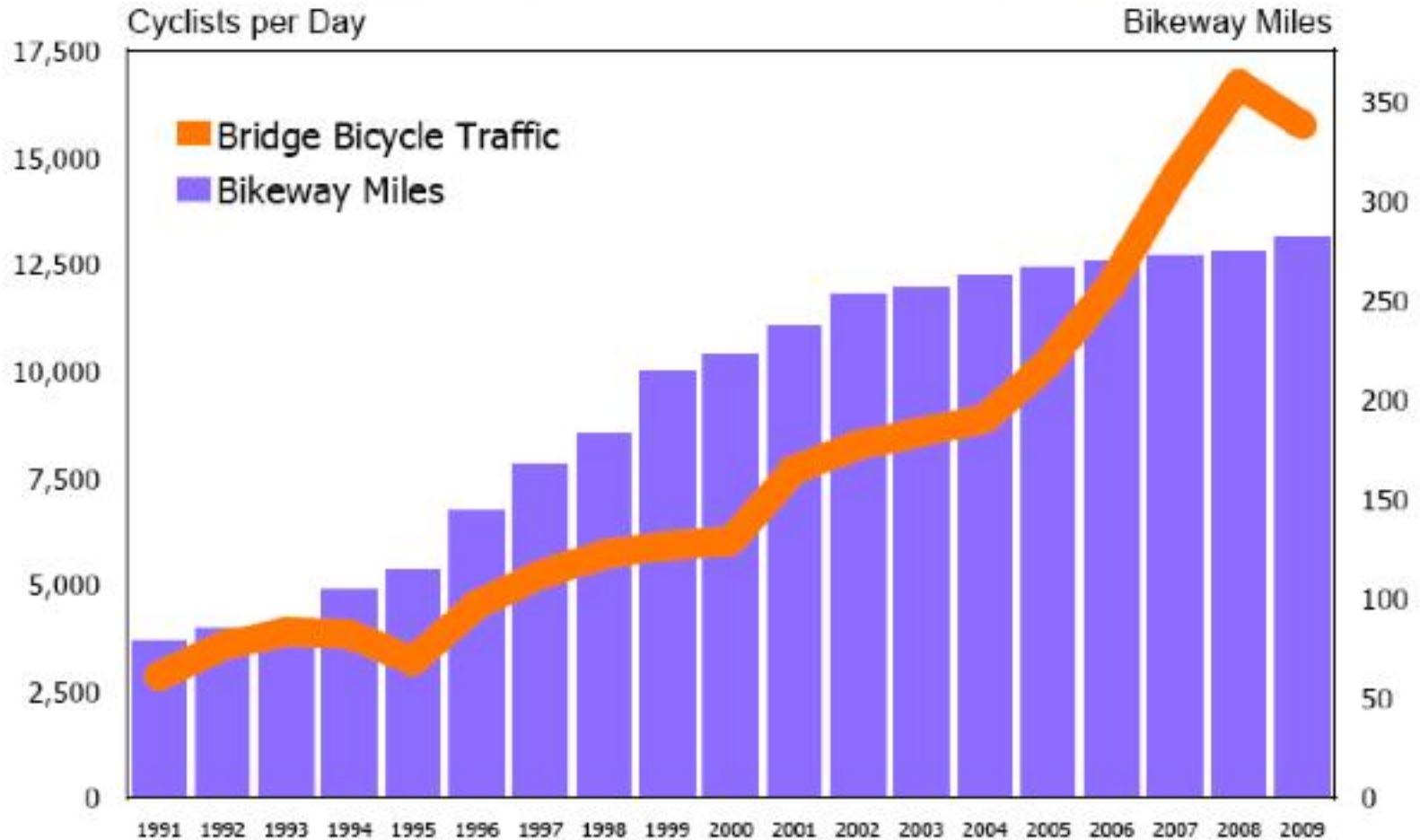
Portland area residents drive less...



Source: U.S. Federal Highway Administration, Highway Statistics, 1990-2008

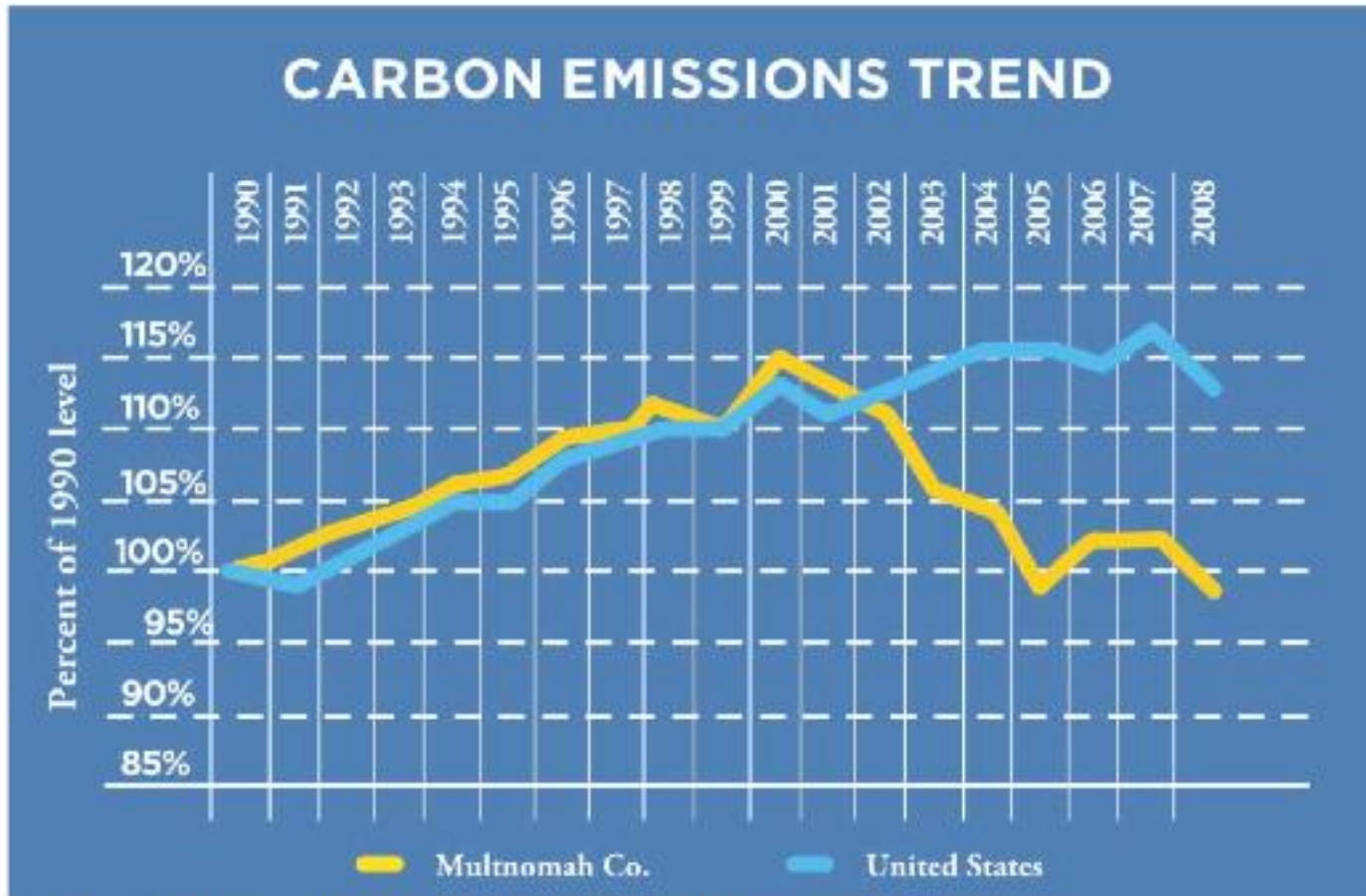


...bike more...



Source: Portland Bureau of Transportation, 2010.

...and, emit fewer greenhouse gases.



Source: City of Portland and Multnomah County, 2009.

Portland Case Study: Complete and Safe Streets Increase Walking and Biking

PROGRAM

Between 1991 and 2008 Portland expanded its bicycle network 250% (from approx. 75 to 275 miles). Installed four different types of bikeways:

- Bike Lanes
- Neighborhood Greenways/Bike Boulevards
- Paths
- Cycle Tracks



Southwest Broadway in downtown Portland, OR

Sources:

PortlandOnline.com. [Portland Bicycle Count Report](#).

Portland Bureau of Transportation. "Bicycling in Portland: The Portland Bureau of Transportation works to make bicycling an integral part of daily life."

<http://www.portlandonline.com/transportation/index.cfm?c=34772>.

Photo: Rose, Joseph. [Portland State study says cycle track on Southwest Broadway is working -- in most ways .](#)" OregonLive.com. .

Portland Case Study: Complete and Safe Streets Increase Walking and Biking Continued...

RESULTS:

- Since 2000/2001 bike counts, bicycle traffic has nearly tripled.
- Between 1990 and 2000 foot and bicycle commuting increased almost 10%.
- Share of bicycle commuters is between 6 to 8 percent.
- Share of commuters who walk is 5%.



Bike Boulevard in Portland, OR

Sources:

Portland Bureau of Transportation. "Bicycling in Portland: The Portland Bureau of Transportation works to make bicycling an integral part of daily life."

<http://www.portlandonline.com/transportation/index.cfm?c=34772>.

Global Warming Progress Report. *A progress Report on the City of Portland and Multnomah County Local Action Plan on Global Warming*. June 2005. Pg 4.

Portland Bureau of Transportation. "Portland Bicycle Count report 2010. <http://www.portlandonline.com/transportation/index.cfm?a=327783&c=44671>.

Geller, Roger, Bicycle Coordinator. Build it and they will come Portland Oregon's experience with modest investments in bicycle transportation. City of Portland, OR. April 2011.

Photo: Fried, Ben. "All Eyes on Portland at Bike Summit." Streetsblog.org.

The National Scene: Complete and Safe Street Encourage Walking

Facts and Figures

- Respondents to a Bureau of Transportation Statistics (BTS) survey strongly favor acquiring more sidewalks.
- The results of the BTS survey question, “what changes they would like to see in their communities” were: nearly ½ of the respondents cited more sidewalks (39%) or better sidewalks (5%).
- This supports the Victoria Transport Policy Institute’s finding that completing sidewalk networks in typical U.S. towns would increase average per capita non-motorized travel 16% and reduce automobile travel 5%.



Outside a grocery store on Highway 8 in Hillsboro, OR



Outside a grocery store on Highway 8 in Hillsboro, OR

Source:

U.S. Department of Transportation. Bureau of Transportation Statistics. Issue Brief #12: Sidewalks Promote Walking. December 2004.

Litman, Todd. Evaluating Non-Motorized Transportation Benefits and Costs. Victoria Transport Policy Institute. November 24, 2011.

Photo: TriMet. “Pedestrian Network Analysis Project: Improving Pedestrian Access to Transit Stops.” <http://trimet.org/projects/pedestrian-network.htm>.

Union Square Park, NYC Case Study: Redesign Increases Walking

Success Here at Home

Union Square Park in NYC has undergone a three-phase revitalization. Phase Two and Three have resulted in a large uptick in bicycle and pedestrian traffic.



Union Square Before



Union Square After

Union Square Park, NYC Case Study: Successes at Home Continued...

Phase 3: Specifics

- Converted E. 17th Street from two-way to one-way.
- Installed 12,784 sq. ft. of pedestrian plaza space on Broadway and E. 17th St.
- Upgraded 1.3 miles of bicycle facilities.
- Eliminated conflicting vehicle movements at USW and E. 14th St.



Pedestrians Crossing into Union Square Park in NYC



Bike Lane at the Intersection of Broadway and 18th Street in NYC

Phase 3: Results

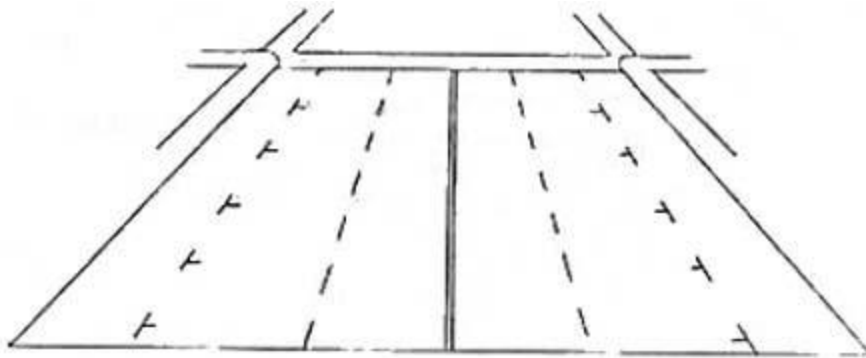
- Bicycle volumes on Broadway increased by 16% on weekdays and 33% on the weekends.
- Weekday pedestrian volumes in the Union Square area increased 59% along the retail corridors from 2003 and 2008 (approx. 150,000 people daily).
- There has been a resurgence of commercial activity in the area.

San Francisco Case Study: Establish Bike Lanes on Commuter Routes

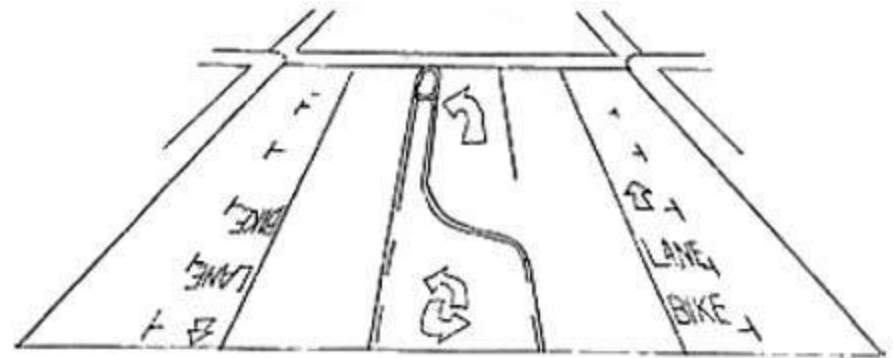
Valencia Street Road Diet: Reclaiming Street Space for Other Uses

- An increase in the number of safe bike lanes = an increase in the number of bicyclists and a reduction in vehicles.
 - Bicycle count prior to the road diet: 88 bicyclists afternoon peak hour.
 - Bicycle count after road diet: 215 bicyclists per hour.
- **RESULT:** 140% increase in bicyclists.

Valencia Street Before Road Diet



Valencia Street After Road Diet



The Netherlands Case Study: Complete and Safe Bike-Ped Access to Transit

Lessons Learned Abroad:

The bicycle is the main mode of transportation to the train station for more than 35% of all trips.



Bike Parking Facility in Amsterdam, The Netherlands

Key Factors to Success:

- Level of attention given by local governments to making streets pedestrian and bicycle friendly.
- Major focus: Introducing widespread traffic calming measures in both residential and commercial areas.
- Bikes and pedestrians given a separate right-of-way, with attention to intersection design.
- Underground guarded bike parking is more than 10x less expensive per space than automobile park-and-ride construction.

Dutch Bicycle Lanes and Paths

- Separate bike lane when speeds increase above 30 km/hr.
- Mixed-use roadway along streets with low volumes of motor vehicles.

Source:

Photo: Doro Bike Rack Company. "World of Bike Racks - Netherlands." http://www.dero.com/world_4.html.
Replogle, Michael. "Bicycle Access to Public transportation; Learning from Abroad." *Institute for Transportation Engineers Journal*, December 1992. http://apps.edf.org/documents/2294_BikesJournal.pdf.
Zeeger, Charles V. *FHWA Study Tour for Pedestrian and Bicyclist Safety in England, Germany, and The Netherlands*. BTS.gov. October 1994.

Examples at Home and Abroad: Bike Share Programs

Domestic Case Study: Washington, DC

- Capital BikeShare ridership increased 67% from December 2010 to February 2011 to 48,000 trips per month.



Capital Bikeshare Program Location in Washington, DC



Velib Bike-Share Station in Paris, France

International Case Study: Paris, France

- Within a year of the Velib bike-share's introduction, bicycle use in Paris increased 24%.
- Within the first year, there were 27.5 million trips by approximately 2.1 million people recorded, many of them for daily commutes.
- On average, there are 120,000 trips at 903,104 km per day (2010 data).

Source:

Photo: Velo Breakaway. "Capital Bikeshare." <http://velobreakaway.com/?tag=capital-bikeshare>.

Photo: MSNBC. "Going Green: Bike-sharing services roll into the U.S. - Creative financing allows cities to expand public transit offerings ."

http://www.msnbc.msn.com/id/23869261/ns/business-going_green/t/bike-sharing-services-roll-us/.

Access: Fall 2011. Number 39. Transportation Research at the University of California.

District of Columbia. "Capital Bikeshare Boasts Near Record Ridership in February

Winter Weather Warrior Contest Draws Hundreds of Riders Out into the Cold " March 9, 2011.

Engler, Steven. "A New Fashion Catches On in Paris: Cheap Bicycle Rentals." *NYTimes*, July 13, 2008.

Here at Home: Shaping Bike Share Programs

NYC Introduces New Bike Share Program:

- Privately run by Alta Bicycle Share (of Portland, OR).
- Numbers: 600 rental stations and 10,000 bicycles to be incorporated on to NYC streets.
- Participants encouraged to purchase long- or short-term memberships.
- Memberships to include unlimited trips of up to 45 minutes. Fees to be applied accordingly as the trips get longer.
- Rental stations to be found in Manhattan (south of 79th St.) and specific Brooklyn neighborhoods.



Demonstration Bike Station at a NYC News Conference

Moving Forward: Encourage TOD by Integrating Walking/Biking into TOD Zoning and Codes

Studies Cited by the Pew Center on Global Climate Change suggest:

A combination of land use and transportation policies could reduce vehicle miles traveled by about 5% to 7% over 30 years in large urban areas.



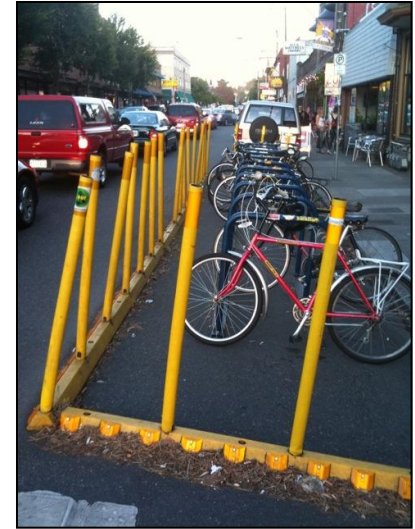
Rendering of a Complete Street in Portsmouth, VA

Moving Forward: Encourage TOD by Integrating Walking/Biking into TOD Zoning and Codes Continued...

Proposed Zoning Policy Examples: New York State

Bike Parking Schedule: The following minimum amounts of bicycle parking will be provided:

- Residential (Multi - Family): 1 bicycle parking space per dwelling unit.
- Commercial Uses: bicycle parking spaces = 10% of required auto parking.
- Institutional (Schools): 1 bicycle parking space for every 10 students and staff Government: 1 bicycle parking space per every 10 employees.
- Industrial Uses: 1 bicycle parking space per 1000 sq. ft.



Bike Corral in Portland, OR



Bicycle Parking Garage In Front of Amsterdam's Central Train Station

Moving Forward: Encourage TOD by Integrating Walking/Biking into TOD Zoning and Codes Continued...

2010 Nassau County Master Plan: Coding for Walkable Downtowns and TOD

- Create compact, walkable centers served by public transit
 - 1) Increase density to support public transit.
 - Example: Prohibit auto-related uses and surface parking near transit stops; create pedestrian friendly routes from the stop.
 - 2) Accelerate and expedite development review in areas near transit stops.
 - 3) Require street connections.
 - Example: Where topographical or other constraints preclude full connectivity for vehicles, provide for pedestrian access with walkway or stairways.
 - 4) Revise street and sidewalk standards.
 - Example: Sidewalks should be wide enough accommodate pedestrian amenities such as shade trees and benches.
 - 5) If the downtown's primary street is an arterial and thus not suitable for a main street, then new retail and pedestrian activity will have to be refocused on a quieter secondary street.

