



Income and School Performance in Hamilton

How the Low Income Mix
Within School Boundaries
Impacts School Performance in
Hamilton



Foreword

This report was commissioned by the Hamilton Community Foundation in keeping with its mission to strengthen Hamilton's quality of life as an inclusive and sustainable community by acting as a catalyst and by connecting people, ideas and resources through community philanthropy.

The Centre for Community Study (CCS) is an independent non-profit research organization, specializing in urban public-policy issues, providing research and services to the public, not-for-profit and private sectors. The CCS has expertise in a variety of areas including: Urban trends and analysis; community renewal strategies; media policy analysis; organizational and strategic planning.
For more information go to www.communitystudy.ca



Table of Contents

Executive Summary	iv
1.0 Introduction	1
1.1 Data Sources and Notes.....	2
2.0 Low Income Levels by Census Tract	3
2.1 Mapping EQAO Test Scores.....	4
2.2 School Boundaries and Low Income Levels.....	6
2.3 Categorizing School Boundaries By Income.....	8
3.0 School Performance and Low Income Levels	10
3.1 Elementary Schools.....	10
3.2 Middle Schools.....	14
3.3 Secondary Schools.....	17
4.0 The Impact of Mixed Income Areas on School Scores	21
5.0 French Immersion.....	23
6.0 Conclusions.....	25
7.0 References	28



List of Tables and Figures

Table 1: Income Mix Levels for School Boundaries.....	8
Figure A: Performance of Public Schools on All EQAO Tests.....	v
Figure B: All Schools Above and Below the City Average for Test Scores by Income Mix Levels.....	iv
Figure 1: Levels of Low Income by Census Tract in Hamilton, 2006.....	3
Figure 2: Performance of Elementary Schools on Grade 3 EQAO Tests.....	4
Figure 3: Performance of Middle Schools on Grade 6 EQAO Tests.....	5
Figure 4: Performance of Secondary Schools on Grade 9 EQAO Tests.....	5
Figure 5: Elementary School Boundaries Overlaid on Low Income Levels in Hamilton	6
Figure 6: Middle School Boundaries Overlaid on Low Income Levels in Hamilton.....	7
Figure 7: Secondary School Boundaries Overlaid on Low Income Levels in Hamilton.....	7
Figure 8: Elementary School Boundaries Coded by Income Mix Levels.....	8
Figure 9: Middle School Boundaries Coded by Income Mix Levels.....	9
Figure 10: Secondary School Boundaries Coded by Income Mix Levels.....	9
Figure 11: Elementary School Scores Overlaid on Income Mix Levels.....	10
Figure 12: Above City Average Elementary School Scores Organized by Income Mix Levels.....	11
Figure 13: Below City Average Elementary School Scores Organized by Income Mix Levels.....	11
Figure 14: Above City Average Elementary School Scores (Reading, Writing, Math) Organized by Income Mix Levels.....	12
Figure 15: Below City Average Elementary School Scores (Reading, Writing, Math) Organized by Income Mix Levels.....	13
Figure 16: Middle School Scores Overlaid on Income Mix Levels.....	14
Figure 17: Above City Average Middle School Scores Organized by Income Mix Levels.....	15
Figure 18: Above City Average Middle School Scores (Reading, Writing, Math) Organized by Income Mix Levels.....	16
Figure 19: Secondary School Scores Overlaid on Income Mix Levels.....	17
Figure 20: Above and Below City Average Secondary School Scores Organized by Income Mix Levels.....	18
Figure 21: Above City Average Secondary School Scores (Applied, Academic, Literacy) Organized by Income Mix Levels.....	19
Figure 22: Below City Average Secondary School Scores (Applied, Academic, Literacy) Organized by Income Mix Levels.....	20
Figure 23: Schools Scores and Mix Levels of Low Income.....	21
Figure 24: Schools Scores and French Immersion.....	23
Figure 25: Schools Score Trends (2006-2010) and French Immersion.....	24
Figure 26: All Schools Above and Below the City Average for Test Scores by Income Mix Levels.....	26



Executive Summary

Schools play a significant role in creating shared prosperity across a community, in neighbourhoods both rich or poor, urban or suburban. In 2010, the Hamilton Community Foundation (HCF) published a paper citing research that demonstrated a positive link between income and school performance. The paper concluded that Hamilton should explore this link locally and potentially consider bold and innovative options, such as income integration in schools as a catalyst in Hamilton's long-term poverty reduction efforts.

Prior to this, in 2005, the Hamilton-Wentworth District School Board (HWDSB) developed an anti-poverty initiative that aims to ensure that students from all areas of Hamilton are given the same opportunities to succeed. Despite this goal, not all schools score the same on the Education Quality and Accountability Office (EQAO) tests. This raises the question of the nature of the relationship between school location, school scores, and low income levels across Hamilton.

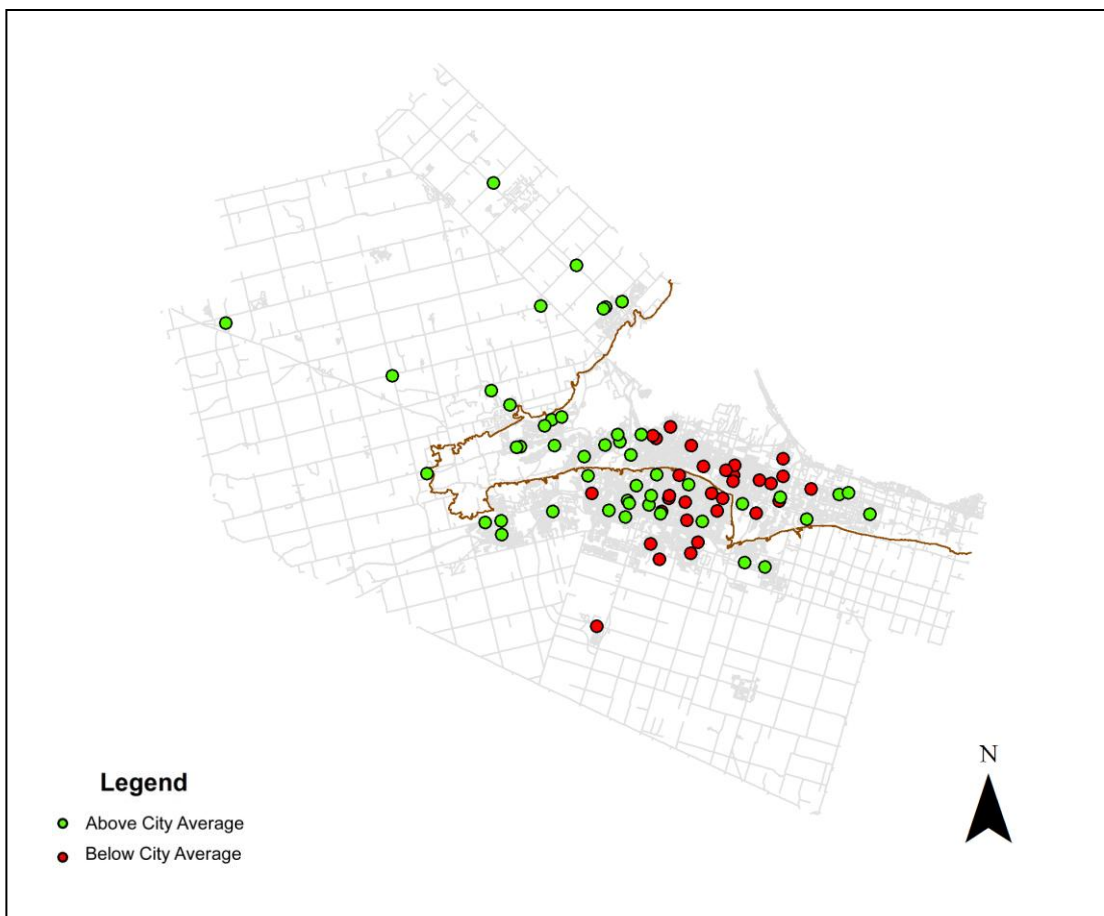
This is a timely question as the HWDSB is undertaking a reorganization that is looking at everything from programming and school closures, to the potential revision of the boundaries from which each school draws its students. Within this context, the HCF commissioned research to look at school performance and the spatial link with low income levels to see what, if any, trends can be observed.

The Analysis

As a starting point for discussion, this report illuminates trends on the Hamilton educational landscape by comparing school scores at the elementary, middle, and secondary levels as to whether they are above or below the city average (see Figure A). From there, these scores were compared with levels of low income in the districts from which the schools draw their students. With these results, the report attempts to determine what levels of low income mixing have a positive or negative impact on school scores and how that might factor into the drawing of school boundaries moving forward.



Figure A: Performance of Public Schools on All EQAO Tests*



*2010-2011 Data, 2012 Literacy

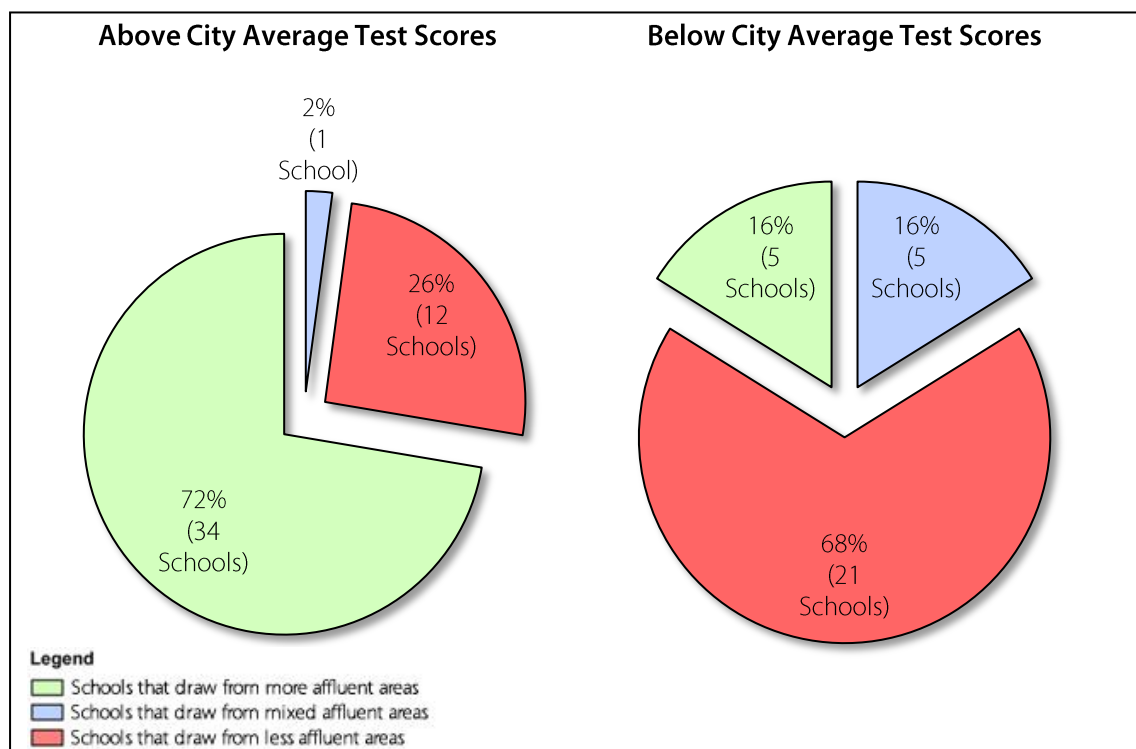
The data generated from the test scores and low income analysis were compared across the Hamilton landscape with the following results:

Schools that scored at or above the city average on the tests overwhelmingly draw students from areas that are more affluent. For schools that scored at or above the city average on all test scores, 72 percent of them draw students from areas where the majority of Census Tracts (CTs) are below the city average in low income levels.

Schools that scored below the city average on the tests overwhelmingly draw students from areas that are less affluent. For schools that scored below the city average on all test scores, 68 percent of them draw students from areas where the majority of CTs are above the city average in low income levels.



Figure B: All Schools Above and Below the City Average for Test Scores by Income Mix Levels



What about mixed income schools?

The analysis showed that there appears to be an income mix point when the number of schools with above city average test scores increase and the number of schools with below city average test scores drop off. This is at the point where a school's boundary encompasses twice as many affluent CTs than less affluent CTs. While by no means conclusive, this is an interesting trend that should be investigated further. At the very least, it provides a basis for understanding the potential impact of the location of school boundaries.

What about specialty programming?

The analysis also looked at how the presence of a French Immersion (FI) program compares with school performance and while the numbers are small (15 FI programs in total), the data showed that nine of the FI programs were located at schools that scored above the city average on all tests while two were located in schools that scored below the city average on all tests. The remaining four schools had test scores that were a mix of above and below the city average.



Conclusions

What do these results mean moving forward? Overall, the results expand the local understanding of the relationship between school location, levels of affluence and EQAO test scores. This relationship should be more fully explored with the detailed data and additional human resources available to the HWDSB. However, the results point to some potential implications for school planning:

1. In any reorganization of school boundaries, the clustering of areas of low income should be avoided as these schools typically scored lower on EQAO tests. This would have particular relevance to the establishment of an inner city school where the levels of low income are the greatest.
2. Mixing the levels of low income within school boundaries may be one method to help create school populations that score better overall. The research shows that in this regard, mixing some less affluent areas with a greater number of more affluent areas has a positive impact on school scores. While by no means conclusive, this is an interesting trend that should be investigated further. At the very least, it provides a basis for understanding the potential impact of the location of school boundaries.
3. Given the geography of Hamilton, there are certain areas of the city where this mixing is easier to achieve such as on the escarpment. However, the ghettoization of the inner/lower city schools should be avoided and serious consideration should be given to the location of specialty programs like French Immersion as a method to encourage more mixing for areas where geographic grouping is difficult to achieve.

While this study looks at low income levels and school scores, more investigation into other potential factors, such as teacher quality and parental involvement, that influence test scores would be beneficial to help inform school planning even further. Overall, any study on this issue is useful and helps to develop a more complete picture of the role and effectiveness of Hamilton's schools in contributing to the development and sustainability of a vibrant, equitable community. The school system, low income levels and community well-being are interconnected and the more school planning is informed by an awareness of the nature of this relationship, the greater the ability of Hamilton as a whole to build capacity to maintain civic vitality.



1.0 Introduction

Schools play a significant role in creating shared prosperity across a community, in neighbourhoods both rich or poor, urban or suburban. In Hamilton, this is understood by a number of civic institutions including the Hamilton Community Foundation (HCF) and the Hamilton Wentworth District School Board (HWDSB). In 2010, the HCF published a paper that looked at the issue of income integration of schools citing research that demonstrated a positive link between income and school performance.¹ The paper concluded that Hamilton should further explore this link locally and potentially consider bold and innovative options, such as income integration in schools as a catalyst in Hamilton's long-term poverty reduction efforts.

Prior to this, in 2005, the HWDSB developed an anti-poverty initiative that aims to respond to the needs of students who live in less affluent areas including the fundamental goal that students from all areas of Hamilton are given the same opportunities to succeed.² Despite this goal, not all schools perform the same on the standardized evaluations known as the Education Quality and Accountability Office (EQAO) tests. EQAO assesses students' skills in reading, writing and mathematics at key points in their academic career and compares their results to the local school board and provincial averages. This raises the question of the nature of the relationship between school location, school scores, and low income levels across Hamilton.

This question is particularly relevant now, as this is a time of major change in the Hamilton public school system. The HWDSB is undertaking accommodation reviews across the community. An accommodation review takes into account school space, programming and possible school closures. A further review will determine other elements of the system such as the placement of specialty programming and the potential revision of the boundaries from which each school draws its students. Within this context, the Hamilton Community Foundation has commissioned research to look at school performance and the spatial link with low income levels to see what, if any, trends can be observed.

As a starting point for discussion, this report will attempt to illuminate the trends on the Hamilton educational landscape by comparing school scores at the elementary, middle, and secondary levels, with levels of low income in the districts the schools draw their students from. From there, the report will attempt to determine what levels of low income mixing have a positive or negative impact on school scores and how that might factor into the drawing of school boundaries moving forward.



1.1 Data Sources and Notes

The data used in analysis is from the following sources:

- Percentage in low income before tax - All persons, Statistics Canada Census Tract data, 2006 Census³
- EQAO Scores, as posted on the HWDSB website for:
 - Grade 3 - Reading, Writing, Mathematics, 2010-2011 (2006 and 2008 for trend analysis)⁴
 - Grade 6 - Reading, Writing, Mathematics, 2010-2011 (2006 and 2008 for trend analysis)⁵
 - Grade 9 - Applied, Academic, 2010-2011, Literacy (March 2012), 2006 and 2008 for trend analysis⁶

While EQAO testing could be improved⁷, it provides the best and most up to date data to measure student progress, and it gives a basis to conduct research into school performance.

Some important caveats about the analysis should be noted:

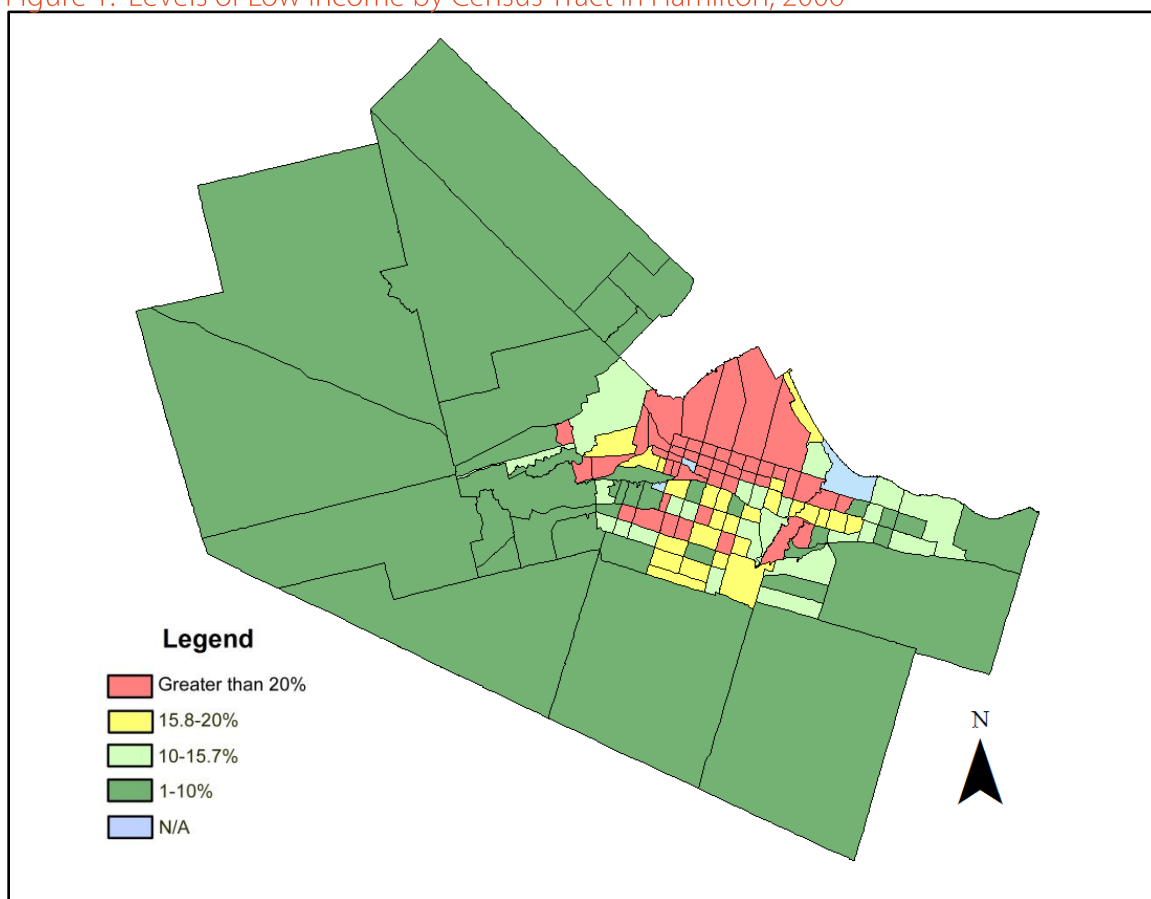
1. As EQAO test scores provide the basis for comparison, there is the assumption that the testing process is administered consistently across all schools at all grade levels.
2. While the analysis compares scores with income, it doesn't look at other factors such as the quality of teachers or parental involvement which could have a significant influence on test scores regardless of the low incomes levels of the surrounding areas.
3. The analysis looked at schools that scored at or above the city average, and below the city average on test scores, both overall, and at individual subject levels. For the overall analysis, not all schools were included in all the results. For example, one school may be above the average in writing, but below in math. However, in total, the analysis of all school scores at all levels encompasses almost 75 percent of all schools (78 schools) tested in the system and trends from that sample can provide some useful insight. At the individual subject levels, all schools were part of the analysis as they were either above or below the city average on test scores.
4. The number of schools in some of the analysis, particularly at the middle school level, is too small to make any confident conclusions in isolation. However, it is useful to include the results as reference and when combined with other levels, there is enough data to provide insights.



2.0 Low Income Levels by Census Tract

A look at the low income landscape in Hamilton provides a good starting point for analysis. Statistics Canada defines *Low Income* as income levels at which families or persons spend 20 percent more than the average of their before tax income on food, shelter and clothing.⁸ Using this data, the levels of low income in Hamilton's Census Tracts (CTs) were mapped out (Figure 1). In order to show the geographic spread, a range of low income levels were mapped. Four categories of low income (before tax) levels were used, centered on the city average of 15.7 percent. From Figure 1, the analysis shows that, in general, low income levels are the highest below the escarpment between the Red Hill Valley and Highway 403, and they are the lowest in the suburban areas surrounding the city. There are exceptions to this trend such as on the escarpment where there is quite the mix of areas above the city average as well as pockets just below the escarpment in the lower city that are below the city average. CTs in blue had either insufficient data or no data recorded by Statistics Canada.

Figure 1: Levels of Low Income by Census Tract in Hamilton, 2006





2.1 Mapping EQAO Test Scores

Using data from the school EQAO reports, the test performance of all schools in the HWDSB were mapped out. The scores were compared against the Board average for the City of Hamilton in order to see how schools performed relative to their local peers. Figure 2 shows elementary schools that scored above (green) and below (red) the city average on all scores (reading, writing, math) at the Grade 3 level. Note: Schools in grey were neither solely above or below the city average on all tests.

Figure 2: Performance of Elementary Schools on Grade 3 EQAO Tests

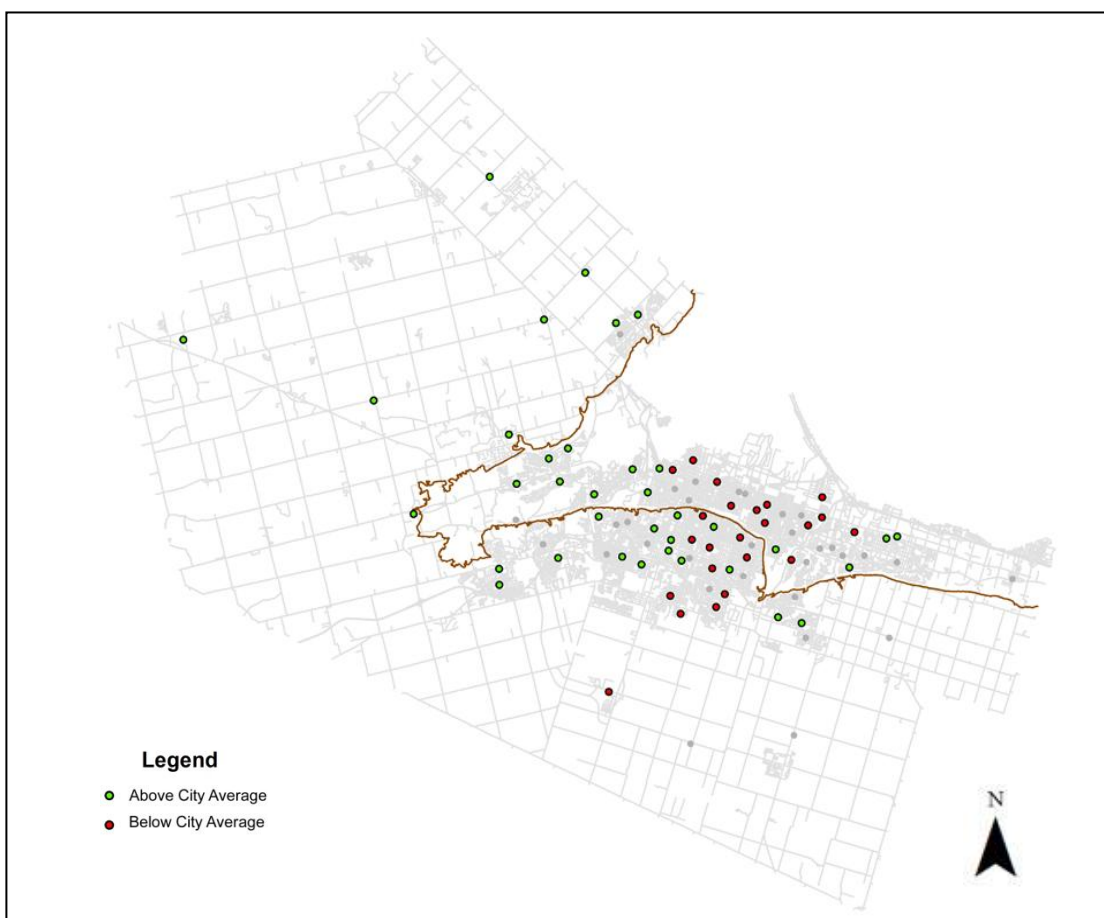


Figure 2 shows that the elementary schools that scored below the city average on all tests tend to be located in the central lower city and central mountain (on the escarpment, south of the brown line). Conversely, the elementary schools that scored above the city average on all tests are mainly located in the western half of the city (above and below the escarpment) as well as a cluster in upper and lower Stoney Creek.



Figures 3 and 4 show the school performance for middle and secondary schools with the patterns exhibited in the elementary map largely repeated. Once again, the schools in the western part of the city and parts of Stoney Creek score above the city average on all test scores while school in the central lower, and central mountain areas scored below the city average. Schools in grey were neither solely above or below the city average on all tests.

Figure 3: Performance of Middle Schools on Grade 6 EQAO Tests

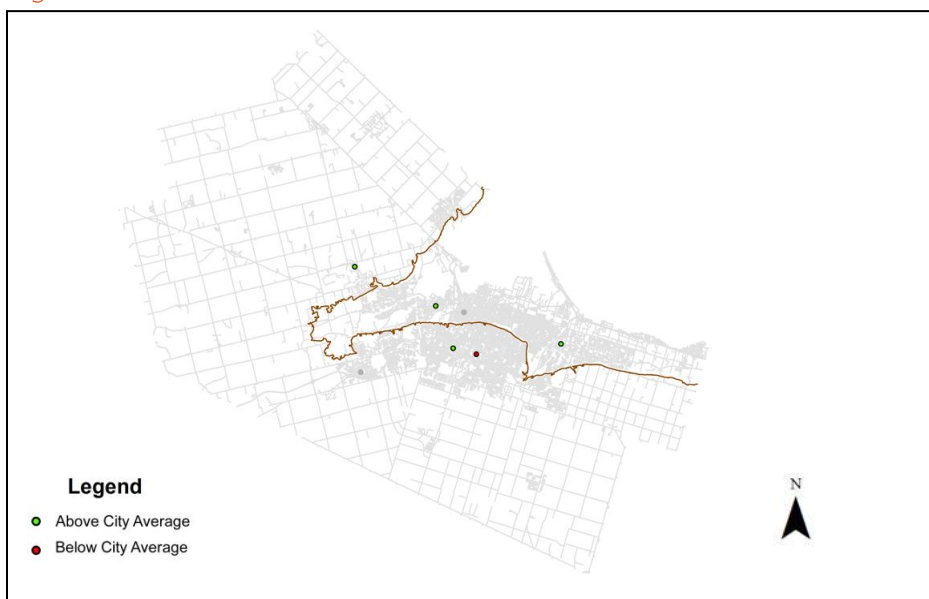
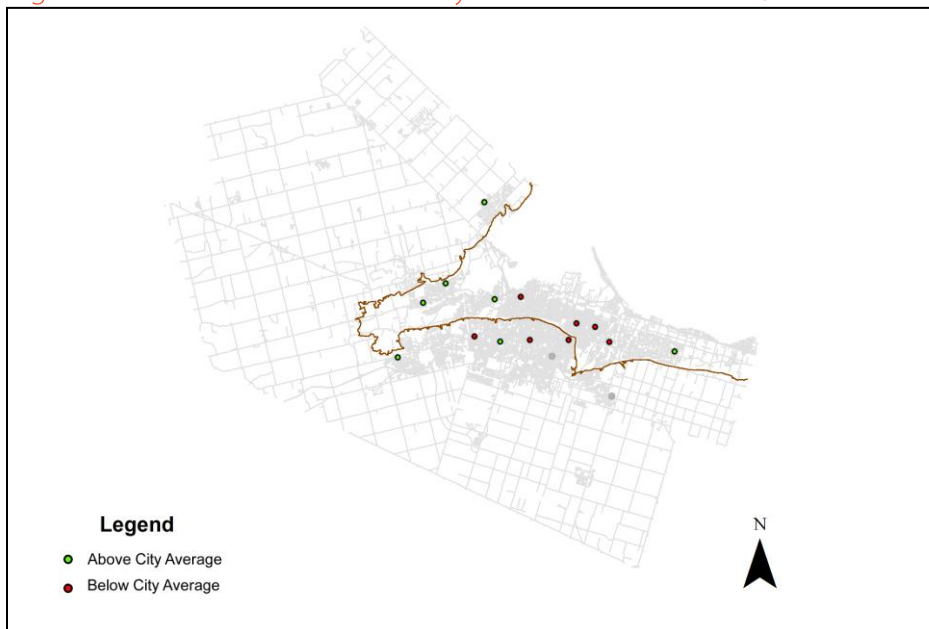


Figure 4: Performance of Secondary Schools on Grade 9 EQAO Tests





2.2 School Boundaries and Low Income Levels

In order to look further into the link between income and school performance, the boundaries from which schools draw students must be considered.⁹ Each school draws from multiple CTs which can have a variety of low income levels. For example, Figures 5-7, shows the school boundaries overlaid with low income levels in Hamilton.

Figure 5: Elementary School Boundaries Overlaid on Low Income Levels in Hamilton

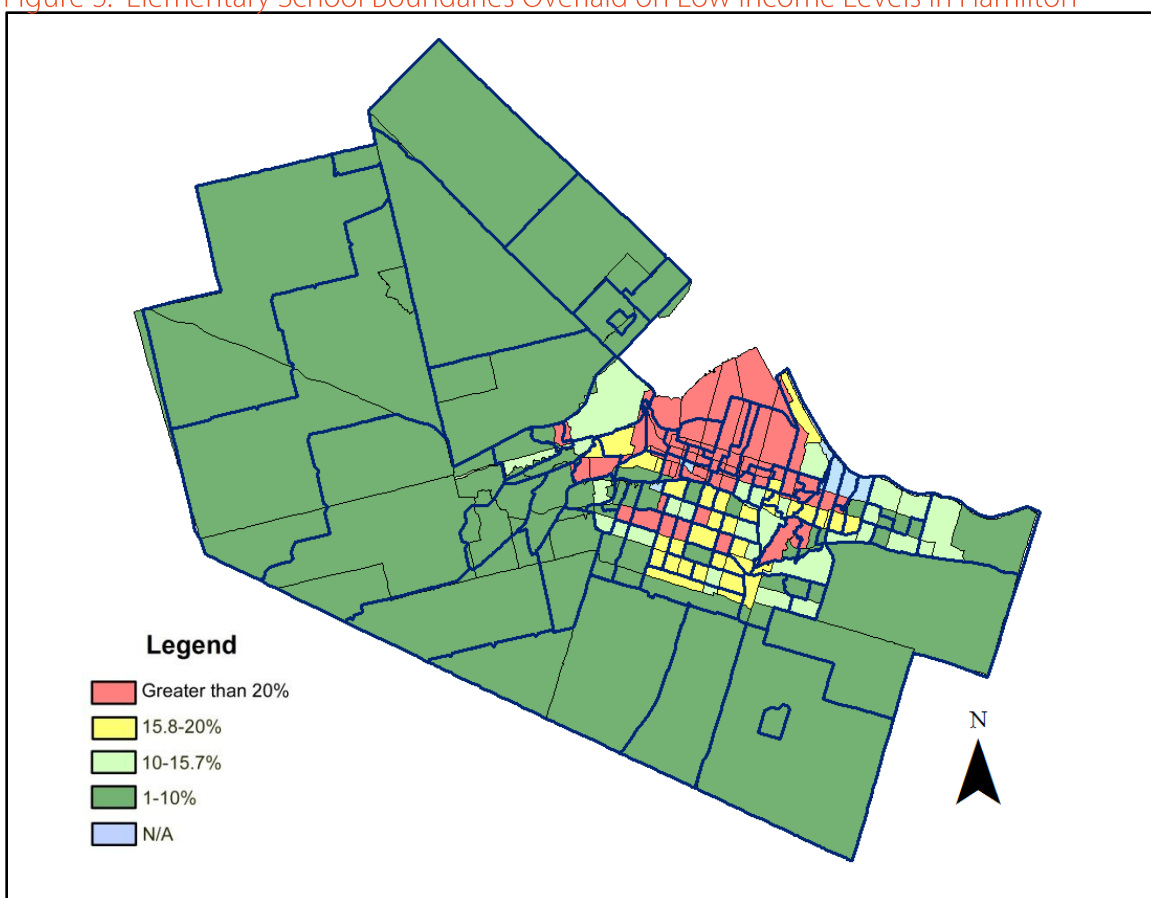




Figure 6: Middle School Boundaries Overlaid on Low Income Levels in Hamilton

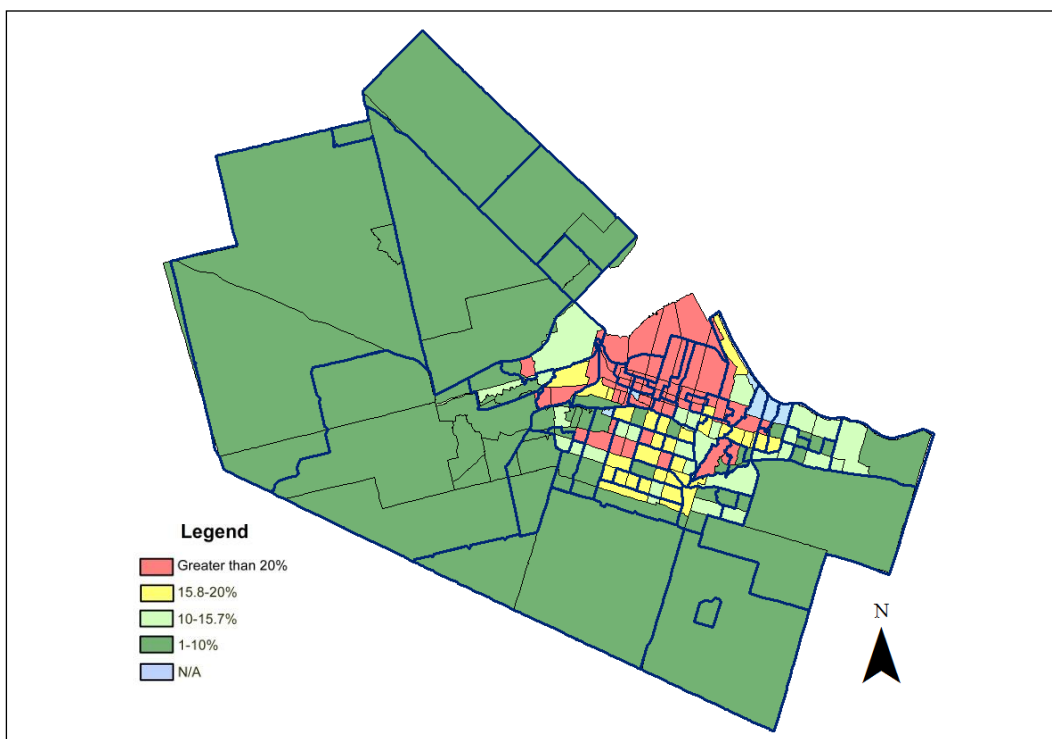
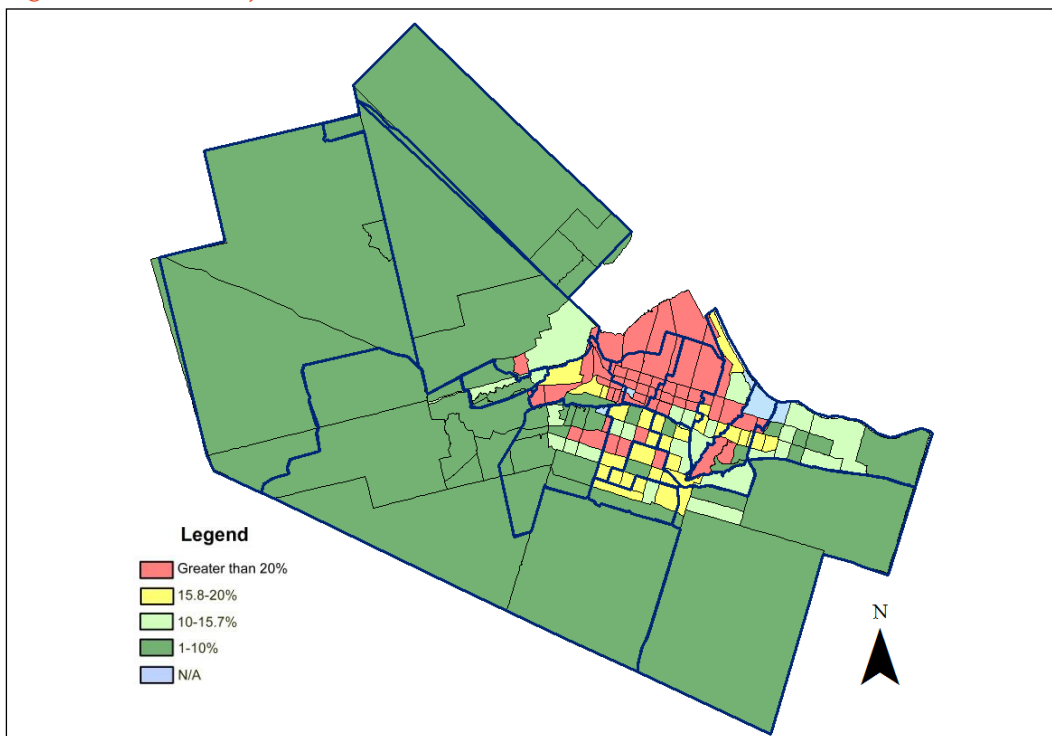


Figure 7: Secondary School Boundaries Overlaid on Low Income Levels in Hamilton





2.3 Categorizing School Boundaries By Income

Building on the overlay in the previous section, school boundaries were organized based on the level of mixing of the low income levels of the CTs within each boundary. 5 levels of mixing within school boundaries were established.

Table 1: Income Mix Levels for School Boundaries

Level	Boundaries that draw from CTs that:
1	Have low income levels that are entirely below the city average
2	Are above and below the city average in low income levels, but with the majority being below the city average
3	Are equally above and below the city average in low income levels
4	Are above and below the city average in low income levels, but with the majority being above the city average
5	Have low income levels that are entirely above the city average

Based on these levels, three school boundary maps were generated that correspond to elementary, middle, and secondary schools (Figures 8-10).

Figure 8: Elementary School Boundaries Coded by Income Mix Levels

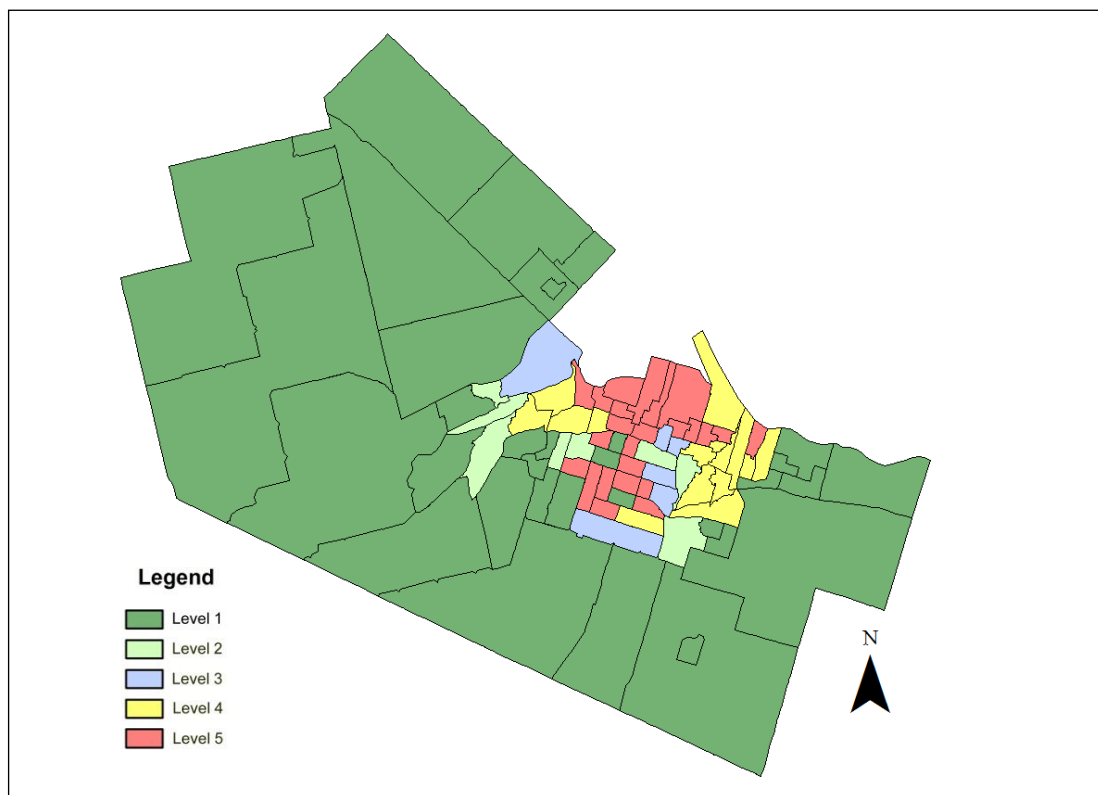




Figure 9: Middle School Boundaries Coded by Income Mix Levels

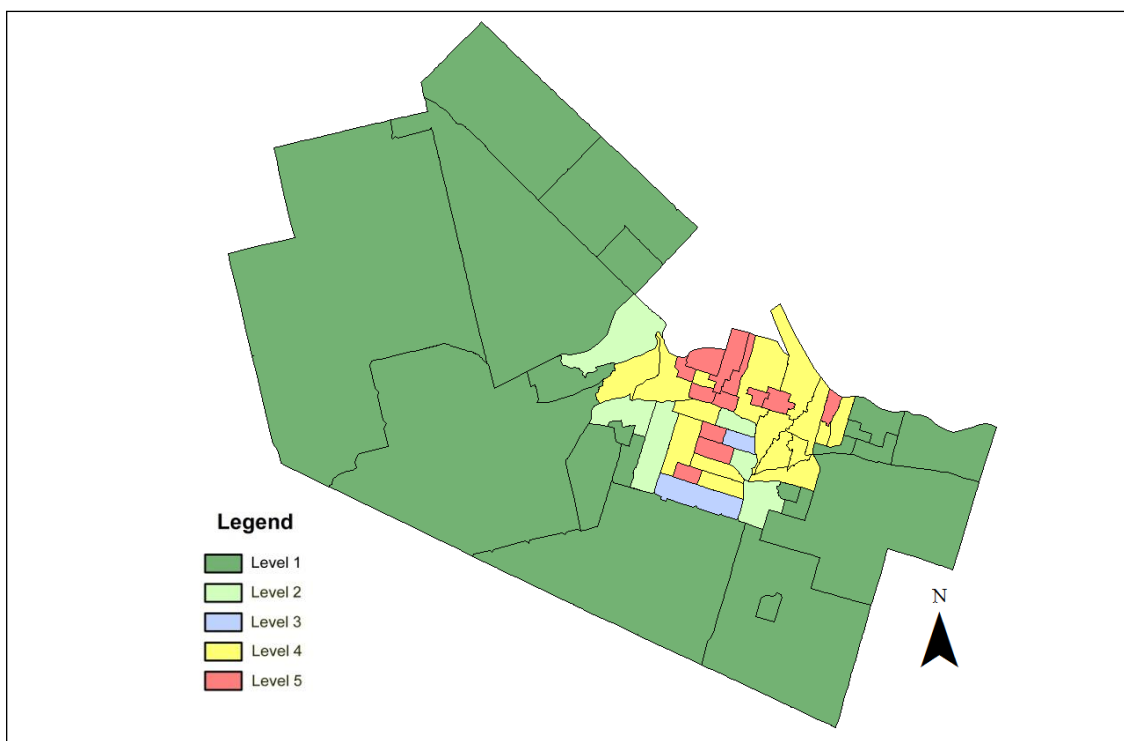
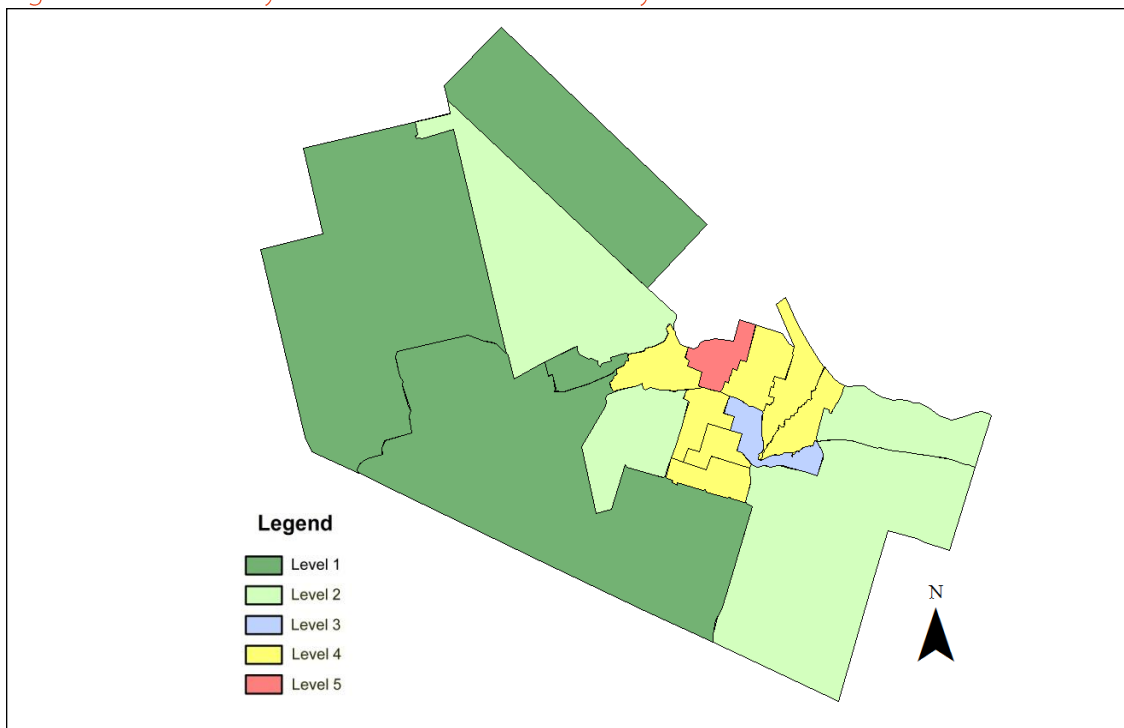


Figure 10: Secondary School Boundaries Coded by Income Mix Levels





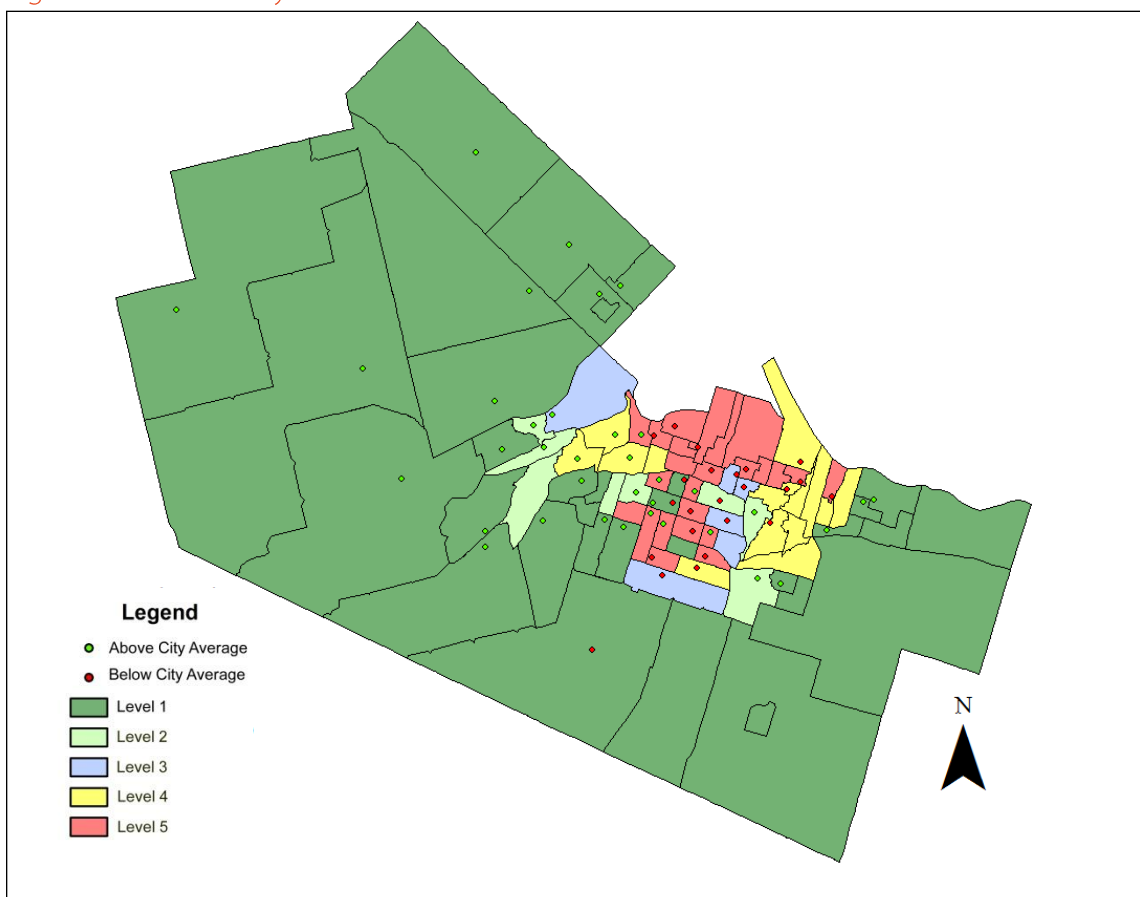
3.0 School Performance and Low Incomes Levels

Comparing the scores of schools with the low income mix established in section 2.3 helps to determine what patterns might exist. Further, breaking the scores down by subject can show if there are any interesting trends aside from the overall scores. The follow analysis looks at the three school levels (elementary, middle, and secondary) to see how scores in these schools relate to the income categories of the boundaries from which they draw students.

3.1 Elementary Schools

Figure 11 shows the spatial relationship between elementary schools and low income levels. Overall, there appears to be some patterns between scores and the low income levels of the areas they are drawing from, but a breakdown of the numbers illustrates this further.

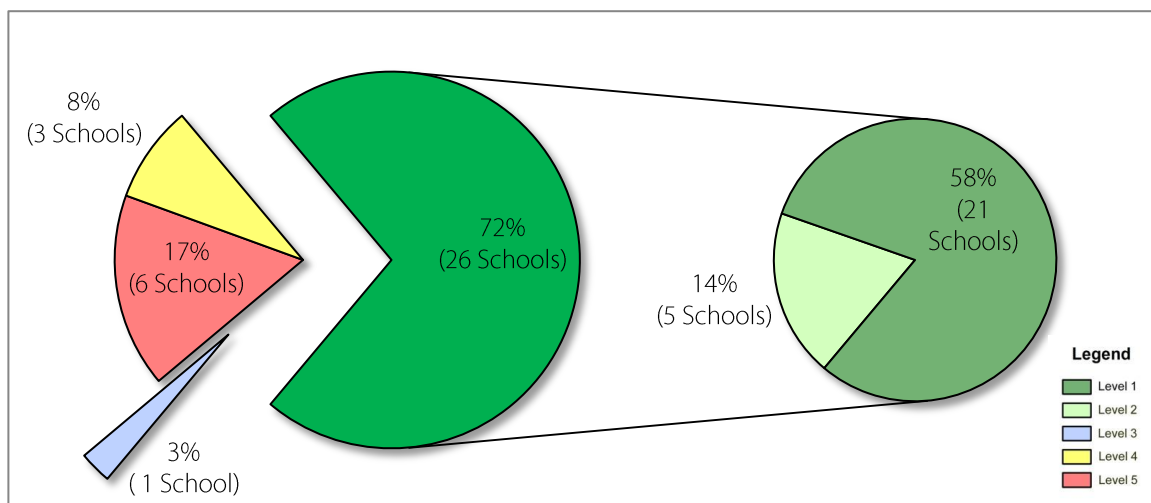
Figure 11: Elementary School Scores Overlaid on Income Mix Levels





As shown in Figure 12, over 70 percent of elementary schools that scored above the city average on test scores draw students from more affluent areas where the majority of CTs are below the city average in low income levels. Further, over half of higher performing elementary schools draw students from the most affluent areas where all of the CTs are below the city average in low income levels.

Figure 12: Above City Average Elementary School Scores Organized by Income Mix Levels



Conversely, as shown in Figure 13, 65 percent of elementary schools that scored below the city average in reading, writing, and math draw students from areas where the majority of CTs are above the city average in low income levels (less affluent). Further, over 50 percent of all underperforming elementary schools draw from areas where all of the CTs are above the city average in low income levels (e.g. the least affluent areas).

Figure 13: Below City Average Elementary School Scores Organized by Income Mix Levels

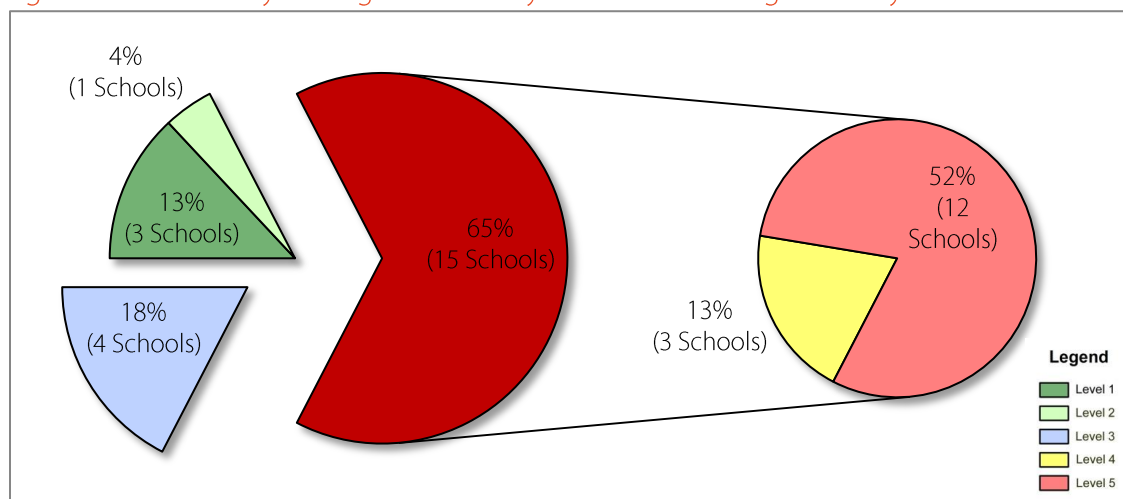




Figure 14 shows the break-down of schools with above city average scores by subject tested. The results show similar trends whereby the majority of schools with above city average test scores draw students from areas where the majority of CTs are below the city average in low income levels (more affluent).

Figure 14: Above City Average Elementary School Scores (Reading, Writing, Math)
Organized by Income Mix Levels

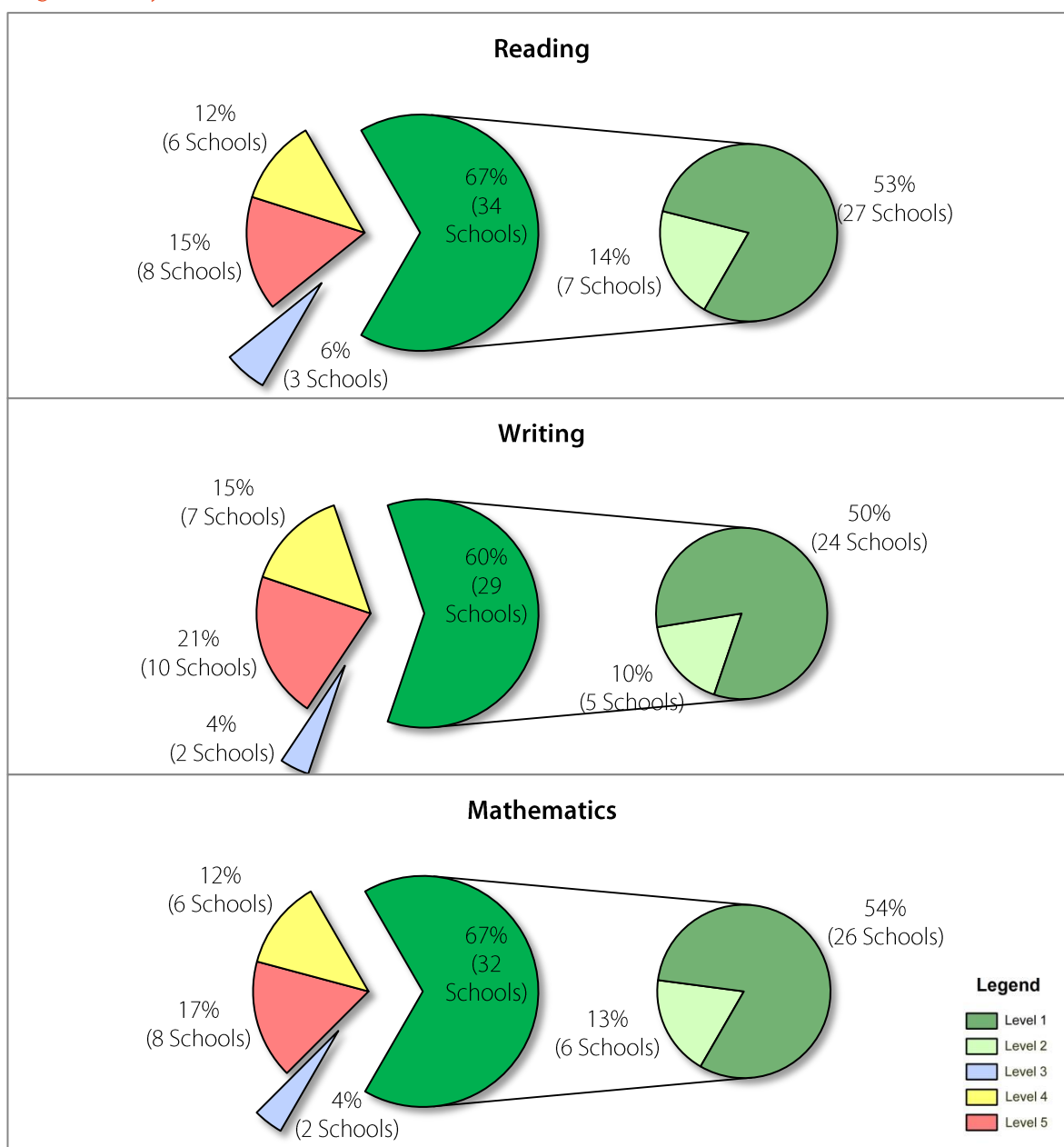
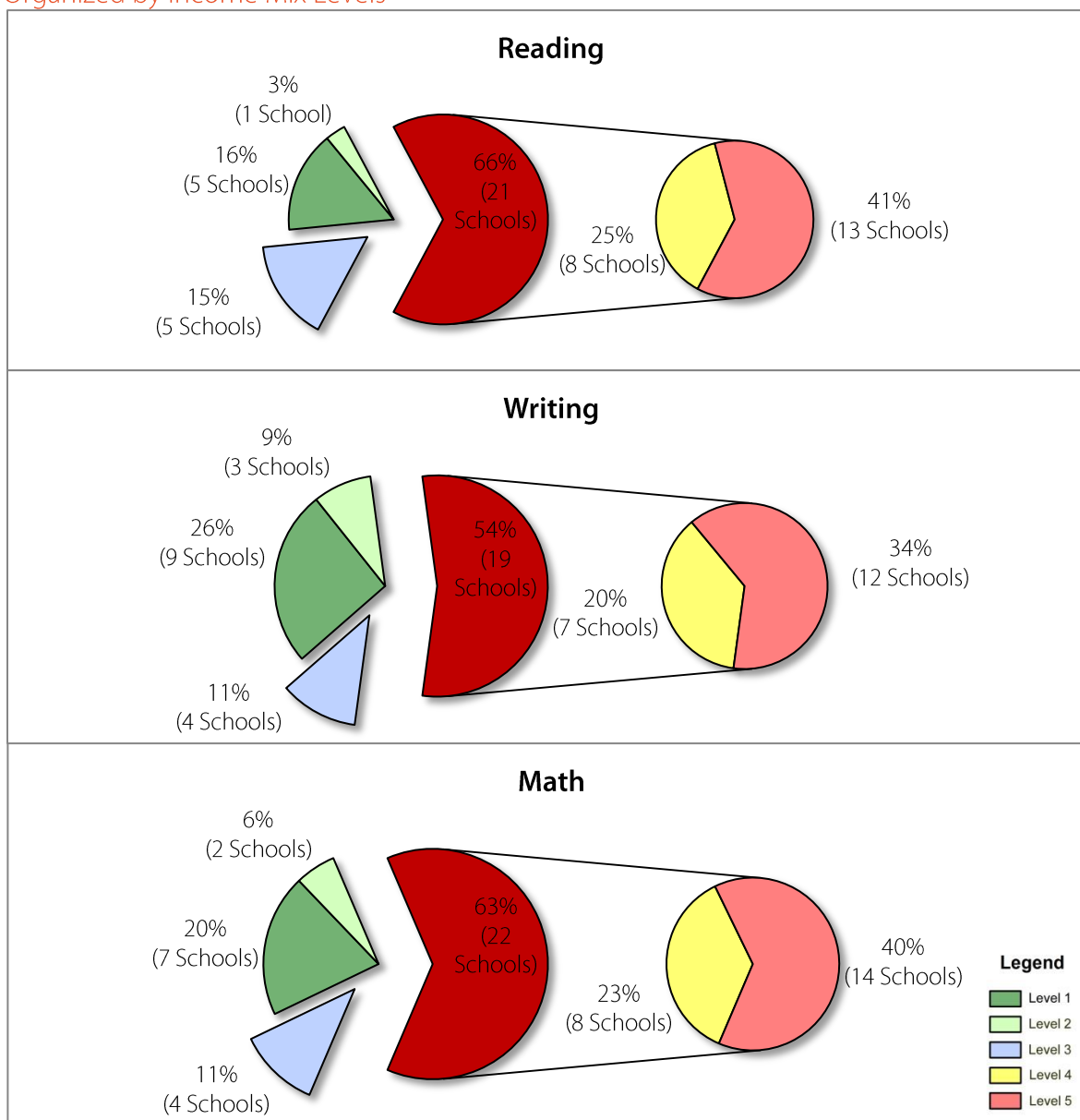




Figure 15 shows the break-down of schools with below city average scores by subject tested. The results show that in all cases, the majority of schools with below city average test scores draw from areas where the majority of CTs are above the city average in low income levels (less affluent).

Figure 15: Below City Average Elementary School Scores (Reading, Writing, Math)
Organized by Income Mix Levels

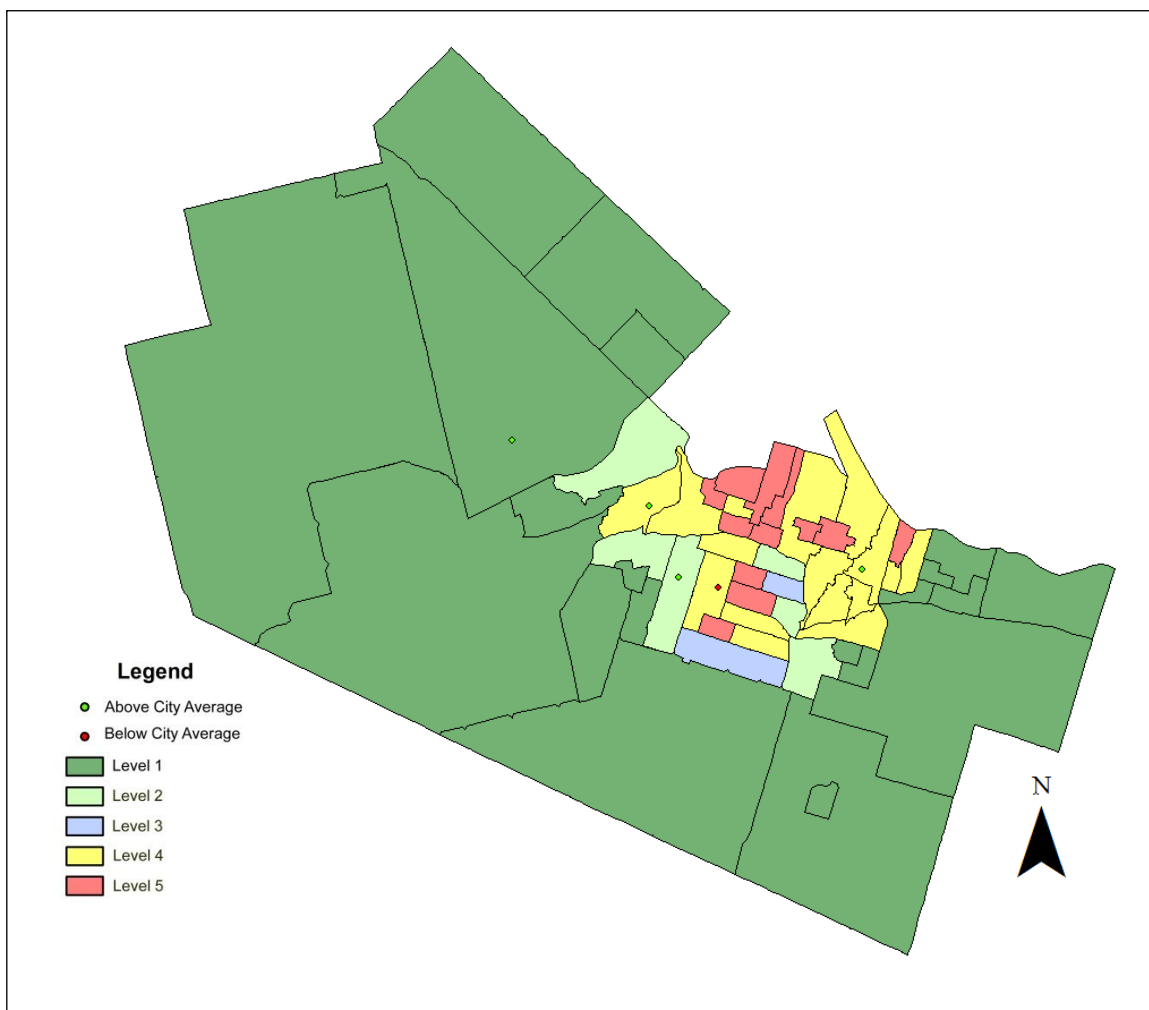




3.2 Middle Schools

Figure 16 shows the overlay between middle schools scores and school boundaries coded by the low income levels. For the analysis of middle schools, the small sample size must be noted as this makes any conclusions about larger trends unreliable on their own.

Figure 16: Middle School Scores Overlaid on Income Mix Levels





As shown in Figure 17, of the four middle schools that were above the city average in test scores in all three subjects (grade 6 reading, writing, math), two draw students from boundaries where the majority of CTs are below the city average in low income levels (more affluent) and two draw from areas where the majority of CTs are above the city average in low income levels (less affluent). The single middle school that was below the city average in test scores draw students from an area where a majority of CTs were above the city average in low income rates (less affluent).

Figure 17: Above City Average Middle School Scores Organized by Income Mix Levels

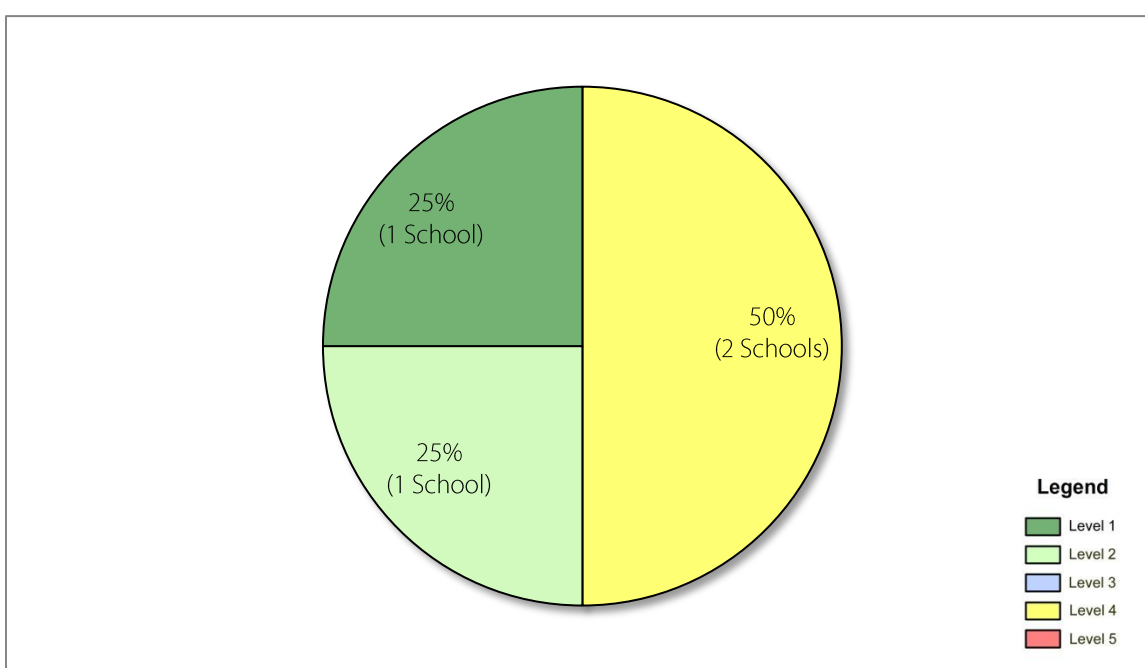




Figure 18 shows the break-down of middle schools with above city average scores by subject tested. The small sample size makes any conclusions difficult, but the limited results show that in the case of writing and reading, the majority of schools with above city average test scores draw from areas where the majority of CTs are above the city average in low income levels (less affluent).

Figure 18: Above City Average Middle School Scores (Reading, Writing, Math) Organized by Income Mix Levels



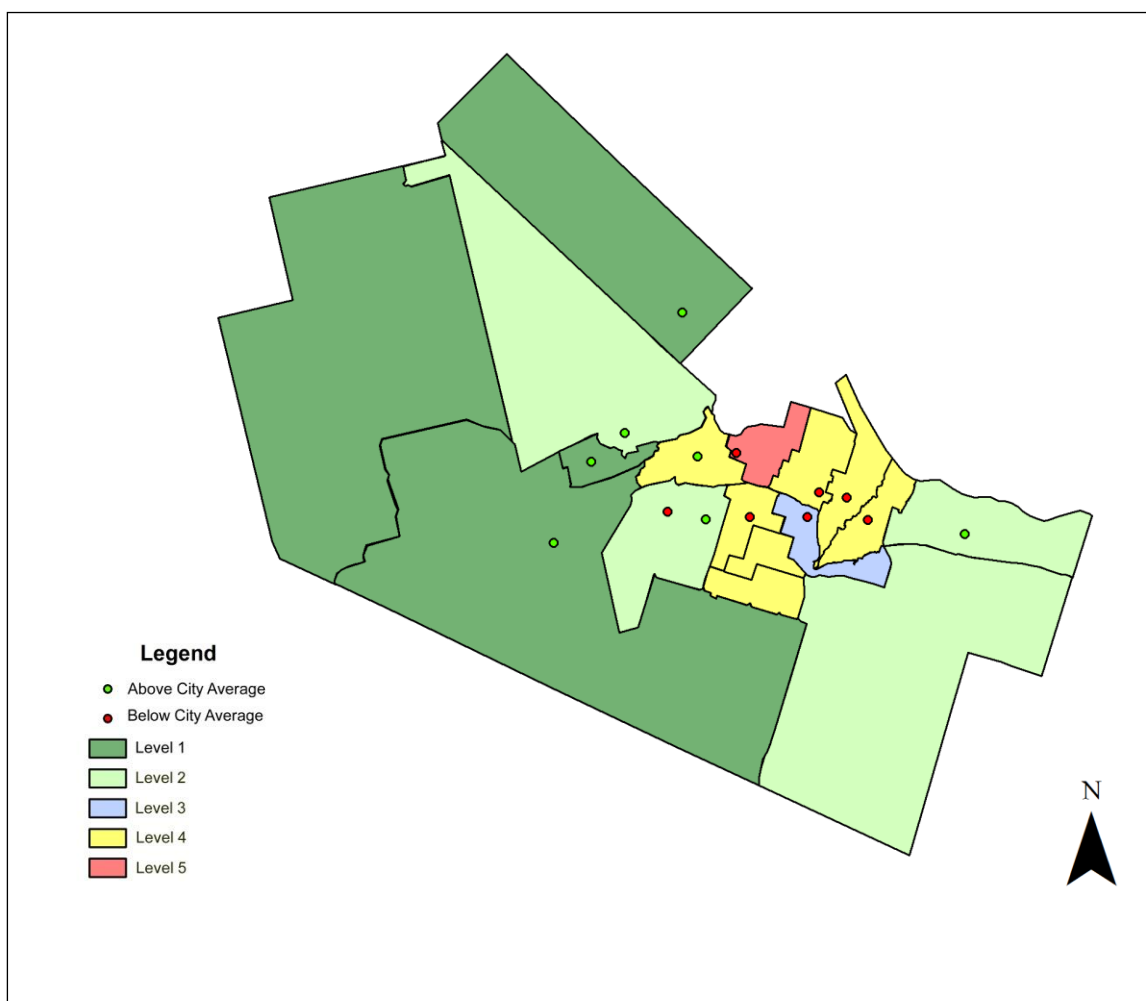
For schools with test scores below the city average in reading writing and math, the analysis showed that all these schools draw from areas where the majority of CTs are above the city average in low income levels (less affluent).



3.3 Secondary Schools

Figure 19 shows the overlay between secondary schools scores and school boundaries coded by the low income levels. As with the analysis of middle schools, the small sample size must be noted as this makes any conclusions about larger trends less reliable.

Figure 19: Secondary School Scores Overlaid on Income Mix Levels





As shown in Figure 20, in the two scenarios (secondary schools that score above and below the city average in all the tests - academic, applied, and literacy) the majority of schools with above average scores draw students from areas that were, in large part, below the city average in low income levels (more affluent) and the majority of schools with below city average scores draw students from areas with a majority of CTs that were above the city average in low income rates (less affluent). Again, the small sample size and the larger size of school boundaries must be taken into account when reading these results.

Figure 20: Above and Below City Average Secondary School Scores Organized by Income Mix Levels

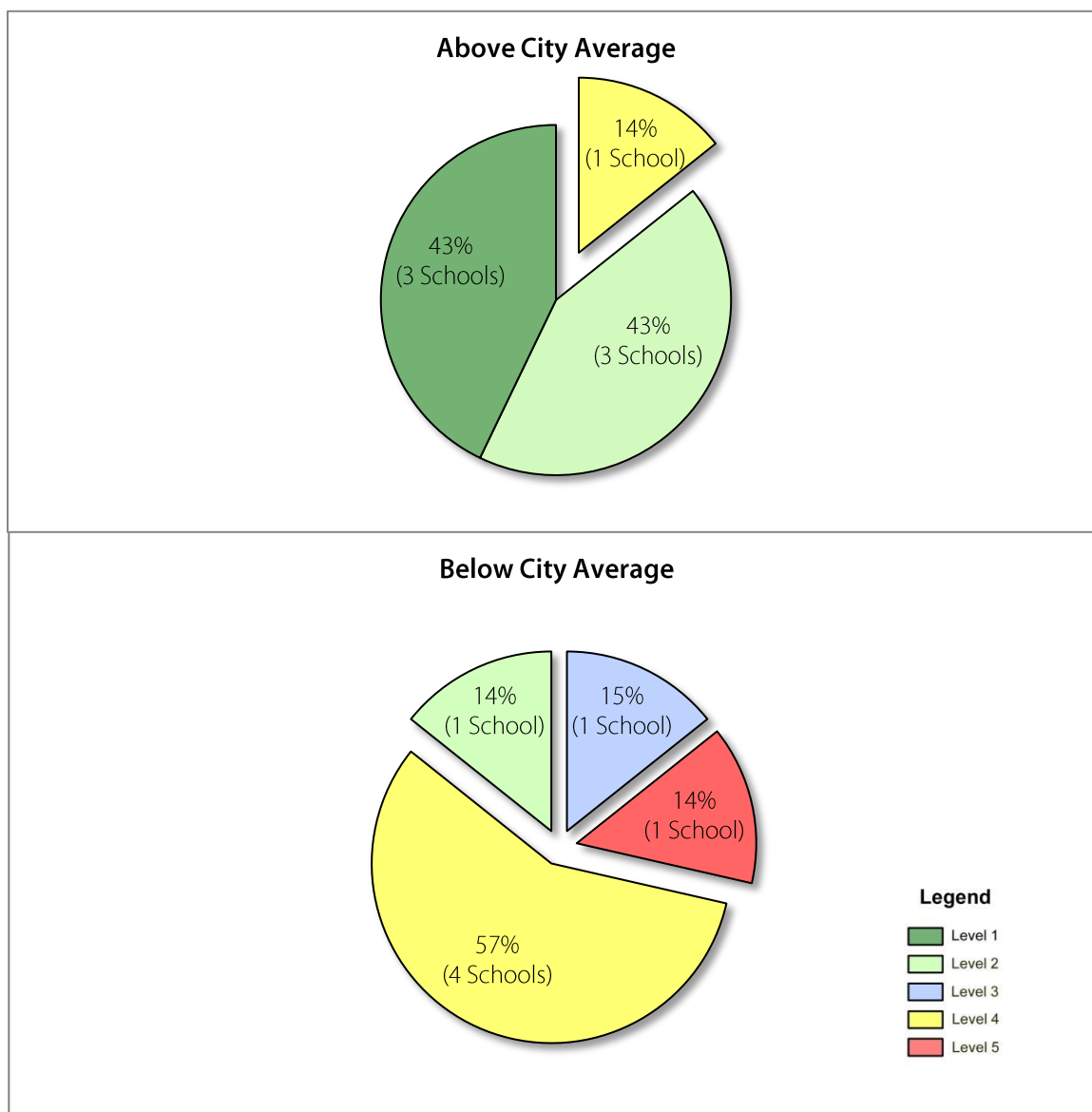




Figure 21 shows the break-down of secondary schools with above city average scores by subject tested. The results show that in all cases, the majority of schools draw students from areas where the majority of CTs are below the city average in low income levels (more affluent).

Figure 21: Above City Average Secondary School Scores (Applied, Academic, Literacy)
Organized by Income Mix Levels

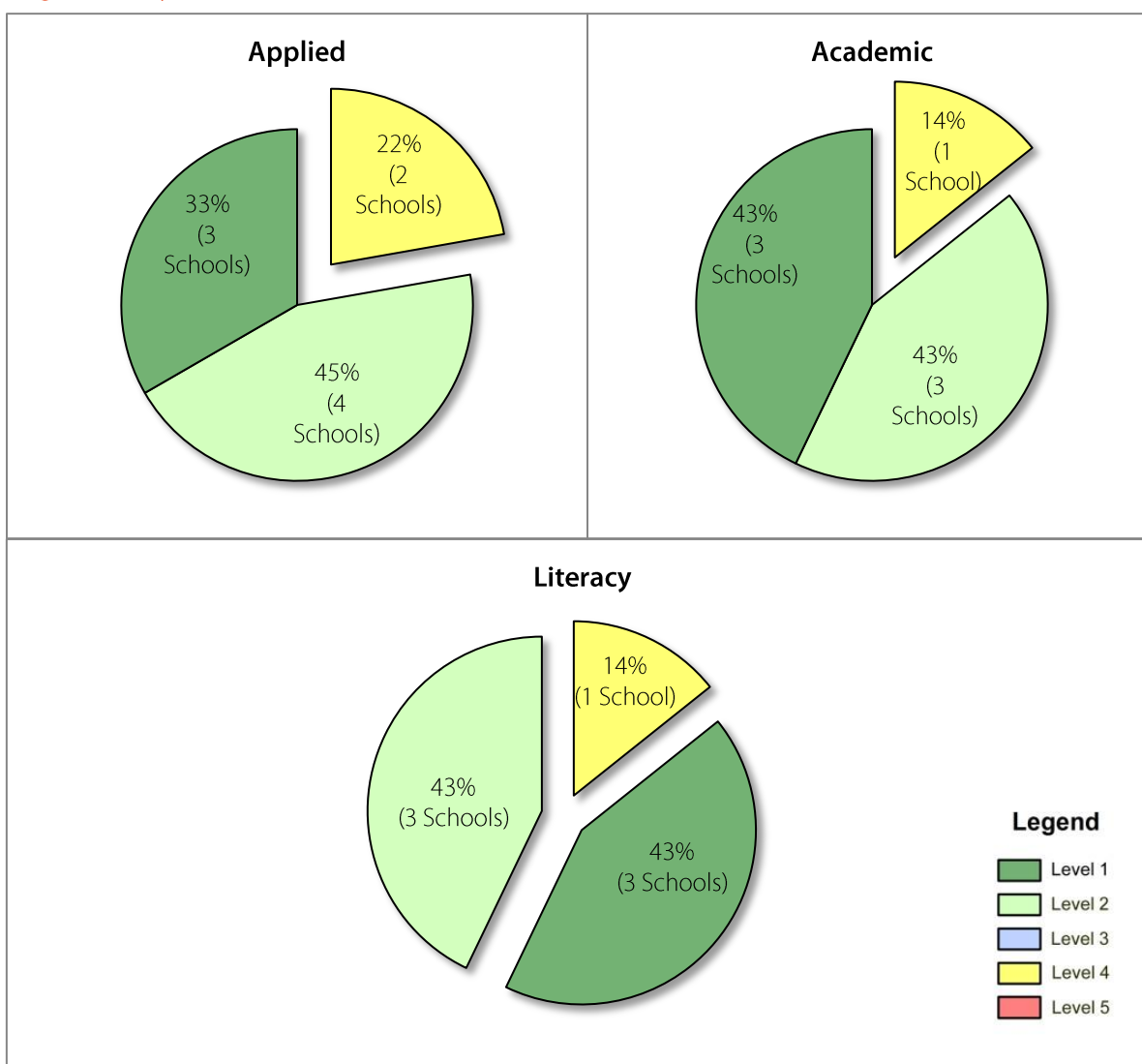
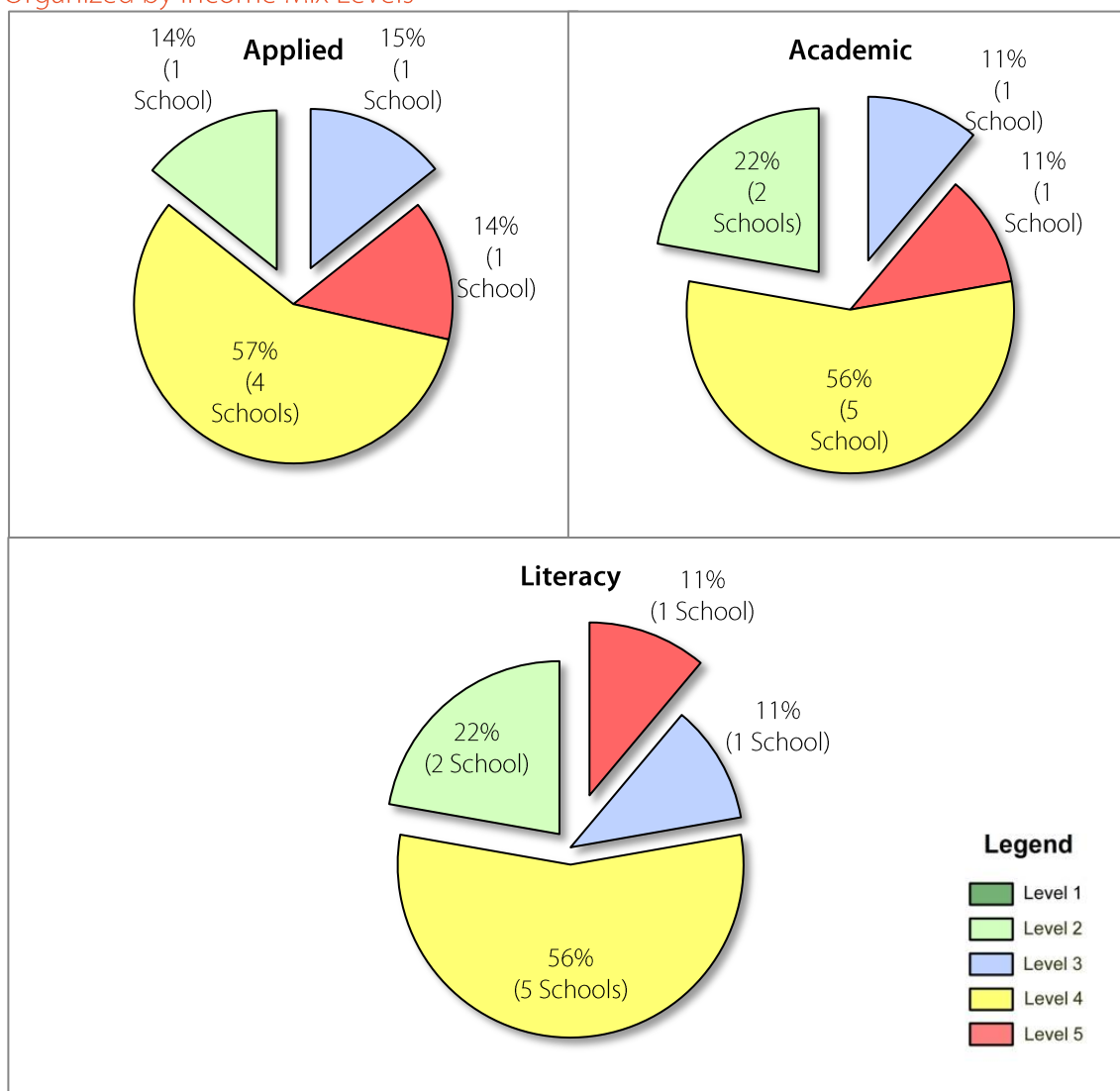




Figure 22 shows the break-down of secondary schools with below city average scores by subject tested. The results show that in all cases, the majority of schools with below city average test scores draw students from areas where the majority of CTs are above the city average in low income levels (less affluent).

Figure 22: Below City Average Secondary School Scores (Applied, Academic, Literacy)
Organized by Income Mix Levels





4.0 The Impact of Mixed Income Areas on School Scores

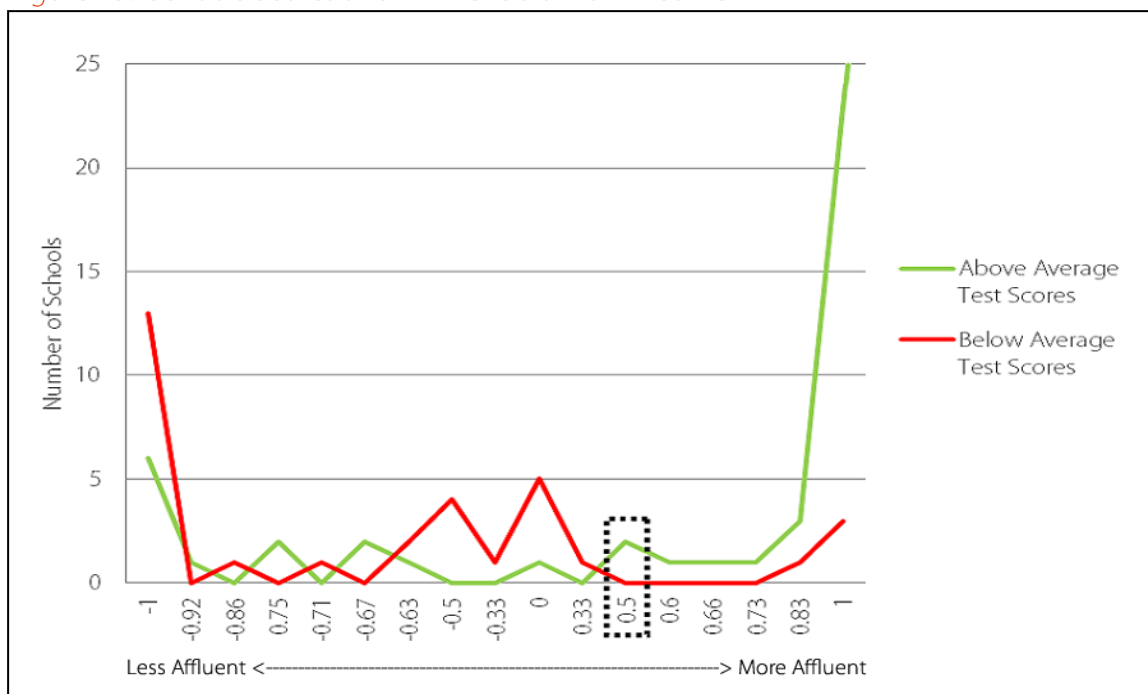
While the analysis so far has shown that schools from more affluent areas tend to do better on test scores and schools from less affluent areas tend to do worse, what about schools that draw from mixed income areas? At what point do levels of income mixing show impacts on school performance?

In an effort to start to answer these questions, the levels of income mix for school boundaries that were established in section 2.3 were used as a basis of a spectrum of mix levels that range from -1 to +1:

- -1 refers to school boundaries that draw entirely from CTs that are above the city average for low income levels (less affluent)
- +1 refers to school boundaries that encompass CTs that are entirely below the city average for low income levels (more affluent)
- The mid-way point, or 0, represents a half and half mix of CTs.

Figure 23 shows the result of this analysis using two groups of schools: those that scored above (green) and those that scored below (red) the city average on test scores.

Figure 23: Schools Scores and Mix Levels of Low Income





The analysis shows that mixing the levels of low income within school boundaries may impact how school populations score on EQAO tests. More specifically, while there are spikes at either end of the income mix spectrum that roughly correspond to the trends observed in section 3, there appears to be an income mix point (0.5 on the spectrum) when the number of schools with above city average test scores increase and the number of schools with below city average test scores drop off. This is at the point where a school's boundary encompasses twice as many affluent CTs (areas with lower than average low income levels) than less affluent CTs (areas that have higher than average low income levels). While by no means conclusive, this is an interesting trend that should be investigated further. At the very least, it provides a basis for understanding the potential impact of the location of school boundaries.



5.0 French Immersion

In an effort to supplement the primary analysis contained in this report, the presence of specialty programming, specifically French Immersion was looked at in terms of the relation to test scores. Figure 24 shows the relationship between schools that scored above and below the city average on test scores and the presence of a French Immersion program in schools.¹⁰ Figure 25 shows schools that are trending upward and downwards on school scores (from 2006-2010, 2012 Literacy) in relation to French Immersion. In both cases, the analysis is dealing with a small number of schools but interestingly, the figures show that the majority of schools that have a French Immersion program have above city average test scores (9 of 15) and almost half show an upward trend in the scores from 2006-2010 (7 of 15). Conversely, only 2 schools with a French Immersion program score below the city average in test scores, and only 3 are trending downwards. It should be noted that the analysis does not consider the impact that student migration, due to the presence of specialty programming, might have on school performance. For example, high performing students might attend a school with a FI program which could both boost the score of the school attended, while lowering the score of the local school that student would have normally attended if FI was offered there.

Figure 24: Schools Scores and French Immersion

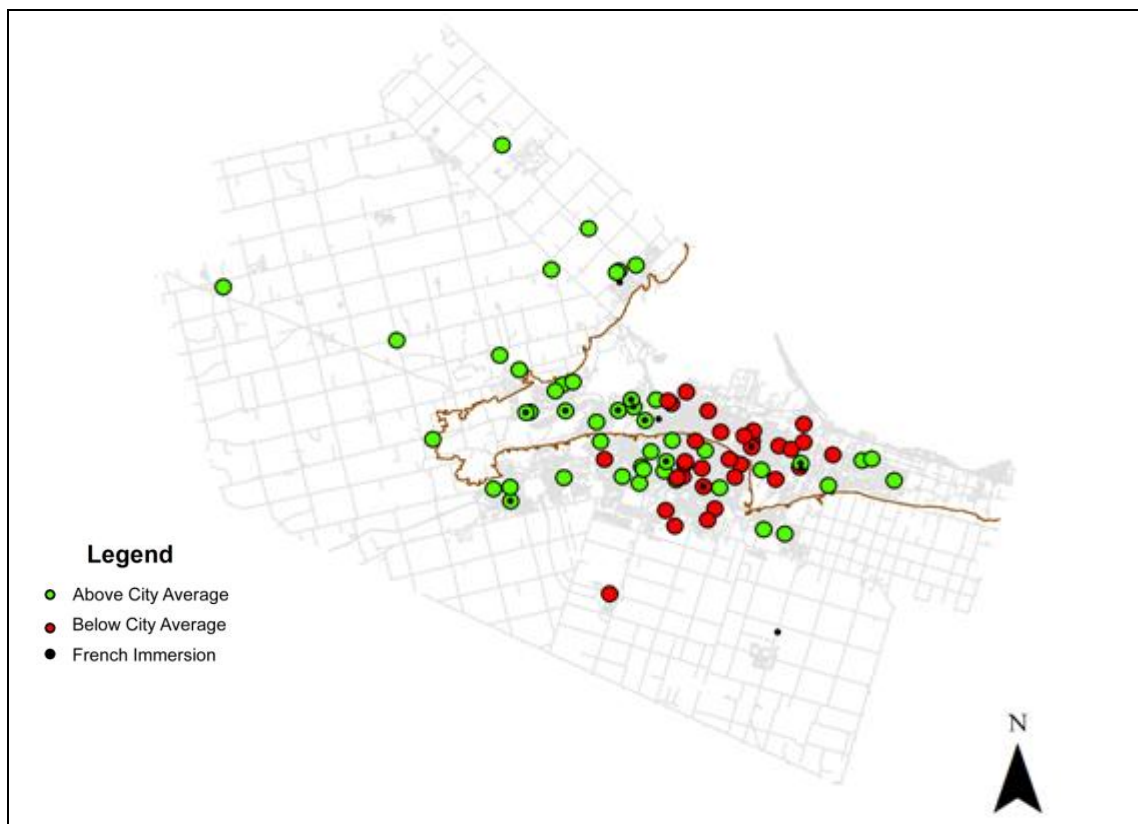
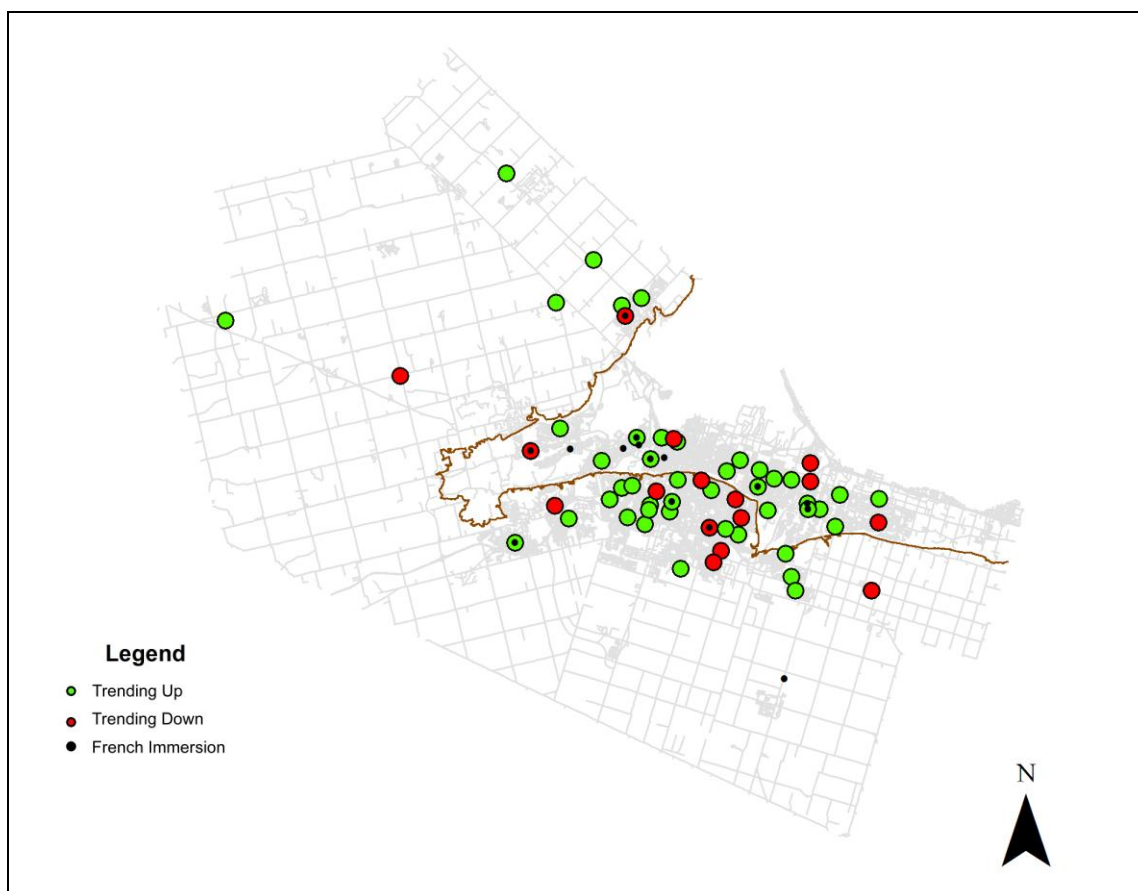




Figure 25: Schools Score Trends (2006-2010) and French Immersion





6.0 Conclusions

Before drawing conclusions from this analysis, is it useful to restate some of the caveats from the introduction to put these results into context:

1. As EQAO test scores provide the basis for comparison, there is the assumption that the testing process is administered consistently across all schools at all grade levels.
2. While the analysis compares scores with income, it doesn't look at other factors such as the quality of teachers or parental involvement which could have a significant influence on test scores regardless of the low incomes levels of the surrounding areas.
3. The analysis looked at schools that scored at or above the city average, and below the city average on test scores, both overall, and at individual subject levels. For the overall analysis, not all schools were included in all the results. For example, one school may be above the average in writing, but below in math. However, in total, the analysis of all school scores at all levels encompasses almost 75 percent of all schools (78 schools) tested in the system and trends from that sample can provide some useful insight. At the individual subject levels, all schools were part of the analysis as they were either above or below the city average on test scores.
4. The number of schools in some of the analysis, particularly at the middle school level, is too small to make any confident conclusions in isolation. However, it is useful to include the results as reference and when combined with other levels, there is enough data to provide insights.

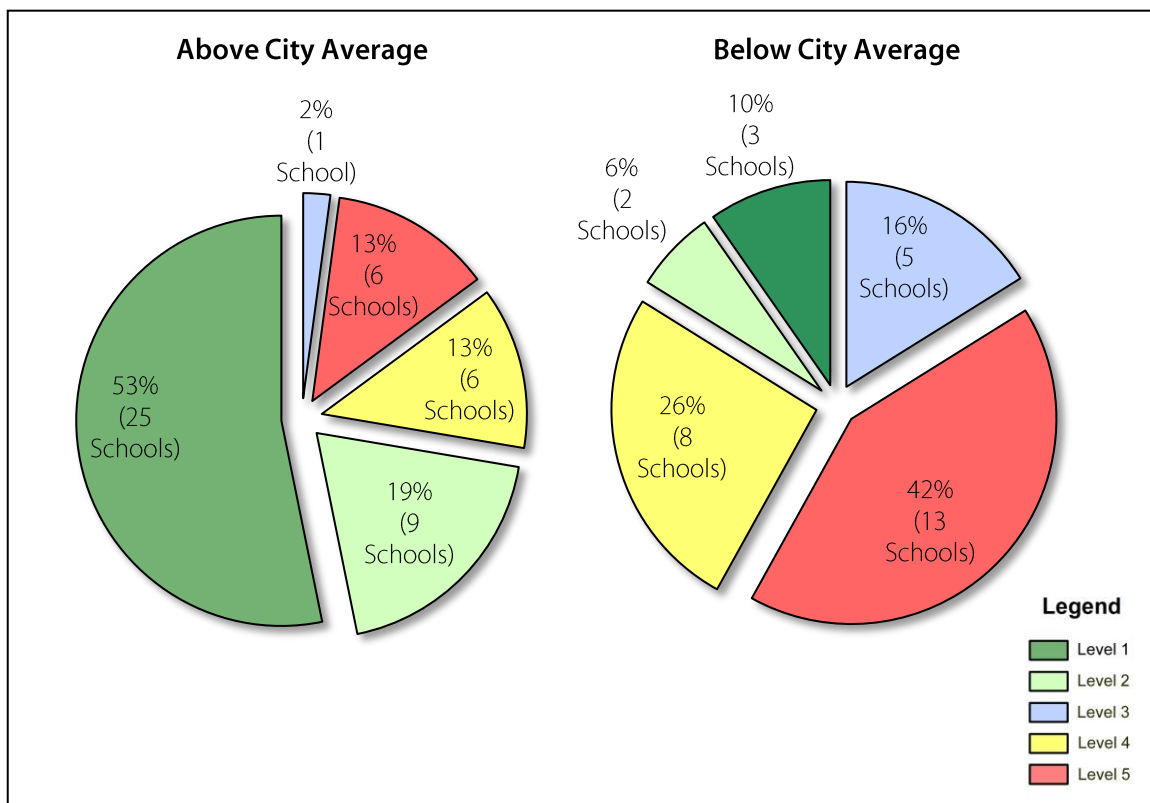
With these points taken into consideration, a compilation of all the results at all grade levels provides the basis for some general conclusions (Figure 26):

Schools that scored at or above the city average on the tests overwhelmingly draw students from areas that are more affluent. For schools that scored at or above the city average on all test scores, 72 percent of them draw students from boundaries where the majority of CTs are below the city average in low income levels. Further, 53 percent of higher performing schools draw students from areas that are entirely below the city average in low income levels.

Schools that scored below the city average on the tests overwhelmingly draw students from areas that are less affluent. For schools that scored below the city average on all test scores, 68 percent of them draw students from boundaries where the majority of CTs are above the city average in low income levels. Further, 42 percent of underperforming schools draw students from areas that are entirely above the city average in low income levels.



Figure 26: All Schools Above and Below the City Average for Test Scores by Income Mix Levels



There appears to be an income mix point when the number of schools with above city average test scores increase and the number of schools with below city average test scores drop off. This is at the point where a school's boundary encompasses twice as many affluent CTs (areas with lower than average low income levels) than less affluent CTs (areas that have higher than average low income levels).

Additionally, the general analysis of the presence of French Immersion showed that the vast majority of schools that had a program, scored above the city average in tests and were trending upwards in terms of those scores. Conversely, a small number of schools that had a French Immersion program scored poorly or were trending downwards.



What do these results mean moving forward? Overall, the results expand the local understanding of the relationship between school location, levels of affluence and EQAO test scores. This relationship should be more fully explored with the detailed data and additional human resources available to the HWDSB. However, the results point to some potential implications for school planning:

1. In any reorganization of school boundaries, the clustering of areas of low income should be avoided as these schools typically scored lower on EQAO tests. This would have particular relevance to the establishment of an inner city school where the levels of low income are the greatest.
2. Mixing the levels of low income within school boundaries may be one method to help create school populations that score better overall. The research shows that in this regard, mixing some less affluent areas with a greater number of more affluent areas has the most positive impact on school scores. While by no means conclusive, this is an interesting trend that should be investigated further. At the very least, it provides a basis for understanding the potential impact of the location of school boundaries.
3. Given the geography of Hamilton, there are certain areas of the city where this mixing is easier to achieve such as on the escarpment. However, the ghettoization of the inner/lower city schools should be avoided and serious consideration should be given to the location of specialty programs like French Immersion as a method to encourage more mixing for areas where geographic grouping is difficult to achieve.

Looking ahead, more investigation into other potential factors that influence school test scores are required to address some of the limitations of this study. Namely, in school factors such as teacher quality or in home factors such as parental involvement that cannot be fully determined by EQAO scores. Overall, all study on this issue helps to fill out a more complete picture of the role and effectiveness of Hamilton's schools in contributing to the development and sustainability of a vibrant, equitable community. The school system, low income levels and community well-being are interconnected and the more school planning is informed by an awareness of this nature of this relationship, the greater the ability of Hamilton as a whole to build capacity to maintain civic vitality.



7.0 References

¹ Goodman, Matthew, *Poverty Reduction Background Paper: Income Integration of Schools*, Hamilton Community Foundation, April, 2010.

² HWDSB Anti-Poverty Initiative, <http://www.hwdsb.on.ca/community/antipoverty/>

³ Statistics Canada, *Census Tract (CT) Profiles, 2006 Census*, Catalogue number: 92-597-XWE, <http://www12.statcan.ca/census-recensement/2006/dp-pd/prof/92-597/index.cfm>

⁴ Hamilton-Wentworth District School Board, *Assessments of Reading, Writing and Mathematics, Primary Division (Grades 1–3)*, <http://www.hwdsb.on.ca/schools/>

⁵ Hamilton-Wentworth District School Board, *Assessments of Reading, Writing and Mathematics, Junior Division (Grades 4–6)*, <http://www.hwdsb.on.ca/schools/>

⁶ Hamilton-Wentworth District School Board, *Grade 9 Assessment of Mathematics, 2010–2011*, <http://www.hwdsb.on.ca/schools/>

Hamilton-Wentworth District School Board, *Ontario Secondary School Literacy Test, March 2012*, <http://www.hwdsb.on.ca/schools/>

⁷ Environics Research Group, *Teachers' Views of Standardized Testing and EQAO, 2010*, http://www.etfo.ca/IssuesinEducation/EQAOTesting/TeachersViews/Documents/Teachers_Views_EQAO.pdf

⁸ Statistics Canada, *Low income before tax cut-offs*, <http://www12.statcan.ca/census-recensement/2006/ref/dict/fam020-eng.cfm>

⁹ Hamilton-Wentworth District School Board, *Accommodation and Planning Interactive Map, School Boundary Layers*, <http://ap2.hwdsb.on.ca/map.html>

¹⁰ Hamilton-Wentworth District School Board, *Accommodation and Planning Interactive Map, French Immersion Boundaries*, <http://ap2.hwdsb.on.ca/FImain.html>