Nicholas Willie

ENST-70

10/14/09

Revised Literature search

 My question of interest is currently: How can New York City most effectively facilitate an increase in bicycle use and thus increase the sustainability of its transportation? To address this question, I have reviewed New York City Department of Planning’s 1997 *Bicycle Master Plan*, the City’s most current and comprehensive document discussing bicycle use within city limits. Some of the priorities that this plan outlined were encouraging bicycle use through the implementation of a variety of social programs, increasing on-street bicycle lanes, building secure parking facilities for bicycles, and developing infrastructure (particularly passage on bridges) to allow easy movement for cyclists between the five boroughs. Further, the report detailed means of facilitating the use of bicycles in conjunction with mass transit systems, expanding its Greenway system, and educating the public, particularly children, about bicycle safety.

 I reviewed a variety of papers detailing cases studies, stated preference studies, and a collection of other types of papers that were informative of best current practices regarding the implementation of bicycle use from a planning point of view.

 A number of the papers I examined obtained data using stated preference methods to answer questions about what factors most heavily influenced the decisions of people to use bicycles for commuting or other purposes. Tilahun et al. (2007) find that users are willing to pay the highest price for designated bike-lanes, followed by absence of parking on the street and finally by taking a bike lane facility off road. Sener et al. (2009) as well found that bicyclists prefer routes with no parking, then routes with angled parking, and prefer rides with continuous biking facilities, lower traffic volume, lower vehicle speeds. Steg and Gifford (2005) found that people are most strongly opposed to changes that could increase the sustainability of transportation when they believe that these changes will result in a decrease in their quality of life.

The majority of the papers I reviewed consisted of case studies of specific areas intended to reveal the effectiveness of certain policies regarding bicycling infrastructure or the effects of certain environmental factors on bicycle use decisions. Moudon et al. (2005), Hunt and Abraham (2006), and Rietveld (2004) note that policy and intervention programs could increase levels of cycling by improving actual and perceived environmental conditions, particularly as they relate to cyclist safety. However, Krizek (2004) notes that while considerable research supports this finding, there is little conclusive evidence to suggest that those facilities commonly created to increase cyclist safety actually do so. Hanson and Young (2006) and Batterbury (2003) find that it can be quite effective for activists to pressure elected officials to select transportation managers that see sustainable transportation/bikeways as crucial to overall transportation systems. One more crucial finding is that people are typically more inclined to walk rather than use bus systems or cycle, so it may be beneficial to maintain and/or improve pedestrian infrastructures along with bicycling facilities (Sungyop (2008)). Finally multiple papers note that congestion charging and parking regulations can have significant impacts on automobile use on short trips, regardless of the presence of other infrastructures (Sungyop (2008), Krizek (2004)).

I reviewed an assortment of bicycle related journal articles, and found various items of note. Cherry et al. (2009) examined the environmental impacts of electric bicycles, which are quite prevalent in China, and could possibility entice people who would not otherwise use bicycling infrastructures to do so. It was found that electric bicycle use has more negative environmental effects than walking or bicycling, similar effects (in magnitude) to bus use, but effects several times lower than transportation by automobile or motorcycle. Rashad (2007) discussed the health related benefits of cycling, and presented estimated monetary benefits (due to reduced obesity levels) to various levels of increased cycling in the US, along with suggestions as to how such increases in cycling could be induced. Chang and Chen (2009) found that senior Taiwanese governmental officials believe that providing better public transportation services is more practicable than limiting private car use by increasing usage costs. An unknown fraction of US policymakers may share this sentiment; if they do, then to avoid angering the public, they would be inclined to implement options such as building friendlier walking and bicycling environments.

In a review of a ‘bike to work’ event in Australia, Rose and Marfurt (2007) found that 27% of those who rode to work for the first time in such an event were still riding to work five months after the event. As well, over 4/5ths of first time event goers found that the event had a positive influence on their readiness to ride to work. This suggests that such social initiatives may be quite effective in encouraging bicycle use. In a similar vein, Blickstein and Hanson (2001) found that ‘Critical Mass’ events, which are typically monthly rush hour mass bike rides through major cities such as New York City or San Francisco, encourage dialogue about the role of bicycle use in American cities at the events themselves and by spurring discussion on the internet. They found that such events have the ability to influence local, regional, and global problems as well as motivate changes in the behavior of city planners. As well, Rietveld and Daniel (2004) in a study of Dutch provinces found that the cultural traditions of different groups has an influence on their likelihood to use a bicycle as a means of transportation, which reinforces the notion that education could play an important role in increasing bicycle use.

Sener et al. (2009) note that commuter bicyclists can be attracted by reducing travel time, and that non-commuter bicyclists can be encouraged by providing routes along roadways with moderate hills. On a related note, Farrell (2009) notes in a recent NY Times article that some bicycle infrastructure designers would like to see ‘bike freeways’ constructed throughout certain areas of New York City, noting that they would encourage cycling for fitness by providing less interrupted passageways for cyclists, as well as for transportation, by reducing travel times. He also notes that another popular project idea is that of turning Broadway into a Greenway, and yet another is encouraging cycling to school for children, with the supervision of adult chaperones.

Bibliography

Batterbury S, **Environmental Activism and Social Networks: Campaigning for Bicycles and Alternative**

**Transport in West London.** *The Annals of the American Academy of Political and Social Science* 2003 590: 150-169

Blickstein S, Hanson S, Critical mass: forging a politics of sustainable mobility in the information age.

*Transportation* **28** (2001), pp. 347–362.

Chang H, Chen P, Exploring senior officials' policy beliefs regarding sustainable transportation,

*Transportation Research Part D: Transport and Environment*, Volume 14, Issue 4, June 2009, Pages 249-254.

Cherry C, Weinert J, Xinmiao Y, Comparative environmental impacts of electric bikes in China,

*Transportation Research Part D: Transport and Environment*, Volume 14, Issue 5, July 2009, Pages 281-290.

Farrell, S. "Concepts Run Wild at Dutch-American Bike Slam." *New York Times* 22 Sep. 2009, Print.

Hanson, R., Young, G., 2006, Active living and biking: Tracing the evolution of a biking system in

Arlington, Virginia. *Journal of Health Politics*, Policy & Law 33(3), 387-406.

Hunt, J.D., Abraham, J.E.: Influences on bicycle use. *Transportation* 34(4), 453–470 (2006)

Krizek, K., (2004) Estimating the Economic Benefits of Bicycling and Bicycle Facilities: An Interpretive

Review and Proposed Methods, *Transportation Research Board* *Annual Conference* , Washington, D.C.

Mohan D & Tiwari G (1999) Sustainable transport systems: Linkages between environmental issues,

public transport, non-motorized transport and safety. *Economic and Political Weekly* XXXIV(25): 1589–1596.

Moudon A, Lee C, Cheadle A, Collier C, Johnson D, Schmid T, Weather R, Cycling and the built

environment, a US perspective, *Transportation Research Part D: Transport and Environment*, Volume 10, Issue 3, May 2005, Pages 245-261.

Rashad I, Cycling: An Increasingly Untouched Source of Physical and Mental Health. *NBER Working*

*Paper Series*, Vol. w12929, pp. -, 2007.

Rietveld P, Daniel V, Determinants of bicycle use: do municipal policies matter?, *Transportation*

 *Research Part A: Policy and Practice*, Volume 38, Issue 7, August 2004, Pages 531-550.

Rose G, Marfurt H, Travel behaviour change impacts of a major ride to work day event, *Transportation*

*Research Part A: Policy and Practice*, Volume 41, Issue 4, May 2007, Pages 351-364.

Rose J, Lynn C. "The New York City Bicycle Master Plan, 1997 ." *New York City Department of*

 *Planning*. NYC Departments of City Planning and Transportation, Web. 11 Oct 2009. <http://www.nyc.gov/html/dcp/html/bike/mp.shtml>.

Sener, I.N., Eluru N, Bhat C, An Analysis of Bicycle Route Choice Preferences in Texas, U.S.,

 *Transportation*, Vol. 36, No. 5, pp. 511-539, 2009.

Steg L, Gifford R, Sustainable transportation and quality of life, *Journal of Transport Geography*,

Volume 13, Issue 1, March 2005, Pages 59-69.

Sungyop, K, Ulfarsson, G., 2008. Curbing automobile use for sustainable transportation: analysis of mode

choice on short home-based trips. *Transportation* 35(6), 723-737.

Tilahun N, Levinson D, Krizek K, Trails, lanes, or traffic: Valuing bicycle facilities with an adaptive

stated preference survey, *Transportation Research Part A: Policy and Practice*, Volume 41, Issue 4, May 2007, Pages 287-301.

Wilkinson B (1997) Nonmotorized transportation: The forgotten modes. *Annals of the American Academy*

*of Political Science* 553: 87–93.