Library use across Hamilton:

Borrowing and population trends for library planning

FINAL

Prepared for the Hamilton Public Library



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1.0 Introduction

The Hamilton Public Library is one of the most widely used public services delivered by the City of Hamilton. Through its 22 branches, over 30 bookmobile stops (Figure 1), and visiting library service, HPL lends more than 6 million items per year. It also serves many others through programming and events, in branches and in the community, computer labs and popular online collection and services.



Figure 1. Map of HPL branches and bookmobile stops

As part of HPL's regular scan of trends across the City and how they relate to library planning, HPL commissioned the SPRC to review HPL circulation and customer data in relation to new Census data and city population growth predictions. To give more context for the map of HPL branches in Figure 1, Figure 2 shows the 2016 population density across Hamilton, ward and urban boundaries and the categories of HPL branches (colours of the circle symbols) along with 2016 circulation for each branch (size of the circle symbols).





HPL categorizes its branches in four categories: Rural (currently five branches), Community (14 branches), District (2 branches) and its headquarter branch, Central. Since Hamilton's amalgamation in 2001, HPL has closed four branches: Rockton and Millgrove, rural branches in Flamborough, Picton, a community branch in the North end of Hamilton on James Street, and the Winona community branch on Highway 8 near Fifty Road in Stoney Creek.

In 2015, HPL completed a Facilities Master Plan¹ to help its Board of Directors make planning and funding decisions regarding its branches. The future actions recommended by the Plan are summarized below. A column has been added to indicate any new renovations or planning updates in the time since the FMP was completed.

Branch	2015 FMP Action Status Summary	2018 status
Ancaster	Monitor use of the facility and growth in the community	
Barton	Monitor and maintain	
Binbrook	Build new expanded facility	New facility opened January 2018.
Carlisle	Review	Review completed, planning in progress.
Central	Maintain	
Concession	Monitor and maintain	
Dundas	Renovate facility	Renovated facility completed in March 2018.
Felton	Monitor and maintain	
Greensville	Partner with city and HWDSB for joint facility	New hub facility in development. Opening likely in 2019.
Kenilworth	Monitor and maintain	
Locke	Review options and funds for improved entrance	Currently under renovations, expected to re-open in Q4 2018.
Lynden	Monitor and maintain	
Mount Hope	Relocate	
Red Hill	Monitor and maintain	
Saltfleet	Monitor and maintain. In the longer term, look for opportunities to partner with city to move to downtown Stoney Creek	
Sherwood	Monitor and maintain	
Stoney Creek	Monitor and maintain	
Terryberry	Monitor and maintain	
Turner Park	Monitor and maintain	
Valley Park	Work with city and Heritage Green Community Trust to secure funding and expand branch at current location	Funding secured and at design stage.
Waterdown	New facility in development	New facility opened in 2015.
Westdale	Monitor and maintain	

¹ Hamilton Public Library, (2015). Facilities Master Plan 2015. http://www.hpl.ca/sites/default/files/HPL%20Facilities%20Master%20Plan%202015_AODA.pdf

2.0 Data and methods

The following datasets were used in this report

- HPL cardholders: anonymized data about HPL cardholders including age, postal code, lifetime circulation and year of card registration.
- HPL circulation data physical items at branches: branch where item was borrowed, date of transaction and cardholder ID, for the period October 2015 to September 2016. A change in HPL databases made it more difficult to access more recent data. The period of this data was deemed acceptable because it overlapped with the dates of the 2016 Census.
- HPL circulation data bookmobile: same as above for bookmobile items.
- HPL circulation data online items: This data was only available for Overdrive and Freegal items and included transaction date and cardholder ID for the full 12-month period of 2016.
- HPL circulation data last activity date: This was used to reduce the list of over 230,000 cardholders to eliminate persons who had no activity in the last three years (criteria used was last activity greater than 2013). This reduced the number of cardholders to about 180,000 persons.
- 2016 Census (Statistics Canada): indicators used included population, income groups, education levels, languages, housing types among others, all at the smallest geography available, dissemination areas (DA).
- 2016 Postal Code Conversion File (Statistics Canada): This dataset is a list of postal codes across Canada and within which Census geographies they are found. Due to many postal codes in rural areas belonging to multiple large areas, often a link between postal code-based data in rural areas cannot be linked to census data. This was the case in Hamilton, as will be seen in later sections of this report.
- HPL Branch performance data: this data was not linked to individual cardholders, rather was the aggregated data from each branch. Data included circulation, visits, and computer use for 2016. In addition, data on circulation per hour at each branch for a selected week was also accessed. This data was supplemented with data from the 2015 HPL Facilities Master Plan, including branch size (square footage) and FMP status.
- Current and projected (to 2025) population data from the Watson and Associates Inc. report for the City of Hamilton Ward Boundary Review:

 City of Hamilton Ward Boundaries (2018): This report uses the new City of Hamilton ward boundaries that will take effect during this coming 2018 municipal election. The Watson report, which created the boundaries, only labels each ward by a number. This report adds descriptive names for each ward to help readers locate them. The names are based on the official names of the previous ward boundaries with changes to reflect the modified boundaries. The names are only to help readers of this report and are not official in any way.

Data linkages were created between most of these datasets to analyze the data in more detail and to enable investigation of trends not apparent in individual datasets. The specific data linkages were as follows:

- HPL cardholder and circulation data using the cardholder ID.
- HPL cardholder and circulation data with 2016 Census data using the postal code conversion file.
- 2016 Census data and Watson report on current and projected population using a spatial join to find the DA that best fit to the new ward boundaries.
- All data was limited to where a join was possible, so cardholders who had a postal code outside of Hamilton or whose postal code could not be linked to a DA were not included in the data tables or the maps.
- In addition, one DA was eliminated from the analysis, the DA for McMaster campus (35250678). This DA had the largest number of cardholders by far (over 4,000 records). Since students on campus are not counted in the Census because it occurs in May after most students leave their campus residence for the summer, removing this DA improved the data quality.

In this report, a few key terms should be defined in advance to help the reader understand the data being used:

- HPL average only includes data where linkages were made to dissemination areas, so excludes some HPL customers as noted above.
- Cardholders all persons who are registered HPL customers and have activity on their card in 2014 or later.
- Active borrowers: cardholders who borrowed at least one physical or online item in 2015-16.
- Online items only includes Overdrive and Freegal items.

3.0 Hamilton's population growth patterns

3.1. Growth at ward and sub-ward level areas

To inform the planning process with the HPL, an examination of residential growth in the City of Hamilton is summarized for this report.

The provincial Places to Grow Act and Greenbelt legislation requires cities in the Greater Toronto and Hamilton area to shift more of their growth to already urbanized areas. This shift has not yet been fully implemented in Hamilton. Residential home building in the City of Hamilton continues to be primarily concentrated in outlying suburban areas of the City². One of the reasons is that the City still has suburban green fields within its Urban Boundary, so population growth in the short to medium term will continue to be strong in these areas. In the medium term, the implementation of the LRT line from McMaster to Eastgate is expected to increase growth in the lower city, which is already in evidence as new residential towers are in construction or planning stages.

The map in Figure 3 is an overlay of current and new ward boundaries and showing the current and projected (2025) growth in each ward and sub-ward area. Glanbrook is expected to experience tremendous growth, with other City documents showing the growth will be focussed in Binbrook, Mount Hope/Airport lands and then areas near Twenty Road and Upper James. An additional 20,000 residents are expected in these communities combined.

The other major growth areas will be in the lower Stoney Creek/Winona areas and the Heritage Green and Summit Park areas of upper Stoney Creek, near the Eramosa Karst around Mud Street Rymal Road East, Pritchard and Upper Centennial (Highway 20). In the next 10 years, an additional 10,000 residents are expected in these two major growth nodes. Waterdown is also expecting approximately 10,000 additional residents in the coming decade.

More modest population increase is expected in two other growth areas of the city: Downtown Hamilton and Ancaster. One specific site of residential growth in the lower city will likely be West Harbour and Barton Tiffany lands where city planning documents call for more than 3,200 new units of housing in these areas combined. The LRT line across the lower city from Eastgate to McMaster is also expected to spur residential growth, but across a larger area than the West Harbour node.

² In addition, City reports note that greenfields in Hamilton are being built at a much lower density than now required by the province. At the end of 2016, the planned density for new greenfield developments was 56 persons and jobs per hectare (pjh), while the province now mandates an average of 80 pjh.

Longer term (beyond 2025), the City is currently undergoing a secondary planning process for Elfrida (Upper Centennial and Rymal Road East) which over the coming decades plans for growth of up to 70,000 residents, in a dense, walkable suburban community, it's population size equivalent to the city of Peterborough but in a much smaller foot print³.

Some of these plans are not fully confirmed as they are subject to various appeals at the Ontario Municipal Board, or need further approval from the province. And as these plans rely on private housing developers to invest in and build, any changes in market conditions may also speed up or slow down the rate of implementation of these developments.



Figure 3. Population by ward and sub-ward areas, 2016 and 2025

³ Because currently planned greenfields only achieve about 56 pjh (persons and jobs per hectare), city planning staff have reported to City Council that the Elfrida growth node "will need to be planned at much greater density to achieve the required 80 phj" average across the city's new greenfields. As a comparison, the Dundas growth node is currently at a density of 103 pjh, and new growth in downtown Hamilton is planned to be 250 pjh.

The map in Figure 4 shows the same data as Figure 3, but with the growth displayed as a percentage increase or decrease (the colours in each area), and the net projected increase for the growing areas (the green circles). This map shows that in addition to areas previously mentioned, growth is expected in the McMaster/Westdale area, the Upper James Corridor, and the Eastgate/Centennial area⁴.





⁴ More information about growth in specific areas of the City is available on the Secondary Plans section of the city's website: <u>https://www.hamilton.ca/city-planning/planning-community/secondary-plans</u>

3.2. Projected population per branch in 2025

As Hamilton grows, it will be important for HPL to monitor access to branches to ensure at least a rough equity between areas and neighbourhoods, keeping in mind that many factors must be weighed in determining branch locations.

The map in Figure 5 illustrates the projected ratio of branches to projected population in 2025 in each of the city of Hamilton's wards, based on population growth forecasts and the recently approved new ward boundaries. There are limits to the usefulness of analyzing branches per capita by ward because it doesn't include information about how many people are within a reasonable walking, or driving distance, from a library branch. As well, since ward boundaries are administrative, not visible in the physical environment, and subject to a change every five years, basing branch locations on ward boundaries brings risks for proper long-term planning.

Figure 5 shows that in 2025 wards 15 and 13 (Waterdown, Flamborough and Dundas) will offer the best population to branch ratios among Hamilton's wards (fewer than 20,000 residents per branch). A feasibility study for the Carlisle Branch was recently completed; it recommended keeping Carlisle open. By 2025, Ward 15 will have better than average population per branch (Table 1).

Ward 11 (Glanbrook) currently has a low number of residents per branch, but with growing population, the ratio will rise to closer to average levels by 2025. Most of the lower city, Mountain and Stoney Creek wards will continue to have a larger-than-average population per branch (over 35,000 residents per branch in these areas). The largest population per branch in 2025 will be lower Stoney Creek, east of Grays Road, with almost 50,000 residents per branch. The new Ward 14, which includes the West Mountain, west of Garth Street, does not contain any branch.

Figure 5. New ward boundaries and branches per 10,000 residents in each ward, based on projected population in 2025



The table in Figure 6 provides the raw data that was used for Figure 3, 4 and 5, to examine the trends in more detail.

				Projected			
	2016	Projected 2025		population		Population per	Projected population
New ward and area name	population	population	Difference	change (%)	Branches	branch in 2015	per branch in 2025
Ward 1 (Chedoke - Cootes)	41,340	43,900	2,560	6.2%	2	20,670	21,950
Ward 2 (Downtown)	37,220	41,855	4,635	12.5%	1	37,220	41,855
Ward 3 (Hamilton Centre)	43,780	43,485	-295	-0.7%	1	43,780	43,485
Ward 4 (Hamilton East)	40,235	39,395	-840	-2.1%	1	40,235	39,395
Ward 5 (Red Hill - Centennial)	44,070	44,620	550	1.2%	2	22,035	22,310
Ward 6 (Mountain - Upper Ottawa)	39,500	37,880	-1,620	-4.1%	1	39,500	37,880
Ward 7 (Mountain - Upper Wentworth)	49,170	48,770	-400	-0.8%	2	24,585	24,385
Ward 8 (Mountain - Upper James)	35,730	38,180	2,450	6.9%	1	35,730	38,180
Ward 14 (Mountain - Upper Paradise)	34,585	33,740	-845	-2.4%	0	N/A	N/A
Ward 9 (Upper Stoney Creek)	28,390	43,530	15,140	53.3%	1	28,390	43,530
Ward 10 (Lower Stoney Creek)	38,175	48,085	9,910	26.0%	1	38,175	48,085
Ward 11 (Glanbrook)	24,230	46,105	21,875	90.3%	2	12,115	23,053
Ward 12 (Ancaster - Flamborough)	43,755	49,140	5,385	12.3%	2	21,878	24,570
Ward 13 (Dundas - Flamborough)	36,795	35,425	-1,370	-3.7%	3	12,265	11,808
Ward 15 (Waterdown)	28,295	38,755	10,460	37.0%	2	14,148	19,378
City	565,270	632,865	67,595	12.0%	22	25,694	28,767

Figure 6. New ward boundaries, population and residents per branches in 2015 and projected in 2025

Data source: Watson & Associates. (2017). City of Hamilton Ward Boundary Review: Final Report (Amended)

3.3. Additional City of Hamilton growth planning context

In its planning documents, the city has defined "Urban Nodes", which are "intended to provide for a broad range and mix of uses in an area of higher density and activity than surrounding Neighbourhoods."⁵ Figure 7 provides a map of these urban nodes. The Heritage Green and West Elfrida node locations will be of particular importance to review as part of the planning process for the re-development of the Valley Park branch. The Centennial node, including the planned Eastgate transit hub, will be relevant to any review of the Red Hill branch's leased location. In the longer term, the Meadowlands node may be relevant if HPL feels it needs to address the lack of a library in the new Ward 14. Meadowlands is not in Ward 14, but just across the Ward 14 western boundary and is a frequent shopping destination for many Ward 14 residents.

⁵ City of Hamilton. (2017). GRIDS 2 Growth Summary 2006-2016

Figure 7. City of Hamilton Nodes and Urban Boundary as identified in Urban Hamilton Official Plan



Data source: City of Hamilton. (2017). GRIDS 2: Growth Summary 2006-2016

Any future planning should also be linked to the development of the city's BLAST rapid transit network, as locating library branches near this network will make branch access easier and is likely to increase circulation performance. (See Figure 8 for BLAST Network).



Figure 8. City of Hamilton Planned BLAST Rapid Transit Network

4.0 Branch performance metrics

4.1. Performance metrics by branch characteristics, assets and locations

HPL currently has a robust performance metrics dashboard that provides high quality information about branch performance for monitoring and decision-making. For this report, HPL circulation data was combined with information about branch features and location characteristics to examine trends that are broader than at the individual branch level.

The circulation data for this analysis only includes each branch's 2016 physical circulation (as electronic circulation may not be tied to an individual branch). Three circulation metrics are provided:

- Circulation per hour: physical circulation per hour each branch is open. Normalizing circulation data by branch hours of service provides a fairer comparison between branches that may have fewer opening hours than others.
- Annual circulation per square foot: physical circulation per branch floor space. This normalization provides a fairer comparison of small and large branches.
- Annual circulation per FTE: physical circulation per full-time equivalent staff person at each branch.

In addition, the data tables provide the number of branch catchment areas in each category as an additional guide to help with interpretation (a small number of branches in the category might mean the results simply illustrate individual branch characteristics and not broader level group trends).

To give an overview of circulation in the branches by new ward boundaries, Figure 9 provides a table with the circulation statistics by new wards. Seven wards contain a single branch, so this table does not provide significant insights into group trends. Ward 2 stands out as it is the ward for Central. As the largest branch located to some of Hamilton's densest neighbourhoods, Central has circulation many times that of most other branches. For this reason, in subsequent tables, data includes and excludes Central to better see trends that may be common to average size branches but that can be obscured when Central is included.

Figure 9. Branch performance metrics by new ward boundaries

Branc	hes	in
Dranc	110.3	

New wards	Circulation per	Annual circulation	Annual circulation	Visitors per	Computer use	Number of
	service hour	per sq ft	per FTE	service hour	per service hour	branches
Ward 1 (Chedoke - Cootes)	78.7	29.8	22,479	58	9	2
Ward 2 (Downtown)	286.2	7.0	8,635	429	93	1
Ward 3 (Hamilton Centre)	77.3	22.4	32,503	57	18	1
Ward 4 (Hamilton East)	85.7	23.9	22,836	44	13	1
Ward 5 (Red Hill - Centennial)	82.2	15.7	19,036	55	17	2
Ward 6 (Mountain - Upper Ottawa)	82.0	10.0	16,137	56	14	1
Ward 7 (Mountain - Upper Wentwor	96.9	15.3	19,800	94	20	2
Ward 8 (Mountain - Upper James)	145.1	12.8	20,968	65	25	1
Ward 9 (Upper Stoney Creek)	44.9	35.4	20,068	42	4	1
Ward 10 (Lower Stoney Creek)	48.0	13.6	24,619	29	3	1
Ward 11 (Glanbrook)	28.0	14.2	18,239	12	2	2
Ward 12 (Ancaster - Flamborough)	75.3	20.4	24,377	48	4	2
Ward 13 (Dundas - Flamborough)	72.5	17.7	19,627	43	7	3
Ward 15 (Waterdown)	63.0	43.8	19,703	36	4	2
HPL average	92.8	13.1	15,621	80	17	22

(New ward 14 Mountain - Upper Paradise does not contain any library branches)

Figure 10 shows branch characteristics that seem to have a strong relationship with branch circulation per hour, the size of a branch (with increasing circulation by increasing size of a branch) and the presence of a computer lab. However, since larger branches all contain computer labs, further analysis is required to separate the influence of each of these factors, as they are correlated. Medium-size branches have mid-performance on circulation per hour, however perform best on circulation per square foot, indicating it is likely that the presence of computer labs, branch programs, or other branch amenities in these medium size branches are more important in driving circulation than simply a larger building.

Presence of a computer lab shows that physical circulation is about twice as high with customers who use these branches, and excluding Central, the circulation per square foot, or per staff, is almost the same as branches without a computer lab. These results suggest adding a computer lab to smaller branches would likely help increase their physical circulation. Since a small branch building can't accommodate a traditional computer lab, it is worth examining whether a "mobile computer lab" in small branches (allowing borrowing of tablet computers for customers to use on existing seating within the branch) would be a feasible alternative. HPL is already piloting of in-library lending of laptops and tablets in the Dundas and Binbrook branches this year. An evaluation of this pilot could include examining whether users of these devices also had an increase in physical circulation, as seems to be the case for desktop computer labs.

The last set of tables in Figure 10 validates that HPL's Facilities Master Plan has targeted for relocation or redevelopment mainly branches that have lower circulation performance, which could be due to its location, size, or assets.

Figure 10. Branch performance metrics by branch characteristics

Branches based on						
Building size	Circulation per	Annual circulation	Annual circulation	Visitors per	Computer use per	Number of
Bunuing Size	service hour	per sq ft	per FTE	service hour	service hour	branches
large	133.1	10.8	13,757	128.9	28.7	8
medium	69.7	27.1	21,771	48.1	9.5	8
small	31.0	13.1	20,450	15.5	1.8	6

All branches including Central

Branches based on

Presence of computer lab	Circulation per service hour	Annual circulation per sq ft	Annual circulation per FTE	Visitors per service hour	Computer use per service hour	Number of branches
No	56.0	18.8	21,312	36.9	7.3	14
Yes	134.9	11.4	13,857	130.2	28.5	8

Branches based on

FMP status (2015)	Circulation per service hour	Annual circulation per sq ft	Annual circulation per FTE	Visitors per service hour	Computer use per service hour	Number of branches
Maintain	108.4	11.4	14,358	103.7	24.3	13
Monitor	103.9	22.0	24,432	69.0	4.9) 1
New facility	80.0	27.4	19,708	47.2	7.0) 3
New Hub facility in development	29.1	10.3	22,747	13.7	1.9) 1
Rebuild	44.9	35.4	20,068	41.7	4.5	i 1
Relocate	60.4	11.7	18,243	35.3	7.1	. 2
Review	22.2	14.8	17,275	8.9	0.6	i 1

Central excluded from data

Branches based on

Building size	Circulation per	Annual circulation	Annual circula	tion Visitors pe	r Computer use p	per Number of	ł
Building size	service hour	per sq ft	per FTE	service hou	ar service hour	branches	
large	103	5 1	.5.0 20),142.5	70.9	16.3	7
medium	69	7 2	7.1 2:	L,770.7	48.1	9.5	8
small	31	0 1	.3.1 20),450.2	15.5	1.8	6

Branches based on

Broconco of computor Joh	Circulation per	Annual circulation	Annual circulation	Visitors per	Computer use per	Number of
Presence of computer lab	service hour	per sq ft	per FTE	service hour	service hour	branches
No	56.0	18.8	21,312	36.9	7.	3 14
Yes	105.6	16.9	20,308	72.2	16.	0 7

Branches based on

Facilities Master Plan status (2015)	Circulation per	Annual circulation	Annual circulation	Visitors per	Computer use per	Number of
Facilities Master Plan status (2013)	service hour	per sq ft	per FTE	service hour	service hour	branches
Maintain	83.7	16.3	20,946	58.5	5 14.8	12
Monitor	103.9	22.0	24,432	69.0	4.9	1
New facility	80.0	27.4	19,708	47.2	2 7.0	3
New Hub facility in development	29.1	10.3	22,747	13.7	1.9	1
Rebuild	44.9	35.4	20,068	41.7	4.5	1
Relocate	60.4	11.7	18,243	35.3	3 7.1	2
Review	22.2	14.8	17,275	8.9	0.6	1

Examining characteristics by branch location characteristics, as done in Figure 10, is helpful to see differences between areas of the City and what neighbourhood features, that may have a disproportionate impact on circulation.

The first set of tables in Figure 11 groups branches by neighbourhood income. This was done using customer postal codes and branch "catchment areas" (see section 5.4 for more detail) and 2016 Census income data to categorize each area into one of three income categories: "Below average income", "Moderately above average income" and "Highly above average income". Neighbourhood income trends in Figure 11 reveal branches serving below average income neighbourhoods have the highest circulation per hour. This finding is useful for planning any customer recruitment campaigns. If the goal is to increase physical circulation, then targeting lower than average income neighbourhoods may have higher impact. When residents in these neighbourhoods become customers, they are higher-than-average borrowers of physical items.

The data on computer use by neighbourhood income shows an even stronger "social gradient", with branches in below-income neighbourhoods having the highest computer use and computer use declining with increasing income within branch catchment areas. This is not surprising given that customers from lower income households are less likely to have a computer or Internet access at home. HPL has strived to bridge this "digital divide" and has targeted computer labs in many branches in lower income neighbourhoods, which may also be a driver of the differences seen on this indicator in Figure 11.

The second set of tables in Figure 11 shows that higher and medium population density is correlated to higher circulation, which could be the influence of walkable neighbourhoods which are more common in higher-density neighbourhoods. Being able to walk to a branch is likely to be more attractive than to a branch further away, that may require car travel.

The final set of tables in Figure 11 show various geographic location characteristics of branches and the relationship to circulation. If Central is excluded, the Mountain, Ancaster, and Dundas branches have the best per hour customer circulation performance.

Figure 11. Branch performance metrics by location characteristics

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Annual circulation

Annual circulation

per sq ft

per sq ft

88.7

82.1

28.1

103.9

102.6

47.6

57.0

. . .

All branches including Central

Di dificiles Daseu Oli						
Neighbourhood income	Circulation per service hour	Annual circulation per sq ft	Annual circulation per FTE	Visitors per service hour	Computer use per service hour	Number of branches
Below average	125.6	10.5	13,045	124.9	30.9	8
Moderately above average	68.8	17.5	21,274	50.0	8.3	9
Highly above average	73.3	26.8	21,926	45.0	4.3	4
Branches based on						

Circulation per	A	nnual circu	ulation	Annual circu	lation	Visitors per	Computer use per		Number of
service hour	p	er sq ft		per FTE		service hour	service hour		branches
	123.3		10.4		12,877	122.2		29.0	8
	82.1		20.8		22,152	59.2		10.2	10
	28.1		14.7		19,683	12.8		1.6	4

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Number of

branches

Number of branches

7

9

3

1

1

5

2

5

4

3

15.4

10.2

1.6

4.9

9.9

3.2

1.9

15.1

20.0

5.9

.

Low density Branches in

Branches based on

Branches based on **Population density** High density Medium density

Community
Ancaster

Flamborough

Glanbrook Lower city

Mountain

Dundas

Circulation per	Annual circulation	Annual circulation	Visitors per	Computer use per	Number of
service hour	per sq ft	per FTE	service hour	service hour	branches
103.9	22.0	24,432	69.0	4.9	1
102.6	20.2	19,404	62.3	9.9	1
47.6	25.3	20,498	26.2	3.2	5
28.0	14.2	18,239	12.3	1.9	2
132.2	10.6	12,183	147.7	34.1	6
105.7	13.1	19,353	77.2	20.0	4
57.0	15.4	20,137	39.7	5.9	3

.

Stoney Creek Branches in Geographic area

Rural Suburban Urban - lower city Urban - mountain

Circulation per	Annual	circulation	Annual c	irculation	Visito	rs per	Computer use per		Number of
service hour	per sq f	ťt	per FTE		servic	e hour	service hour		branches
	27.6	13.1		21,012		12.9		1.4	4
	71.5	20.6		20,643		45.5		5.9	8
	132.2	10.6		12,183		147.7		34.1	6
	105.7	13.1		19,353		77.2		20.0	4

Central excluded from data

Neighbourhood income	Circulation per service hour	Annual circulation per sq ft	Annual circulation per FTE	Visitors per service hour	Computer use per service hour	Number of branches
Below average	91.0	16.0	19,960	48.8	14.	57
Moderately above average	68.8	17.5	21,274	50.0	8.	3 9
Highly above average	73.3	26.8	21,926	45.0	4.	3 4

Annual circulation

Annual circulation

19,412

22,152

19,683

24,432

19,404

20,498

20,137

per FTE

per FTE

15.4

20.8

14.7

22.0

20.2

25.3

15.4

Visitors per

service hour

Visitors per

service hour

57.1

59.2

12.8

69.0

62.3

26.2

12.3

56.5

77 2

39.7

Computer use per

Computer use per

service hour

service hour

Branches based on	
Population density	

High density
Medium density
Low density

Branches based on Neighbourhood income Below average

Branches in

Ancaster Dundas Flamborough Gla Lower city Mountain Stoney Creek

Coorrentia avec	Circulation per	Annual circulation	Annual circulation	Visitors per	Computer use per	Number of
Geographic area	service hour	per sq ft	per FTE	service hour	service hour	branches
Rural	27.6	13.1	21,012	12.9	1.4	4
Suburban	71.5	20.6	20,643	45.5	5.9	8
Urban - lower city	82.3	24.3	22,687	56.5	15.1	5
Urban - mountain	105.7	13.1	19,353	77.2	20.0	4

nbrook	28.0

14.2 18,239 24.3 22,687 82.3 19.353 105.7 13.1

Circulation per

Circulation per

service hour

service hour

4.2. Branch circulation performance by time periods

HPL currently tracks and monitors branch circulation performance per hour and day of the week, but as individual branches may operate on different hourly schedules, comparison between branches is somewhat difficult. A normalization of the hourly circulation data by each branch's individual opening hours facilitates comparison of each branch's circulation performance.

Figure 12 shows each branch's 2016 physical circulation performance per open hour in 4 different time periods:

- Average for Monday-Friday daytime hours (before 5pm)
- Average for Monday-Friday evening hours (5pm and later)
- Average for Saturdays
- Average for Sundays (If applicable. In 2016 only four branches were open on Sundays)

In most branches, weekend circulation per hour is higher than weekdays. Weekday evenings are most often the lowest performing times. In the case of seven of HPL's 22 branches (Ancaster, Kenilworth, Saltfleet, Sherwood, Terryberry, Waterdown, Westdale), Saturday circulation is very close to double or more than double the hourly circulation on weekdays.

In the case of three of the four branches that are open on Sundays (except during July and August), their Sunday performance is on par with, or even higher than Saturday circulation. A 2011 report about the Toronto Public Library system also found that Sunday has the best per hour performance on average across their branches⁶. This data suggests that an exploration of extending Sunday hours into July and August in the four branches currently open on Sundays is warranted given that Sundays are a high-performing day the rest of the year. Seasonal data for HPL was not examined in this data, however, the TPL report showed that overall July and August were the first and third busiest months for branches across their system. Alternatively, adding Sunday hours to more branches (or in the case of Mount Hope, Saturday hours) is also likely to be a good investment of staff hours if HPL is interested in increasing access to greater numbers of residents visiting branches and borrowing items.

Figure 12. Circulation per hour performance by branch and time periods

⁶ DPRA and LeisurePlan International Inc. (2011). *Service Efficiency Study Toronto Public Library: Final Report.* https://www.toronto.ca/wp-content/uploads/2017/08/96fe-library_ses_report.pdf



5.0 Population characteristics, cardholders and circulation performance metrics

5.1. Cardholders, population and circulation

To deepen the analysis of HPL performance data, customer level data was used instead of the branch-level summary data used in previous sections of this report. HPL customer circulation totals data was combined with customer postal code and neighbourhood census data using geographic information software to compare HPL customers and borrowers to the general population across the city.

Figure 13 shows that on average, approximately 33% of the city's residents are HPL cardholders. On average, 16% of residents used their library card to borrow physical, Overdrive and Freegal items in the most recent year for which data was available⁷. (Usage of other library digital resources or in branch computer or Wi-Fi use is not included in this data.)

The pattern of proportion residents who are cardholders, or active borrowers, varies across Hamilton's wards. Wards 1 (Chedoke – Cootes), 2 (Downtown) boast nearly 50% ward residents who are HPL customers. The highest rates of ward population borrowing at least one item in the 2015-16, 12-month period are Ward 1 (26%), Ward 12 (Ancaster – Flamborough) (24%), and Ward 13 (Dundas – Flamborough) (22%).

Ward 9 (Upper Stoney Creek) and Ward 4 (east Hamilton) have the lowest proportion of cardholders and active borrowers. The single branch in Ward 9 is Valley Park, which was identified as a low-performing branch in the Facilities Master Plan. The 2015 FMP directs Planning to explore feasibility of rebuilding of the branch in the current location at the Valley Park recreation centre.

⁷ For physical items, the circulation data covers the October 2015-September 2016 period (due to database changes, newer data was not available). For online items, the data includes all circulation in 2016.

Figure 13. HPL Cardholders and active borrowers as a percentage of population, new ward boundaries, City of Hamilton, 2016 Census



Examining the circulation patterns of current borrowers, Figure 14 reveals that on average persons who borrowed items in 2015-16 used a total of 63 items (about five per month), counting physical, Overdrive and Freegal data only.

The wards with substantially below average physical borrowing include Wards 9 and 11 for reasons previously discussed, as well as Wards 15, 10 and three of the four Mountain wards (6, 8 and 14). Ward 15's new Waterdown branch is growing in circulation and if the trend continues, the gap with the HPL average will continue to shrink.

The new Ward 10 includes most of lower Stoney Creek and includes the eponymously named branch located at the old Stoney Creek City Hall. Just across the Grays Road new ward boundary, many customers in lower Stoney Creek also use the Saltfleet branch (located in Ward 5). The 2015 Facilities Master Plan lists both of these branches as "Monitor and Maintain," but in the case of the Saltfleet branch, with an indication to consider developing a long-term plan to relocate from Cardinal Newman secondary school to be more centrally located in downtown Stoney Creek. The rate of growth of residential developments in Winona will be determined by an upcoming provincial ruling on lands in the area. Assuming Winona and surrounding lands continue to grow in some form in the near future, the Winona population centre being located in the easternmost part of Stoney Creek combined with somewhat low borrowing at existing branches should be flagged for further review by HPL. In the short term, a new weekly Bookmobile stop in Winona, potentially located near the new Costco, would likely increase access to physical library materials for more area residents.

The three of four Mountain wards with relatively low borrowing at branches per active user (Figure 14) contrasts with the Mountain branches having among the best circulation on a per hour basis than any other area of the city (Figure 9). These two trends are explained by the fact that three of the four Mountain wards (wards 6, 8 and 14) have lower-than-average rate of branches per population. Each Mountain branch has a high population that it serves, so they are very busy. However, because there aren't enough branches per population on the Mountain, each branch is further away from many residents and this leads to Mountain residents visiting a library and borrowing items less often than they might if there was a branch closer to them.

Finally, Ward 5 with both Saltfleet (discussed above) and Red Hill branches is another ward with somewhat lower in-branch circulation than the HPL average. Red Hill is listed as Monitor and Maintain in the Facilities Master Plan, but as one of HPL's leased branches that is not colocated with other services, there is opportunity to examine a better location within the area than other branches with low performance. The current location in a plaza on Queenston Road near Nash Road is on a major bus route, but is somewhat awkwardly located relative to the major population centre in the ward, the Riverdale neighbourhood. Riverdale is Hamilton's second most densely populated area (after Durand in downtown Hamilton) and is a major "arrival city" for newcomers to Hamilton from countries around the world. Libraries are very important part of settlement services for newcomers, and approximately half of Riverdale and walking to the buses at Queenston at Eastgate is about half the distance to Red Hill branch, so it is likely users from Riverdale walk the entire distance (about 1-2 km, depending where Riverdale residents live) instead of waiting for a bus to take them only two stops. As well as being newcomers to Canada, many Riverdale residents live on low incomes, making it much less likely that they could access a branch by car.

The LRT implementation on Queenston Road and new GO station at Centennial is bringing major new development to the area, and the City has just concluded a Centennial Neighbourhoods Secondary Plan, which indicates that the Eastgate LRT terminus stop at Queenston Road and Centennial Parkway will become a central hub of Ward 5. HPL should keep in close communication with the City on area developments to position the Red Hill branch as part of the Eastgate hub (in the long-term), which could help bring Ward 5 circulation up to the city average.

Figure 14. Annual circulation, by borrowing type for current borrowers, new ward boundaries, City of Hamilton, 2015-16.

5.2. Bookmobile usage

The pattern of bookmobile usage by ward shows that Ward 14 (Mountain – Upper Paradise), Ward 5 (Red Hill – Centennial) and Ward 4 (Hamilton East) have the highest Bookmobile circulation as a percentage of branch circulation (Figure 15). The Bookmobile customers in these wards also have a higher-than-average likelihood of not borrowing at a branch. These indicators can be a reflection of a library branch that is not well located in the neighbourhood and more difficult to access compared to branches in other areas of the city, or particular Bookmobile stops in these wards are very well located in high density areas, or the Bookmobile is reaching a population with very limited mobility who wouldn't be able to access a branch no matter how well-located. In all likelihood, many if not all of these factors explain these differences.

5.3. Trends by age groups

While Figure 14 showed differences between wards on proportion of residents who are HPL cardholders, Figure 16 shows that the differences are much greater when comparing age groups.

Not surprisingly, children aged 0-4 years have the lowest rate of holding their own library card (around 13% across the city). While HPL encourages even young kids to be signed up, most parents likely use their own cards when they borrow items for their young children, making this indicator not as meaningful for the youngest age group. As kids enter school age, rates of card holders increased dramatically to the highest of any age group. Cardholders age 10 to 14, have a rate of over 50% city wide. This jump is likely due in large part to library field trips that are part of the school curriculum and registering kids for their own library cards is part of that process.

In most wards, the pattern is library card-holding falls off consistently throughout adulthood and into senior years. A library recruitment campaign targeted to these age groups would likely be helpful to re-introduce the library and its benefits to their quality of life. Other research into barriers to library use has shown that fines for late and lost items can be a major reason why some customers stop using a library, which could also be a factor in dropping library activity with age. HPL has previously piloted fine forgiveness programs with mixed success⁸, but more

⁸ Hovius, B., Darling, K. Sawa, M. (2009). Hamilton Public Library Inter-City Service Plan. <u>https://www.hpl.ca/sites/default/files/inner-city%20service%20plan%202009%20compliant.pdf</u>

exploration of this and other barriers is warranted to better understand actions to increase library participation with increasing age in adulthood.

In contrast to the pattern of library card holders per population, the trend in items borrowed by active borrowers illustrates borrowing declines with school age and then increases in adulthood (Figure 17). Borrowed items peaks in the age 50-64, with lower but still high borrowing among seniors. Contrary to the stereotype of older adults being less digitally literate than younger users, online usage is similar to physical borrowing, with the highest rates among older adults. One reason could be that digital resources remove barriers for persons with visual impairments, which are more common among older adults (for example scaling font size on ebooks, or downloading audiobooks for listening instead of reading). This finding reinforces the previous analysis that recruiting older adults may be an effective way to increase circulation, as once they become active library users, older adults are high users of physical and online items.

Examining borrowing by age and ward shows that most wards have a similar pattern (Figure 18). The highest borrowers across ages and ward are age 50-64 in wards 2 and 3 (more than 120 items per year – 10 items per month).

Figure 18. Average items per year, among active borrowers, by age group, City of Hamilton, 2015-16

5.4. Branch catchment areas

The geocoding of circulation data to create the data tables in this section was also used to develop "branch catchment areas" – roughly aggregated neighbourhoods that reflect each HPL branch's area of highest use. These branch catchment areas were based on examining circulation data for each Census dissemination area and finding the most popular branches that customers borrowed from (in the case of ties, the closest branch was selected as the "most popular branch").

Figure 19 shows the map of these branch catchment areas developed from the circulation data. Most of Hamilton's rural areas were excluded from the creation of branch catchment areas because postal codes in rural areas are often tied to multiple large areas and cannot be linked to a single census dissemination area. In the rural areas where postal codes were able to be geocoded, there are many areas where branches further away are more popular than their local branch. For example, HPL customers in the Mount Hope area are more likely to use the Turner Park branch than their local Mount Hope branch. Other "destination branches" include Central which is accessed by many people across the city who live further away but work downtown and Waterdown, which is used by many people who are closer to Freelton or Carlisle.

Figure 19. Map of HPL branch catchment areas using 2015-16 circulation data

Using these branch catchment areas, the 2015-16 HPL circulation data was aggregated to view borrowing trends across these areas (Figure 20). While the geographic area is named for each branch that is most popular in that area, the circulation data includes all borrowing, including at branches outside the catchment areas. This aggregation of all HPL circulation data in the geographic areas is what distinguishes Figure 18 from other branch-specific circulation data published by HPL, which only includes borrowing at each specific branch.

An important caveat about this data is that due to lower reliability of postal code geocoding in rural areas, the high rates of active borrowers in the rural areas may be less accurate. Due to these issues with rural areas, the branch catchment data may not be as revealing as the trends discussed in section 5.0, which aggregates the circulation data by type of neighbourhood instead of by geographic area.

Figure 20. Borrowing trends within HPL branch catchment areas, 2015-16 circulation data and 2016 Census data

			Annual items per active borrower						
Branch catchment area	Acti per catc	ve borrowers population in hment area	In bra (inclu borro any br	nch des wing at ranch)	Online		Bookmobile	Total	
Ancaster		19%		42.5		13.3	0.2		56.0
Barton		16%		<mark>6</mark> 6.1		4.6	0.5		<mark>71</mark> .2
Binbrook		71%		38.1		7.5	0.0		45.6
Carlisle		20%		40.2		12.3	0.0		52.5
Central		18%		<mark>73.</mark> 8		8.2	2.3		84.3
Concession		17%		<mark>6</mark> 6.2		16.4	0.2		82.9
Dundas		24%		49.4		14.2	0.6		<mark>6</mark> 4.2
Freelton		17%		44.8		13.2	1.0		<mark>5</mark> 9.0
Greensville		20%		57.0		8.9	0.0		<mark>6</mark> 5.9
Kenilworth		13%		57.3		10.0	0.7		<mark>67</mark> .9
Locke		27%		52.6		10.9	0.2		<mark>6</mark> 3.7
Lynden		40%		57.6		11.5	2.4		<mark>71</mark> .5
Red Hill		12%		48.4		9.5	4.9		<mark>6</mark> 2.8
Saltfleet		13%		47.3		13.0	0.7		<mark>6</mark> 1.0
Sherwood		15%		48.5		11.4	0.8		<mark>6</mark> 0.7
Stoney Creek		12%		36.7		9.2	0.0		45.9
Terryberry		16%		44.2		9.8	2.1		56.0
Turner Park		15%		36.6		10.9	0.7		48.2
Valley Park		15%		33.1		8.4	0.1		41.7
Waterdown		24%		38.2		11.2	0.0		49.4
Westdale		26%		<mark>67</mark> .1		14.8	1.3		83.2
HPL average		17%		50.4		10.8	1.2		<mark>6</mark> 2.5

(Data note: due to postal code geocoding problems in rural areas, the data may be less accurate for the branches located in rural areas including Binbrook, Carlisle, Freelton and Greensville. The circulation at the rural Mount Hope branch is very low and as a consequence does not meet the criteria for a branch catchment in this analysis.)

5.5. Maps of borrowing patterns

The map in Figure 21 shows the percentage of residents who are active borrowers varies across areas of Hamilton. In general, there seems to be a modest trend where areas in western parts of the city have higher rates of active borrowers among residents. This same data is summarized previously in Figure 12 which illustrates a general trend that many wards in the western areas of the city have higher rates of active borrowers compared to areas in the

eastern parts of the city. The map also shows that many rural areas have high proportions of active borrowers, but as discussed in Section 4.4, the accuracy of geocoding is reduced in rural areas, so rates in rural areas should be treated with caution.

The map of average number of items borrowed per active borrower (Figure 22) doesn't show the same east-west pattern. Notable areas with lower items borrowed are mainly on the Mountain south of the Linc and parts of lower Stoney Creek.

Figure 22. Map of borrowed items per active borrower, using 2015-16 HPL circulation data (physical items only)

These maps offer a superficial exploration of borrowing patterns across the city. To deepen the analysis, the next section links this geocoded circulation data to the neighbourhood level Census data to explore equity in borrowing and access across the city.

6.0 Equity and inclusion lens applied to circulation and customer data

6.1. City of Hamilton's Playbook for human services planning

City services, such as the library system, have an important role in improving inclusion for residents across the City and who may have different life circumstances and experiences. Library services, in particular, can help people access resources to overcome systemic elements of exclusion. One of many examples is the library's role in increasing access to learning materials to help overcome educational disadvantage. Another way the library system reduces barriers is the wide range of materials in many different accessible formats to suit a variety of abilities among residents.

In an effort to help City departments, agencies and programs to be more intentional about inclusion in their planning and delivery of services, Hamilton has published a Playbook for human services planning with a focus on using an "inclusion lens" ⁹. The principle of inclusivity is defined by the City as "generating the feeling and the reality of belonging". The inclusion lens (in other contexts also called the equity lens) is an important tool to analyze programs and services to ensure all groups have fair access to services, especially groups for which there may be more barriers to service than other groups. The Playbook describes these barriers as "elements of exclusion" and lists eight of special importance:

- Poverty
- Disadvantage
- Inequality
- Discrimination
- Barriers to Access
- Disability
- Isolation
- Marginalization

The Playbook also lists seven "elements of inclusion" that reduce exclusion:

- Adequate income
- Reduce disparities
- Human Rights access
- Ability to participate
- Valued contribution

⁹ City of Hamilton. (2010). *The Playbook: A Framework for Human Services Planning in Hamilton.* http://www2.hamilton.ca/NR/rdonlyres/29573631-A3F1-4D7E-B356-32987BB41235/0/HSP_Playbook.pdf

- Belonging
- Empowerment

Many of these inclusion elements are reflected in current library resources or programming. This equity framework can be used to ensure that more programing incorporates these elements of inclusion.

6.2. Applying an inclusion lens to HPL data

To apply this inclusion lens to library planning and the data for this report, an analysis was performed looking at various equity groups and neighbourhood characteristics to determine patterns of differences in access to library services between groups. Differences in access or use by different groups may indicate that HPL needs to consider additional strategies to overcome elements of exclusion that may be barriers to equitable access to library services and materials.

Figures 23 to 25 summarize analysis that combines HPL circulation data, cardholder postal codes and 2016 Census data about the neighbourhoods in which cardholders live. This analysis does not include any demographic information about individual customers, but rather shows the types of neighbourhoods where customers live in and the borrowing patterns of the active customers in those neighbourhoods.

This analysis is exploratory on these questions of equity and it is important to note that many measures of equity and marginalization are correlated. For example, neighbourhoods with low income are often also neighbourhoods with low levels of education. This analysis does not control for this correlation, so it must be kept in mind that any relevant trends should be further explored to determine a more specific relationship between the equity measures and library circulation outcomes.

The tables present six data points for each neighbourhood group:

- The percentage of the population in each group of neighbourhoods who are HPL customers (card-holders).
- The percentage of the population in each group of neighbourhoods who borrowed an item (but only items in the categories listed below) in the 2015-16 period, labelled as "active borrowers".
- Among these 2015-16 active borrowers only, how many items they borrowed:
 - \circ in a branch;
 - online (but only including Overdrive and Freegal items);
 - \circ or at a Bookmobile stop
 - The total number of all these items borrowed in the 2015-16 year.

As was done in section 4.0, two sets of tables are presented: the patterns using all HPL data matched to postal codes across Hamilton's neighbourhoods (in blue), and the same data but removing neighbourhoods where the most common branch used by customers is Central (in green). Because Central is by far the largest branch, removing Central in this way allows examination of patterns across HPL branches that may be obscured by the high circulation and large number of customers at Central.

The analysis of neighbourhood demographic data was done using multiple measures of neighbourhood and demographic characteristics. Figures 23 to 25 show the indicators where the trends were strongest, or most revealing. All variables are included in Appendix A for further review.

6.3. Income

Analyzing borrowing patterns by neighbourhood income quintiles¹⁰ shows a strong gradient by income in total items borrowed (Figure 23). Active borrowers in the lowest income neighbourhoods accessed, on average, almost 73 items in the 2015-16 year. With each increasing neighbourhood income group, the number of borrowed items drops, with the lowest borrowed items in the fourth quintile income group (54.5 items) and a slight increase in the top income group (55.7 items). Even when neighbourhoods served by Central are removed from the analysis, the income gradient remains: high borrowing among active users in low income neighbourhoods to lowest borrowed items among active users in the highest income neighbourhoods, although the differences are smaller (range of 62 to 54 items).

Borrowing trends also vary by income, based on whether the item is a physical item borrowed in branch, or an online loan (Overdrive and Freegal only). Physical items are most popular in low-income neighbourhoods, while borrowing online items increases as neighbourhood income increases (from 8.6 online items in the bottom quintile income group to 12.1 in the top income neighbourhoods).

In contrast to the patterns of borrowed items, the data on cardholders by neighbourhood income group shows polarization of highest rates in the bottom and top income groups and low rates in the middle. The lowest income group neighbourhoods with the highest rate of cardholders per population (38%) and the next highest rate is among the highest income

¹⁰ Neighbourhood income quintiles groups are from the 2016 Census and created by Statistics Canada using the Canadian income distribution (not the local Hamilton income distribution) and creating income ranges (cutoffs) for the households in the bottom 20% of the income distribution, the households in the 20-40% of the income distribution and so on, ending with the top 20% of the income distribution (from 80% to 100%).

neighbourhoods (34% of residents in these neighbourhoods hold a library card). Middle income neighbourhoods have the lowest rates (with three in 10 residents signed up for a library card and using it at least once since 2014). Removing Central from the analysis reduces but does not eliminate this polarization.

Examining how many cardholders were active borrowers¹¹ in 2015-16 by neighbourhood income groups shows that the highest rate of active borrowers among residents is highest in the highest income neighbourhoods (19%). The next highest rate is in the lowest neighbourhood income group (17% of residents in this group are active borrowers) and the middle-income neighbourhoods have the lowest rates (all at 14%). The removal of Central from the analysis has no impact except for the lowest income group, where the percentage of active borrowers drops from 17% to 16%.

Figure 23. Neighbourhood borrowing patterns by income

By income groups in surrounding neighbourhood

					Annual items per active borrower						
Neighbourhoods in:	Cardholders per population		Active borrowers per population		From branch	Online		Bookmobile	Total		
Bottom income quintile group		41%		17%	62.3		8.6	1.9		72.9	
Second income quintile group		31%		14%	51.6		9.0	0.8		61.4	
Third income quintile group		31%		14%	46.0		11.4	1.2		58.6	
Fourth income quintile group		30%		14%	41.3		12.1	1.0		54.5	
Top income quintile group		34%		19%	42.9		12.2	0.6		55.7	
Total HPL average		35%		16%	49.8		10.7	1.2		61.7	

By income groups in surrounding neighbourhood

(excluding neighbourhoods where Central is the most popular branch among borrowers)

		Cardholders per		tive borrowers	From branch	Onlino		Rookmobilo	Total
Neighbourhoods in:	popul	population		r population	110111 branch	oninc		BOOKINODITE	TOLAT
Bottom income quintile group		38%		16%	51.6		9.5	1.8	62.9
Second income quintile group		30%		14%	51.4		8.9	0.6	60.9
Third income quintile group		31%		14%	45.6	1	0.5	1.3	57.4
Fourth income quintile group		30%		14%	41.0	1	2.2	1.0	54.2
Top income quintile group		34%		19%	42.9	1	2.3	0.6	55.8
Total HPL average		33%		16%	45.4	1	1.2	1.0	57.6

¹¹ As described earlier, "Active borrowers" in this report only includes data on in-branch, online (Overdrive and Freegal only), and Bookmobile borrowing. Customers can be active library users in other ways (using computer at a branch, attending a program, using other online resources for example), but data for these types of library activity was not available for this level of analysis.

6.4 Education

To begin a preliminary examination of the relationship between education and library usage, library data was grouped by neighbourhoods based on their average rate of residents with high school education or less¹². Figure 24 shows that neighbourhoods with above-average rates of residents with high school education or less have the lowest rates of active borrowers (14%), but active borrowers in those neighbourhoods use a very large number of total items (77.9), almost 20 items more per year than neighbourhoods with higher education levels. As with the income findings, the general patterns remain even with Central removed, but differences are reduced. Similar to the income trends, the neighbourhoods with high rates of high school education or less likely to borrow online items (9.3 items per year) than neighbourhoods with the lowest rates of low education (12.2 items per year).

Figure 24. Neighbourhood borrowing patterns by educational attainment

					Annual items per active borrower						
	Cardho	olders per	Active borrowers		From branch Online		Poolymobile	Total			
Neighbourhoods with:	popula	ition	per	population	FIOID DIAIICH	Unime	BOOKINODITE	TOLAT			
Above average rate of high school education or less		34%		14%	62.9	9.3	2.0		74.2		
Average rate of high school education or less		34%		16%	47.4	10.3	1.2		58.9		
Below average rate of high school education or less		37%		19%	46.8	12.2	0.9		60.0		
Total HPL average		35%		16%	49.8	10.7	1.2		61.7		

By rate of persons with high-school education or less in surrounding neighbourhood

By rate of persons with high-school education or less in surrounding neighbourhood

(excluding neighbourhoods where Central is the most popular branch among borrowers)

Annual items per active borrower

	Cardholders per		Ac	tive borrowers	From branch	Online	Pookmobilo	Total	
Neighbourhoods with:	population		ре	r population		Unime	BOOKINODITE	TOLAT	
Above average rate of high school education or less		32%		13%	53.0	9.8	1.8		64.6
Average rate of high school education or less		32%		15%	43.8	10.8	0.9		55.5
Below average rate of high school education or less		35%		19%	44.9	12.5	0.8		58.2
Total HPL average		33%		16%	45.4	11.2	1.0		57.6

6.5 Non-English language spoken at home

Figure 25 provides a preliminary examination of the relationship between neighbourhoods based on their rate of persons who speak a language other than English at home and library use. Neighbourhoods with higher rates of non-English home language have lower rates of

¹² Education attainment data includes persons age 15 and over only.

active borrowers (14%) compared to neighbourhoods with low rates of non-English mother tongues (18% rate of active borrowers among residents in these neighbourhoods).

When examining HPL data across all neighbourhoods, the pattern of borrowed items among active borrowers shows no clear trend, with only small differences between neighbourhood groups based on rates of residents with non-English mother tongues for physical items and total items. There remains a trend within online borrowing with neighbourhoods with highest rates of non-English home languages having the lowest rates of borrowing online items (9.0 items per year), in contrast to the neighbourhoods with the lowest rates of home languages other than English (11.8 items per year).

With Central removed from the analysis, a new pattern of active borrowers emerges: active borrowers in neighbourhoods with highest rates of non-English mother tongues have lower total borrowed items (54.9) than neighbourhoods with lowest rates of non-English home language speakers (60.7 total items).

Figure 25. Neighbourhood borrowing patterns by non-English home language

By rate of persons speaking non-English language at home in surrounding neighbourhood											
	Annual items per active borrower										
	Cardh	olders per	Act	tive borrowers	Online	`	Bookmobile	Total			
Neighbourhoods with:	population		pe	r population	i i oni branch	Omme	-	DOOKINODIIC	Total		
Above average rate of non-English mother tongue		34%		14%	50.1		9.0	1.4		60.6	
Average rate of non-English mother tongue		34%		15%	50.0		11.1	1.0		62.0	
Below average rate of non-English mother tongue		36%		18%	49.5		11.8	1.1		62.4	
Total HPL average		35%		16%	49.8		10.7	1.2		61.7	

By rate of persons speaking non-English language at home in surrounding neighbourhood

(excluding neighbourhoods where Central is the most popular branch among borrowers) A						ms per acti	ve borrower	•	
	Cardholders per population		Active borrowers		From branch	Online	Bookmobile	Total	
Neighbourhoods with:			pe	r population	110111 branch	Onine	BOOKINODITE	TOLAT	
Above average rate of non-English mother tongue		31%		13%	41.8	9.5	1.4		52.6
Average rate of non-English mother tongue		32%		15%	44.8	11.7	0.8		57.3
Below average rate of non-English mother tongue		35%		18%	47.7	12.0	0.9		60.7
Total HPL average		33%		16%	45.4	11.2	1.0		57.6

6.6 Analysis of equity and inclusion findings

These findings related to inclusion reflect that HPL planning has paid attention to equity issues and on some measures HPL performs well on equity indicators. Specifically, high rates of items borrowed among customers in the lowest income neighbourhoods, neighbourhoods with lower levels of educational attainment, and near average rates of customers per residents in these neighbourhoods are good signs of HPL removing barriers to access for many residents in these neighbourhoods. The comparison of data with and without Central shows the immense role that Central plays in improving inclusion and equity for the HPL system. When Central is removed, HPL performance on many of the equity measures is not as positive as when Central is included. This indicates that HPL should consider an inclusion lens strategy to move other branches closer to achieving Central's performance among lower income and lower education neighbourhoods and residents.

With or without Central, this data shows a clear trend that residents who are active borrowers is lowest in the lower education neighbourhoods and in neighbourhoods with high rates of non-English home language speakers. Conversely, the data also shows that the highest rates of active borrowers are in the highest income, highly educated, or with lowest rates of non-English home language speakers. This is an important finding that shows where HPL needs to improve inclusion, to achieve better performance on equity measures. HPL recruitment of customers in these neighbourhoods with lower levels of education or high rates of speaking a language other than English at home, and finding ways of converting these customers to active borrowers by removing barriers of exclusion, could improve equity performance.

Another clear finding is that online borrowing is most popular with residents in neighbourhoods with the highest income, or low rates of low education and to a more limited extent, where English is the most dominant home language. As HPL continues to transition more of its acquisition budget from physical to online items, equity considerations must be taken into consideration to ensure neighbourhoods with lower access to digital resources are not left behind.

The inclusion of residents with speaking languages other than English deserves special attention for further analysis. The preliminary analysis in this report shows that neighbourhoods with high rates of non-English home language speakers have lower-than-average items borrowed per active borrower. This is in contrast to very high rates of items per active borrower in the lowest income neighbourhoods and neighbourhoods with low education rates. There could be multiple factors contributing to the low number of items borrowed in neighbourhoods with high rates of non-English mother tongues, for example:

• The relationship could not be one of direct causation if the non-English home language is correlated with another measure which is driving the lower rates of items borrowed. For example, if these neighbourhoods also have more children than the average (and

previous data showed that children have lower rates of borrowed items), this could be more of a factor than the languages of the residents.

- Customers who speak languages other than English could be visiting the library less
 often either because of lack of time (for example if working multiple jobs), or if library
 branches are not well located in relationship to neighbourhoods with high rates of nonEnglish mother tongues.
- If these customers are visiting at the same rate as other customers, they could be borrowing fewer items if the collection is not reflective of their interests, or in their preferred language, as compared to other customers.

Further investigation is needed to separate the influence of each of these factors and determine which is most likely to be the driving force explaining lower borrowing in neighbourhoods with high rates of non-English home languages.

7 Potential expansion locations for new branches

As described in earlier sections of this report, and seen in Figure 5, there are areas of the City that are currently under-served compared to their population, notably some parts of the Mountain and areas in Stoney Creek, as well as parts of the lower City to some extent. While HPL's capital and operating budgets in the short term may not allow for additional branches, with a longer term view, an analysis was conducted to examine potential candidate locations for new infill branches, if ever budgets would allow such expansion.

In determining potential candidate locations and the size of population they would serve, first an analysis was performed with current branches to see how walking distance to each branch had the strongest relationship to branch circulation per hour. Using GIS network analysis revealed that, on average, HPL branches have a total of about 17,000 residents within a 30 minute walking area. There is a huge variation among branches as Hamilton's geography and population density is quite variable across different areas of the city (Figure 26).

An analysis comparing population within various walking distances with physical circulation per hour for each branch showed that the strongest relationship between branch circulation and population was with the 20 minute walking distance catchment areas (Figure 27).

Figure 27. Correlation (using R-squared) between circulation per hour at each branch and population within 10, 20, 30, 40 and 50 minute walking distance to branch, 2016 Census (Statistics Canada)

Walking distance catchment area	R-squared value (higher values indicate stronger relationship)
0-10 min walking area around branches	0.396
0-20 min walking area around branches	0.528
0-30 min walking area around branches	0.516
0-40 min walking area around branches	0.494
0-50 min walking area around branches	0.465

Using this 20-minute walking area and GIS network analysis, candidate branch catchment areas were created based on current Bookmobile locations as well as school locations in areas where there are currently no branches. These two types of locations were used as candidate locations in the analysis as they are broadly distributed in neighbourhoods across the City. Locations were also limited to areas within the City's urban boundary and excluding employment areas. Candidate locations that were very near each other were edited to include one instead of multiple candidates at the same location.

The analysis started with 57 different locations. The GIS analysis reduced this to 29 potential candidate locations listed in Figure 29. For mapping purposes, candidate locations with large overlapping catchment areas were examined to eliminate locations with a lower population within the catchment areas. Other locations that had both small populations and were far from the BLAST network were also removed. This reduced the list to 22 final candidate locations.

Figure 28 shows these 22 candidate locations with the size of the population they would serve within a 20 minute walk of each location (excluding population within an overlapping 20min walking distance of an existing branch). The map also shows the areas of the City that are

expected to grow quickly, or remain stable in their population, as well as the planned BLAST rapid transit network.

Based solely on the number of residents within the 20 minute catchment area, Mountain locations showed the highest potential populations within the candidate catchment areas (with many locations ranging from 11,000, up to 16,000 residents in the candidate location catchment area). The Mountain however is not expected to grow significantly in population (many areas are in fact expected to have a small population drop as the population ages). The growth projections, however, are only forecast for the next 10 years, and most of the BLAST transit network on the Mountain is projected on a longer time horizon (10-25 years, except for the A-line BRT on Upper James which is planned for 2024), at which time some areas on the Mountain will become growth areas. For this reason, locations on the Mountain near the BLAST network should be favoured over locations that may be a longer walk from these planned major transit lines, as any growth on the Mountain will occur in large part near BLAST transit stations.

The candidate locations of Saltfleet District High School and Bishop Ryan Catholic Secondary School (in Upper Stoney Creek) had smaller populations within their catchment areas (about 8,000 and 3,000 respectively), but these are near the Elfrida growth area which is expected to grow by at least 50% in the next decade. Another major growth area is in and around Winona in Stoney Creek (east of Fruitland Road). However, branch at Winona school (based on current population only), would have a very small population within its catchment area (about 2,500 residents). In contrast, the candidate location of Orchard Park Secondary School would have a catchment population of just under 10,000 residents, which is higher than the current Stoney Creek branch located at the Stoney Creek City Hall (less than 2,000 residents within a 20 minute walking distance). Orchard Park is in an area with no residential growth expected, but very near the Fruitland/Winona growth area. The current Stoney Creek branch is also near the Fruitland/Winona growth area, so depending on City and provincial decisions on growth in that area, a re-location may not be advisable.

A data table of the longer list of 29 candidate locations is included in Figure 29 and a more detailed map of the top 22 candidate locations, compared to current branch location catchment areas, is provided in Appendix B.

Figure 28. Potential infill candidate locations for new branches compared to projected population growth and BLAST transit network

Prepared by the Social Planning and Research Council of Hamilton Data sources: Projected population from City of Hamilton Ward Boundary Review: Final Report (Amended), by Watson & Associates (2017) Potential candidate locations population in catchment area from 2016 Census (Statistics Canada)

Figure 29. Table of potential candidate locations and population within 20 minute walking distance

Candidate location name	Major intersection	Walking distance to BLAST network?	Total residents with 20 min walk	Residents already within 20 min walk of another branch	Residents not served within 20 min walk of existing branch	Included in final candidate map?
Regina Mundi Elementary School	Upper Paradise and Mohawk	T-Line (beyond 2025)	19,211	2,920	16,290	Yes
Blessed Teresa of Calcutta Elementary School	Upper Sherman and Linc Parkway	Not close to BLAST network	18,369	2,413	15,956	Yes
Lawfield Elementary School	Upper Sherman and Stone Church	Not close to BLAST network	17,024	2,796	14,228	No
R. A. Riddell Elementary School	Garth and Lincoln Alexander Parkway	Not close to BLAST network	14,666	942	13,724	No
Holbrook Elementary School	Sanatorium and Rice	Not close to BLAST network	15,106	1,668	13,438	No
Our Lady of Lourdes Elementary School	Upper Wentworth and Stone Church	T-line (beyond 2025)	20,881	7,962	12,919	Yes
Richard Beasley Elementary School	Upper Gage and Stone Church	T-line (beyond 2025)	18,838	7,058	11,779	Yes
Deerview Crossing	Garth and Rymal	S-line (beyond 2025)	11,717	31	11,686	Yes
Holy Name of Mary Elementary School	Meadowlands Blvd and Golf Links Rd	Not close to BLAST	10,653	0	10,653	Yes
Sir Wilfrid Laurier School	Quigley and Albright	Not close to BLAST	11,332	1,477	9,855	Yes
Orchard Park Secondary School	Dewitt and Highway 8	B-line extension (beyond 2025)	11,010	1,251	9,759	Yes
St. Anthony Daniel Elementary School	Upper Kenilworth and Mohawk	S-line (beyond 2025	15,020	5,879	9,142	No
St. Eugene Elementary School	Parkdale and Queenston	B-Line (planned for 2024)	19,689	11,117	8,572	No
Saltfleet High School	1st Rd W and Highland	S-line (beyond 2025)	10,225	2,225	8,000	Yes
James Macdonald Elementary School	West 5th and Linc Parkway.	Not close to BLAST	9,471	1,725	7,745	Yes
Immaculate Conception Elementary School	Southcote and Garner	S-line (beyond 2025)	7,468	0	7,468	Yes
Notre-Dame Elementary School	Gage and Cumberland	B-Line (planned for 2024)	19,598	13,204	6,394	Yes
Rosedale Elementary School	Rosedale and Lawrence	T-line (beyond 2025)	8,928	2,899	6,029	Yes
Ancaster Senior Elementary School	Wilson and Amberly	Not close to BLAST network	5,661	185	5,476	Yes
Colin Macdonald Community School	Main W and Rifle Range	B-line extension	6,557	1,685	4,872	Yes
St. Charles Adult Education	Upper James and Fennell	A-line (planned for 2024)	14,701	9,841	4,861	No
Sir William Osler Elementary School	Governor's and Castlewood	Not close to BLAST	6,241	1,459	4,782	Yes
First Place	Wellington and Main	B-Line (planned for 2024)	35,113	31,263	3,850	Yes
St. Thomas the Apostle Elementary School	Dundas and Burke	Not close to BLAST network	3,830	57	3,772	No
Bishop Ryan Secondary School	Upper Mount Albion and Rymal	S-line (beyond 2025)	3,071	10	3,061	Yes
St. Lawrence Elementary School	John and Burlington	A-line (planned for 2024)	13,755	10,804	2,951	Yes
Winona Elementary School	Fifty Rd and Barton	B-line extension (beyond 2025)	2,596	32	2,564	Yes
Lake Avenue Elementary School	Centennial and Barton	S-line (beyond 2025)	12,643	10,442	2,201	Yes
Village Green (Stoney Creek)	Centennial and King	S-line (beyond 2025)	10,359	8,485	1,874	Yes

In addition to population size and proximity to the BLAST transit network, an inclusion lens should be used to analyze any potential candidate locations. Map 8 provides an overview of how each of the 22 candidate locations performs on the equity measures that were discussed in Section 6.0 of this report: residents living on low incomes, residents with lower levels of education and non-English speakers. The three candidate locations that would most likely increase library access for lower income, less educated and non-English speaking residents are all in the lower city: Lake Avenue school in Riverdale (Centennial/Eastgate area), Wilfrid Laurier School (Davis Creek neighbourhood) and St. Lawrence School in the North End.

Map 8. Potential infill candidate location catchment areas and selected equity measures

Equity analysis of potential candidate locations

Map produced by the Social Planning and Research Council of Hamilton (May 2018)

* 20min walk areas and population for candidate locations excludes overlapping population and areas with 20min walking areas of existing HPL branches

8 Summary Gap Analysis

This report has reviewed HPL customer and circulation data in comparison to branch and ward characteristics and expected population growth patterns across Hamilton.

The following findings were highlighted as areas for further review by HPL:

Operations:

- A library customer recruitment campaign with the goal of increasing circulation would likely be most effective if it targeted neighbourhoods with lower-than-average income, to older adults in the 50-79 year age group. These groups have among the highest rates of borrowing items once they become active library users.
- The library does well on many equity measures of library access in neighbourhoods where residents face barriers to inclusion. For example, residents living in low income neighbourhoods, or neighbourhoods where residents have lower levels of education, borrow items at higher rates than other neighbourhoods. However, there is some evidence that residents who speak a language other than English at home may not access library items as much as other residents. In addition, the move towards more digital resources is currently being taken up at higher rates by higher income residents. The library should continue its efforts to reduce the "digital divide" and ensure materials and technology are available to all residents regardless of income.
- While Sunday hours are offered at a limited number of branches and not during the summer, analysis of HPL data and review of a Toronto Public Library report shows that Sundays, including in the Summer, are a very popular day for people to visit a library and borrow materials. Expanding hours to open more branches on Sundays, or adding Sunday summer hours, would likely increase library usage.

Facilities:

- HPL should continue with its Facilities Master Plan to review and improve branches at Valley Park and Mount Hope. As the Elfrida (Upper Centennial and Rymal) secondary plan and developments are advanced, HPL should pay close attention to determine if a new branch will be required given the potentially large number of residential units planned.
- The new ward boundaries on the Mountain have created a new Ward 14 (surrounding Upper Paradise Rd.), which does not contain any branches. By itself, this would not automatically trigger the planning for a new branch, as ward boundaries can often be

subject to change and distance to a branch is more important than invisible, administrative electoral boundaries. But customer and circulation data also point to the Mountain being underserved by HPL. When added together, the four Mountain branches have the highest circulation per hour compared to other areas of the City (when Central is excluded from lower city data). However, three of the four wards have lower-than-average branches per residents in the near term, and per capita Mountain residents have lower-than-average rates of borrowing. These trends all point to the need to examine the Mountain branches, performance and population trends in more detail to develop strategies and find opportunities to better serve that area. A preliminary analysis of potential candidate locations for a new Mountain branch shows that the top near the BLAST network in development, at Upper Paradise and Mohawk, Garth and Rymal or Upper Wentworth and Mohawk would each serve 20 minute walking area catchment populations in the range of 11,000 to 16,000 residents, with or at higher than average HPL catchment population (average of 11,800 residents in a 20 minute walking area surrounding each branch).

 The Saltfleet, Stoney Creek and Red Hill branches should be examined as a group in more detail to determine potential opportunities for increased circulation due to some relatively lower performing branches. The planned major transit hub at Eastgate is an opportunity to be part of a co-located facility and the Winona/Fruitland growth area may also present new co-location development opportunities.

Appendix A: Neighbourhood borrowing patterns by selected equity measures

By population density in surrounding neighbourhood

Annual	items	ner	active	horrower
Allilual	ILEIIIS	Der	active	DOLLOWEL

			Active								
			borrowers	From here the Online			De a luce a billa	Tetel			Number of
	Patr	ons per	per	FIOIII DI AIICII	Online		BOOKINODIIE	TULAI		Number of	active
Neighbourhoods with:	рор	ulation	population							cardholders	borrowers
Above average population density		38%	16%	60.4		8.2	1.7		70.2	49,779	20,789
Average population density		34%	16%	48.0		11.5	1.1		60.6	47,446	21,956
Below average population density		34%	17%	4 <mark>5.5</mark>		11.4	1.0		57.9	91,694	45,070
Total HPL average***		35%	16%	49.6		10.7	1.2		61.5	188,919	87,815

By neighbourhood dominant housing type				Annual iter	ns per active	borrower			
	Patrons pr		Active borrowers per	From branch	Online	Bookmobile	Total	Number of	Number of active
Neighbourhoods with predominantly:	рори	lation	population					cardholders	borrowers
Apartment buildings		42%	18%	69.1	8.4	1.8	79.3	38,471	16,095
Townhouses or semi-detached housing		33%	14%	47.9	8.7	1.3	58.0	30,897	13,390
Single-detached housing		33%	17%	44.4	11.8	1.0	57.2	115,082	57,666
Total HPL average***		35%	16%	49.6	10.7	1.2	61.4	186,035	87,908

By rate of rental units in surrounding neighbourhood				Annual iter	ns per active	borrower			
Naighbourboods with:	Patr	ons per	Active borrowers per	From branch	Online	Bookmobile	Total	Number of	Number of active
neighbourhoous with.	hoh	ulation	population		-	1 C C		carunoiders	DOITOWEIS
Above average rate of rental units		41%	17%	61.8	8.1	1.7	71.6	71,295	29,869
Averagerate of rental units		35%	16%	50.2	12.1	1.2	63.5	16,510	7,370
Below averagerate of rental units		31%	16%	42.4	12.0	0.9	55.4	98,230	49,294
Total HPL average***		35%	16%	49.8	10.7	1.2	61.7	186,035	86,533

By population density in surrounding neighbourhood

(excluding neighbourhoods who borrow predominantly at Central)

			Active	Farme barrah	Online		Deeluwehile	Tetal		Number of
	Patro	ons per	borrowers per	From branch	Unline		BOOKMODIIE	Total	Number of	active
Neighbourhoods with:	рори	llation	population						cardholders	borrowers
Above average population density		35%	15%	50.4		8.8	1.5	60.7	25,943	10,943
Average population density		33%	15%	44.2	1	3.8	1.2	59.2	49,613	23,263
Below average population density		31%	16%	45.0	1	1.8	0.8	57.7	73,474	37,087
Total HPL average***		32%	15%	45.6	1	2.0	1.0	58.7	149.030	71.293

By neighbourhood dominant housing type

(excluding neighbourhoods who borrow predominantly at Central)

	Patro	ons per	Active borrowers per	From branch	Onlin	e	Bookmobile	Total	Number of	Number of active
Neighbourhoods with predominantly:	popu	liation	population						cardnoiders	borrowers
Apartment buildings		37%	16%	56.3		16.1	2.0	74.5	18,006	7,931
Townhouses or semi-detached housing		30%	13%	43.7		9.4	1.1	54.2	23,464	10,353
Single-detached housing		32%	16%	44.2		12.0	0.9	57.1	106,241	52,375
Total HPL average***		32%	15%	45.6		12.0	1.0	58.7	149,151	71,329

By rate of rental units in surrounding neighbourhood

(excluding neighbourhoods who borrow predominantly at Central)

Annual items per active borrower

Annual items per active borrower

Neighbourhoods with:	Patro	ons per lation	Active borrowers per population	From branch	Online	2	Bookmobile	Total	Number of cardholders	Number of active borrowers
Above average rate of rental units		37%	16%	52.6		12.0	1.6	66.2	39,967	17,194
Averagerate of rental units		34%	16%	48.0		11.2	0.6	59.8	15,534	7,059
Below averagerate of rental units		30%	15%	42.7		12.1	0.9	55.7	93,529	47,040
Total HPL average***		32%	15%	45.6		12.0	1.0	58.7	149,030	71,293

By rate of persons identifying as visible minorities in surrounding neighbourhood

Annual items per active borrower

		Active						
		borrowers	Farmer have a sh	Online	D lura - hila	Tatal		Number of
	Patrons per	per	From branch	Unine	BOOKMODIIE	lotal	Number of	active
Neighbourhoods with:	population	population					cardholders	borrowers
Above average rate of visible minorities	35%	15%	50.1	9.0	1.2	60.3	70,554	29,487
Average rate of visible minorities	36%	17%	52.6	11.1	0.9	64.6	36,080	16,881
Below average rate of visible minorities	34%	17%	48.5	11.9	1.4	61.7	78,900	39,768
Total HPL average***	35%	16%	49.9	10.7	1.2	61.8	185,534	86,136

By rate of immigrants in surrounding neighbourhood	Annual iter	ms per active						
		Active						
	Cardholders borrowers		From branch	Onlino	Rookmobilo	Total		Number of
	per	per	FIOID DIALICI	Unime	DUOKITIUDITE	TOLAT	Number of	active
Neighbourhoods with:	population	population					cardholders	borrowers
Above average rate of immigrants	33%	14%	49.2	9.7	1.5	60.4	62,372	26,673
Average rate of immigrants	36%	17%	50.4	9.9	1.1	61.4	56,153	26,475
Below average rate of immigrants	36%	18%	49.4	11.9	1.1	62.4	70,394	34,667
Total HPL average***	35%	16%	49.6	10.7	1.2	61.5	188,919	87,815

By rate of persons identifying as visible minorities in surrounding neighbourhood

(excluding neighbourhoods who borrow predominantly at Central)

Neighbourhoods with:	Patro popu	ons per Ilation	Active borrowers per population	From branch	Online	!	Bookmobile	Total	Number of cardholders	Number of active borrowers
Above average rate of visible minorities		31%	13%	41.1		12.1	1.3	54.5	48,633	20,929
Average rate of visible minorities		35%	16%	46.9		11.4	0.6	58.9	34,067	16,124
Below average rate of visible minorities		32%	16%	47.7		12.2	1.1	61.1	66,330	34,240
Total HPL average***		32%	15%	45.6		12.0	1.0	58.7	149,030	71,293

By rate of immigrants in surrounding neighbourhood

(excluding neighbourhoods who borrow predominantly at Central)

Annual items per active borrower

	Card	holders	Active borrowers per	From branch	Online		Bookmobile	Total	Number of	Number of active
Neighbourhoods with:	per p	opulation	population						cardholders	borrowers
Above average rate of immigrants		30%	13%	41.0		10.4	1.4	52.8	43,295	19,012
Average rate of immigrants		33%	16%	45.6		13.0	0.8	59.5	57,380	27,573
Below average rate of immigrants		33%	17%	49.1		12.1	1.0	62.2	48,355	24,708
Total HPL average***		32%	15%	45.6		12.0	1.0	58.7	149,030	71,293

By rate of post-2000 immigrants in surrounding neighbourhood

By rate of post-2000 immigrants in surrounding neighbourhood				Annual iter						
			Active							
	Card	holders	borrowers	From branch	Online		Rookmobilo	Total		Number of
	per		per	riombranch	Onine	-	BOOKINODITE	Total	Number of	active
Neighbourhoods with:	рори	ulation	population						cardholders	borrowers
Above average rate of immigrants arriving after 2000		33%	14%	49.2		9.7	1.5	60.4	62,372	26,673
Average rate of immigrants arriving after 2000		36%	17%	50. <mark>4</mark>		9.9	1.1	61.4	56,153	26,475
Below average rate of immigrants arriving after 2000		36%	18%	49.4		11.9	1.1	62.4	70,394	34,667
Total HPL average***		35%	16%	49.6		10.7	1.2	61.5	188,919	87,815

By rate of persons speaking non-English language at home in surrounding neighbourhood

-)													
			Annual iter	ns per ad									
		Active											
Cardho	olders	borrowers	From branch	Onlino		Rookmobilo	Total			Number of			
per		per	riombranch	Unime		BOOKINODITE	TOLAT		Number of	active			
popula	tion	population							cardholders	borrowers			
	34%	14%	50.1		9.0	1.4	e	6.0	71,792	30,309			
	34%	15%	50.0	1	11.1	1.0	e	52.0	28,315	12,663			
	36%	18%	49.5	1	L1.8	1.1	6	52.4	85,928	43,561			
	35%	16%	49.8	1	LO.7	1.2	6	51.7	186,035	86,533			
	Cardho per popula	Cardholders per population 34% 34% 36% 35%	Active Cardholders borrowers per population 34% 14% 34% 15% 36% 18%	Annual iter Active Cardholders borrowers per per population population 34% 14% 35% 18% 49,5 16%	Annual items per an Active Cardholders borrowers per per From branch Online population population 000000000000000000000000000000000000	Annual items per active Active Cardholders borrowers per per 34% 14% 50.1 9.0 34% 15% 50.0 11.1 36% 18% 49.5 11.8 35% 16% 49.8 10.7	Annual items per active borrower Active Cardholders borrowers per per 000000000000000000000000000000000000	Annual items per active borrower Active Cardholders borrowers per per 34% 14% 50.1 9.0 1.4 6 34% 15% 50.0 11.1 1.0 6 36% 18% 49.5 11.8 1.1 6 35% 16% 49.8 10.7 1.2 6	Annual items per active borrower Active Cardholders borrowers per per 34% 14% 50.1 9.0 1.4 60.6 34% 15% 50.0 11.1 1.0 62.0 36% 18% 49.5 11.8 1.1 62.4 35% 16% 49.8 10.7 1.2 61.7	Annual items per active borrower Active Cardholders borrowers per per Total 34% 14% 50,1 9.0 1.4 60.6 71,792 34% 15% 50,0 11.1 1.0 62.0 28,315 36% 18% 49,5 11.8 1.1 62.4 85,928 35% 16% 49.8 10.7 1.2 61.7 186,035			

By rate of non-English mother tongue in surrounding neighbourhood

,												
				An	nnual iten	ns per a	active					
			Active									
	Card	holders	borrowers	Ero	mbranch	Onlino		Pookmobilo	Total			Number of
	per		per	FIU	III DI AIICII	Unime		BOOKINODITE	TULAI		Number of	active
Neighbourhoods with:	рорі	ulation	population								cardholders	borrowers
Above average rate of non-English mother tongue		33%	14	%	48.1		9.8	1.3		59.2	65,571	27,915
Average rate of non-English mother tongue		35%	16	%	51.0		10.1	1.1		62.2	44,461	20,132
Below average rate of non-English mother tongue		36%	18	%	50.6		11.8	1.3		63.6	75,502	38,089
Total HPL average***		35%	16	%	49.9		10.7	1.2		61.8	185,534	86,136

By rate of post-2000 immigrants in surrounding neighbourhood

(excluding neighbourhoods who borrow predominantly at Central)

Annual items per active borrower

			Active	From Law and	0.1		De alexada la	T 1		Number of
	Carc	lholders	borrowers per	From branch	Uniin	e	BOOKMODIIE	Iotai	Number of	active
Neighbourhoods with:	per	oopulation	population						cardholders	borrowers
Above average rate of immigrants arriving after 2000		30%	13%	41.0		10.4	1.4	52.8	43,295	19,012
Average rate of immigrants arriving after 2000		33%	16%	45.6		13.0	0.8	59.5	57,380	27,573
Below average rate of immigrants arriving after 2000		33%	17%	49.1		12.1	1.0	62.2	48,355	24,708
Total HPL average***		32%	15%	45.6		12.0	1.0	58.7	149,030	71,293

By rate of persons speaking non-English language at home in surrounding neighbourhood

(excluding neighbourhoods who borrow predominantly at Central)

Annual items per active borrower

Neighbourhoods with:	Card per p	holders population	Active borrowers per population	From branch	Online	2	Bookmobile	Total	Number of cardholders	Number of active borrowers
Above average rate of non-English home language speakers		31%	13%	41.5		11.9	1.4	54.8	52,854	22,882
Average rate of non-English home language speakers		31%	14%	44.9		11.6	0.7	57.2	27,071	12,373
Below average rate of non-English home language speakers		34%	18%	48.4		12.3	0.9	61.6	69,105	36,038
Total HPL average***		32%	15%	45.6		12.0	1.0	58.7	149,030	71,293

By rate of non-English mother tongue in surrounding neighbourhood

(excluding neighbourhoods who borrow predominantly at Central)

	Carc	Iholders	Active borrowers per	From branch	Online		Bookmobile	Total	Number of	Number of active
Neighbourhoods with:	per	population	population						cardholders	borrowers
Above average rate of non-English mother tongue		30%	13%	6 4 <mark>0.4</mark>		12.8	1.2	54.4	47,327	20,570
Average rate of non-English mother tongue		34%	16%	5 45.1		10.8	1.2	57.1	45,997	21,649
Below average rate of non-English mother tongue		33%	17%	49.6		12.3	0.8	62.8	55,706	29,074
Total HPL average***		32%	15%	45.6		12.0	1.0	58.7	149.030	71.293

By income groups in surrounding neighbourhood

b) meene Breups in surrounding neighbourneeu										
				Annual iter	ms per activ					
			Active							
	Car	dholders	borrowers	From branch	Online	Rookmohilo	Total			Number of
	per		per	From branch Online		BOOKHODHE	TOLAT		Number of	active
Neighbourhoods in:	рор	ulation	population						cardholders	borrowers
Bottom quintile income group		41%	17%	62.3	8.	6 1.9	1	72.9	66,867	27,286
Second quintile income group		31%	14%	51.6	9.	0 0.8	;	61.4	16,519	7,411
Third quintile income group		31%	14%	46.0	11.	4 1.2		58.6	18,383	8,501
Fourth income quintile group		30%	14%	41.3	12.	1 1.0)	54.5	35,787	17,182
Top quintile income group		34%	19%	42.9	12.	2 0.6	;	55.7	47,206	25,528
Total HPL average***		35%	16%	49.8	10.	7 1.2		61.7	184,762	85,908

By rate of children living in poverty in surrounding neighbourhood

				Annual ite	ms per a					
			Active							
	Cardh	olders	borrowers	From branch	Online		Bookmobile	Total		Number of
	per		per	i tom branch	rom branch Online		Dookinobile	Total	Number of	active
Neighbourhoods with:	popul	ation	population						cardholders	borrowers
Above average child poverty rate		39%	16%	61.2		8.8	1.7	71.6	68,048	27,669
Average child poverty rate		33%	15%	48.1		11.7	1.1	60.9	24,522	11,359
Below average child poverty rate		33%	17%	43.6	i 🗌	11.5	1.0	56.1	96,639	48,912
Total HPL average***		35%	16%	49.7	'	10.7	1.2	61.6	189,209	87,940

By rate of seniors living in poverty in surrounding neighbourhood

by face of seniors name in poverty in surrounding neighbourhood										
				Annual iter	ns per a					
			Active							
	Carc	Cardholders borrowers per per From branch		For a barrier	branch Online		Bard and shells	T 1		Number of
	per			From branch			BOOKMODIIE	Iotal	Number of	active
Neighbourhoods with:	рор	ulation	population						cardholders	borrowers
Above average senior poverty rate		41%	18%	62.9		8.6	1.7	73.	1 62,151	26,362
Average senior poverty rate		35%	15%	49.0		9.7	1.5	60.	2 27,289	12,149
Below average senior poverty rate		33%	16%	42.8	:	12.0	0.9	55.	8 99,769	49,429
Total HPL average***		35%	16%	49.7		10.7	1.2	61.	6 189.209	87.940

By income groups in surrounding neighbourhood

(excluding neighbourhoods who borrow predominantly at Central)

Annual items per active borrower

			Active		From branch	Onlino		Pookmobilo	Total		Number of
	Card	holders	boı	rrowers per	rioin bianch	Onine		BOOKINODITE	TOtal	Number of	active
Neighbourhoods in:	per p	opulation	pop	pulation						cardholders	borrowers
Bottom quintile income group		37%		28%	62.5		10.6	1.9	75.0	36,253	27,147
Second quintile income group		30%		15%	51.6		9.0	0.8	61.4	15,404	7,411
Third quintile income group		31%		15%	46.0		11.4	1.2	58.6	17,406	8,501
Fourth income quintile group		27%		13%	41.8		12.7	1.1	55.6	31,738	15,503
Top quintile income group		34%		19%	42.8		12.2	0.6	55.7	47,171	25,644
Total HPL average***		32%		18%	50.1		11.4	1.2	62.7	147,972	84,206

By rate of children living in poverty in surrounding neighbourhood

(excluding neighbourhoods who borrow predominantly at Central)

Annual items per active borrower

			Active	From branch	Online		Deelmebile	Total		Number of
	Card	holders	borrowers per	FIOIT DIATICIT	Unine	-	BOOKINODITE	Total	Number of	active
	per p	opulation	population						cardholders	borrowers
Above average child poverty rate		36%	15%	50.4		12.8	1.4	64.6	39,124	16,178
Average child poverty rate		31%	15%	47.2		12.3	0.9	60.4	23,989	11,163
Below average child poverty rate		31%	16%	43.4		11.7	1.0	56.0	86,038	43,988
Total HPL average***		32%	15%	45.6		12.0	1.0	58.7	149,151	71,329

By rate of seniors living in poverty in surrounding neighbourhood (excluding neighbourhoods who borrow predominantly at Central)

		Active	From branch	Onlino	Rookmobilo	Total		Number of
	Cardholders	borrowers per	FIOIT DIATICIT	Onime	BOOKIIIODIIE	Total	Number of	active
	per population	population					cardholders	borrowers
Above average senior poverty rate	39%	17%	52.4	13.2	1.4	67.0	31,393	13,969
Average senior poverty rate	32%	14%	47.2	9.7	1.3	58.3	29,824	13,339
Below average senior poverty rate	30%	15%	42.9	12.3	0.9	56.1	87,934	44,021
Total HPL average***	32%	15%	45.6	12.0	1.0	58.7	149,151	71,329

By rate of persons with high-school education or less in surrounding neighbourhood

			Annual iter	ns per active				
Neighbourhoods with:	Cardholders per population	Active borrowers per population	From branch	Online	Bookmobile	Total	Number of cardholders	Number of active borrowers
Above average rate of high school education or less	34	% 149	62.9	9.3	2.0	74.2	35,805	14,189
Average rate of high school education or less	34	% 16%	5 4 7.4	10.3	1.2	58.9	102,767	47,548
Below average rate of high school education or less	37	% 19%	46.8	12.2	0.9	60.0	47,463	24,796
Total HPL average***	35	% 169	49.8	10.7	1.2	61.7	186,035	86,533

By rate of persons with high-school education or less in surrounding neighbourhood

(excluding neighbourhoods who borrow predominantly at Central)

	Cardh	olders	Active borrowers per	From branch	Online		Bookmobile	Total	Number of	Number of active
Neighbourhoods with:	per p	opulation	population						cardholders	borrowers
Above average rate of high school education or less		33%	13%	55.4		15.9	1.8	73.1	16,428	6,469
Average rate of high school education or less		31%	15%	44.8		11.4	1.1	57.3	100,441	47,454
Below average rate of high school education or less		37%	20%	44.2		12.3	0.5	57.1	32,161	17,370
Total HPL average***		32%	15%	45.6		12.0	1.0	58.7	149,030	71,293

Appendix B: Detailed map of potential candidate locations with catchment area populations compared to current branch catchment areas and populations (within City of Hamilton Urban Area only)

