



Carnegie Library of Pittsburgh

Assessing System Options and Opportunities

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This report's conclusions and opinions are the CED's alone. This report does not represent the conclusions, views, or official positions of Carnegie Mellon University or any of its corporate officers.

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About the CED

The Heinz College at Carnegie Mellon University exists to improve the ability of public, non-profit and private organizations to address the most difficult challenges facing society. Established in 1968, Heinz takes a broad interdisciplinary approach that combines systems analysis, quantitative analysis, and information technology to address policy questions.

The Center for Economic Development at the College exists to help local institutions address challenges in the Pittsburgh region. Since its inception under the College in 1987, the Center has followed the Heinz approach to help the region confront problems and opportunities in economic, workforce, community, and neighborhood development.

Through objective research and technical tools, the Center helps clients manage change through policy, strategy, and programming. Our toolkit includes economic, demographic, geographic, and institutional data analysis, economic and statistical modeling, survey design and analysis, performance measurement, and program design and evaluation.

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Overview

In order to assist in prioritizing the next phase of capital improvements to its branch libraries, and as a first step towards its goal of rightsizing its system of facilities, Carnegie Library of Pittsburgh (CLP) asked the CED to help it identify and evaluate a number of potential relocations, closures, and mergers involving selected local library branches.

The time is right for this report. Much has changed since Andrew Carnegie gifted (but did not endow) Pittsburgh a central library and its first seven neighborhood branches. Most of the 19 facilities in the system today were built over 20 years ago, including six built near the turn of the century. Meanwhile since the fifties Pittsburgh's population has declined by half, and continues to do so at different rates across city neighborhoods.

For this study, the CED conducted a comprehensive review of data on the characteristics, operations, and usage patterns for each local branch in the CLP system. Local "geographic market areas" were also defined for each branch comprised of the areas of the city where residents were most likely to use each branch, and most likely to be impacted by a change. Based on the results of this preliminary research, CLP and the CED agreed to evaluate a limited set of location options for nine branches. Scenarios were selected based on market composition (including mission priority demographic groups), branch use and cost effectiveness, and management input.

These options were evaluated primarily according to their impact on the *access* of local residents. Ensuring access is a traditional goal for providing library services in the United States and is a less aggressive objective than maximizing use per capita or cost effectiveness, both of which if pursued single-mindedly can result in very inequitable distributions of access to library services, particularly for those in need. Our approach is described on page 44. A synopsis of the results can be found in Tables 3-5 in this report, starting on page 27. The results suggest that even an incremental reconfiguration of the branch system will involve both opportunity and risk.

The CED did not make any recommendations for specific branch actions in this report. Instead we provide information on the tradeoffs involved. For example, for closures, populations within the "most impacted" areas of the market are described, along with the access they would have left (by foot, transit, or auto) to alternative service points without the branch. CLP will need to make decisions that consider the numbers and needs of the people most impacted and their access to library services.

This report also includes a comparison of the CLP system to other systems based on people (legal service area population) per facility. We found that across a number of comparison groups of other systems, CLP had a relatively low number of people per library, or to put it another way, a high number of libraries per capita. This pattern persisted when the comparison was made on a "consolidated city-county" basis, that is, when compared to other counties, Allegheny County also has high number of library branches per capita.

However, we do not feel that these simple comparisons can be viewed as proof that CLP or Allegheny County has "too many libraries." There are many reasons a higher branch per capita could be

defensible, including, but not limited to, our region's unique topography. Instead, they should be viewed as an "indicator light" warranting further investigation.

This report represents an important first step in that direction. A second useful step, as recommended by RAND in a recent report, would be for CLP to engage in a needs assessment of the communities it serves, and determine the ideal mix of services for each. Needed services could then be prioritized according to organizational goals and available resources, and classified according to whether a CLP operated facility would be needed to provide them or not. The results, together with the findings in this report, would help CLP move much closer to a "final answer" to the rightsizing question.

A legacy of changing lives

Industrialist Andrew Carnegie built over 2,500 libraries across the globe, including nearly 1,700 in the United States. By the time the last branch opened in Philadelphia in 1930, eleven years after his death, nearly half of the libraries in the nation had been built through his generosity. Southwestern Pennsylvania was an early epicenter of this “Big Bang” of literacy. Pittsburgh received one of Carnegie’s first grants, which funded a central library, a museum, and a system of seven neighborhood branches. Today, Carnegie Library of Pittsburgh includes a main library, seventeen branches, and the Library for the Blind and Physically Handicapped.

Appraising the entirety of this system’s impact on the social and economic welfare of local residents since its conception is an impossible task. Suffice to say CLP has touched the lives of millions upon millions of people who have lived and worked in Allegheny County in countless ways. More specifically, libraries foster literacy and lifelong learning. They provide materials and programs that enrich lives and expand horizons. Library personnel help people solve problems through information and services. Job seekers use library computers and business equipment to find work, and throughout the 20th century, libraries have helped millions of new Americans to navigate, appreciate, and assimilate into our society. Libraries are safe, open, trusted spaces for communities to gather, connect, organize, and grow stronger. Libraries also mean jobs and economic benefits. In a recent economic impact study the CED estimated that CLP operations, visitor spending and services supported over 700 jobs and \$132 million in business output and other economic benefits in Allegheny County in 2004. The study also found that more than half of the City’s residents and nearly one out of every five Allegheny County residents have a CLP library card.

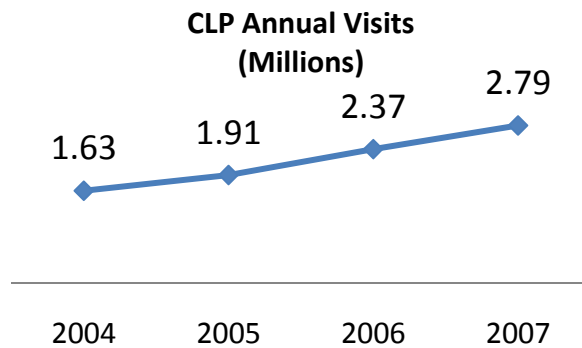


Figure 1. CLP Annual Visits (2004-2007)

Library services are still in great demand in Pittsburgh today. In 2004 CLP saw 1.6 million visitors, making it the region’s most visited asset. These results were achieved despite several temporary closures due to renovations, and the lingering effects of severe cuts in service hours forced by a drop in state funding in 2003. Yet since 2004 visits have steadily climbed, and it can be assumed that visit driven community and economic impacts have grown as well. After service hours were increased (but not fully restored) in 2007, CLP drew almost 2.8 million visitors, even with one branch down the entire year.

Assessing a legacy system

Given CLP's success, it is fair to ask why an examination of its current locations is necessary. The reasons have to do with a legacy system, population decline, Pittsburgh's unique topography, mission priorities, and unstable funding streams.

Since 2001, when its capital campaign began, the CLP has renovated or relocated seven neighborhood libraries and completed a partial renovation of the first floor of the Main Library. Two additional projects are underway. These capital projects followed CLP's "21st Century Library" design principles to make facilities more inviting from the outside, and easier to use and operate on the inside. These improvements share in the credit for the recent surge in library use, as a recent survey of CLP users suggests that upgrades made a positive difference in how often patrons use the system.¹ Given its success so far, one might ask why CLP should not simply upgrade or rebuild the remaining facilities in place.

Virtually every branch's location in the system was established over thirty-five years ago, with more than half dating to the turn of the 19th Century, although some of the original buildings in these locations have since been replaced. The placement of these branches, along with other libraries near city limits, together with Pittsburgh's unique topography, have combined to divide the city into separate geographic market areas for each local branch. But these markets are not equal in population, and are changing at different rates. While Pittsburgh's population fell by 50% between 1950 and 2000, decline has not occurred evenly across city neighborhoods, and these differences contribute to large variations in use and cost effectiveness from branch to branch today. While large branches serving large markets have led the charge in increasing visits to the system, some branches are serving small and diminishing catchments of customers. As smaller markets shrink, since funds available for operating branches are limited, it seems prudent for CLP to reassess the best use of available resources.

At the same time against a backdrop of economic decline and shrinking government revenue, library systems across the country are under mounting pressure to articulate and increase the benefits they provide in exchange for local and state tax dollars. But articulating the benefits of library services is easier than increasing them. Increasing impact with flat funding requires difficult choices about customers, services, and system design.² For example, CLP has long identified serving children and families as a key priority.³ Yet while not every library service for young patrons requires a physical branch, the number youth reached will depend in part on library location, and not every Pittsburgh neighborhood has the same number of children, or the same number of children in need.

Finally, as noted recently by RAND, the recent destabilization of state and local funding streams may require CLP to right-size the system; both to ensure long term sustainability of operations and to remain responsive and relevant to the communities it serves.⁴

Given a weakening economy, changing markets, and unstable funding streams, it makes sense for CLP to assess the best uses of capital and operating funds to ensure a stable and vibrant library system.

CLP's branch system and its markets

All 17 branches of CLP, the Library for the Blind and Physically Handicapped and the Main Library are located within the city. CLP serves the City of Pittsburgh as well as many municipalities in Allegheny County that currently do not have libraries of their own. Because CLP is designated as the "County" library, all municipalities not within another library's legal service area default to CLP's legal service area (LSA). CLP's LSA contained an estimated 458,597 people in 2007, including 311,218 Pittsburgh residents. CLP also serves all 1.2 million County residents in a number of ways. Residents living outside the city but within the CLP's LSA can access CLP library services, in addition to unique CLP Internet services. Also, the Main and Downtown and Business Libraries, both of which are located in major job centers, draw users from across the County. Finally, CLP also serves all County residents indirectly through its Commonwealth designated role as a District Library Center for Allegheny County; providing special services, materials, resources, and leadership to all the County's public libraries

Specialized facilities vs. "local" branches

The Main Library in Oakland and the Downtown and Business Library in the Golden Triangle do double duty as neighborhood (or "local") branches and as special purpose facilities. Each serves as the dominant branch for nearby neighborhoods. But each also draws hundreds of thousands of visitors from across the City and County. This is due in part to what these facilities have to offer. Both provide unique information resources, programs, and services that patrons are willing to travel for. Another very important reason is that both branches are located within the two largest job centers in Pittsburgh, allowing them access to an extra market of thousands of commuters who live outside their local markets, but come there to work. Collectively the Downtown and Oakland areas contain an estimated 50% of the jobs in Pittsburgh, which in turn contains nearly 40% of jobs in Allegheny County.⁵

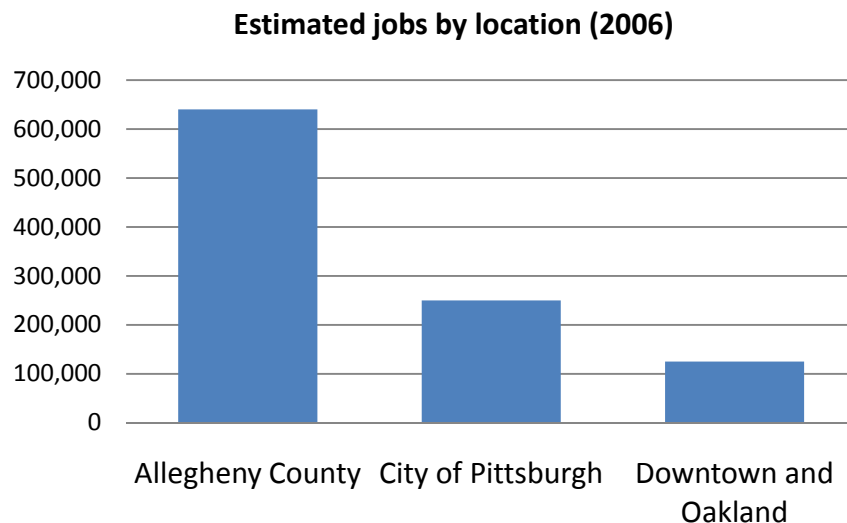


Figure 2. Jobs by County, City, and Downtown/Oakland (2006)

The Library for the Blind and Physically Handicapped is located in Oakland, but serves patrons with special needs in 36 counties in central and western Pennsylvania, and therefore was not examined for this report. This leaves 16 other local branches, which together with Main and Downtown provide local library service to our neighborhoods. More information on these facilities can be found on page 49.

Physical barriers, the location of other libraries, and community factors influence how patrons use the local branch system

Using two years of anonymized data from circulation transactions, computer sessions, and library card registration, together with spatial data on physical barriers, streets and population demographics from the 2000 Census, the CED identified geographic “market areas” based on branch market share, and comprised of aggregated census block groups. The results are shown below in Map 1.

Legend

- ★ CLP System
- Other libraries

Market Area

Branch

- Allegheeny
- Beechview
- Brookline
- Carrick
- Downtown
- East Liberty
- Hazelwood
- Hill District
- Homewood
- Knoxville
- Lawrenceville
- Main
- Mt. Washington
- Sheraden
- South Side
- Squirrel Hill
- Unassigned
- West End
- Woods Run



Map 1. CLP Branch Market Areas

These “market areas” are intended to illustrate how patrons actually use the system, and are not to be confused with formally established system “service areas”, which serve important but separate functions such as branch management and administration.⁶ Instead, these areas show which local branch city residents are most likely to patronize.

What accounts for these patterns? This being Pittsburgh, local markets are defined in part by natural and man-made physical obstacles such as rivers, road (and busway) barriers, hilltops and ridges, and open spaces. Examples of local markets sharply defined by such barriers include Mount Washington, the West End, and Hazelwood.



Map 2. CLP Branches, Elevation and Selected Physical Barriers (Roads, Rivers, Cemeteries, and Greenways)

Since all CLP branches are in Pittsburgh, and since we assume that in the near future, any reconfiguration of the system will occur within the city, our market areas stop at the city border. As it happens, most CLP branches near the border have markets which are constrained anyway by physical barriers like rivers or by the markets of non-CLP libraries across the city line, or both.

The influence of non-CLP libraries can also reach across city lines and impact CLP markets. For example, based on our analysis, one of three areas in the city without a clearly dominant local branch is Banksville, a neighborhood west of Beechview. Like the other two areas in Map 1 “unassigned” to a branch, Banksville has a smaller (2000) population than any “assigned” market, and is relatively physically isolated from the CLP system. But the main reason Banksville is not clearly dependent on one particular branch is that its residents are arguably served by four libraries, including CLP’s Beechview and Brookline, but also the non-CLP Greentree and Dormont libraries.

All this is not to say that, apart from these “unassigned” areas, users never patronize CLP branches from markets outside the one in which they live. They do, due to work commutes, personal preferences and other reasons. The degree of resident loyalty varies from market to market, again because of physical

barriers, the proximity of more attractive branches, and other factors . Interestingly, data shows that for most areas of the city, the “second most frequented CLP branch” is not the next nearest one, but the Main or Downtown library. This suggests that in the presence of physical barriers and other factors, and perhaps the attitudes and habits they have fostered in Pittsburgh over time, residents that lose their local branch may not necessarily patronize the next closest service point.

Finally, markets are not defined by the location of other branches and physical barriers alone. On a case by case basis, other factors such as access to personal and public transit, community identity, and perceptions (fair or not) of community safety also may play a role. Indeed CLP markets are unique in both physical shape and character; and one very important way they differ is population size.

Pittsburgh's population decline has not unfolded evenly across CLP markets

According to the U.S. Census, both the City of Pittsburgh and Allegheny County lost population from 1990 to 2000, and estimates indicate they continued to do so through 2007. Available population projections through 2030 suggest either very slow growth, no growth, or slow decline for the county, and continued decline for the city.⁷ As shown in Map 3, local branch markets experienced different rates of population change from 1990 to 2000, and entered the new millennium with a wide range of population sizes.

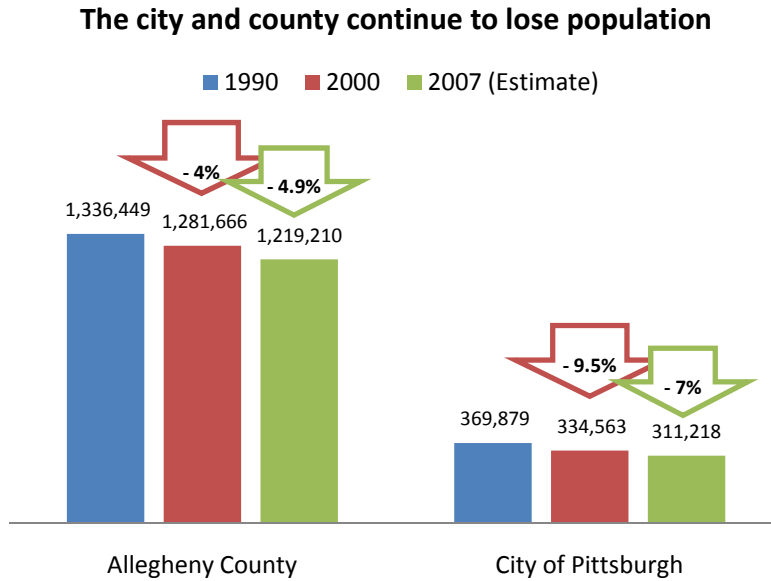
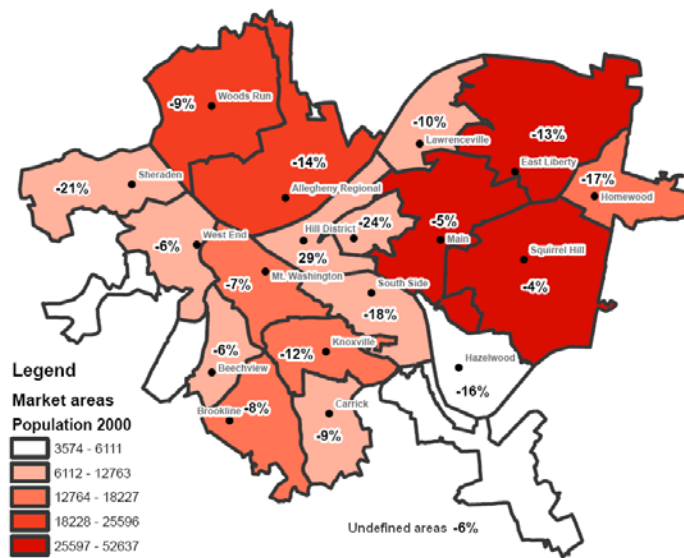


Figure 3. City and County Population Decline (2000-2007)



Map 3. Branch Market Area by 2000 Population and 1990-2000 Population Change

Market population trends are impacting branch use and cost effectiveness

Branch library use is a function of many things, including facility and site characteristics, and the size and demographic composition of markets served (a good overview of the research on these factors is available from Koontz)⁸. But for a local branch to be used, it is usually necessary, if not sufficient, for people to live near it. Keeping in mind that CLP libraries are not equal in terms of service hours, resources, and other factors, it should not be surprising that facilities serving more populated markets are generally outpacing branches with smaller markets, not only in usage, but also in cost effectiveness.

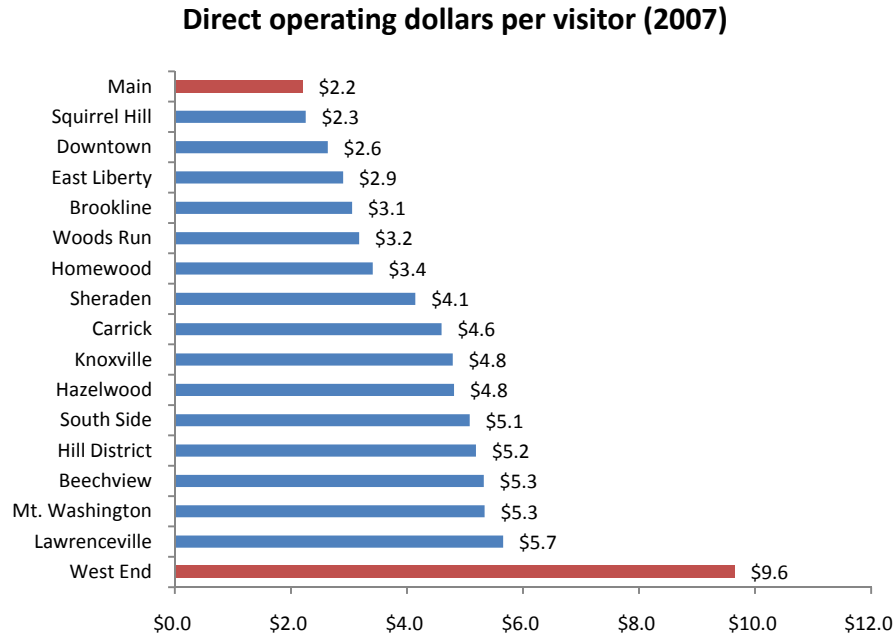


Figure 4. Cost Effectiveness by Branch (2007)

One way to compare branches by cost effectiveness is by direct operating cost per visitor.⁹ By this measure, despite being the cheapest facility to operate in 2007, the West End branch was also the least cost effective, costing nearly \$10 per visitor. While the Main Library incurred many times the direct operating cost as the West End, it also had 31 times as many visits in 2007, and its direct operating cost per visitor was the lowest in the system.

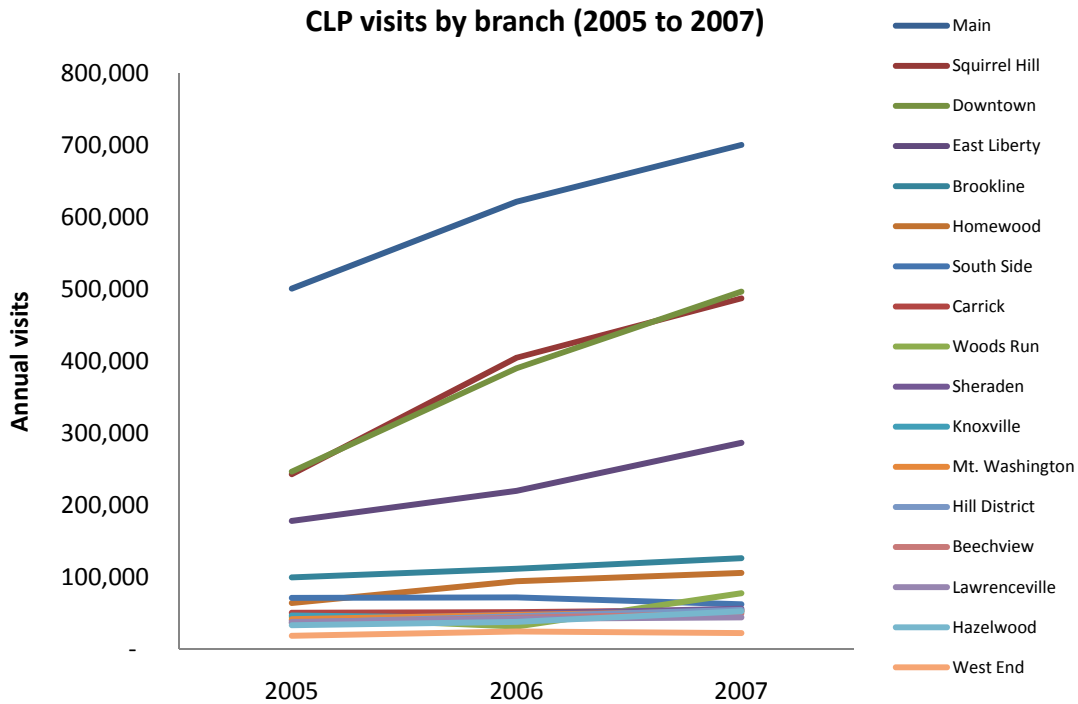


Figure 5. Annual Visits by Branch (2005-2007)

Market population trends are also affecting the number of people with access to library services

While cost effectiveness is a virtue, one should not expect every branch to be equally efficient. While increasing use is a worthy goal, ensuring *access* to library services, even to communities that may use them less frequently, has been the more traditional one for library systems in the United States. In the name of access, it may be acceptable to keep a branch in an area where use per capita is low to ensure the population has the option of using library services, especially if that population is in need. Sacrificing higher levels of use or efficiency this way in the name of access is just one compromise among many competing goals that library systems must make.

However, providing access to a large city involves its own tradeoffs. CLP’s operating budget is limited, and it cannot, for example, maintain a location in every one of Pittsburgh’s “ninety neighborhoods”. Moreover, the differential impact of population decline in the City raises the question of whether the current configuration of branches is providing as much access as it could. Retaining a branch in a physically isolated market makes sense only as long as there are enough people there to justify its presence. As the pool of customers in a branch catchment area diminishes, the tradeoff involved with retaining access for a few at the expense of extending it to a larger audience elsewhere (via a new facility or increased service hours) may eventually become unacceptable.

Assessing Location Options

Due to these issues, rather than move immediately to upgrade existing facilities in place, CLP asked the CED to investigate the likely impact of several alternative location scenarios including move, merger, and closure options.

How scenarios were selected

Scenarios and options were selected for evaluation based on a combination of factors, including market size and composition, trends in use, cost effectiveness, and CLP management team input and mission priorities. For example, three examined demographic groups closely related to mission goals included families with children, children and teens, and children in poverty. Understandably, the emphasis was on locations that have yet to be upgraded.

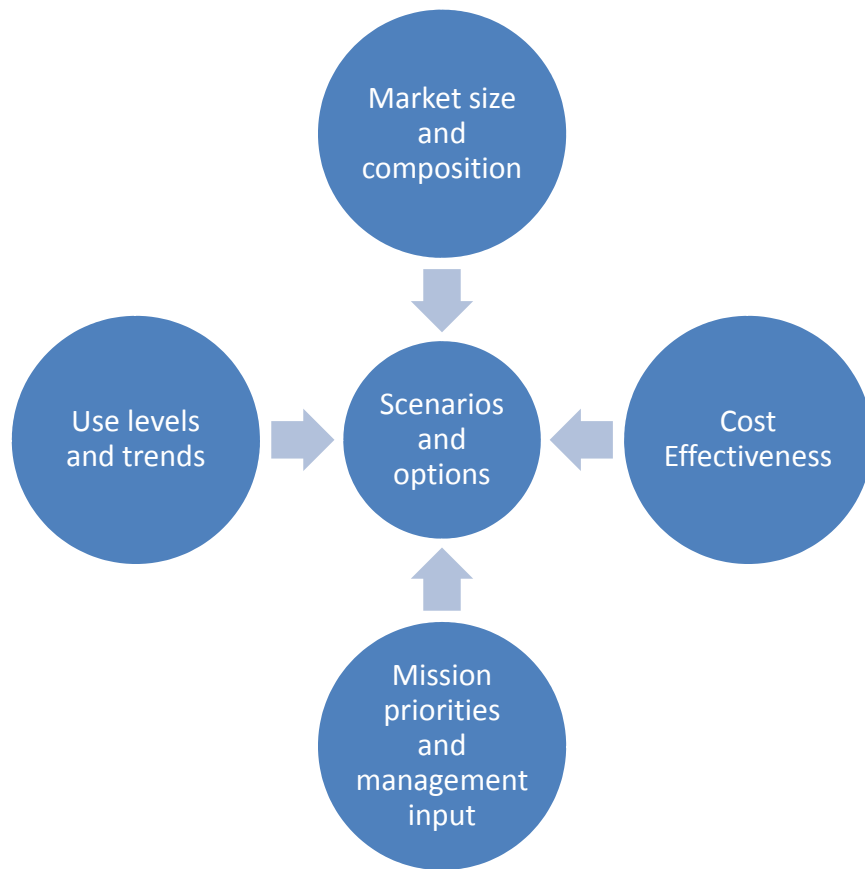


Figure 6. Scenario Selection Factors

Scenarios investigated for this report

CLP asked the CED to investigate the likely impact of nine options for seven locations, including selected moves, mergers, and closures. The nine options, along with the study questions investigated for each scenario are shown in Table 1 on the next page. Key market characteristics for selected branches are shown on the page following. Additional details for all local branches can be found in Table 8 in the Appendices.

Table 1. Key Study Questions

Locations/Markets	Options	Study Questions
West End and Sheraden	Close West End	If the West End branch were closed, would residents in the market area have reasonable access to Sheraden or another branch?
	Merger	Would a merger of the two branches better serve the market area than closing West End alone?
Mt. Washington	Local move	What are the options for relocating the branch to a more central and accessible location?
		Would it be possible to relocate this branch to serve patrons impacted by a Carrick/Knoxville merger scenario?
Carrick and Knoxville	Merger	How would combining the two branches impact access to the system in their market areas? What locations should be considered if a new facility were built?
Southside	Closure	If this branch were closed, would residents in the market area have reasonable access to a nearby branch?
	Local move	What are the options for relocating the branch to a more accessible location? Could it capture demand from adjacent areas such as Arlington or Knoxville?
Lawrenceville	Local move	Could a relocation of the branch better serve residents of the neighborhood and communities on the opposite side of the river currently lacking library service?
Hazelwood	Closure	If this branch were closed, would residents in the market area have reasonable access to a nearby branch?
		In the wake of a closure, would existing community-based organizations be positioned to deliver key services to residents in partnership with CLP?
Beechview	Closure	If this branch were closed, would residents in the market area have reasonable access to a nearby branch?

Table 2. Study Market Areas

Market Area	Hazelwood	West End	Beechview	Lawrenceville	South Side	Sheraden	Carrick	Mt. Washington	Knoxville
Population (2000)	6,208	8,200	8,772	10,272	10,525	10,554	12,897	14,057	18,366
Rate of population change (1990-2000)	-16%	-6%	-6%	-10%	-18%	-21%	-9%	-7%	-12%
Pop. per million square feet	108	136	212	208	190	137	230	230	300
Number of children aged 9 or less	843	1,137	982	987	654	1,548	1,390	1,165	3,010
Households	2,555	3,385	3,776	4,963	5,291	4,226	5,625	6,725	7,095
Households with families with children (<18)	654	1,012	888	936	711	1,259	1,360	1,144	2,315
Est. % of households with families and children	26%	30%	24%	19%	13%	30%	24%	17%	33%
Households in poverty	676	526	378	1,147	959	808	634	1,014	1,666
Est. household poverty rate	26%	16%	10%	23%	18%	19%	11%	17%	23%
Est. occupied housing units without a vehicle	876	696	797	1,926	1,735	978	1,102	1,401	2,470
Est. % of occupied housing units without a vehicle	34%	21%	21%	39%	33%	23%	20%	21%	35%
Direct op. dollars per visitor (2007)	\$4.80	\$9.6	\$5.30	\$5.70	\$5.10	\$4.10	\$4.60	\$5.30	\$4.80

Notes: All figures except population change and dollars per visitor are based or derived from long form estimates from the 2000 Census aggregated by market area from the census block group level. Population change is based on Census short form counts. Long form estimates are based on samples, and are subject to statistical error.

Public school students per local branch market

We also examined the public school population in Pittsburgh. We obtained data from Pittsburgh Public Schools for both the 2008-2009 and 2003-2004 school years, and geocoded it by branch market. In terms of the school aged population, these numbers cannot tell the whole story, in that they do not include parochial, private, or charter school numbers, or high school drop outs under 18. However, they do include a large majority of the city's students in poverty.

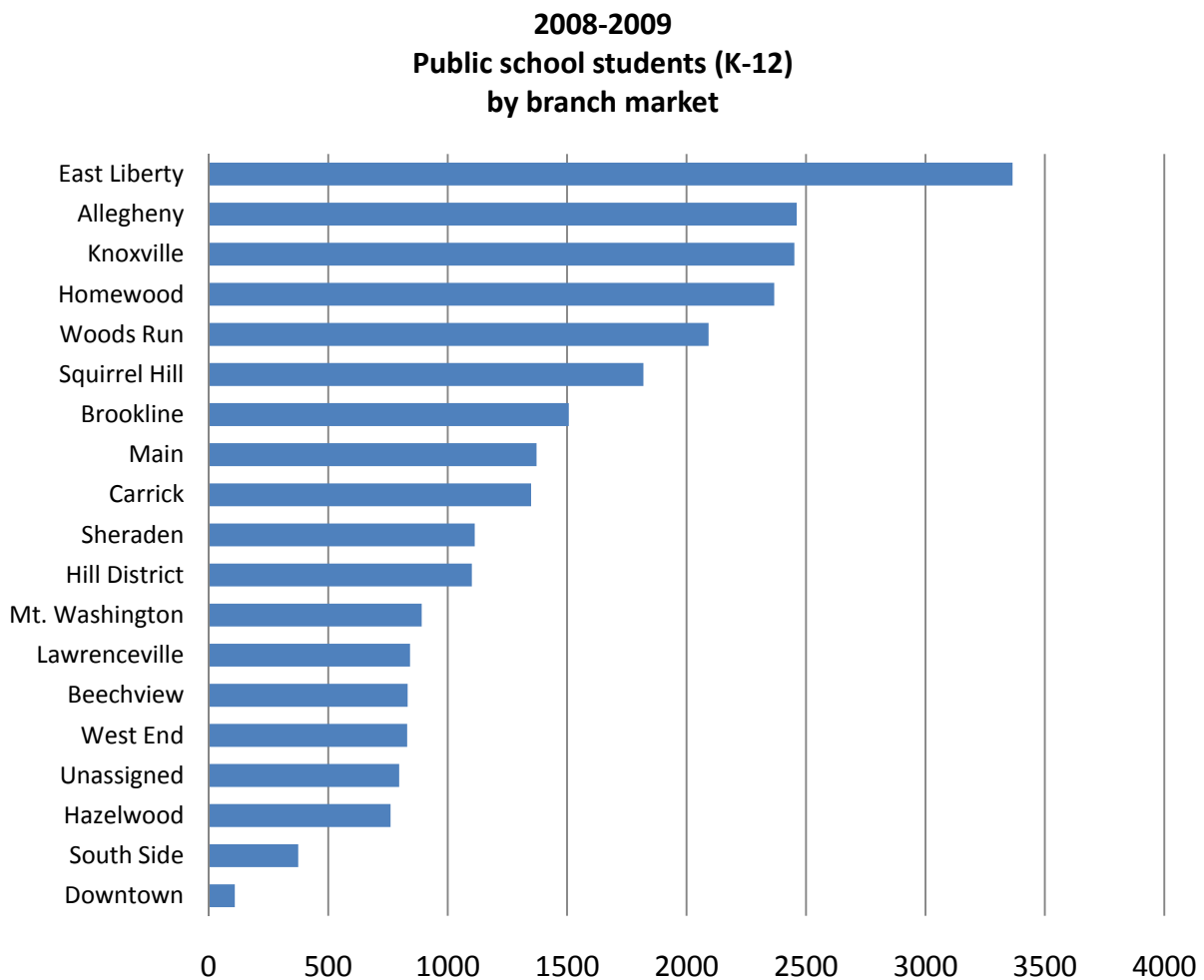


Figure 7. Public School Students by Branch Market

Based on K-8 numbers, overall 74% of these students were eligible for free or reduced lunch. Only the South Side, Carrick, Main, Beechview, Brookline, Unassigned, and Squirrel Hill markets had lower than average rates of student need based on this measure, ranging from 70% to 19% respectively. If markets are ranked instead by the number of K-8 students eligible for free or reduced lunch, the Carrick, Hill District, Lawrenceville, and Hazelwood move up in rank while the Squirrel Hill, Beechview, Brookline, and Mt. Washington markets fall back.

**2008-2009
public school students (K-8)
by free/reduced lunch status
by branch market**

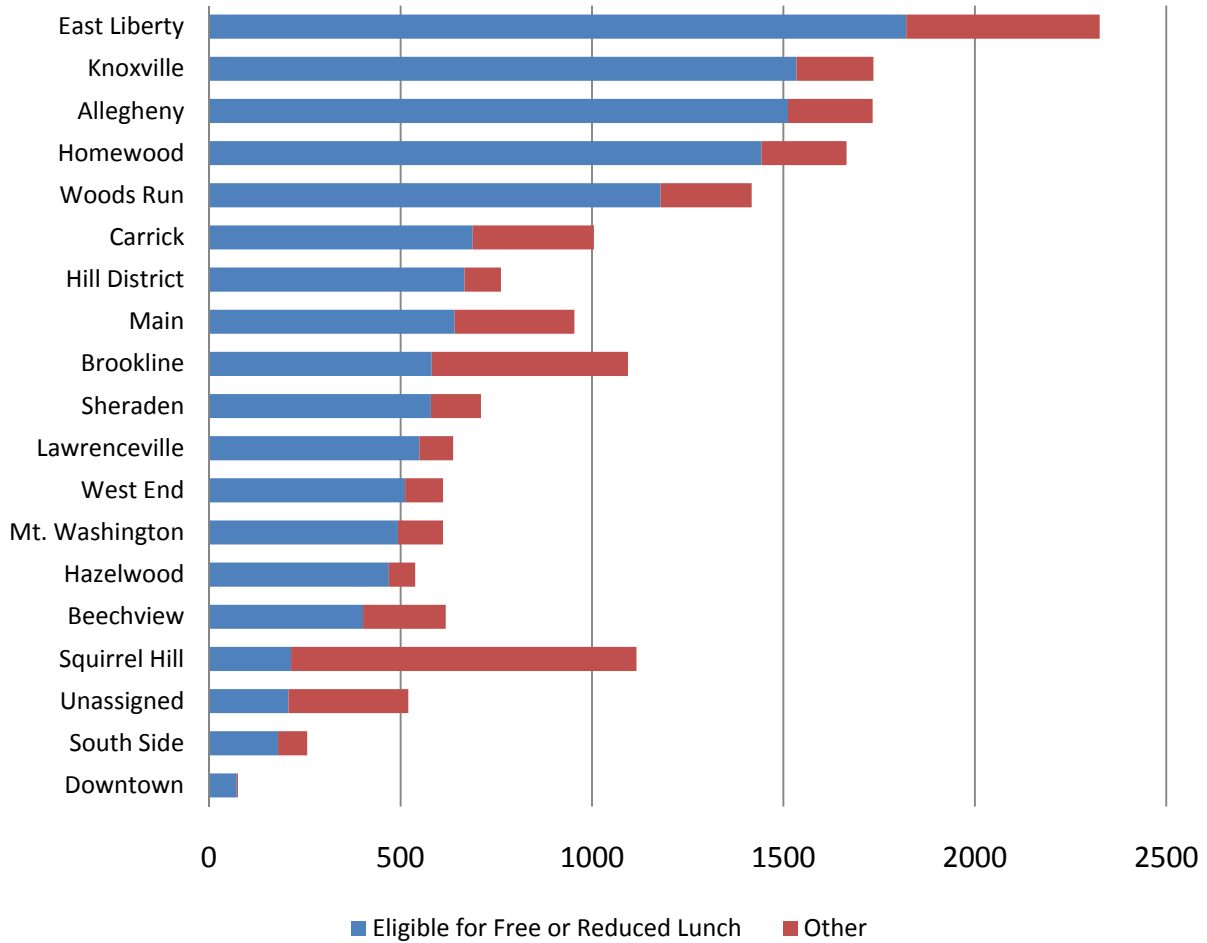


Figure 8. Public School Students in Need by Branch Market

Current numbers of students per market are the result of different rates of ongoing decline from market to market. Between the 2003-2004 and 2008-2009 school years, all markets registered a drop in public school students, with an overall drop of 19%. Eleven markets saw declines of 19% or more, six of which involved drops of 400 students or more. Five markets saw declines of 10% or less, and four of these involved drops of under a 100 students, including Beechview, Carrick, Brookline, and Hazelwood.

Change in public school students (K-12) by branch market 2003-2004 to 2008-2009 school years

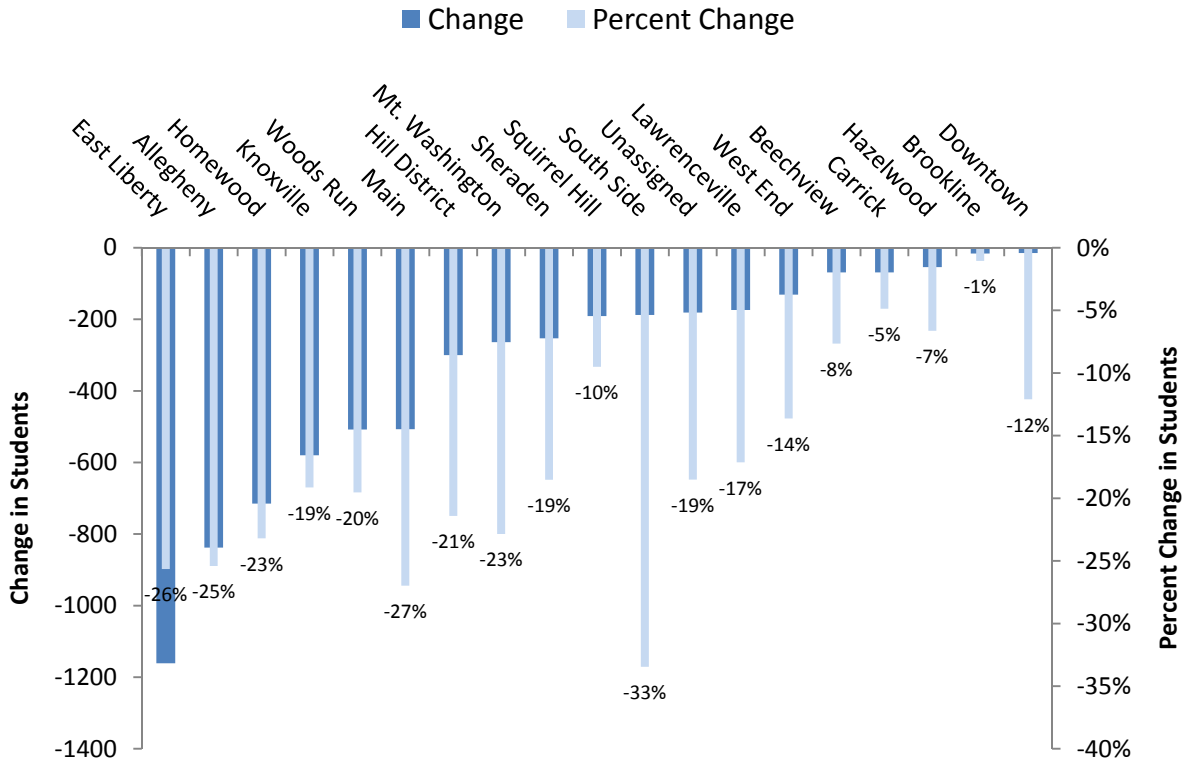


Figure 9. Change in Public School Students by Market

How alternatives were evaluated

Per agreement with CLP, the CED evaluated location options primarily by their likely impact on *access* (as defined below). On a case by case basis, other potential impacts are discussed, including use and economic spillover. While other goals such as economic impact, use, and cost effectiveness will surely be affected by reconfiguration, the focus of this study is on access to library services via a local physical branch.

Whose access?

For any given branch action, we concern ourselves first with the impact on the branch's market residents, both for the general population, and for mission priority groups. By definition these residents are already more likely to use this branch than any other, and are therefore most likely to "feel the pain" if something happens to it. On a case by case basis, we also look at residents from outside the market, especially if the market contains a major job center (such as the South Side).

What kind of access?

Access to library services can be measured in many ways. To aid in decision making, we attempt to standardize it by using a term called "reasonable access" in this report. That is, market residents will have reasonable access to a physical library if¹⁰:

1. they are within a theoretical 20 minute walk along the street network of another library, controlling for physical barriers, whether the alternate library is a CLP facility or not, and regardless of what transportation mode typically used (walking, biking, driving, transit etc.);
2. they are not within a walk, but still have access to a bus or "T" transit route that can take them to an alternative library in one trip (no transfers); and
3. failing the above, they still have a high probability of having access to a personal vehicle, with another library nearby (in most parts of the city, a second library is within a short drive, ex: <2 miles).

We are not recommending that "reasonable access" be the criteria by which decisions are made. Instead we offer it as a uniform measuring stick to help decision makers more easily digest our findings. In fact, we fully expect that CLP management and board members will have very different ideas about what kind of access is "reasonable". To accommodate this we provide additional details to allow the reader to make their own judgments. For example, since not everyone will agree with the "reasonableness" of a 20 minute walk, we also assess access based on a 10 minute walk. We not only identify when transit is available, but also the mode ("T" vs. bus) and the number of loops (buses) that pass through available routes on a daily basis, and which libraries they take patrons to.

"Reasonable" access however defined, does not mean "equally good" access. While repositioning a branch within a market can actually increase access, mergers and closures are *never painless*. For example, if a resident loses her preferred branch, according to this report she would still have "reasonable access" if she could walk to an alternative service point. But this access might not be as good for any number of reasons (longer trip, outside their "comfort zone", fewer service hours,

computers, smaller collection, no air conditioning, etc.). If she couldn't take a walk or short drive, but had to take the bus instead, that would be arguably worse. And if the only library the bus would take her to is Downtown, some might argue that would be worse still (others might disagree).

How do assessments work?

For each scenario, we first identify the areas of the affected market likely to be impacted the most by a branch action. These areas are then described according to population size and numbers for mission priority groups, such as families with children, children and teens, and children in need. We then assess whether or not impacted areas would still have "reasonable access" to another branch and (regardless of the answer) describe what access they would have left. Decision makers will need to decide whether or not the numbers impacted or the access remaining is acceptable.

Techniques (and caveats)

As one might have expected, there is more to the story than the aggregate figures in the charts and maps presented so far have revealed; the devil is in the details. To dig deeper the CED examined study questions using GIS and other tools to assess market demographics, spatial information on physical barriers, street networks, access to personal transit, public transit routes, and the location of relevant institutions such as other libraries and schools. Because each market is unique, different techniques were applied and different factors were examined for each study question.

Despite the great amount of research and analysis conducted for this study, our findings cannot eliminate risk from the process. For instance, we cannot provide a "sneak peak" at the 2010 Census, and we can only complement, not substitute for the well of market intelligence available to branch managers who are deeply engaged in their communities. More information on our approach can be found on page 44.

Additional research in this report

Several issues besides access are investigated in this report, including a discussion of how local development plans and initiatives may shape Pittsburgh's future, and the implications for system reconfiguration. The report concludes with a discussion of benchmarking CLP vs. other systems, and the limits of using benchmarking to inform branch system design.

Closures: opportunities to redirect resources

While closures provide an opportunity for a library system to extend access by shifting resources elsewhere, no closure is painless. We investigated the impact on access for the Hazelwood, West End, Beechview, and South Side branches. In each case, we described the market population, assessed reasonable access, identified the most impacted area, and characterized the population living in impacted areas, and the access remaining after closure.

Closure caveats

In examining closures, we found a number of factors on a case by case basis that could mitigate the local impact of losing a branch, including the presence of other nearby libraries, bookstores, video stores, café's and similar public places with wireless access. In one case, we also identified institutions that CLP might partner with to deliver library services if the local branch closed. We also looked for possible changes to Port Authority bus routes that might better connect residents to the next closest service point in the wake of a closure. While all of the above have some potential to "soften the blow" of a closure, their potential may ultimately be limited for a number of reasons.

First, while the presence of other nearby libraries might mitigate the impact of a closure, this study made no formal attempt to assess the scope, capacity, or quality of services that non-CLP libraries provide, nor did we attempt to assess the likelihood that they will remain in operation in the near future.

Second, while for one scenario we found non-library institutions that CLP could partner with to deliver library services in the absence of a local branch, the services provided would necessarily be limited compared to what a fully staffed library could provide. Further the number of people served could be additionally constrained by eligibility requirements, target populations, or capacity limits tied to each institution or provided program. An investigation of these factors is beyond the scope of this report.

Third, only Port Authority can permit adjustments to bus routes. Such actions are not within the direct control of CLP or even local communities. Stakeholders should engage Port Authority first before assuming such adjustments are possible. In fact, Port Authority is currently in the process of proposing major changes to the configuration of the transit system.

Finally, bookstores, video stores, and cafés are certainly *not* "substitutes" for public libraries based on the common use of the term. Some consumers may substitute certain services between these outlets to some degree. However, at best such outlets are only *partial* substitutes for the full range of services and benefits that libraries can provide. They only substitute for some library services, for some people, for some of the time; and they also cost money. Because the sustainability of these outlets is also tied tightly to the economy and local purchasing power, their continued presence cannot be assured.

Table 3. Closure Impacts

Market/branch	Market population	Most impacted area	Most impacted area population	“Reasonable” access?	Access remaining after closure
Hazelwood	<p>In 2000:</p> <ul style="list-style-type: none"> 6,200 people 654 families with children (<18) 676 households in poverty 876 occupied units w/o a vehicle <p>In 2008-2009:</p> <ul style="list-style-type: none"> 760 public school students (K-12) 87% eligible free/reduced lunch (K-8) 	The entire market, which includes the neighborhoods of Hazelwood and Glen Hazel.	Same as market	No	<ul style="list-style-type: none"> • Market residents would not be within walking distance of an alternative service point • No convenient transit route to alternative service point • Relatively low rate of vehicle access (personal transportation). <p><u>Potential mitigating factors</u></p> <p>Transit changes: Retaining reasonable access to other service points such as Squirrel Hill, Oakland, or the Homestead Library would require significant changes to the configuration of the 56B/56C/56E routes, or significantly more throughput (in both directions) for the 56U, or if feasible, a new route.</p> <p>Forging partnerships: A number of institutions are in or near the area that offer programs for youth, families, or seniors, including four schools, five CBO/FBOs, and two senior centers. While the programs offered by these institutions may be suitable to deliver some library services, their eligibility requirements, intended target audiences, and resource limitations may prevent them from offering access to large numbers families and children in the market.</p>

Market/ branch	Market population	Most impacted area	Most impacted area population	“Reasonable” access?	Access remaining after closure
West End	<p>In 2000:</p> <p>8,200 people 1,012 families with children (<18) 526 households in poverty 696 occupied units w/o a vehicle</p> <p>In 2008-2009:</p> <p>830 public K-12 students</p> <p>84% eligible free/reduced lunch (K-8)</p>	<p>If the West End branch were closed, some residents in the West End market would have access to other service points such as CLP’s Sheraden branch, and the Crafton and Greentree Libraries.</p> <p>However, residents in a “core” area of the market would be more likely to be impacted by a closure, especially a concentration of families and children in central Crafton Heights.</p> <p>The “core” West End market includes the neighborhoods of the West End, Elliot, and parts of Crafton Heights.</p>	<p>In 2000:</p> <p>5,712 people 758 families with children (<18) 418 households in poverty 595 occupied units w/o a vehicle</p> <p>In 2008-2009:</p> <p>655 public K-12 students</p>	Yes	<ul style="list-style-type: none"> • “Core” area still retains access primarily through bus routes to Sheraden, Crafton, and Downtown libraries • Non-core areas more likely to have vehicle, already using other service points <p><u>Potential mitigating factors</u></p> <p>Alternative service points: Many West End market residents outside the “core” are already using Sheraden, Crafton, or Greentree libraries. However, many residents in the “core” market might have greater difficulty relying on these service points if the West End closed.</p> <p>Transit changes: If the West End closed, central Crafton Heights would be the most impacted area. One way to lessen this impact would be to improve the connection between central Crafton Heights and the Sheraden library by creating a finger off the 26A/D bus route that stops at the Greenway school site. Another solution might be to direct residents to the Crafton Library by adding a finger to the 26B off Middletown Road up Woodlow.</p>

Market/ branch	Market population	Most impacted area	Most impacted area population	"Reasonable" access?	Access remaining after closure
Beechview	<p>In 2000:</p> <p>8,772 people 888 families with children (<18) 378 households in poverty 797 occupied units w/o vehicle</p> <p>In 2008-2009:</p> <p>830 public K-12 students</p> <p>65% eligible free/reduced lunch (K-8)</p>	<p>Much of the market would retain access to other libraries, but the Beechview neighborhood north of current branch would be more vulnerable, being largely outside of a reasonable walk, and with fewer transit options.</p>	<p>In 2000:</p> <p>6,200 people 630 families with children (<18) 302 households in poverty 511 occupied units w/o a vehicle</p> <p>In 2008-2009:</p> <p>622 public K-12 students</p>	Yes	<ul style="list-style-type: none"> Residents south of branch can take a short walk, drive, bus, or "T" trip to Dormont or Brookline libraries Residents north of the branch can still take bus or "T" to Dormont, with the exception of residents north of Crane Avenue. However these residents had high rates of vehicle ownership in 2000. <p><u>Potential mitigating factors</u></p> <p>Alternative service points: As noted above, Dormont and Brookline are accessible by foot, high volume and quality transit, or auto for much of the market. Greentree is also accessible by car, and less than 2 miles away on the street network for over half of the Beechview market.</p>

Market/ branch	Market population	Most impacted area	Most impacted area population	"Reasonable" access?	Access remaining after closure
South Side	<p>In 2000: 10,525 people 711 families with children (<18) 959 households in poverty 1,735 occupied units w/o vehicle</p> <p>In 2006: 10,000 workers (in the Flats)</p> <p>In 2008-2009: 830 public K-12 students 65% eligible free/reduced lunch (K-8)</p>	<p>South Side Flats neighborhood</p> <p>The most impacted area would be the South Side Flats neighborhood. Residents of this area would lose access to their local branch, and would be less likely to travel to Knoxville. Over 10,000 people working in the South Side Flats would also lose access to a library via work commute.</p>	<p>In 2000: 5,700 people 270 families with children 660 households in poverty 1,211 occupied units w/o vehicle</p> <p>In 2006: 10,000 workers</p> <p>In 2008-2009: 370 public K-12 students</p>	Yes	<ul style="list-style-type: none"> Residents can take bus routes to Downtown, Oakland, Knoxville, or even Carrick branches, depending on where they live. 1/3 of Flats residents work in Oakland or Downtown. <p><u>Potential mitigating factors</u></p> <p>Alternative service points: The Knoxville, Oakland and Downtown libraries would be accessible by bus.</p> <p>Many fee based partial substitutes for library services, including three South Side bookstores and numerous coffee shops (with wireless access) are available in this neighborhood. For some patrons, these assets would mitigate, but certainly not fully compensate for the loss of library services in the area.</p>

Local moves: opportunities for improving access

Relocating a branch can confer several advantages. It offers an opportunity to increase access to library services, both generally and to mission priority groups. In turn, increased access may also lead to increased use and cost effectiveness. Local moves also present an opportunity to increase facility attractiveness by rebuilding branches according to CLP's 21st Century Library design principles, and recent experience has shown that new and upgraded CLP branches see more visitors per hour. Finally, relocating may also provide an opportunity for increased synergy between the library and neighborhood business districts, driving up both library use and local business activity. That said, a careless move could diminish rather than enhance access, use, and other desired objectives.

CLP asked the CED to examine the benefits of relocating the Mt. Washington, Lawrenceville, and South Side branches to other locations within their existing markets.

While the literature on library location offers some quantitative methods for assigning branches across markets, these are not suitable for "small moves" within markets. From the literature available, common location practice, and current CLP objectives, we based our evaluation of alternative sites on the following factors: population within walking distance, proximity to public transit routes and busy streets, and proximity to schools and the local business district. If appropriate, sites were also evaluated based on proximity to public school students by residence.

All sites examined were "approximate locations." Identifying specific land parcels (and their availability and suitability) was not in the scope of this study. In all cases we assume (but do not verify) that new locations will provide equal or better parking or visibility. All results are subject to local validation, and of course, local acceptance. The results of our analysis are summarized here, further details, including the approximate site locations, are available from CED upon request.

Relocation caveats

We examined a wide range of relevant factors for library location, but additional factors may also bear on results. The peculiarities of each area's street network, for example, may preclude some candidate sites. As available prime real estate is limited, it must be acknowledged that some of the sites we investigated may have a better use than hosting as a library, (including the current locations)! This is a subject we must leave to others to investigate.

Finally, results are not guaranteed. While there do appear to be some promising candidates for relocation, the technical difficulty of projecting the impact of small moves means that a move will not be risk free. Risks could be mitigated by further steps, including (once feasibility is confirmed) taking measurements of auto and pedestrian traffic at locations, and gathering more information at the local level on how moves might play out. In any case, our approach and results should improve the ability of stakeholders to weigh the pros and cons of any site moving forward, including current locations.

Table 4. Local Relocation Opportunities

Market/branch	Alternative sites evaluated	Was any site more accessible on foot?	Was any site more accessible by transit?	Was any site on a high traffic street?	Was any site close enough to local businesses to create spillover effects?
Mt. Washington	Intersection of Virginia and Maple Terrace, intersection of Virginia and Southern, near Olympia Park, and along Bailey Avenue	All four sites were arguably more accessible on foot than the current location across most measures. Saint Mary, a parochial school, is within a 10 minute walk of every locale save Bailey and Virginia Southern. Bailey and Olympia Park were closer to more public school students by residence, and both are within a 10 minute walk of a public school.	All four sites and the current location are on transit lines. Bailey Ave and the current location are accessible by one bus route, while the other sites are accessible by two.	None of the four alternatives are on Grandview, the busiest street in the area, where the current branch is located. Virginia is a relatively busy neighborhood street.	Virginia and Maple and Virginia and Southern are both close enough to provide spillover business to the local business district. This is much less true for the current location.
Lawrenceville	Seven points along Butler Street between 40 th street and the Allegheny Cemetery Gate.	None of the alternative sites was superior to the current location based on walking distance based on 2000 residential patterns. However, much of the access provided by the current location is extended to areas where other libraries (such as East Liberty) already dominate. Moving the branch east along Butler could increase access to a large number of public school students residing in Upper Lawrenceville.	Any location on Butler Street would make the branch more accessible to transit than the current location.	Butler Street is the busiest street in Lawrenceville, and relocating the branch here would allow it to capture vehicle traffic, including potential patronage from communities across river with limited service such as Troy Hill, Spring Garden, Millvale, etc. However, adequate parking will be crucial to capturing this traffic.	Businesses line Butler, and there are ample opportunities for spillover effects.
South Side	Seven points along Carson in the South Side Flats between 10 th and Hot Metal streets.	Points from 18 th to 20 th street appear to provide more access on foot to Flats residents based on 2000 population patterns. This area is also closer to an elementary school, and to new housing developments along the river.	Sites from 18 th to 20 th street also appear to have slightly superior access from transit lines serving the area.	Carson is the area's busiest street. The current branch is already located on Carson. Adequate parking will be crucial to capturing vehicle traffic	Businesses line Carson, there are ample opportunities for spillover effects.

Mergers: opportunities and risks

Merging branches combine opportunities with risks. On the one hand, consolidating two branches into one can be an opportunity to build more a more attractive, effective, and cost efficient facility, particularly if hours, services, and resources at the new site are substantially and perceptively superior than what was available before. If so, both the effective reach (area), penetration (use per capita) of the merged library's market can increase.

Yet if present, market specific factors can limit the potential gains from mergers. Physical barriers can limit the effective frontier of the new facility's market. Placing the facility in a sparsely populated area (for example, to balance access between the former locations) can undercut total use. Mergers, like closures, are never painless. They almost always entail moving a service point further away from one or both communities involved. Regardless of how effective they are in increasing users and use levels, access will be reduced for some residents, or even eliminated for those without a means of travelling to the new location.

Table 5. Merger Opportunities and Risks

Market/ branch	Candidate merger sites evaluated	Merger opportunities and benefits	Merger risks and challenges
West End and Sheraden	Seven points along Chartiers Avenue, Berry, and Middletown roads.	Arguably limited. Physical barriers, residential density patterns, and competitive service points would restrict the gains that an enhanced facility point might achieve.	<p>In 2000 large parts of the West End market had relatively low vehicle ownership rates. Based on walking distance, no site would appear to provide as much access to the core areas of the Sheraden and West End market as the current locations combined. Thus, many residents would have to depend on transit to reach the merged branch.</p> <p>Moreover, the available alternative locations are either in relatively empty areas which will see less foot traffic and less use, or are already near the service areas of non-CLP libraries (Crafton).</p>
Carrick and Knoxville	A single area between the branches along Brownsville Road from the intersection of Nobles Lane and Brownsville Road south to the current Carrick location.	Unlike West End and Sheraden, the space between the Carrick and Knoxville branches is not as restricted by physical barriers, and the two markets are connected at several points along the street network. Also, this area is not “empty” of residents, and even includes a shopping center.	<p>The new “merged” market would be very large in area, population, and in number of public school students. While a substantially more attractive branch could be expected to successfully serve this area, there are challenges.</p> <p>The Knoxville market in particular contains the second largest number of public school children in the system, and many of them are in need. The new site would place a large number of these students outside of walking distance to the branch. While transit would be available to other locations, the Knoxville market also had a relatively low rate of vehicle ownership in 2000. These issues may limit the ability of Knoxville residents to access the new branch, regardless of its attractiveness.</p>

Plans and initiatives that may impact branch markets

Until the results of the 2010 Census are released, we cannot know precisely how the city’s population decline is playing out across branch markets. But whatever does happen will (hopefully) be shaped in part by city and county development efforts. Local plans and initiatives do at least provide clues on how efforts might play out for the branch markets evaluated in this study. That said, the following information must be taken with a grain of salt -- plans are only plans, and even if implemented they are not guaranteed to work.

While assembling a comprehensive inventory of relevant projects and plans was not possible for this study, we can report that both the City of Pittsburgh and Allegheny County have identified certain communities as being particularly suitable for future development/redevelopment (or study) that are relevant to the scenarios in this report. These are shown in the table below, and are discussed thereafter, together with Port Authority’s plans to reconfigure its system of transit routes.

Table 6. Branch Markets and Related Local Plans/Initiatives

Market	Allegheny “Place”	City of Pittsburgh
West End		
Sheraden	●	
Mt. Washington	●	
Knoxville		●
Carrick	●	
South Side	●	
Beechview	●	●
Hazelwood	●	●
Lawrenceville	●	●

“Allegheny Places” from the Allegheny County Comprehensive Plan

The Allegheny County Comprehensive Plan includes a Future Land Use Plan which identifies targets for investment across the County called “Allegheny Places.”

“The Future Land Use Plan is a guide for development and redevelopment in Allegheny County through the year 2025...The Future Land Use Plan is built around the concept of ‘Places’. There are eight different types of Places, each of which has a unique identity. ...The intent of Places is to provide an efficient and economical way to allow for both new growth and revitalization, meet a diversity of needs, support transit, reduce consumption of open space, and protect environmentally sensitive resources.”¹¹

Three types of places are relevant to the branch markets in this report.¹² Before using these Places as factors in decision making, CLP should contact the Allegheny County Department of Economic Development to better understand their implications and progress and plans for reinvestment. See <http://alleghenyplaces.com/main.asp> for more information.

Table 7. Relevant “Allegheny Places”

“Allegheny Place”	Neighborhoods containing this type of “Place”	Description
“Urban Neighborhoods”	Sheraden South Side Hazelwood Lawrenceville Mt. Washington Beechview	Urban Neighborhoods are located within the cities of Pittsburgh and McKeesport. They build on existing business districts and mixed-used areas in older, densely developed neighborhoods, and include more regionally-oriented services with a mix of housing types in a walkable setting. Revitalization of Urban Neighborhood Places will include infill development, rehabilitation of existing buildings and improved transit connections, and will take advantage of nearby cultural and recreational amenities.
“Community Downtowns”	Carrick	Community Downtowns are similar in character to Urban Neighborhoods, but are less densely developed and include other municipalities. Most, but not all Community Downtowns build on the existing business districts and downtowns in older communities. They will be Places where additional business development can occur in a mixed-use setting that includes residential, office, retail, and other compatible uses.
“Transit-Oriented Developments” (TODs)	Hazelwood Beechview	Transit-oriented development, or TOD, is a mix of relatively dense residential, office and retail uses at transit stations or transit stops, to maximize pedestrian access to transit. TOD is an overlay on selected Places that are located along the existing ‘T’ line and busways, and on proposed new transit lines. TOD Places will incorporate both infill development, and substantial new development on large parcels when available. TOD Places will create opportunities for people to live, learn, work, invest and play in the same Place. TOD Places will also enable people to connect to other Places in the County via transit. Examples of TOD Places include Mt. Lebanon, Wilkinsburg, Oakland, the North Shore and Carnegie. TOD Places are a key element of the County’s Equity and Diversity plan. Many people do not have cars; and many others, such as the disabled, elderly, and young, depend on walking and transit. TOD Places will support transit use and make it more accessible to more people.

Pittsburgh City Planning Department

The City Planning Department has produced a number of plans relevant to the markets in this study. These include a development plan for the Allegheny riverfront, which, if implemented, would be relevant to the Lawrenceville branch. Development and design plans have also been produced for Hazelwood. All three plans are available at:

http://www.city.pittsburgh.pa.us/cp/html/comprehensive_planning.html

Recently, at a local symposium on Transit Oriented Development hosted by Sustainable Pittsburgh, the planning department also identified a “study area” (not a plan!) for transit oriented development that included areas around stations at South Hills Junction (potentially relevant to the Knoxville market) and central Beechview, see http://www.city.pittsburgh.pa.us/cp/assets/TOD_Conference_Jan09.pdf.

Again, CLP should contact City Planning before factoring in these plans into decision making.

The Port Authority of Allegheny County: Transit Redevelopment Plan

The Port Authority is currently engaged in what may be a major redesign of transit in Allegheny County (see “Port Authority Riders Face Turbulent Year”, Pittsburgh Post Gazette, Jan 24th 2009, <http://www.post-gazette.com/pg/09024/944184-85.stm>). Early descriptions of the change suggest that the new system will concentrate on system backbones like the busways and the “T”, with most routes providing feeder service to these areas. Major changes to bus routes could occur. The agency is currently evaluating its entire system, with results expected to come together into a final plan in April of 2009. In the meantime, evaluations of each bus route are currently available. See <http://tdp.portauthority.org/paac/Home/tabid/404/Default.aspx> for the Transit Redevelopment Plan website. Route evaluations are here:

<http://tdp.portauthority.org/paac/RouteEvaluations/tabid/478/Default.aspx>.

Feasible vs. faulty uses of benchmarking

CLP asked the CED to compare its system of branches to other systems based on legal service area (LSA) population per facility. It was hoped that the results could shed light on the number of branches CLP “should have” given the number of people in its service area.

While not the only facility related measure worth comparing to other systems, “population per facility” does serve as an aggregate measure of the access provided by the “net of service points” library systems cast over their communities. All things equal, in a simple version of the world, a system with a lower number of people per branch, or, to use the reciprocal, more “libraries per capita”, would likely provide better coverage of its service area than a system with fewer libraries per capita. That is, the more branches per capita, the more likely any given resident would have a service point nearby, assuming points are evenly distributed. This is a crucial outcome, as no facility related factor (including size or service hours) is more important to driving library use in an area than actually having a library nearby to go to.¹³

Yet, a very high number of facilities per capita may not only signify increased access, but also increased choice, or even redundancy.

CLP appears to have a lower number of people per facility

For the record, CLP appears to have a low population per branch, or a high number of branches per capita, when benchmarked against other library systems.

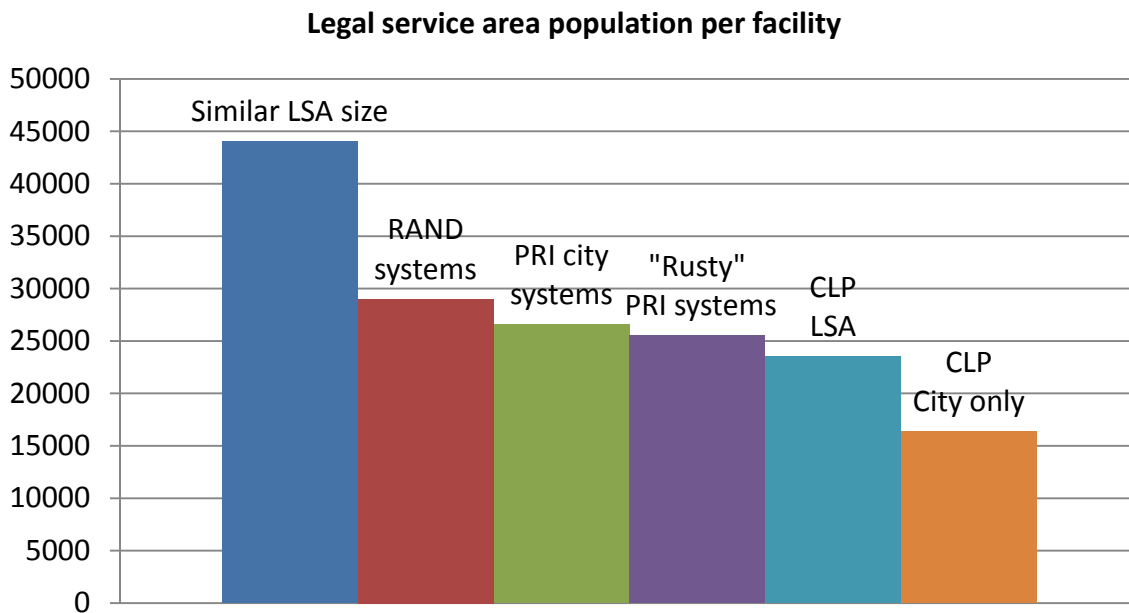


Figure 10. LSA population size per facility

For example, we compared CLP to a subset of 81 library systems with service area population sizes similar (within .5 standard deviations) to the CLP LSA. Each system participated in the American Library Association’s 2007 Public Library Data Service (PLDS) Statistical Report, a survey covering over 800

library systems in North America.¹⁴ While the average system in this subset had about one facility (branch or central library) per 45,000 residents, CLP had one for every 23,500. All CLP facilities are within city limits, so if only the city's population is considered, this ratio falls to 16,400. Area size did not factor into this comparison, but it is worth noting that the CLP's LSA was the also the 14th smallest in the group in land area.¹⁵

While this comparison was made on the basis of population size alone, we also compared CLP's pop. per facility to that of fifteen systems similar to the CLP along a range of factors identified by RAND in a recent report.¹⁶ Common factors of this set include funding and governance structures, population served, and others. Importantly, RAND *did not* select these systems for the purpose of location planning. Instead, they were selected to help the CLP identify promising strategies used by systems with similar challenges and characteristics. That said, compared to RAND's subset, as of 2006, the CLP still had a relatively low number of persons per facility, although it was closer to the RAND group average of 29,000, and ranked 6th in fewest persons per facility. This comparison was based on data from the 2006 Public Libraries Survey from the National Center for Education Statistics (see data sources, page 50).

While they have more in common with the CLP than service area population size, the RAND comparison set still contains systems that differ from CLP in important ways. For example, some are "county only" systems from western states, rather than urban systems. To limit the comparison to urban systems, we also benchmarked CLP to city systems from the "benchmark regions" of the Pittsburgh Regional Indicators Project. As noted by the Project:

"[These regions] are Pittsburgh's approximate size in population and share a common economic history in most, but not all cases. Most benchmark regions are east of the Mississippi River and north of the Ohio River." (See: <http://www.pittsburghtoday.org/web/home.jsp>)

Overall these 15 systems had 26,600 persons per facility. CLP was closer to this group's average, although it still ranked 6th in fewest in persons per facility.

Because the PRI set still contained very different cities from Pittsburgh (ex: Denver, Seattle, Richmond), we further limited the PRI set to nine "rustier" cities with more in common with our economic history. Based on this set the group average fell to 25,500, with CLP ranking 5th in fewest people per branch.

It must be acknowledged that none of these comparison groups are intended to be a statistically representative group of libraries, but are instead merely samples of convenience. Still, CLP consistently has a below average population per facility across all comparisons, although when groups become more comparable to Pittsburgh, the difference becomes less extreme. We should also note that, given the current economic situation, many of these systems are or will likely be reviewing their system configurations as well.¹⁷

LSA Population per Facility by Comparison System and Group

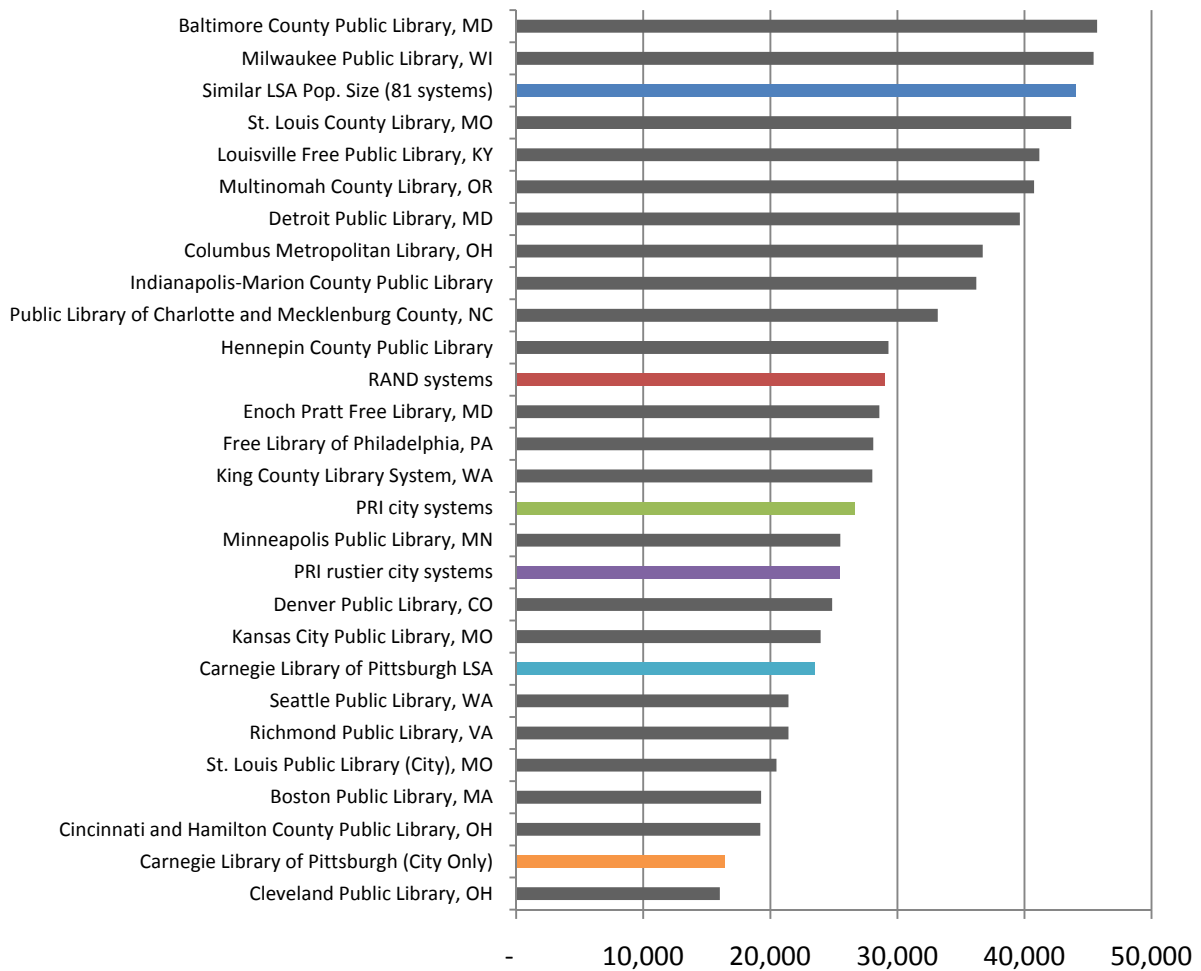


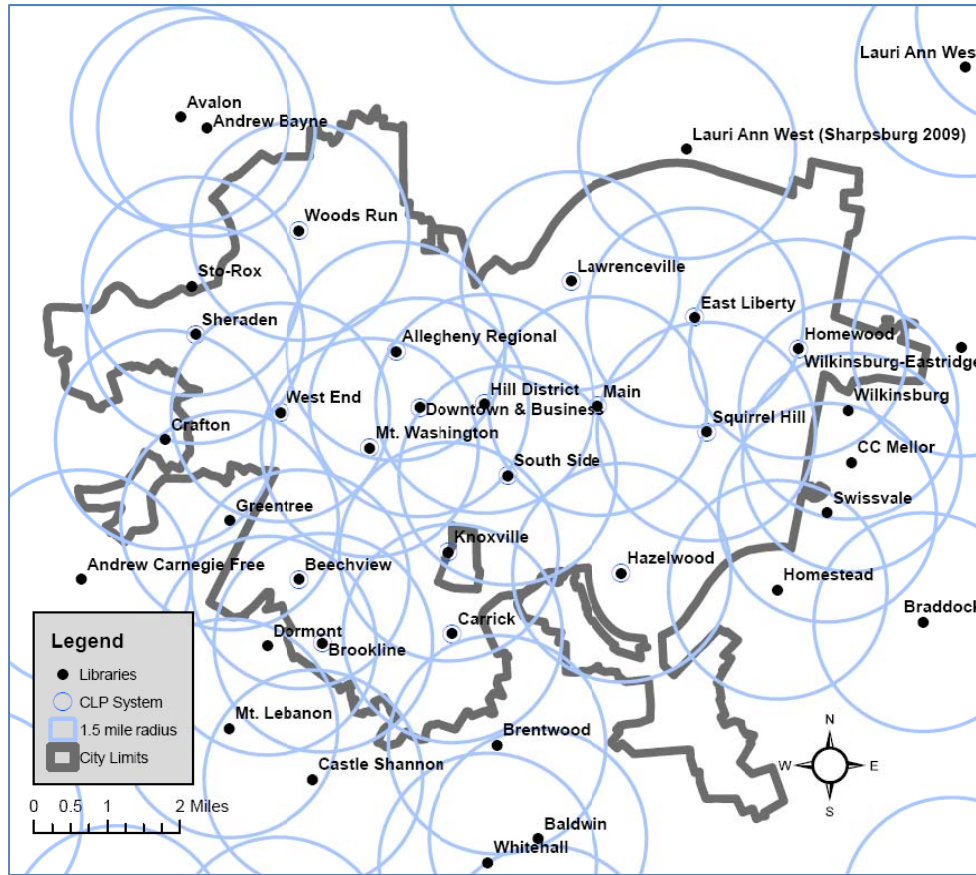
Figure 11. Library Systems by People Per Facility

Does CLP have “too many” branches?

Does the extreme position of the “City Only” bar on Figure 11 mean that CLP has too many branches? By now hopefully the reader understands that the number alone does not tell us much about whether CLP has “the right number” of facilities. The devil is in the details.

At one time the American Library Association recommended that “optimal” library service areas in urban areas range from one to one and a half miles, and research suggests that the maximum distance that most patrons are willing to travel is not much larger.¹⁸ Map 4 shows 1.5 mile radii (as the crow flies) around every CLP and ACLA (Allegheny County Library Association) branch within or near the city limits. If one assumed that prospective patrons in any of these circles would be willing and able to travel to its center, one might not only conclude that this “greater system” provides access to almost every corner of the city, but also that many residents have a large, perhaps excessive number of options.

Choice is good, but Map 4 suggests that some city residents would have to have five different branches to choose from. Yet as we know by now, this is Pittsburgh, and this map is actually quite misleading.



Map 4. Superior Access, Choice, Redundancy, or Just Misleading?

As this report has shown, in reality the same natural and man-made physical barriers that helped shape and define Pittsburgh’s neighborhoods have also divided the city into natural markets for library service. These catchment areas justify, at least in part, a larger number of branches per capita. If, for example, residents on either side of a river will not cross it for library services, serving all of them will likely require two branches rather than one. A city without such barriers would not have this problem.

In reality all things are not equal across library systems. These simple comparisons still do not control for area size, physical topography, population density, population patterns, or patron needs (not only for specific services, but also specialized facilities). Each ratio in Figure 11 is not only the result of these circumstances, but also each system’s unique history and evolution.

For example, unlike many of these systems, CLP benefitted from the Carnegie expansion from the beginning. As Pittsburgh’s population grew, state and local funding and public acceptance enabled the system to build out. This allowed it to place branches within communities otherwise isolated by physical barriers. As a result, some would argue that the ready availability of the system throughout the 20th Century also contributed to an increased appetite for library services in Pittsburgh compared to other

cities (perhaps justifying a higher level of coverage and service). In time, a long and ongoing period of population decline reduced CLP's population per facility to its current level. Other systems in Figure 11 neither benefited from CLP's early advantages nor experienced its degree of population decline.

In and of themselves, comparisons on branch per capita cannot tell us what to do. At best, rather than proof of redundancy, CLP's low population per facility should instead be viewed as a "blinking indicator light" warranting further investigation. This report is a first step in that direction. The next step will be for the CLP to evaluate the services needed by the communities it serves.

Looking inward rather than outward

Pittsburgh's unique topography and diverse neighborhoods call for evaluating CLP's markets and administrative service areas on a case by case basis. Our analysis suggests that each CLP market is unique, and may call for different mixes of library services. As RAND noted in its recent report for the CLP:

"Coupled with determining the right size and mix of services and programs is the opportunity to evaluate the most effective way to employ CLP's infrastructure, staff, and its myriad holdings. The process begins with understanding the critical programs and services needed by location. It develops further with an analysis of the alternative ways community needs can be met."¹⁹

We agree with RAND that redesigning the system is tied to finding the right mix of services and programs for each market or service area. The next logical step for CLP may be to conduct a needs assessment for the administrative service areas or markets served by the branches covered in this report. As RAND suggests:

"Identifying the right size and mix of services and programs means recognizing new or expanded needs and areas for reductions. Surveys of patrons, forums with community groups, and conversations with other agencies provide the fodder for adjusting service delivery."²⁰

Of the community needs that CLP can realistically serve, some will be related to mission priority groups, and some will not. Some will require a local physical service point to deliver them, and some will not. Some will be deliverable through partner agencies, and some will not. Sifting through these differences should help CLP identify the core facility-based needs for each market or service area. In combination with the information in this report, CLP should be able to make better decisions on where service points should be, what services they should deliver, and what kind of facility (scale and design) will be needed to deliver them.²¹

A final note: county city consolidation

As with RAND, we do not take a formal position on whether the CLP and ACLA library systems should merge. But we agree with RAND that the benefits and tradeoffs of mergers (whether between CLP and ACLA, ACLA itself, or on some other basis) should be investigated further. For the record, if one compares Allegheny County vs. the counties of the benchmark systems on a theoretically consolidated basis (some of these systems are already consolidated; some, like Allegheny County, are not), the trend

noted above continues. Allegheny County had fewer persons per facility (17,700) than any of the counties examined.²²

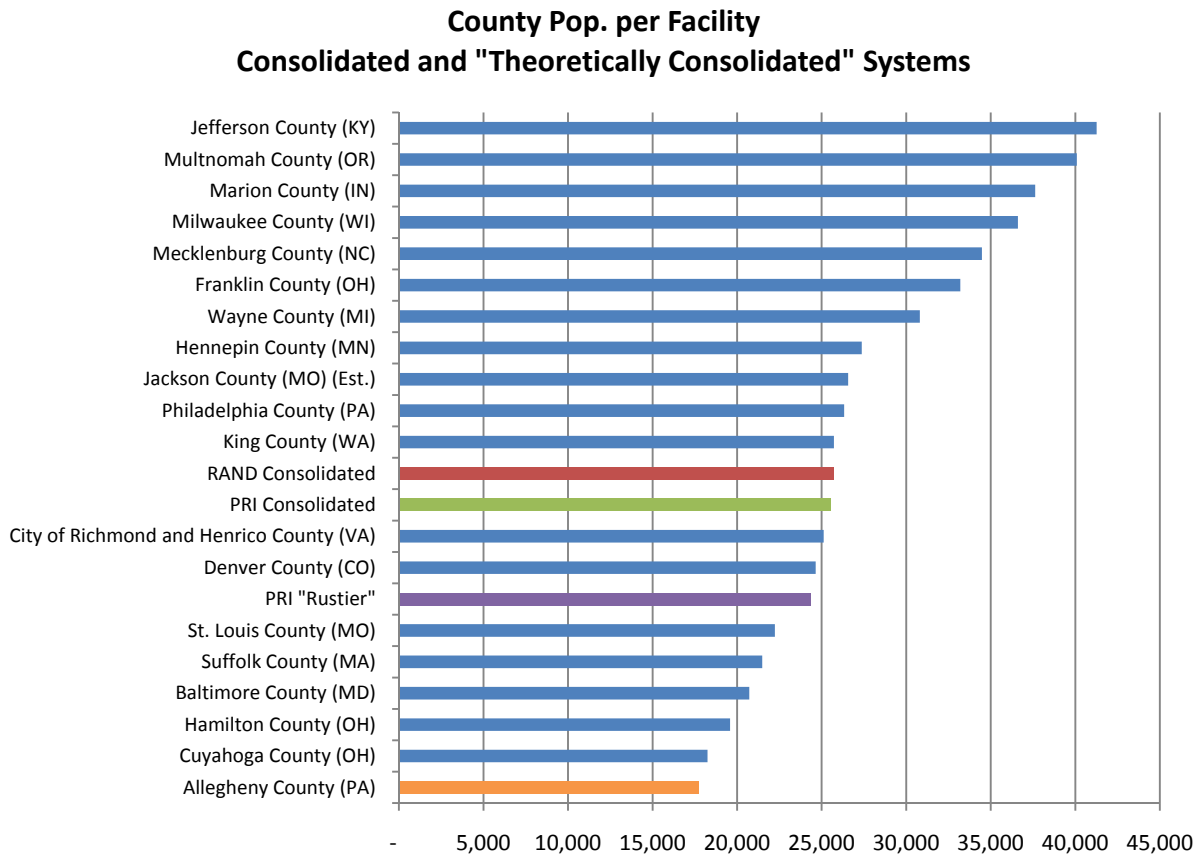


Figure 12. County Population per Facility Comparison

Once again, the County’s position in Figure 12 cannot tell the whole story. For example, it is actually the second largest County in land area, although it has a below average population per square mile. Again, the result should be treated as an indicator warranting further investigation. The devil is still in the details.

Appendices

Technical Notes

To investigate the research questions in this study we first characterized CLP branches by examining branch level data on visits, circulation, computer use, program attendance, operating hours and costs, and other branch related data. We then geocoded anonymized cardholder and transaction (circulation and computer use) data, and used the results to define “market areas” around each local CLP branch.

Market areas were then characterized using data from the 2000 Census for population size and demographic information, the LEHD OnTheMap tool for job center identification, and anonymized data from Pittsburgh Public Schools on the location of public school students, including those eligible for free and reduced lunch. Areas were also analyzed using spatial information on the location of libraries, schools and other relevant institutions, transportation networks, buildings, and topography, including natural and man-made physical barriers to access via ArcView GIS. We then used a variety of methods and tools such as ArcView Network Analyst (to assess walking distance), Port Authority’s Trip Planner (for transit access), PENNDOT’s Internet Traffic Monitoring System (for street traffic), and spatial data (ex: vehicle access) from the 2000 Census to qualitatively and quantitatively assess the likely tradeoffs of selected branch location options in terms of access. Technical findings were supplemented with anecdotal evidence from CED’s knowledge of city neighborhoods, selected CLP staff and branch manager feedback, and photographic evidence from GoogleEarth. Other data sources consulted for this report are shown in Table 9.

The CED began this project with a review of the literature on library location planning. The most comprehensive treatment of this subject can be found in Christine Koontz’s Library Facility Siting and Location Handbook (Koontz, 1997). As Koontz and others have noted, the available research on the subject remains fragmented and incomplete, and offers no “unified theory” on library location. State and national policies still lack useful standards for decision making, and despite over a hundred years of practice, decision makers still frequently adhere to simple, traditional, but naïve procedures and theories that can ignore the complexity of the problem and lead to poor investments. Less naïve procedures systematically combine information about branches, sites, users, and markets to weigh the likely impact of location options. Some techniques for this exist on paper but are rarely applied in practice.

While quantitative methods from OR/MS have penetrated several common library related problems (see for example Reisman and Xu, 1994), they rarely appear to figure into actual location planning. For example, to the best of our knowledge, location allocation models have never been applied to library location decisions in the United States. Given the expense of their preparation, their tendency to produce unworkable solutions, and (especially) Pittsburgh’s complex topography, they did not seem to be appropriate to the task given the risks of poor model performance and limited research dollars. On the other hand a multivariate regression model developed by Koontz has been used to inform location decisions for five library systems since the 90s (for example see Koontz, 1992). However, while its results are promising, the primary purpose of this model is to predict impacts on library use, not access.

Because CLP is more concerned with the impact of branch actions on access rather than use, and (again) because of the difficulties posed by Pittsburgh's unique topography, we instead opted to use Geographic Information Systems (GIS) analysis as the primary tool to address the key questions of this study. GIS allows the analyst to visually combine and assess information on library patrons and use patterns, residential and demographic patterns, transportation networks and physical barriers, and complementary and competitive service facilities in a way no other technique can match.

While research on library location is fragmentary, it is by no means useless. Combined with a knowledge of the existing literature on the relationship between library location and spatial and demographic factors, GIS can provide important insights on how location options impact access both on the general population and target demographics. While we forged our own path in using GIS to examine the research questions for this study, our approach was again greatly influenced by Christine Koontz's work in using GIS to examine library location decisions (Koontz, 1996).

We defined the market areas in this report via GIS analysis. These areas, shown in Map 1, were delineated based on "market share." That is, the extent of each market area was based on the degree to which each CLP branch "dominated" (by a majority or clear plurality) the number of transactions generated nearby. Specifically we summarized and geocoded transaction records for a day's circulation volume, and for each branch, observed the capture rate of "circulation visit days" in the surrounding area. Each local CLP branch was then assigned a "market area" composed of census block groups based on the results. This process was repeated for "circulating patrons" and "computer session visit days" with similar results. While residents living in these markets certainly do occasionally leave their home market to patronize other libraries, they appear more likely (and in some cases extremely likely), to use their local branch. In our view, a branch's market area contains the residents most likely to be impacted by (for example) a closure, as they are already more likely to use the branch (as a group) than residents living outside of the area. Not surprisingly, market areas appear to be greatly influenced by physical barriers, and the proximity of other, more attractive libraries.

Caveats

We opted to examine the most reliable measures of use available from the CLP for this study; we assume that this data is both accurate and complete, and we have yet to encounter a reason to believe otherwise. While this study collected and organized an enormous amount of information, final decisions will still be made under conditions of imperfect information, and therefore risk.

For example, until the results from the 2010 Census are in, CLP cannot know for sure exactly how population and demographic trends are unfolding across Pittsburgh neighborhoods. Also, the demographic profiles we constructed for each market are based on aggregated estimates of Census "long form" samples, and are subject to statistical error. Spatial information is not subject to such error but it can become obsolete. Finally, while the primary objective of this study was to better understand the tradeoffs of locations in terms of access, CLP is also justifiably concerned with levels of use. While the available research on spatial and demographic factors can hint at how changes to the system might influence use, precise predictions of how current and potential users will react are not within our reach.

We should also acknowledge that delineating market areas is not always straightforward. Our approach is one of several available, but all are equal parts art and science. In many cases, market areas were crisply defined by Pittsburgh's physical barriers. However, defensible arguments for alternative definitions could certainly be made, although they would likely only be incrementally, not substantially different from those in Map 1.

As always, conclusions derived from this research should be validated by boots on the ground, including library branch members and others with deep local knowledge of impacted communities.

Issues Not Covered

Several relevant issues were not in the scope of this study and may bear further investigation. We did not identify or evaluate specific land parcels for this study. While we compare prospective "sites" these must be considered approximate locations, not recommended parcels. Also, this study did not attempt to evaluate quality of management at each branch, and (related to good management), we did not attempt to compare collections, program offerings, outreach efforts, or other elements of branches service mix in detail. While a talented manager can make the difference between branch success and failure, even the best managers and most aggressive outreach campaigns cannot reverse a constrained and shrinking market, but only attempt to draw more use from it. While empirical research has yet to demonstrate that collection and service mix dominate factors such as market size and demographics in explaining use, common sense dictates that they could make a difference.

Finally, this report does not attempt to address an elephant in the room - the implications of consolidating city and county libraries into one system. CLP has no more control over the position and attractiveness of non-CLP branches than it does where schools are located or where people choose to live. Thus this study assumes that any reconfiguration of the CLP system must take place within a fixed system of library service points in the rest of Allegheny County. If county population loss continues, and if city and county government consolidation ever moves forward, a second and less incremental reconfiguration analysis may be worth investigating.

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Additional Reading

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Table 8. CLP Facility Characteristics (2007)

Branch	Year Built Or Occupied	Own/Rent	Sq Footage	Weekly Service Hours	Out of box hours	Weekend hours	Holdings	Air Conditioning	HVAC in need of upgrade?	Seats	Computer Stations	ADA Compliant	Meeting Room Capacity
Beechview	1967	City Owned	5,600	37.5	11	6	32,983	Yes	Yes	28	13	No	NA
Brookline	1990	CLP Owned	12,651	46	14	7	37,837	Yes	No	50	15	Yes	75
Carrick	1993	City Owned	4,000	37	10	6	25,733	Yes	No	24	11	Yes	40
Downtown	1997	Rented	12,302	46.5	5	0	60,815	Yes	No	48	47	Yes	50
East Liberty	1969	City Owned	31,100	48	13	7	77,268	Yes	Yes	94	22	Partial	130
Hazelwood	1899	Rented	3,343	36	8	6	17,285	Yes	No	22	10	Yes	NA
Hill District	1982	Rented	5,725	37	11	7	22,935	Yes	No	48	9	Yes	45
Homewood	1910	CLP Owned	28,776	39	11	7	39,056	Yes	No	113	12	Yes	75
Knoxville	1965	City Owned	8,864	38	8	4	24,515	Yes	No	36	9	Partial	50
Lawrenceville	1898	City Owned	10,345	39	11	7	25,702	No	Yes	37	12	Partial	80
Mt. Washington	1900	City Owned	4,915	38	10	4	25,634	No	Yes	32	9	No	40
Sheraden	1981	City Owned	4,591	37	10	6	22,442	Yes	No	19	7	Yes	NA
South Side	1909	City Owned	11,610	38	9	5	27,331	No	Yes	60	15	No	40
Squirrel Hill	1972	City Owned	26,706	52	17	11	106,728	Yes	No	210	51	Yes	100
West End	1899	City Owned	4,911	30	10	6	22,307	No	Yes	31	10	No	25
Woods Run	1964	City Owned	5,745	38	12	6	32,239	Yes	No	44	13	Yes	35
Main	1895	City Owned	148,875	62	16	11	1,895,092	Yes	No	355	85	Yes	30

Source: CLP

Table 9. Table of Data Sources

The following datasets were examined for the study that led to this report.

Dataset/Tool	Source	Information
Cardholder data 2006-2008 (anonymized)	CLP	Circulation, comp use, location
Branch use data 2002-2008	CLP	Visits, circulation, comp use., program attendance, more
Facility cost data 2006-2007	CLP	Direct operating cost
Decennial Census 1990, 2000	Census Bureau	Demographics (population, poverty, access to personal transit, children, families and children)
Population Estimates 2001-2007	Census Population Estimates Program	Population estimates
On-the-Map tool 2006	Census Bureau Longitudinal Employer Household Dynamics Program	Location of jobs, workers
Public school student data 2008-2009 (anonymized)	PPS	Student counts, free/reduced lunch eligibility
Port Authority Trip Planner - Neighborhood Search 2008	Port Authority of Allegheny County	Availability, mode, frequency of transit routes to alternative service points
Pittsburgh Neighborhood Community Information System (PNCIS) 2007	Pittsburgh Partnership for Neighborhood Development (PPND)	Crime incidents
Market Value Analysis Ratings 2008	The Reinvestment Fund in cooperation with the City of Pittsburgh, the Urban Redevelopment Authority, PNCIS and others.	Housing market ratings
Tax returns 2000-2005	IRS (via the Brookings Institution)	Number of tax returns by zip code
Spatial data (various)	Allegheny County, PNCIS	Street networks, physical barriers, library and school locations, Census data, and more.

Dataset/Tool	Source	Information
www.humanservices.net (2008)	Allegheny County Department of Human Services	Location and description of youth service providers
Reported Crime 2007	City of Pittsburgh Bureau of Police 2007 Annual Report	Reported crime by category and neighborhood
Internet Traffic Monitoring System (ITMS)	PENNDOT	Street traffic counts
CLP facility data 2006	CLP	Facility size, age, collection, service hours, and more
ACLA facility data	ACLA library websites, accessed 2008	Service hours
Allegheny County Comprehensive Plan (Draft)	Allegheny County Department of Economic Development	List of “Allegheny Places” by market
City planning documents	Pittsburgh Department of City Planning	List of relevant planned city development project by market.
Satellite and street level photography	Google Earth and Google Streetview	Photos of market areas and sites.
Public Library Data Service (PLDS) Statistical Report (2007)	American Library Association	Data on other library systems
Public Libraries Survey (2006) from National Center for Education Statistics	U.S. Department of Education, Institute of Museum and Library Services	Data on other library systems

End Notes

¹ Center for Economic Development (2006), page 30.

² Excellent examples of hard thinking on how to increase library benefits can be found in two recent reports by the Urban Library Council, both which can be found in the bibliography of this report. “The Engaged Library: Chicago Stories of Community Building” recommends practices to help libraries deepen their connection to their communities and contribute to the development of social capital. “Making Cities Stronger: Public Library Contributions to Local Economic Development” presents ways libraries can broaden their impact on early literacy, workforce development, small business development, and neighborhood reinvestment

³ “Carnegie Library of Pittsburgh 2007-2011 Strategic Plan”, page 7.

⁴ RAND, page 43.

⁵ Source: Estimates from the U.S. Census Bureau’s OnTheMap tool from the LEHD Program, 2006 dataset. See <http://lehdmap3.did.census.gov/>.

⁶ The term “service area” can have two different meanings. **Legal service areas** (LSAs) in the Commonwealth are collections of municipalities which a library system is funded to serve, via branch or internet. A library system can also designate **administrative service areas** (often by branch) within their LSA that its branches must serve and engage. For the formal definition of an LSA in Pennsylvania, see “Pennsylvania Library Laws” in the bibliography.

⁷ Chart is based on figures from the 1990 and 2000 decennial census, and the U.S. Census Population Estimates Program. Recent population projections have been published by the Pennsylvania State Data Center (released 2008), Southwestern Pennsylvania Planning Commission (released 2007), and the University of Pittsburgh, as part of a study for Allegheny County’s Comprehensive Plan (released 2005). Only the SPC study included a projection for the city.

⁸ Koonz (1997), pages 142-144.

⁹ Cost effectiveness measures are related to, but do not serve the same purpose as measures of operating efficiency (such as operating dollars per service hour or square foot). Measures of operating efficiency may be useful in assessing how well a branch library is being run, but say little about whether it should be running.

Our measure like any performance measure has pros and cons. Barring “return only” trips, visits are outputs that indicate that someone received at least something of value at the facility (as opposed remotely over the internet). Using visits also allow us to avoid arguing over which library services (and which books) are the most beneficial to whom, a windmill we leave to others to tilt. For the record, we also compared branches base on a cost per use measure by creating an index of common uses (circulation, computer session hours, reference questions, etc.). While this measure has its own problems the resulting rankings were stirred but not shaken compared to visit based rankings. Moving to the denominator, we used direct operating costs provided by CLP management, excluding all forms of branch overhead. It is certainly conceivable that some portion of overhead might be arguably causally related (and thus attributable) to activities at the branch level such as circulation, service hours, labor hours or other cost drivers, but the practice of library cost accounting does not appear to have advanced to this point. Hamburg et al. (1972) covered the difficulties and dangers of these kinds of measures for libraries nicely.

¹⁰ The concept of access has many dimensions, including not only transit (mode accessibility, travel distance and time) but also other facets such as service hours, site physical accessibility, etc. The “reasonable access” measure used in this report is restricted to the transportation dimension.

¹¹ From Chapter 4 of “Allegheny Places: Allegheny County Comprehensive Plan (Draft)”, Allegheny County Department of Economic Development, McCormick and Taylor, and others). The table of related “Places” is also from Chapter 4.

¹² Designations based on examination of the Future Land Use Map of the draft Allegheny County Comprehensive Plan.

¹³ Koontz (1997), page 39.

¹⁴ American Library Association website, accessed June 28, 2009. Link: <http://www.ala.org/ala/mgrps/divs/pla/plapublications/pldsstatreport/index.cfm>

¹⁵ The median area for the subset was 580 square miles, CLP’s LSA covers about 126 square miles.

¹⁶ RAND, page 7.

¹⁷ See: http://www.philly.com/inquirer/home_top_stories/20081114_City_s_library_closing_plan_sparks_outcry.html, Philadelphia Inquirer, Nov 14 2008.

¹⁸ Koontz notes that one review of six studies on the effects of distance on library use by Palmer found that for the studies of urban areas, 90% of users lived within two miles of a library. See Koontz (1997) pages 32-35. In their study of the Free Library of Philadelphia (see bibliography), Coughlin, Taieb, and Stevens found that the “effective radius” (the distance containing 80% of users) of its branches within the city ranged from 0.4 to 1.2 miles for juveniles, 0.6 to 1.5 for teens, and 0.5 to 1.85 for adults.

¹⁹ RAND, page 43.

²⁰ Ibid., page 38.

²¹ Regardless of the type services offered, it’s likely that patrons will continue to use “local” service points as they have up until now, that is, patronizing the nearest branch (if no more than to 2 miles away), subject to physical and other barriers. In other words, the findings of this report will still apply, regardless of the mix of services to be offered at each site, although some results may be more relevant to specific services than others.

²² This comparison used judgment calls to establish comparable “theoretically consolidated” systems. For example, we combined the independent city of Richmond with Henrico County. A limited number of branches within Jackson County’s Consolidated System #3 (which serves areas outside of the County) were included to create an estimate for Jackson County MO.