Double Dutch:

Bicycling Jumps in Philadelphia

Introduction

The path to urban sustainability is paved by streets that accommodate all users, not just cars and trucks. 20th Century transportation policy in the United States presumed that streets were made to carry motor vehicles. But, in a 21st Century that is facing higher gas prices, a dire need to dramatically cut greenhouse gas emissions, and a national obesity epidemic, there is a strong imperative for the United States to encourage Americans to drive less and use "active transportation"--bicycles, walking or public transit—to move themselves around, especially for short distances.

Many factors play into how national, state and local policy can encourage more active transportation but as a start, decision makers and the public need to know how streets are being used. In order to begin the process of transforming streets into conduits for all vehicles (including cars, trucks, buses, motorcycles and bicyclists) and pedestrians, it's important to know who is using city streets now.

In fall 2008, the Bicycle Coalition of Greater Philadelphia (BCGP) conducted counts as part of the Bicycle Ambassadors program, a new adult outreach and education program co-sponsored by the Bicycle Coalition, the City of Philadelphia, University City District and Fairmount Park. The Bicycle Ambassadors program encourages adult bicyclists to ride more often and ride more safely, following the rules of the road, as well as educating motorists on sharing the road. Bicycle Ambassadors will be working in the neighborhoods of Center City, University City and Fairmount Park starting in the spring of 2009. Yearly bicycle counts are an important way to understand the current patterns and needs within the bicycle community; as such, the counts will directly influence the design and focus of the Bicycle Ambassadors program each year. This report summarizes the findings of the 2008 bicycle counts and compares them to counts conducted in previous years.

Bicycling in Philadelphia

Two types of survey statistics shed light on how many people bicycle in Philadelphia. The first statistic is the bike commute "mode share", which is the percentage of workers who use bicycles to get to work as their primary mode of transportation. As of 2006, **1.2% of Philadelphians biked to work**[i]. In other words, out of 100 workers, 1.2 workers rode a bike to work 3 days a week, as opposed to the number who drove (61), took public transit (26.4), walked (8), took a taxi or motorcycle (1) or worked at home (2.4). Philadelphia's bike commute mode share is better than the national average (0.5%), New York City (0.6%) and Chicago (0.9%), but not as large as Washington DC (2.0%) or Portland, Oregon (4.0%)[ii]. This percentage works out to **11,000 daily bicycle commute to work trips**[iii].

The second kind of survey statistic is the percentage of daily trips taken by bicycle (for commuting, errands, etc.). In 2006, the Delaware Valley Regional Planning Commission calculated that approximately **6% of all trips in Center City are made by bicycle[iv].** For the entire city of Philadelphia, **2% of all trips are made by bicycle[v].** This translates to approximately **75,000 daily bike trips** in Philadelphia[vi].

Another way to gauge how much bicycling occurs and how much bicycling has changed over time is to count the number of bicyclists on the streets and compare those figures year to year. Although city and regional agencies regularly count motor vehicles (cars and in some cases, pedestrians), they typically do not count bicyclists on Philadelphia's streets. Consequently, in 1990, the Bicycle Coalition first counted bicyclists and their behavior to fill this knowledge gap. Further counts were conducted in 1998, 2005, 2006, 2007, and most recently during the fall of 2008. In 2006, the Bicycle Coalition counts were conducted with Center City District with a short analysis[vii].

Bicycling can significantly reduce greenhouse gas emissions. Bicyclists in Philadelphia ride 260,000 miles daily[viii]. This number of miles bicycled saves 47,450 tons of carbon dioxide annually that would otherwise be emitted by automobiles[ix]. If Philadelphia could increase its bicycle mode share from 2% to 3%, it would prevent an additional 23,725 tons of CO_2 from being emitted annually[x].

Bicycle Count Methodology

The Bicycle Coalition's methodology has been consistent year to year, although the coverage has varied. Volunteers are assigned to certain intersections and bridges to count bicyclists during morning and evening peak travel hours (7:30am to 9am and 4:30 pm to 6pm). Volunteers count the number of bicyclists, their direction of travel, their gender, whether they are wearing a helmet, and whether they are riding on the sidewalk or in the opposite direction of travel.

In 2008, the Bicycle Coalition and Bicycle Ambassadors concentrated their efforts on five bridges that cross the Schuylkill River and two major intersections (Broad and Chestnut in Center City and 38th and Spruce Streets in West Philadelphia). Table 1 shows the results of the 2008 count and comparative numbers from 2007, 2006, 2005 and 1990.

Table 1-- 1990-2008 Summary of Bicycle Counts at Schuylkill Bridges and Major Intersections

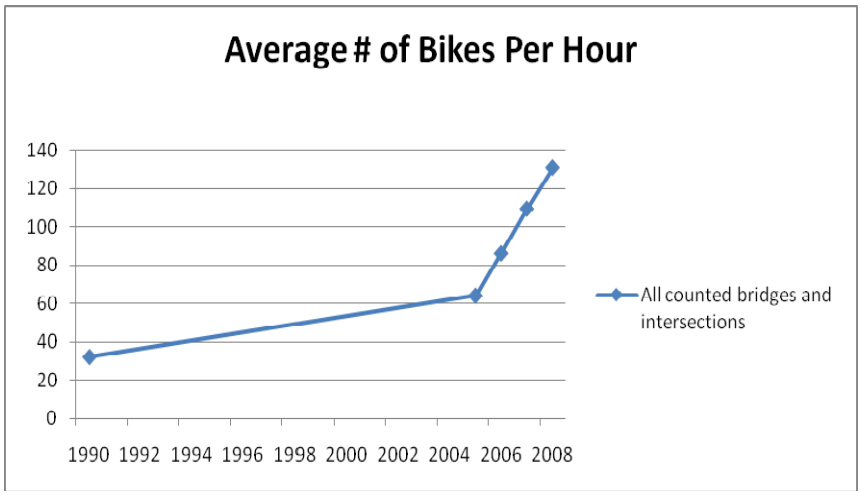
1990-08 Comparison (Bikes per hour)

	1990	2005	2006	2007	2008
Broad and Chestnut		79	44		126
38th and Spruce			129	163	188
Walnut St Bridge	32	74	118	94	137
South St Bridge	60	70	107	114	160
Chestnut St Bridge	18	52	74	108	121
Market St Bridge	19	46	73	68	68
Spring Garden Bridge			59		115
Schuylkill Crossings Total			430		601
Schuylkill Crossings (w/o Spring Garden) Total	129		371		486
Schuylkill Bridges	32	61	86	96	120
All counted bridges and intersections	32	64	86	109	131

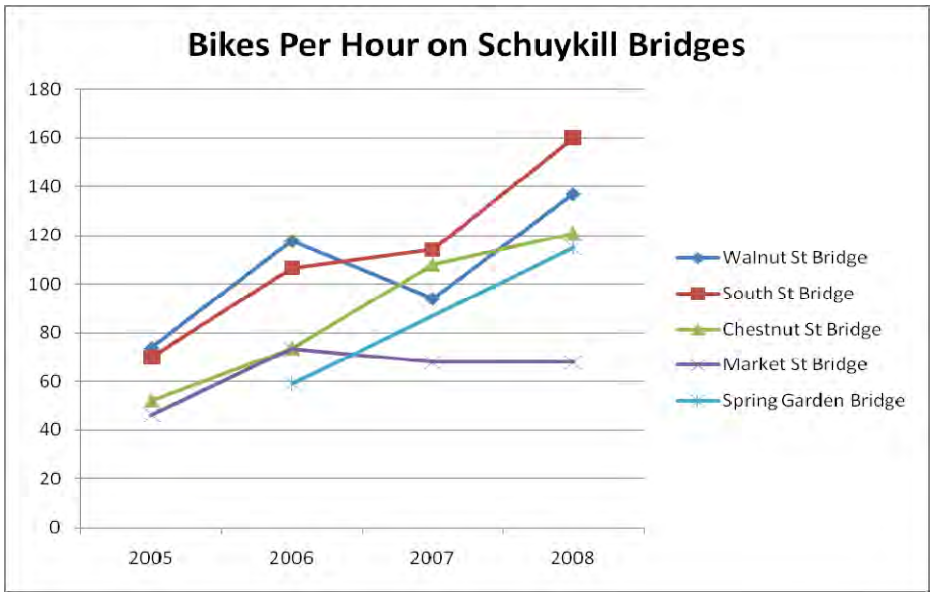
2008 Bicycle Count Findings

Bicycling up 104% from 2005

Bicycling has increased at an impressive rate since 2005. In three years between 2005 and 2008, **bicycling doubled** at counted locations (including all Schuylkill bridges and two intersections). Bicycling increased **104%, or roughly 35% a year**. Prior to 2005, bicycling was increasing at a slower pace, roughly 6.1% a year, and it took fifteen years for bicycling to increase 98% between 1990 and 2005. Since 1990, bicycling in Philadelphia has increased 300%.



Between 2006 and 2008, the total number of bikes per hour counted on five Schuylkill Bridges (South, Walnut, Chestnut, Market and Spring Garden) jumped 40%. One of the most dramatic increases in bicycling occurred at the Spring Garden Bridge, which had a 95% increase in bicycle traffic since 2006. The recent improvements (bicycle lane, switchback ramp down to Martin Luther King Drive, traffic signal) to the Spring Garden Bridge may have contributed to this increase. Interestingly, bicycle traffic on Market Street dropped after 2006, perhaps because Walnut and Chestnut are more preferable.



Profile of a Typical Bicyclist

The ratio of male bicyclists to female bicyclists was 70:30. 43% of bicyclists overall used helmets; 46% of women wore helmets vs. 38% of men. Nearly 20% of bicyclists rode on sidewalks, while only 1% rode in the street going in the wrong direction.

City streets and bridges have over 131 bicyclists per hour, or 1 bike every 30 seconds

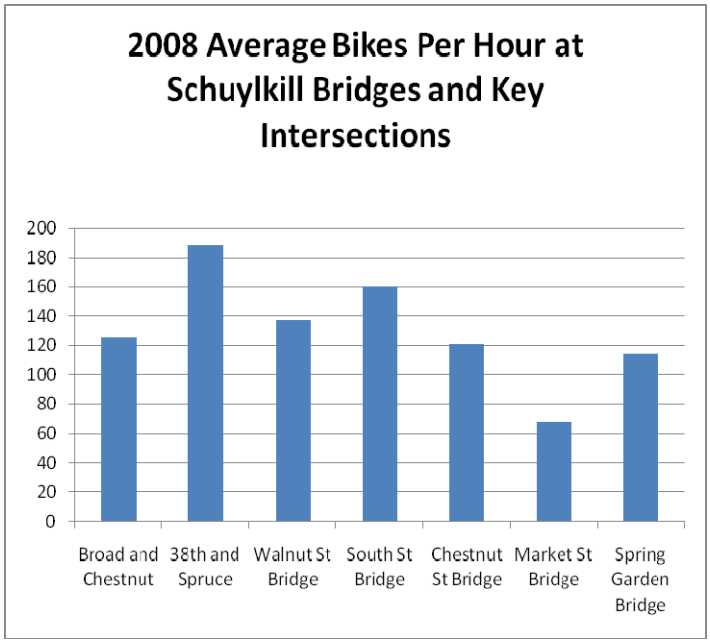
Counting all five Schuylkill River Bridges together, on average 600 bikes per hour (BPH) crossed the Schuylkill River between West Philadelphia and Center City during peak travel times in 2008. That's an average of 120 BPH per bridge.

The intersection of 38th and Spruce in West Philadelphia had the highest BPH rate (188).

South Street Bridge had the most bicyclists of all the Schuylkill Bridges (160 BPH). During one count of all peak traffic (vehicles, bicycles and pedestrians) on the South Street Bridge, bicycles were 7.5% of all traffic. If there are 23,000 drivers who use the South Street Bridge daily[xi], there are approximately 1,700 bicycles that use the bridge as well.

At the intersection of Broad and Chestnut Streets in Center City, 126 bicyclists passed through on an hourly basis during peak traffic flow. On average, 54 bicycles per hour went through going east or west, and 71 bicycles travelled north or south.

Overall, the average for all bridges and intersections in 2008 was 131 BPH. This translates into a stationary person seeing one bicyclist every 30 seconds passing in front of them.



Bicycling has increased dramatically without major infrastructure improvements to city streets

Currently, Philadelphia has 2,575 miles of roads-- 2,180 miles of city streets, 35 miles of Fairmount Park roads, 360 miles of state highways and 320 bridges[xii]. It also has 205 miles of bicycle lanes and 32.1 miles of multi-use trails[xiii].

Most of these bike lanes were put down in the late 1990s on roads wide enough to accommodate the addition of a 5 foot bike lane. Most of these lanes were not put down in Center City, due to the narrowness of Center City streets. Currently, Center City has only 4 miles of bike lanes, 2% of the City's total.

The dramatic rise in bicycling that occurred between 2005 and 2008 is driven by several factors: the 2005 SEPTA strike, increased gas prices, the completion of one mile of the Schuylkill River Trail between the Philadelphia Art Museum and Locust Street in 2004, heightened awareness about global warming and sustainability, and a growing urban bicycle culture.

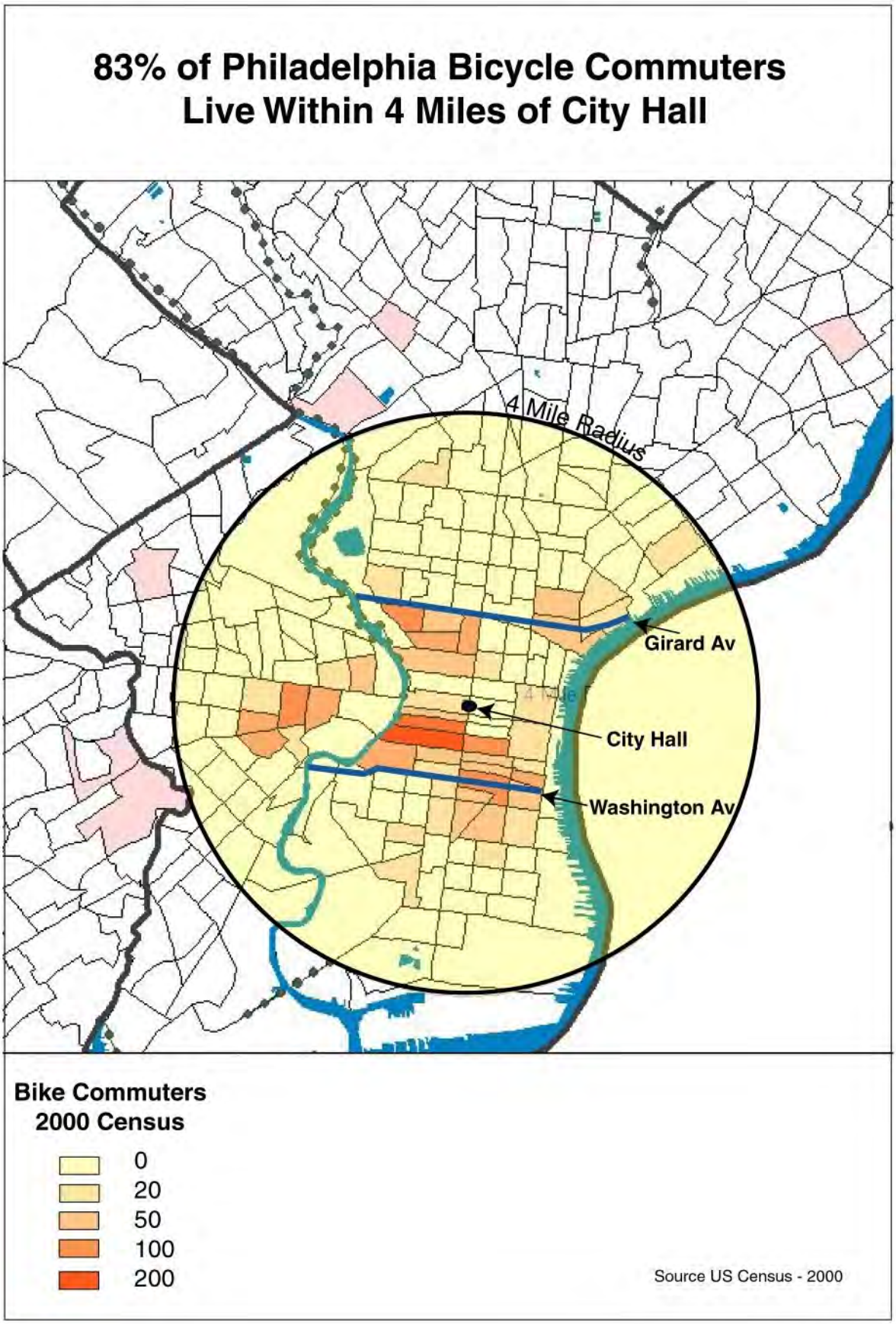
Since the late 1990s, Philadelphia has not made significant bicycle-friendly improvements to city streets in Center City and West Philadelphia, such as bicycling "facilities" (bike lanes, bicycle signals, etc.). The one exception is the 22nd Street bicycle lane. Therefore, it's probable that bicycling would have increased even more dramatically if Philadelphia had a complete bicycle lane network and enhanced bicycle facilities.

Philadelphia needs East-West and North-South bicycle boulevards to meet current and growing demand for bicycling

According to the 2000 census, 83% of Philadelphia residents who use bicycles to commute to work live within a four mile radius around City Hall[xiv]. This is supported by DVRPC's finding that Center City had 3 times the bicycle mode share (6%) of Philadelphia (2%). Center City's bike mode share (6%) is higher than Portland, Oregon's bike mode share (4%). The percentage of bicyclists (of the total of all vehicles), in combination with the average 131 BPH, make a strong case for Philadelphia to improve Center City streets to accommodate bicycles more safely.

The Bicycle Coalition of Greater Philadelphia recommends that by 2010, Philadelphia should create an east-west bicycle boulevard(s) from 25th Street to Front Street and a north-south boulevard(s) from Girard to Washington Avenue.

A bicycle boulevard is a street where all types of vehicles are allowed, but where bicycle traffic is given priority and the result is a safer street for everyone. The street is modified to enhance bicycle safety and convenience. Typically, these modifications will also calm traffic and improve pedestrian safety.


83% of Philadelphia Bicycle Commuters
Live Within 4 Miles of City Hall
4 Mile Radius
Girard Av
City Hall
Washington Av
Bike Commuters
2000 Census
0
20
50
100
200
Source US Census - 2000

Closure of South Street Bridge will double bicycle traffic on Walnut and Chestnut Street Bridges

Of all five Schuylkill Bridges counted, South Street Bridge has the heaviest bicycle traffic, with 160 BPH using the bridge at peak travel times. In the morning, 75% of the bicycle traffic travels west toward University City, and in the afternoon, 75% of the bicycle traffic travels east toward Center City. Comparatively, Walnut Street Bridge (westbound one way) has 137 bicyclists per hour, while Chestnut Street Bridge (eastbound one way) has 121 bicyclists per hour.

The closure of the South Street Bridge in early December 2008 is going to significantly impact bicycle and pedestrian traffic crossing the Schuylkill River between Center City and West Philadelphia. It will send 160 BPH, or 1700[xv] bicycles a day, to the Chestnut or Walnut Street bridges, presuming bicyclists choose the closest available bridge with bicycle lanes going in the appropriate direction of travel. Based on the traffic patterns documented on the South Street Bridge, we estimate that 120 BPH (75% of 160) who go westbound in the morning will most likely use the Walnut Street Bridge, while the same number should use the Chestnut Street Bridge to go eastbound in the evening. This increase in bicycle traffic could **double** bicycle traffic on the Walnut Street Bridge in the morning and on Chestnut Street Bridge in the evening. It will also significantly increase pedestrian traffic on both bridges.

The Walnut Street Bridge is the closest bridge to South Street. The 2008 Bike Count found that 17% of bicyclists riding the Walnut Street Bridge rode on the sidewalks. The influx of bicyclists who would usually use South Street Bridge may result in an increase in bicyclists choosing to ride in the wrong direction on the Walnut Street Bridge eastbound, or ride eastbound on the sidewalks instead of taking the Chestnut Street Bridge. Additionally, pedestrian traffic on the sidewalks will undoubtedly increase. This scenario could result in an increased hazard for all bridge users.

In order to create the safest possible conditions for bicycles and pedestrians during the South Street Bridge closure, the Bicycle Coalition of Greater Philadelphia recommends that:

University of Pennsylvania:

- Assign University of Pennsylvania Bicycle Police Officer to work with Bicycle Coalition of Greater Philadelphia and the Bicycle Ambassadors at 33rd and Walnut Streets to educate bicyclists and enforce bicycling laws including sidewalk riding toward the Walnut Street Bridge.
- Increase enforcement of traffic laws and double parking violations between 30th and 38th Streets and Spruce and Market Streets. Especially in key hotspots:
    - New U.S. Post Office on Chestnut Street
    - Walnut Street b/w 30th and 38th
    - Penn Transit buses that stage between 32nd and 34th and encroach into bike lanes
- Promote Hill Square walkway at 34th to 33rd Streets and Walnut and Chestnut Streets as a bike friendly, safe route to travel to Chestnut Street.

City of Philadelphia Streets Department and Department of Transportation and Utilities:

- Prior to the bridge closure, restripe stop bars, crosswalks and bike lanes throughout University City from Spruce to Chestnut Streets and 30th and 40th Streets.
- Restore the bike lane on 33rd Street between Walnut and Chestnut Street and eliminate all on-street parking on the eastern side of 33rd.
- At Chestnut Street, continue the bike lane using dotted bike lane markings, plus colored pavement, to guide bicyclists to the left of the right turn lane.
- Move the #30 bus stop to other side of 33rd Street on the north side of Chestnut, and the #40 and #42 to the south side of Chestnut around the corner from 33rd Street.
- Reduce conflict between cars and bicyclists in front of the new Post Office short term car parking area by placing a two foot wide diagonal striped buffer zone to define a neutral zone between a 7' parking lane and 5' bike lane. This will help keep bicyclists out of the car door zone and encourage drivers to park closer to the curb. Also, use paint and flexible bollards to define the curb bump outs at either end of the parking lane.
- Reduce conflicts between bicyclists and cars at Chestnut and 23rd Streets by removing parking on the north side of Chestnut Street and creating two 10' through lanes, a 6' bike lane and a 10' right turn lane.

Philadelphia Parking Authority

- Install appropriate signage for designation of short term (15 minute) parking at the Post Office
- Remove on-street parking at east side of 33rd Street b/w Walnut and Chestnut Streets
- Remove on-street parking on the north side of Chestnut starting 100' before 23rd Street.

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[i] 2006 American Community Survey Table S0801 (Commuting Characteristics by Sex) for Philadelphia city (PA). U.S. Census Bureau.

[ii] National and other cities commuting mode share also from 2006 American Community Survey Table S0801 (Commuting Characteristic by Sex) for Portland city (OR), Washington city (DC), New York city (NY), and Chicago city (IL).

[iii] Figure was derived by multiplying 14,735,586 daily trips by the 0.9% bike mode share for the Delaware Valley region (2001. DVRPC. "Transportation for the 21st Century: Household Travel Survey: Travel Survey Results for the DVRPC Region" Prepared for DVRPC by NuStats Research and Consulting and Cambridge Systematics) to find 133,000 daily bike trips in the region, which was multiplied by the percentage of all bike trips that are for work (29%) to derive 38,570 daily bike trips for work. 38,570 /2=19,285 daily one-way bike trips in the region. 19,285 bike commute trips multiplied by the number of the region's bicycle commuters who are residents of Philadelphia (57%) = 10,992 bicycle commute trips take place daily in Philadelphia.

[4] DVRPC reported that in 2005, 23,300 trips were made by bicycles in Center City and surrounding neighborhoods out of approximately 400,000 daily trips. This report was made by W. Thomas Walker in a powerpoint presentation on DVRPC's 2005 Motorized and Non-Motorized Travel survey, presented to the Regional Transportation Committee in April 2008.

[5] "Transportation for the 21st Century: Household Travel Survey: Travel Survey Results for the DVRPC Region" Prepared for the DVRPC by NuStats Research and Consulting and Cambridge Systematics.

[6] DVRPC reported that the 133,000 daily trips are made by bicycle in the region (Delaware Valley Regional Planning Commission. 2007. Bicycling in the Delaware Valley in 2005, p. 1. According to the U.S. Census, 57% of the region bicycle commuters are residents of Philadelphia. 57% of 133,000 is approximately 75,000.

[vii] 2006. BCGP and Center City District. Bicycle Counts Report.

[viii] Estimate was derived by multiplying 75,000 bike trips by the average number of miles travelled by bicyclists, 3.47 miles, from DVRPC 2007 Bicycling in the Delaware Valley in 2005.

[ix] For every mile driven, one pound of carbon dioxide is emitted (see p. 22 of Rails to Trails. 2008. Active Transportation for America: The Case for Increased Federal Investment in Bicycling and Walking by Thomas Gotschi and Kevin Mills.) 260,000 miles daily = 94.9 million miles annually=94.9 million pounds of CO_2=47,450 tons of CO_2 prevented annually by Philadelphia bicyclists.

[x] If 2% of Philadelphia's trips are made by bike (see footnote 5) and Philadelphia's bicyclists travel 260,000 miles daily (see footnote 7), then 1% of Philadelphia's trips account for 130,000 miles, which is equivalent to 130,000 pounds of CO2, which is 47.45 million pounds=23,725 tons of CO_2 avoided annually.

[xi]Mayor's Press Announcement 11-10-08 "Mayor Michael Nutter Announces Reconstruction of South Street Bridge to Begin December 2008."

[xii] City of Philadelphia Streets Department website

[xiii] Calculated by the Bicycle Coalition of Greater Philadelphia: Cobbs Creek Trail, 3.9 miles; Pennypack Trail, 9.5 miles; MLK Drive Trail, 4 miles; Kelly Drive & Schuylkill River Park, 5.7 miles; Forbidden Drive-Wissahickon Bikeway, 5.9 miles; Schuylkill River Trail, 0.8 miles, Manayunk Canal Towpath, 2.3 miles.

[xiv] U.S. Census Bureau. 2000

[xv] The Bicycle Coalition's 2008 Bike Count found that bicyclists accounted for 7.5% of all traffic on the South Street Bridge. Given that 23,000 motorists use the South Street Bridge daily (Mayor Nutter's 11-10-08 Press release), this comes to 1725 bicycles per day.