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# **Bicycle Access to Public Libraries: a Survey of Pennsylvania Public Libraries and Their Accessibility to Patrons Arriving Via Bicycle**

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## **Introduction**

According to the National Household Transportation Survey (2001), 0.9% of all trips in the United States are made by bicycle (p. 135). While this percentage is small at this time, it should be noted that there is a strong federal commitment to increasing the rate at which this mode of travel is chosen.

In the Final Report of the National Biking and Walking Survey (1994), the U.S. Department of Transportation and the Federal Highway Administration set the objective of doubling the percentage of trips taken by bicycle by making the environment for that mode of travel safer and more appealing. Going hand-in-hand with that was the second goal of reducing bicycling accidents by 10% (p. 2).

The U.S. Department of Transportation (1994) felt that this modest goal was achievable due to the underutilization of cycling as a means of transportation (p. 15). The DoT argued that this goal was greatly to the advantage of the American population in terms of health (p. 15) and the environment (p. 18).

It is a simple fact that most public services can only be used if members of the public have the ability to transport themselves to them. Transportation to the provider is thus a significant element in providing service to the public.

In the case of libraries, the service offered is access to information. If users are not able to gain transportation to libraries, then a state of information poverty could be created or aggravated. It is thus important for libraries to recognize potentials for disenfranchisement and to minimize or eliminate them if it is possible.

In the case of bicycle transportation, these issues may extend beyond an apparently small percentage of the population due to certain groups which may be more strongly impacted

by the presence or absence of access and facilities. There are three particularly vulnerable groups which are affected by these issues: young adults, the poor, and immigrants.

Young adults and older children are a group disproportionately affected by changes in bicycling policy, access, and facilities. The National Household Transportation Survey (2001) has reported that 50.5% of all bicycle trips are made by individuals between six and fifteen (p. 233). This is not a demographically insignificant group; statistics from the U.S. Census Bureau's general demographics (2000) report that 11.2% of the Pennsylvania population is between the ages of ten and seventeen. Considering the general commitment to encouraging life long library use through service to young adults, it is only natural that libraries should consider improving access and facilities which would encourage more young adults to come to the libraries.

As a group, the economically poor are often observed as being a group particularly vulnerable to informational poverty. Families and individuals living below the poverty line may be especially affected by their inability to gain transportation to information resources. According to the U.S. Census Bureau's report on specific economic characteristics (2000), 11% of the population of Pennsylvania is below the poverty line. This figure encompasses 7.8% of all households.

The costs associated with purchasing and maintaining a motor vehicle may be prohibitive to those living below the poverty line. The U.S. Census Bureau housing characteristics (2000) reports that 12.8% of Pennsylvania households have no motor vehicles.

Bicycles are far less expensive to purchase and maintain, making them a more effective option for members of the population which have limited credit and who live from paycheck to paycheck. The National Household Transportation Survey (2001) reported that 43.9% of households have one or more full-sized bicycles (p. 89). This percentage is likely to increase if it becomes more viable to travel to useful locations via bicycle.

Immigrants from countries which traditionally have greater usage of bicycles for transportation may feel isolated by the lack of available facilities in the United States . Considered on a global scale, our limited usage of bicycles for transportation is the exception and not the rule.

Examples of high use of the bicycle as a travel mode in other countries were reported by Pulcher (1997) and include Italy and France at 5%, Germany and England at 8%, Sweden and Switzerland at 10%, Denmark at 20%, and the Netherlands at 30% (p. 32). As all of these countries are ' First World ' nations, it is not supportable to claim that high bicycle use is the result of the inability to afford automobiles. Instead, it can be argued that this represents a valid cultural difference which has been encouraged by the governments of their respective countries of origin.

Bicycling is sufficiently prominent in Europe as to cause the European Union to release a bicycle transportation planning guide. This guide, *Cycling: the way ahead for towns and cities* (1999), was released from the European Commission directly to town and city governments rather than through individual nations' federal systems (p. 5). The report's primary conclusions were that automotive congestion was a significant problem in European cities (p. 9) and that the bicycle was a viable alternative for many uses (p. 15).

The Commission's study (1999) found that 70% of polled Europeans felt that they would be likely to purchase a bicycle or use an existing bicycle more often if bicycling facilities were improved further in their communities (p. 23). This point was magnified when studies in Brussels and France on their decline of cycling found that "The essential reason is the absence (or disappearance) of facilities for cyclists, which prevents any potential demand from expressing itself..." (p. 23).

Research in the United States has also produced evidence that by making changes in access and facilities, the rate of bicycle travel can be increased. The National Biking and Walking Survey (1994) found that barriers to greater bicycling transit were largely formed of trip barriers, which are impediments to the safety of a trip (p. 24) and destination barriers, a lack of supporting infrastructure at potential destinations (p. 25).

The 1991 Harris poll, reported by the National Biking and Walking Survey (1994), found that the general population was highly supportive of the idea of increasing their bicycling if facilities were improved. It was found that 46% of the population would be willing to increase bicycle usage if safe bike lanes were available; 53% said they would increase their bicycling if separate paths were available; and 45% of the population said they would increase their bicycle usage if improved facilities were available at their destination (p. 30).

While the material on bicycle access and facilities planning is quite fertile, there appears to be a complete lack of professional literature on the subject directly applied to libraries. To the best of our knowledge, this is the first application of bicycle transportation theory and literature focusing on library facilities. A search of EBSCO Academic Search Premier, Emerald Library Suite, LibLit, and LISA for the term bicycle AND access, facility, facilities, parking, path, or rack turns up no relevant results. These searches run with the term bicycle replaced with the more European term "cycle" also fail to generate results.

This lack of information is surprising considering the general level of support for bicycling which libraries tend to display. Some libraries are even lending bicycles at present (Mazullo, 2005).

In light of the lack of information on this issue, the results of this study will highlight the state of access to library facilities in the state of Pennsylvania . In doing so, it may also point the way to methods of overcoming challenges to bike access in the state. This may also establish a simple methodology whereby the bicycle access services provided by libraries (or other public facilities) in other states, regions, or municipalities may be examined.

## **Method**

This survey consisted of nine questions designed to determine the road accessibility of libraries via bicycle, the presence and capacity of bicycle parking facilities at or near said institutions, and the type of community in which the library is located (urban, suburban, or rural). Participants were asked to provide a short answer to each question as appropriate (see Appendix).

The sample population consisted of slightly over half of the public libraries from each county in Pennsylvania . This list was generated using information from the National Center for Educational Statistics. The actual sample was created by taking the list of public libraries in each county and eliminating every other library. In cases where an odd number of libraries were present in the county, a randomly determined library which would normally have been eliminated was retained to keep the sample at a minimum of 50% in each county.

In cases where a library could not be contacted for the survey, the non-respondent was eliminated and a previously ignored library in its county was used as its replacement in the sample. The replacement was then contacted.

Libraries were contacted via electronic mail or telephone depending on the available resources and accessibility of the library in question. Regardless of the contact method used, the same questions were administered. In e-mail communications, the survey (see appendix) was

used as the body of the messages; when circumstances required telephone communications, the same questions were presented verbally.

The total sample consisted of 225 libraries in the 66 Counties in Pennsylvania . This represents 50% of the total 450 libraries in the state as reported by the National Center for Education Statistics (2005). Of the 225 libraries surveyed, a total of 196 responded. This was an 87% response rate.

## Results

Taken as a whole, the results revealed a poor level of bicycle accessibility among Pennsylvania libraries. This view is derived from examining the two major factors in bicycles access to a destination; these being road access and parking facilities.

Road access, or trip barriers, are those features which help or hinder a bicyclist in getting to their destination. These road access features are composed of local speed limits and the presence or absence of bicycle road facilities such as on-road bicycle paths, paved shoulders, and off-road bicycle trails.

Parking facilities, or destination barriers, are the features which allow or prevent a bicyclist from safely and securely parking their bicycle at their destination. These facilities or accommodations include bicycle racks at the destination, bicycle racks near to the destination, and the visibility of parking facilities from the destination.

As seen on Table 1, speed limits outside of libraries varied considerably from ten miles an hour up to fifty-five. However, the speed limits did tend to cluster around the dominant municipal speed limits of twenty-five (50%) and thirty-five (28%) miles per hour. Interestingly, a small percentage of libraries (6%) could not identify the speed limit in front of their institutions.

<b>Speed Limit</b>	<b># of Libraries</b>
10 mph	1
15 mph	15
20 mph	2
25 mph	99
30 mph	1
35 mph	55
40 mph	4
45 mph	4
50 mph	0
55 mph	2
unknown	13

*Table 1: Speed limits outside of libraries.*

*Reported speed limits in front of 196 Pennsylvania public libraries.*

Table 2 displays information on the presence or absence of bike paths or paved shoulders on roads outside libraries. These facilities were found to be very rare with only 13% of libraries possessing this feature on their access road. Sidewalks were not considered in this total, as Pennsylvania law forbids the riding of bicycles on pedestrian sidewalks.

<b>Path/Shoulder</b>	<b># of Libraries</b>
Yes	26
No	169
Unknown	1

*Table 2: Presence of bike paths or paved shoulders.*

*The state of bicycle access facilities on the roads in front of 196 Pennsylvania public libraries.*

Table 3 lists the presence and/or absence of off-road bicycle trails which are closed to motorized vehicles. This feature was nearly unknown among surveyed libraries, with 5.6% reporting their presence.

<b>Bicycle Trails</b>	<b># of Libraries</b>
Yes	11
No	184
Unknown	1

*Table 3: Off-road bicycle trails closed to motor vehicles.*

*The presence or absence of bicycle trails within the near vicinity of 196 Pennsylvania public libraries.*

Bicycle racks on library property are the primary mode of parking for library patrons who travel by bicycle (see Table 4). In this case slightly more libraries (50%) had their own bicycle racks than lacked bicycle racks (49%).

<b>On-Site Bicycle Racks</b>	<b># of Libraries</b>
Yes	99
No	97
Unknown	0

*Table 4: Bicycle racks on library property.*

*Status of basic secure bicycle parking facilities on the properties of 196 Pennsylvania public libraries.*

Off-site bicycle racks provide parking for those libraries which lack them as well as providing alternate and overflow parking for bicycles. As shown in Table 5, only a small percentage (14%) of libraries have nearby bicycle racks which are not on library property. As there were a number of libraries which were unsure of this fact (7%), the percentage could conceivably be larger, but not by a great amount.

<b>Nearby Bicycle Racks</b>	<b># of Libraries</b>
Yes	27
No	155
Unknown	14

*Table 5: Bicycle racks within a block of libraries.*

*Alternate secure bicycle parking facilities in the near vicinity of 196 Pennsylvania public libraries.*

In cases where a bicycle rack is present on library property, feelings of security can be increased by making it visible from the inside of the library. As shown in Table 6, a majority (61%) of libraries with bicycle racks have them situated so that they are visible from the inside of the library in question.

<b>Bicycle Rack Visibility</b>	<b># of Libraries</b>
Yes	61
No	38
Unknown	1

*Table 6: Visibility of library bike racks from inside libraries.*

*Lines of sight from inside 99 Pennsylvania public libraries to basic secure bicycle parking facilities on library property.*

Road access (Table 7) is a combination of a group of factors based on the perceived safety and comfort present on the road leading to a destination. In the case of this study, the factors are considered to be a speed limit (Table 1) of thirty miles-per-hour or below, the presence of a bicycle path/paved shoulder (Table 2), and/or the presence of an off-road bicycle trail (Table 3). Libraries possessing none of these features are rated as poor, as access is limited. The presence of one of these features is rated as adequate; bicycle riders can reach the location in safety and comfort. The presence of two or more features earns a library an excellent rating as in those cases multiple routes exist for bicyclists to safely and comfortably enter an area.

Thanks to the generally low speed limits in library areas, a majority (58%) of surveyed libraries possess adequate road access. However, few (10%) libraries presented excellent access to bicycle commuters. Less than a third (27%) of surveyed libraries had poor access due to a combination of high speed limits and a lack of any bicycle specific access facilities. A small

number of libraries (6%) could not be rated for their road accessibility due to the lack of full information.

<b>Road Access</b>	<b># of Libraries</b>
Poor	52
Adequate	113
Excellent	19
Unknown	12

*Table 7: Road access to libraries via bicycle.*

*Levels of basic road accessibility to 196 public libraries in Pennsylvania .*

Parking facilities (Table 8) are as relevant for bicycle commuters as they are for motorists. A safe place to park a bicycle can easily make the difference between making a trip and or not. As with the case of road access, parking facility quality is the combination of three factors, the presence of a bicycle rack on library property (Table 4), the presence of alternate bicycle racks within a block of the library (Table 5), and the visibility of library bicycle parking from within the library (Table 6). The lack of all of these qualities rates as poor, while one of these qualities is sufficient to provide adequate service. The presence of two or more of these qualities earns an excellent rating.

The largest number of surveyed Pennsylvania libraries (42%) received a poor rating as they lacked any facilities. Almost a quarter of libraries (24%) had adequate facilities. Interestingly, more libraries (34%) possessed excellent facilities than possessed merely adequate facilities.

<b>Parking Facilities</b>	<b># of Libraries</b>
Poor	82
Adequate	48
Excellent	66
Unknown	0

*Table 8: Parking facilities for bicycles.*

*The overall quality of bicycle parking facilities at 196 Pennsylvania public libraries.*

Overall accessibility (Table 9) is the result of comparing a library's road access rating and its parking facilities rating and applying the lower of the two. This is done because the lack of either of these forms of access makes a library less accessible for bicycle commuters.

As a result of this formula, the majority (54%) of libraries received a poor rating. Just over a third (34%) of surveyed libraries presented adequate access. With the addition of those providing excellent access (6%), it can be reported that only 40% of surveyed libraries in

Pennsylvania possess reasonable (at least adequate) bicycle access. A small number (6%) still could not be rated due to the lack of road access information about their facilities.

<b>Overall Accessibility</b>	<b># of Libraries</b>
Poor	106
Adequate	67
Excellent	11
Unknown	12

*Table 9: Overall access of libraries to bicycle travel.*

*The general state of bicycle access to 196 Pennsylvania public libraries; rated as the lesser of road access and parking facilities available at each individual library.*

Overall access can be further broken down by community type as identified by the surveyed libraries; Table 10 displays these differences. Both rural and urban libraries present a majority of poor access levels (66% and 51% respectively) while only suburban communities have a bare majority of adequate and excellent access (51% combined). This is not necessarily telling as the suburban communities have the highest level of unknown access levels.

<b>Community Type</b>	<b>Overall Access</b>	<b>Percentage</b>
Rural	Poor	66%
	Adequate	26%
	Excellent	4%
	Unknown	4%
Suburban	Poor	39%
	Adequate	45%
	Excellent	6%
	Unknown	10%
Urban	Poor	51%
	Adequate	35%
	Excellent	9%
	Unknown	5%

*Table 10: Overall bicycle access divided by community type.*

*Bicycle access to 196 Pennsylvania public libraries; rated as the lesser of road access and parking facilities available at each individual library and divided further by the community type each library is located in as defined by survey respondents.*

## **Discussion:**

The purpose of this study was to determine and highlight the state of public library bicycle accessibility in the state of Pennsylvania . This study has found that a majority of libraries possess poor overall bicycle accessibility.

This was an interesting conclusion as the individual features of bicycle access would indicate that in each individual category a small majority of libraries possessed at least adequate bicycle access. The overall access levels are then driven down by the combination of factors. Thus, many libraries with sufficient road access lack the facilities for bicycle parking and vice versa.

The cumulative effects of road access and parking facilities need to be considered. As indicated in the National Bicycling and Walking Study (1994), impediments to bicycling result both from trip barriers (p. 24) and destination barriers (p. 25). This point was bolstered by the Harris Poll's findings (NBWS, 1994) that bicycling choice would rise if both of these features were improved.

When examining the parking facilities and road access results it is clear that parking access (a 42% poor rating) is a greater difficulty for bicycle access in Pennsylvania than is road access (a 27% poor rating). In terms of increasing bicycle access, this is actually a positive fact.

Changing road access requires alterations at a municipal level by changing speed limits or adding features to roads. These are often difficult matters due to ongoing costs and local politics. Adding parking facilities however is comparatively easy for libraries to do.

A bicycle parking facility is simply a bicycle rack which represents the commitment of a small amount of space on library property, a small capital outlay, and a negligible ongoing cost. Excellent bicycling facilities could be achieved by simply placing a bicycle rack on library property in a visible position (which discourages theft).

Universal installation of bicycle racks on library property would raise overall access from 40% adequate or better facilities to a rating of 68% adequate or better. This would represent a significant improvement in bicycle accessibility within the state at a minimal cost.

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## Appendix

Bicycle access to Pennsylvania libraries questionnaire:

- What is the speed limit on the street which the library is located on?
- Is there a bike path or paved shoulder with no parking on the library's street?
- Is there an off-road trail or path closed to motor vehicles leading to the library's vicinity?
- Are there bike racks or other bicycle parking on library property?
- In your estimation, approximately how many bicycles can be parked at the library?
- Are there bike racks or other bicycle parking within a block of the library?

- In your estimation, approximately how many bicycles can be parked near the library?
- If present, is bicycle parking visible from inside the library?
- Would you identify the local community as urban, suburban, or rural?