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Magnet schools in Hartford: The intersection of race and school choice among applicants

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Magnet schools in Hartford:

The intersection of race and school choice

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Introduction

Since the 1996 Sheff v O'Neill school desegregation ruling in metropolitan Hartford, Connecticut, the number of interdistrict magnet schools designed to integrate city and suburban students has risen to twenty-two. Using specialized educational themes and resources, they aim to attract both urban and suburban families to enroll. Although magnet schools have been created with the best intentions of reducing racial and socio-economic isolation, they have begun to perpetuate different problems.

Magnet schools have slowly become a hot commodity within the metropolitan Hartford area. To better understand why this has happened it is important to look at who is applying and attempt to ask why. The current study looks to take a closer look at applications for six elementary magnet schools run by Hartford Public Schools by answering four questions:

1.) *Is there a strong relationship between the rate of magnet applications and school CMT scores in Hartford?*

2.) *Do applications to HPS elementary magnets vary across different Hartford neighborhoods?*

3.) *Are magnet applications statistically representative of the racial demographics of neighborhoods in which they reside?*

4.) *Do magnet schools vary in their degree of magnetism?*

This study is grounded on an analysis of 1,853 HPS elementary magnet school applicants collected during the spring 2006 magnet lottery. First, there appears to be no relationship between school CMT scores and rate of applications indicating that school

choice may not rely upon educational opportunity but rather a different factor. Second, magnet school applicants are not dispersed evenly throughout Hartford. Analyses of applications per school zone enrollment reveal gaps ranging from as low as 4.9% to as large as 21.4%, with most school zones falling around 12%. This suggests that there may be different motivating factors to apply to magnet schools on the basis of where one is geographically situated within Hartford. Third, the number of elementary magnet school applicants is not statistically representative of the neighborhood racial demographics the students are coming from. Magnet applicants are more likely to apply if they are a racial minority within their school zone. Specifically, Hispanic applicants were more likely to apply to an elementary magnet if they resided in a predominately Black neighborhood school zone. Similarly, Black applicants were more likely to apply if they resided in a predominately Hispanic neighborhood school zone. Finally, Annie Fisher Magnet School of Multiple Intelligences appears to draw the most elementary applicants from the furthest distance away at an average of 1.833 miles per applicant. These patterns suggest that magnet school applicants are not always representative of their residential demographics and may not be doing what they were intended to. However, one cannot generalize these findings to all inter-district magnet schools because these trends may not be representative of the other 16 in the area.

Significance

These questions are of great significance due to the fact that I am challenging our conventional wisdom that school choice is a factor of school quality. School test scores are often a measuring stick used to gauge which schools are better than others. Many times a parent will decide to remove their child from their current school and place them

in a better high performing school. Many would agree that this is an important factor, but I challenge that belief and offer a different perspective.

In addition to this, there is also a lack of objective research in the Metro-Hartford region to test the commonly held belief by researchers that magnet schools have the potential to "cream" students and help perpetuate the "brain drain" in public neighborhood schools (Smrekar & Goldring, 1999). The current study is also significant because a large part of the current literature only focuses on larger geographic units such as districts. This study focuses on a much smaller unit of geography such as the neighborhood level. By conducting the study at a small unit like the neighborhood level, it allows for a richer analysis.

Another important factor that this study examines is the degree of magnetism of individual magnets on the rate of applications. By looking at which magnet schools have the strongest pull, it is possible for magnet school coordinators to look more closely at what is causing individual differences between magnet application rates and perhaps draw more.

Taking all of this into consideration, this quantitative research can help future research conduct better qualitative research on magnet school quality and reasons for applying and can perhaps improve the quality of magnet schools. During a time in which *Sheff* is back in the news, this study also has the potential to create a real discussion on the appropriateness of magnet schools as a tool for racial integration and improved educational outcomes for all students in the area.

The National and Local Debate

Race and schooling have shared a long and intimate relationship throughout U.S. history, including Hartford. The first time race and schooling was challenged on a large scale came in 1954 through the *Brown v Board* court case which had a monumental impact on school desegregation in America. *Brown* overturned several earlier rulings dating back to *Plessy v Ferguson* (1896), by declaring that state laws that established "separate but equal" public schools for black and white students denied black children equal educational opportunities. Eventually, school systems across the nation needed to look for a way to remedy the racial and socio-economic isolation that was ever-present. A popular solution came in the form of magnet schools. Since its original conception in the 1970s, magnet schools have become a target of educational research.

At the national level, there has been an ongoing debate about the necessity for magnet schools. Critics of magnet schools have offered various explanations for their discontent. Magnet school programs have caused for increased concerns over their potential to worsen or even create socio-economic segregation because of class-related inequalities among parents (Archbald, 1996). These inequalities include access to information, academic support, parental education, means for transportation, and other factors. In particular, Moore and Davenport (1989) stated that magnet schools are simply an "improved sorting machine." In addition to this, Carrison (1981) contends that magnet schools are often elitist which leads to poor tracking techniques and ultimately creates unequal opportunity for all children.

Still others have offered the view that magnet schools increase inequality because applicants represent a self-selected group whose parents have higher levels of education

than those whose children do not apply (Smrekar & Goldring, 1999). They also contend that magnet schools only attract the top students from the neighborhoods they draw from and thus help perpetuate further social isolation (Smrekar & Goldring, 1999). This concept, which is also known as "creaming" has posed several problems. Magnet schools can "cream" students in terms of high achievers, high socio-economic status families and also by race. This "creaming" allows magnets to flourish while local neighborhoods fail.

A study conducted by Sal Saporito (2006) using Geographic Information Systems (GIS) as well as other statistics allowed for a more detailed look at this phenomenon. Saporito linked school attendance boundary maps with residential information (Census 2000 data) and school enrollment data for the twenty-two largest districts in the country. He determined that public schools in those twenty-two districts would actually be less racially segregated if all of the children living in a district attended their neighborhood schools they were assigned to. Similar to this, he demonstrated that private, charter, and magnet schools actually help perpetuate racial isolation rather than help reduce it due to the fact that white families opt out of local neighborhood schools at higher rates than minority children.

A similar study was conducted by Naralys Estevez (2006). Using GIS, census tract information, and magnet application data she determined that applications to a local magnet school (Montessori Magnet School) were not statistically representative of the neighborhood demographics from which the students lived in. She found that Black and Hispanic applicants were more or less likely to apply depending upon where they lived in Hartford.

Another type of isolation that occurs within schools is economic isolation. However, a study conducted by Archbald (2004) did not find any evidence of an association between magnet-based school-choice policies and economic segregation of students among schools. Rather, the results indicate that economically based segregation among schools is prevalent in all districts regardless if they have magnet schools or not.

This debate about the necessity of magnet schools can also be brought closer to home. Debates about magnet schools in the metro-Hartford region have been raging for several years in the wake of the *Sheff v O'Neill* 2003 settlement. The settlement introduced a plan to reduce racial isolation stating that by June 2007, 30% of Hartford minority students would be enrolled in reduced isolation settings. These settings included the institution of magnet schools.

The truth is that magnet schools in the metro-Hartford region pose a problem for plans to reduce isolation. Magnet schools in the area have no control over who applies even with vigorous marketing techniques due to the fact that parents voluntarily apply to magnet schools. At best, magnet school administrators can only hope they attract students of different backgrounds that help it meet the *Sheff* standards. The fact is that even though they had hoped to attract white suburban students, for the most part magnet schools have been more popular among Black and Hispanic suburban families; of all minority applicants to magnet schools, sixty percent come from Hartford while only 40% come from the suburbs (Frahm, 2007).

Another problem facing Hartford is that many of the magnet schools do not have room for the sheer number of applicants. For example, in the spring 2007 magnet lottery, Breakthrough totaled 1,681 applications, but only 43 students were admitted (totaling

2.5% of the pool). This means that over 1,400 students remained on the waitlist

(Dougherty et al, 2007).

Bringing these facts together, it is no surprise that the June 2007 goal was not

met. The original intention of *Sheff* was to help integrate students but Stanley Battle, a

former administrator of Easter Connecticut State University was quoted last year saying,

"We talk about integration, but we practice segregation" (Simpson, 2006). With this

losing battle to initiate integration, the plaintiffs and defendants are back in court

attempting to find a new agreement with new goals to work toward.

The current study as well as Saporito's (2006) and Estevez's (2006) studies all

have one over-arching theme: they all use GIS to ask spatial questions. However, the

current study differs from the others in several ways. First, it is a local, neighborhood-

level analysis of magnet school applications rather than a large national-level study.

Secondly, this analysis allows for the comparison of just two minority groups, Black and

Hispanic due to the fact that Hartford is 97% minority. This racial comparison cannot be

made in a national-level study due to the fact that most large districts have at least some

significant numbers of white students. Finally, it differs from Estevez's (2006) study in

that this study is an analysis of six magnet schools rather than one. These subtle

differences will allow for different analyses and hopefully will create different dialogue

between policy-makers in the area.

Methodology

The primary goal of this quantitative study is to conduct a statistical comparison

of elementary magnet school application data to geographic data to determine if magnet

school applicants are statistically representative of neighborhood school zones in which

they reside. The results of this study draw upon magnet school application data from the spring 2007 lottery and Hartford school district enrollment data for the 2006-07 school year. Specifically, I performed a chi-square test for goodness of fit statistical analysis and a spatial analysis using Geographic Information Systems (GIS).

In the Metro-Hartford region there are twenty-two magnet schools that are either elementary, middle, or high schools. I have chosen to conduct an in depth racial analysis of the six elementary magnet school that are located in Hartford. The applicants to these elementary magnet schools have been limited to only those who reside in Hartford in order to make it a complete analysis of Hartford elementary students.

I have chosen to look at Connecticut Mastery Test (CMT) scores at each of the 26 school zones to rule out the possibility of school quality of being a factor in school choice and thus limiting it to race.

A. Connecticut Mastery Test (CMT) Data

The data used for scholastic achievement (CMT scores) was downloaded from the CMT Reports data website at http://www.cmtreports.com/Default.aspx. Specifically, I clicked on the link "State by District/School Report" and selected the 2006 data for Hartford schools and then selected the 26 schools of interest. After this I selected the "% At/Above Proficiency" for each of the three sub-tests (Math, Reading, and Writing). Table 1 below shows and example of the compiled school CMT data.

Table 1. *Percent of Hartford Fourth Graders At or Above Proficient*

Elementary School Zone	Percent Proficient in Math	Percent Proficient in Reading	Percent Proficient in Writing	Percent Proficient in all 3 Tests
Barnard	35.9	24.3	51.4	37.2
Batchelder	65.5	36.2	63.2	55.0
Betances	26.1	10.9	19	18.7
Burns	23.2	17.9	32.4	24.5
Burr	44.9	34.7	58.3	46.0
Clark	64.3	53.7	70.7	62.9
Dwight	53.4	45.2	67.6	55.4
Fisher	43.4	37.8	77.1	52.8
Fox Elementary	44.4	29.3	56.6	43.4
Hooker	71.4	45.7	71.4	62.8
Kennelly	63.7	39.1	81.3	61.4
King	33.7	26.4	56.5	38.9
Kinsella	32.7	27.8	46.3	35.6
McDonough	51	29.4	58.8	46.4
Milner	20.5	14	25.6	20.0
Moylan	43.8	37.5	72.9	51.4
Naylor	64.1	39.1	68.8	57.3
Parkville	73.4	47	66.2	62.2
Rawson	62.5	56.3	81.3	66.7
Sanchez	50	25.9	61	45.6
Sand	44.8	13.8	75.9	44.8
Simpson	59.4	44.4	79	60.9
Twain	46.2	25.6	45.9	39.2
Webster	50.7	50.7	70.4	57.3
West Middle	42.1	30.7	49.3	40.7
Wish	50	34.1	52.4	45.5

B. Neighborhood School Enrollment Data

The data used for neighborhood school district enrollment was obtained from YH
Alison Zhou at the State Department of Education. This data for the 2006-07 school year
was collected in October, 2006 and included a racial breakdown of each school in the
state of Connecticut, specifically it was reported in terms of Asian, White, Hispanic,
Black, and American Indian. Please note that this is the best available data to use for
analysis; for example, this data does not account for students that may live in one of the
26 school zones but attends a different school, such as a charter school. It also does not
account for students who are enrolled in a city-suburban transfer program, like Project

Choice. Nonetheless, for all intents and purposes, it is valid enough to use for analysis.

Table 2 below shows an example of this compiled neighborhood data.

Table 2. *Neighborhood Elementary School Zone Enrollment for 2006-07 by Race*

Elementary School Zone	Total Indian	Total Asian	Total Black	Total White	Total Hispanic
Barnard	0	2	51	1	333
Batchelder	4	12	113	20	361
Betances	1	0	64	5	325
Burns School	1	0	71	6	433
Burr School	2	7	73	30	401
Clark School	0	1	279	5	112
Dwight	0	6	95	54	274
Fisher	1	2	528	18	71
Fox Elementary	1	7	131	49	643
Hooker	0	6	99	24	273
Kennelly	8	14	227	56	525
King	0	1	595	3	66
Kinsella	1	0	120	33	335
McDonough	0	1	42	8	413
Milner	1	1	275	3	124
Moylan	1	0	75	7	500
Naylor	2	7	96	120	351
Parkville	0	17	117	41	386
Rawson	2	0	397	3	20
Sanchez	0	1	64	1	464
Sand	0	0	183	3	165
Simpson	0	2	313	11	45
Twain	0	1	253	2	34
Webster	3	8	325	56	233
West Middle	0	12	389	15	323
Wish	0	4	195	3	214

C. Elementary Magnet School Application Data

The magnet application data was obtained from Shola Freeman at the HPS

Magnet Schools office in May 2007. The data included each individual applicant's

gender, previous school, current grade, race, and of most importance, their address.

The level of geography that I chose for the neighborhood analysis was Hartford
elementary school zones. I only chose to conduct an analysis of Hartford elementary
school zones for Black and Hispanic applicants and not of other applicants because there
were not enough White, Indian, and Asian applicants to make any insightful claims.
Therefore, only the Black and Hispanic applicants were extracted and used for analysis.

D. Chi-Square Test

The chi-square test for goodness of fit is an inferential statistic that allows meaningful analysis of one nominal variable (independent variable) but no continuous variable (dependent variable) in one population with the same variable (Glass & Hopkins, 1996; Estevez, 2006). For instance, one question I am asking is if the percentage of Black applicants (nominal variable) who apply to elementary magnet schools is greater or less than expected. The expected number of applicants is based on the number of black students residing in each school zone. The end result of a chi-square analysis indicates whether the number expected significantly differs from actual. A result is statistically significant if the difference between groups could have occurred by chance alone in less than 1 time in 20 (Glass & Hopkins, 1996). This is expressed as a p value < 0.05. Table 3 below shows an example of chi-square conducted for one individual elementary school zone, Betances.

Table 3. *Illustration of Computation of the Chi-Square Goodness of Fit from Student Percentages in the Betances School Zone.*

School Zone Enrollment 2006-07			Betances Applicants from Spring 07 Lottery			
Betances	Enrollment	Percentage	Applicants	Percentage	Expected	Significant
Black	64	16.5%	20	32.3%	12	Yes
Hispanic	325	83.5%	42	67.7%	50	Yes
Total	389		62			

$X^2 = (20-12)^2/12 + (42-50)^2/50 = 6.613$
Degrees of Freedom (df) = 1
$p<0.01$

E. GIS Analysis

Geographic Information Systems is a collection of spatial analysis tools that allow one to examine and present data geographically. GIS can be used in a multitude of facets including medicine, city planning, and environmental science. A unique task that GIS can complete is joining spatial data: assigning counts and

Image A: Geocoding Dialog box

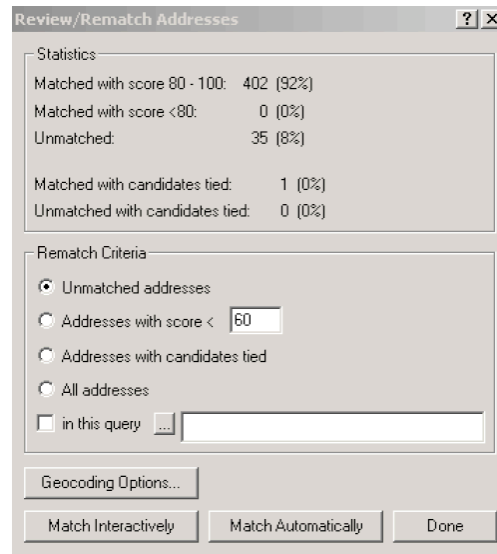summaries of point features (applicant addresses) to polygon features such as neighborhood school zones (Gorr & Kurland, 2005). I used ArcGIS to illustrate elementary magnet school application patterns for this study. In order to create many of my maps, I had to join magnet school application data such as race to geographic spatial data such as Hartford elementary school zones.

In order to conduct my analysis of applicant's, I had to use an advanced feature of GIS known as geocoding. Geocoding is used to plot address data as points on a map and helps to visualize where the applicants live and thus determine very specific information about their residential demographic information. In order to geocode I first obtained individual Hartford elementary magnet school application street address data in an excel file. The Hartford Magnet School program allows each applicant to apply to up to two magnet schools. Therefore, in the large dataset there were several duplicate entries that needed to be removed. After removing these duplicates and formatting the file, I converted the excel file (.xls) into a database file (.dbf). GIS then is able to match (see Image A) street addresses with a street map, which is also known as a shapefile. Several

times the addresses cannot be matched with a point on a map due to errors in dataset and therefore must be matched interactively. Those addresses that cannot be matched are then discarded from analysis.

After all addresses are matched, GIS plots the exact location of the addresses on a street map as individual points. For confidentiality purposes, the exact location of student addresses cannot be shown and must therefore be masked. To do this I overlay any boundary lines that I choose such as elementary school zones to help differentiate sections for analysis. Finally, I can spatially join the plotted points to the spatial feature (elementary school zones) and can summarize each zone by number of applicants per zone to maintain the confidentiality. These summaries can be displayed in terms of graduated color schemes to show those zones with higher and lower rates. In sequence, images 1-5 briefly illustrate the geocoding process (Estevez, 2006).

Image 1: Application data: | *Image 2: Street Map* | *Image 3: Neighborhood*
Street Addresses | *With addresses (dots)* | *boundaries overlayed on map*

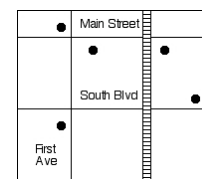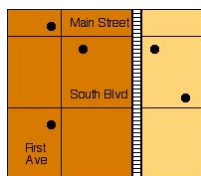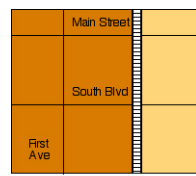| ◇	A
1	Applications
2	35 Main St
3	606 First Ave
4	58 South Blvd
5	49 Main St
6	500 First Ave
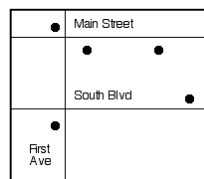
Image 4: Data groups   Image 5: Dots removed
Represented by colors   to maintain confidentiality

In addition to using the geocoding feature, I also used the near tool in order to determine which magnet schools are the "most magnetic." The near tool is designed to find the average distance of a set of multiple points to a single point. In the case of this

analysis, I used the near tool to calculate distances for each plotted application to its respective magnet school. All of these point-distances can then be combined to achieve an overall point-distance average for each magnet school. The output is given in feet, which is then converted to miles.

Results

Relation of CMT Scores to Rate of Applications

The commonly held belief is that school choice is centered on school quality. If a neighborhood school is not achieving at a high rate on standardized tests (low performance), parents might not necessarily want to send their children to those schools and would look for an alternative. If this causal model was applicable to Hartford, one would expect a relatively high correlation between rates of applications to magnet schools and neighborhood school performance. In actuality, there is very little correlation between rates of applications and school performance at each of the 26 neighborhood schools, as measured by the 4th Grade CMT scores; with the R^2 coefficient equaling 0.1894 and can be seen in the figure below (Figure 1).

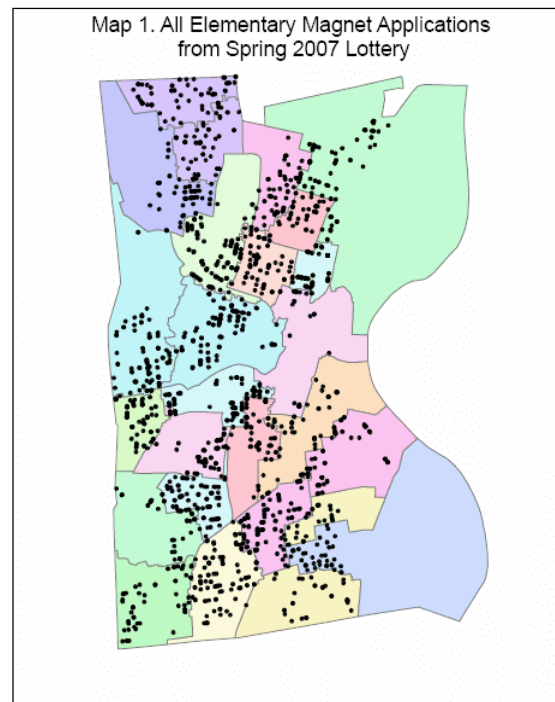**Figure 1**. *Relation of Magnet Application s and CMT Scores*
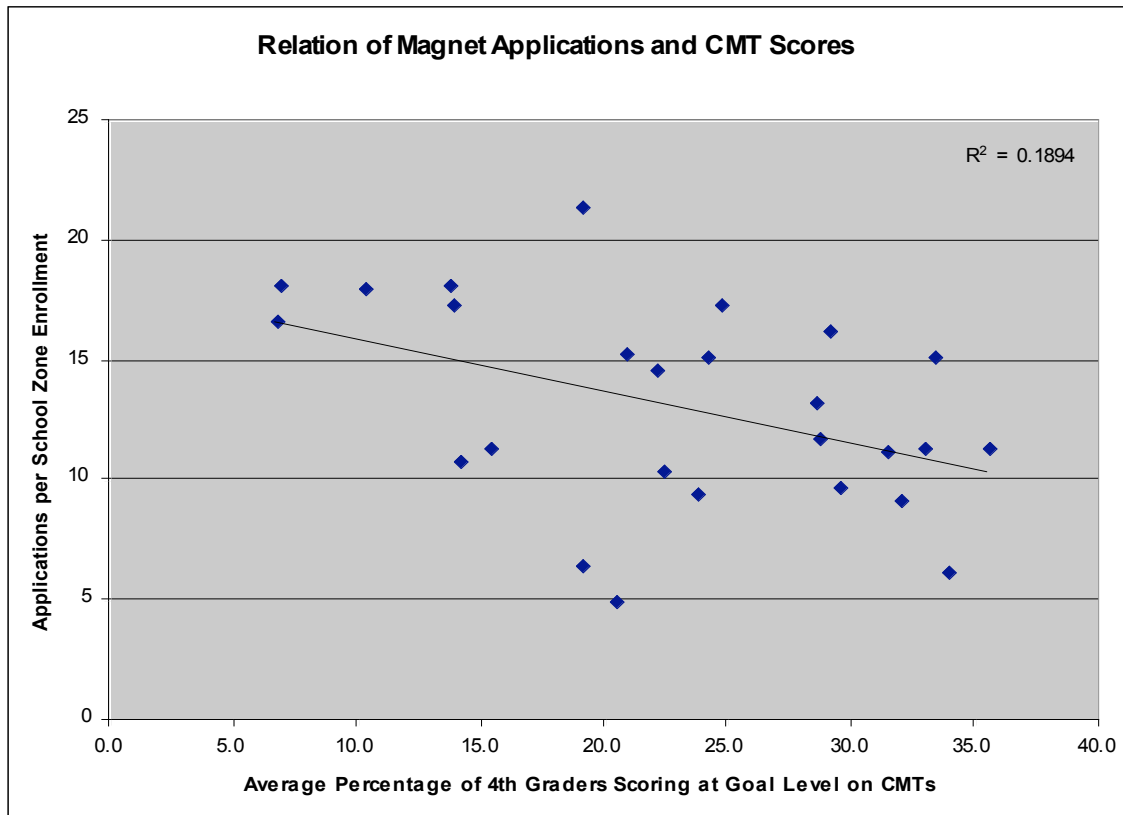
The preceding figure (Figure 1) demonstrates that school choice in Hartford is not driven by school quality (as measured by mean fourth grade CMT scores) due to the fact that there is very little correlation with the number of applications (r = 0.1854). This means that the rate of applications to magnet schools in no way depends on the quality (good or bad) of the school zone in which the applicant resides. It is important to note that this finding does not include correction for statistical variance among applications. Following this logic, it would appear that something else has to be driving the rate of applications.

Magnet Application Variation Across Hartford

Map 1. *Elementary Magnet Applications from Spring 2007 Lottery*

All 1,853 HPS elementary magnet school applications were geocoded on top of elementary school zone boundaries for the city of Hartford. This is represented in Map 1 (inset).

Map 1. All Elementary Magnet Applications from Spring 2007 Lottery

Unfortunately this map alone does not paint the entire picture of application variation. Instead, the best way to represent application information is to calculate applications per school zone enrollment, because each school varies in terms of enrollment; enrollment is not the same for each school. It is important to note however that the base numbers used for school zone enrollment are not perfect; they are the best numbers available. The reason for this

imperfection is that some students are unaccounted for. For example, these numbers do not include Hartford students who are enrolled in Project Choice and also do not include students who go to private or charter schools. But the school zone enrollment numbers can be considered reliable enough for analysis. An example as to how to calculate this ratio goes as follows: Burr enrolls 513 children and there were 25 applications coming out of the Burr zone; 25 divided by 513 yields 4.9%.

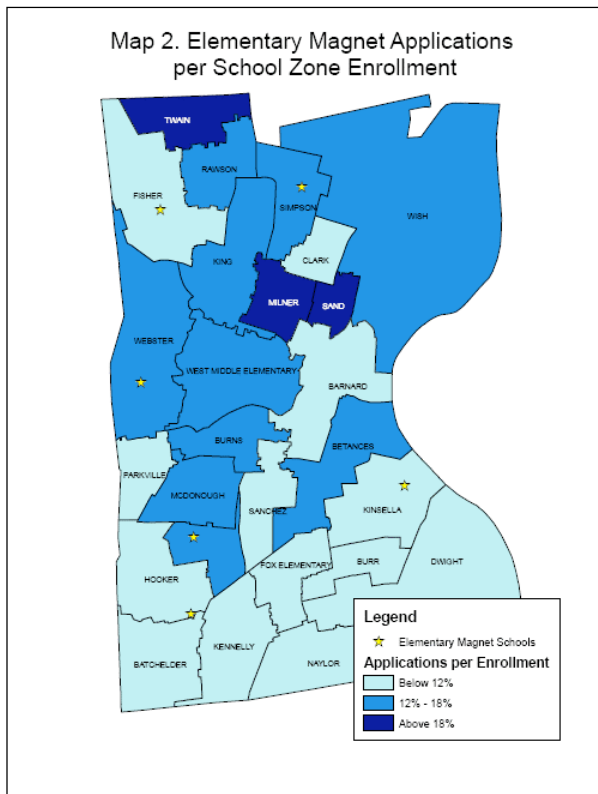*Table 4. Applications per School Zone Enrollment*

Elementary School Zone	School Zone Enrollment	Applications	Applications per Enrollment
Burr	513	25	4.9
Naylor	576	35	6.1
Barnard	387	25	6.5
Dwight	429	39	9.1
Fisher	620	58	9.4
Hooker	402	39	9.7
Sanchez	530	55	10.4
Kinsella	489	53	10.8
Kennelly	830	93	11.2
Clark	397	45	11.3
Fox Elementary	831	94	11.3
Batchelder	510	58	11.4
Parkville	561	66	11.8
Webster	625	83	13.3
West Middle	739	108	14.6
McDonough	464	70	15.1
Rawson	422	64	15.2
Moylan	583	89	15.3
Simpson	371	60	16.2
Betances	395	66	16.7
Wish	415	72	17.3
King	665	116	17.4
Burns	511	92	18.0
Milner	404	73	18.1
Sand	351	64	18.2
Twain	290	62	21.4

As can be seen in Table 4 (inset), applications per enrollment range from as small as 4.9% (Burr) to as large as 21.4% (Twain) with most school zones falling in the middle (median = 11.8%) At the high end (Twain): this means that nearly 1 out of every 5 students is attempting to opt out of their neighborhood school zone by applying to an HPS magnet school. The same information can be seen in the following map (Map 2).

Map 2 (below) illustrates the information above (Table 4) in terms of geography. The school zones shaded in light blue are ones in which the application per enrollment is less than 12%, the regular blue shading are the zones in which the application per enrollment is between 12% and 18% and the dark blue shading are the ones that are over 18%. Three school zones are over 18%: Milner, Sand, and Twain.

Map 2. *Applications per School Zone Enrollment*

Map 2. Elementary Magnet Applications per School Zone Enrollment

Taken as a whole, it is apparent that magnet applications do not come equally from all school zones. There is a large range of applications per school enrollment ranging from nearly 5% to 21%. Those school zones that are at the higher end (dark blue) tend to be located toward the northern end of Hartford. Looking more closely, these areas of high choice also tend to be located next to areas of lower choice. For example, Milner and Sand (dark blue) are both located next to Barnard and Clark (light blue). In addition to this, Twain (dark blue) is located next to the Fisher school zone (light blue).

Due to the fact that magnet school application rates vary across the city, it would seem logical that there has got to be an explanation for this; students must be attempting to opt out for different reasons depending on where they reside. Unfortunately the answer to this question is grounded in qualitative thought, which cannot be directly addressed in

this report (see senior project by Heather Moore, '08). However, what can be addressed is whether or not the race of the applicant has an effect on application rates.

Statistical Variation of Magnets Across Hartford by Racial Demographics

Black Applicants

The student application data from the spring 2007 lottery and the CT State Department of Education's school district enrollment data for the 2006-07 school year indicate that black families are applying to HPS elementary magnet schools at unequal rates in comparison to where the majority of Black families are located. Chi-square tests for Black applicants by school zone demonstrate the statistical significance of the uneven rates. Statistical significance means the likelihood that the difference found between groups could have occurred by chance alone. A result is statistically significant if the difference between groups could have occurred by chance alone in less than 1 time in 20. This is expressed as a p value < 0.05.

Table 5 (below) indicates all of the school zones that yielded statistical significance via chi-square. For example, for the Burns school zone, it was expected that there would be 14 Black applicants applying to magnet schools. In actuality 23 applied which means that Black applicants are more likely to apply if they reside in the Burns school zone. Hartford has 26 elementary school zones; nearly half of them demonstrate statistical significance (as seen in Table 5). Only in 2 of the 10 cases did Black applicants apply less than expected (in the King and Simpson school zones). In addition this in 10 of the 12 cases Black applicants applied more than expected.

Table 5. *Black Applicants that were More Likely or Less Likely to Apply by School Zone*

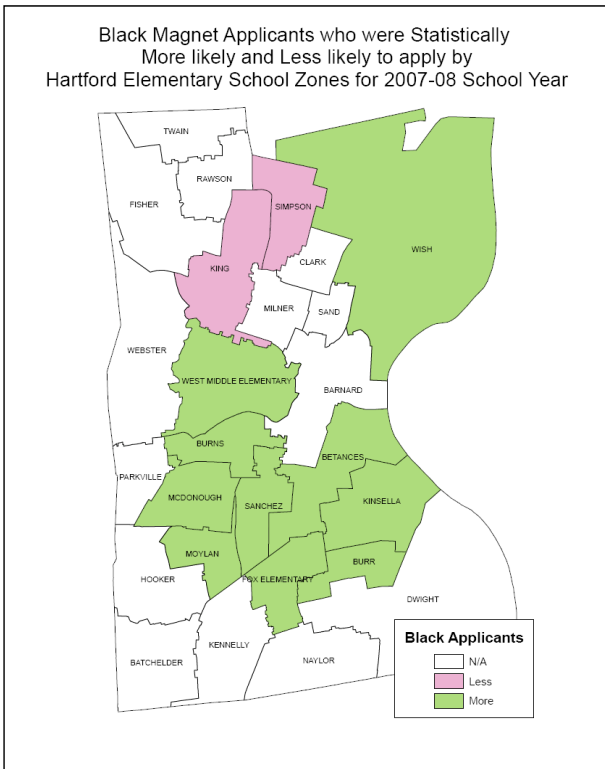| Elementary School Zone	Applicant's Race	Expected	Observed	Significant?	More or Less Likely
Fisher	Black	49	47	No	NA
Barnard	Black	4	6	No	NA
Batchelder	Black	15	20	No	NA
Betances	Black	12	20	Yes	More
Burns	Black	14	23	Yes	More
Burr	Black	4	11	Yes	More
Clark	Black	33	37	No	NA
Dwight	Black	9	13	No	NA
Fox Elementary	Black	16	25	Yes	More
Hooker	Black	9	10	No	NA
Kennelly	Black	28	31	No	NA
King	Black	101	93	Yes	Less
Kinsella	Black	14	21	Yes	More
McDonough	Black	7	18	Yes	More
Milner	Black	50	54	No	NA
Moylan	Black	13	27	Yes	More
Naylor	Black	7	9	No	NA
Parkville	Black	14	11	No	NA
Rawson	Black	61	60	No	NA
Sanchez	Black	7	14	Yes	More
Sand	Black	33	30	No	NA
Simpson	Black	51	42	Yes	Less
Twain	Black	54	57	No	NA
Webster	Black	35	36	No	NA
West Middle Elementary	Black	56	75	Yes	More
Wish	Black	36	56	Yes	More

So as to make a spatial comparison between actual applicants and where applicants should theoretically come from, it is important to determine where the majority of black applicants reside. Map 3 (below) demonstrates which school zones are predominately Black. The red area illustrates which school zones are dominated by Black students. This map indicates that Black students tend to be a racial majority in the north end of Hartford. Following the results indicated this map we would expect to see Black applicants apply at higher rates (or at least as expected) if they reside in the north end.

Map 3. *Black Dominated School Zones, SYE 2007*

Map 3. Black Dominated Elementary School Zones for 2006-07 School Year
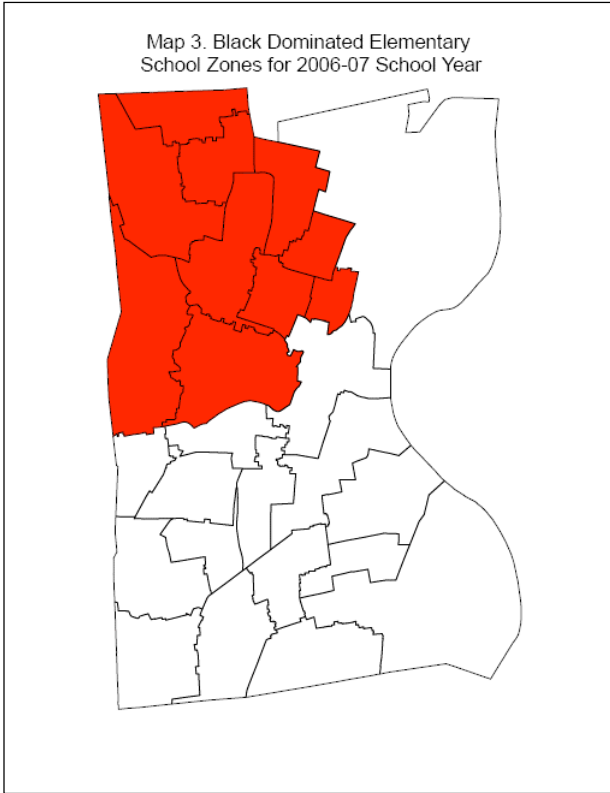
In order to make this comparison complete, it is also important to map out where applicants reside. Map 4 (below) demonstrates where Black applicants were actually more (green) or less (pink) likely to apply. Black applicants were more likely to apply if they resided in the south end (and the Wish zone) as opposed to being less likely to apply if they resided in the north end.

Map 4. *Statistical Representativeness of Black Applicants*

Black Magnet Applicants who were Statistically More likely and Less likely to apply by Hartford Elementary School Zones for 2007-08 School Year

Black Applicants
N/A
Less
More

Comparing maps 3 and 4, it is very apparent that applications from Black families did not come from the zones they were expected. Black families were more likely to apply if they resided in the south end and less likely to apply if they lived in the north end. In terms of racial composition of the school zones in Hartford, the south end is predominately Hispanic and the north

end is predominately Black. Following that it appears, that Black students are more likely to apply if they are a racial minority in their school zone.

The data just presented suggests that race does in fact play a part in school choice in Hartford. If race were not a factor, it would be expected that the higher number of Black applications would be generated from the north end. This finding reveals part of relationship between school choice and race. One possible explanation for this may be that a Black student going to school in the south end may feel alienated from there classmates (whom are predominately Hispanic) for racial, ethnic, or other social factors. Unfortunately, these possible cannot be validated in this analysis.
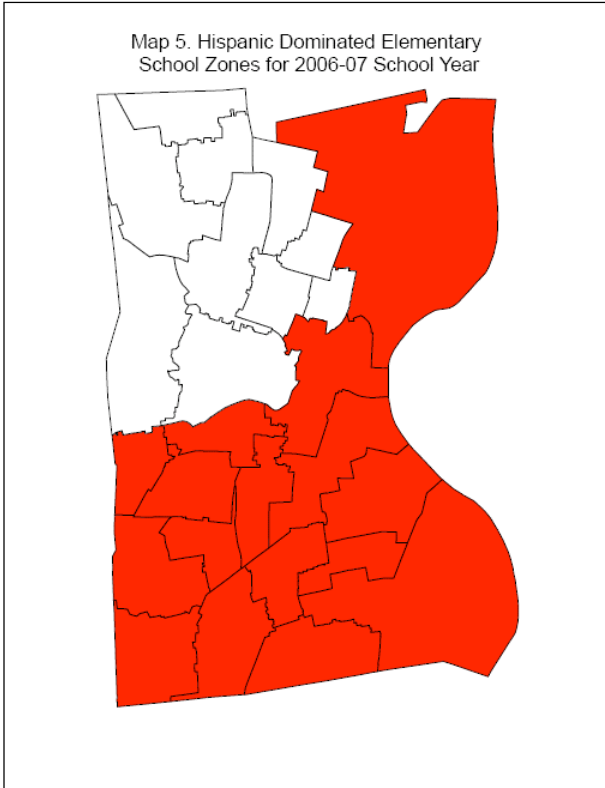
Hispanic Applicants

Student application data from the spring 2007 lottery and the CT State Department of Education's school district enrollment data for the 2006-07 school year indicate that Hispanic families are applying to HPS elementary magnet schools at unequal rates. Chi-square tests for Hispanic applicants by school zone demonstrate the statistical significance of the uneven rates. Table 6 (below) indicates all of the school zones that yielded statistical significance via chi-square. For example, for the Betances school zone, it was expected that there would be 50 Hispanic applicants applying to magnet schools. In actuality only 42 applied, which means that Hispanic applicants are less likely to apply if they reside in the Betances school zone. Out of the possible 26 cases, 12 were found to be statistically significant ($p < 0.05$). In only 2 of the 10 cases did Hispanic applicants apply more than expected but in 10 of the 12 cases they applied less than expected (Table 6).

Table 6. *Hispanic Applicants that were More Likely or Less Likely to Apply by School Zone*

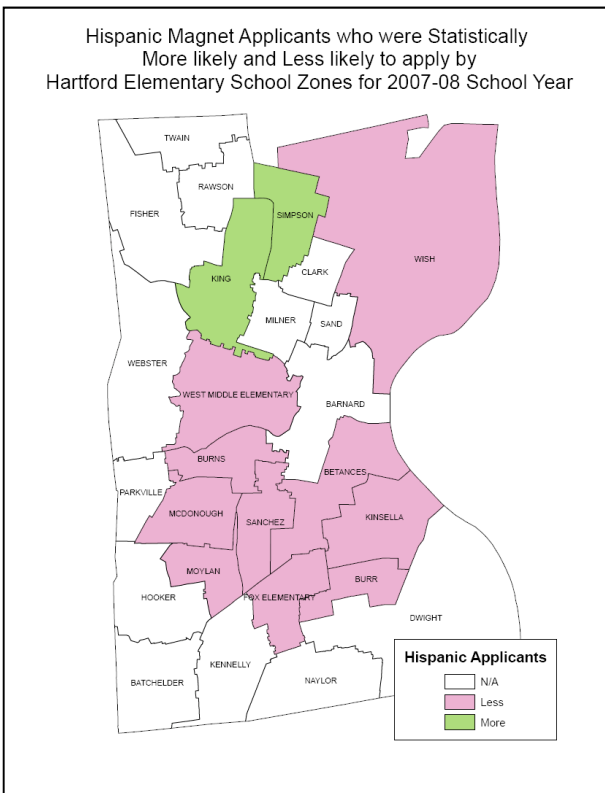| Elementary School Zone	Applicant's Race	Expected	Observed	Significant?	More or Less Likely
Barnard	Hispanic	22	19	No	NA
Batchelder	Hispanic	44	38	No	NA
Betances	Hispanic	50	42	Yes	Less
Burns	Hispanic	74	62	Yes	Less
Burr	Hispanic	20	13	Yes	Less
Clark	Hispanic	12	8	No	NA
Dwight	Hispanic	26	22	No	NA
Fisher	Hispanic	7	9	No	NA
Fox Elementary	Hispanic	72	63	Yes	Less
Hooker	Hispanic	25	24	No	NA
Kennelly	Hispanic	62	59	No	NA
King	Hispanic	13	21	Yes	More
Kinsella	Hispanic	37	30	Yes	Less
McDonough	Hispanic	57	46	Yes	Less
Milner	Hispanic	22	18	No	NA
Moylan	Hispanic	74	60	Yes	Less
Naylor	Hispanic	24	22	No	NA
Parkville	Hispanic	48	51	No	NA
Rawson	Hispanic	3	4	No	NA
Sanchez	Hispanic	46	39	Yes	Less
Sand	Hispanic	31	34	No	NA
Simpson	Hispanic	9	18	Yes	More
Twain	Hispanic	7	4	No	NA
Webster	Hispanic	25	23	No	NA
West Middle Elementary	Hispanic	41	22	Yes	Less
Wish	Hispanic	29	16	Yes	Less

As was previously done to make a spatial comparison between actual applicants and where applicants should theoretically come from, school zones in Hartford were assessed to determine which are dominated by Hispanic students. Map 5 (below) demonstrates which school zones are predominately Hispanic. Again, the red area illustrates which school zones are dominated by Hispanic students. This map indicates that Hispanic students tend to be a racial majority in the south end of Hartford, with the exception of the Wish zone. If magnet applications were randomly distributed, we would expect them to be in proportion to the racial demographics of each neighborhood.

Map 5. *Hispanic Dominated School Zones SYE 2007*

Map 5. Hispanic Dominated Elementary School Zones for 2006-07 School Year

To finalize this applications rate comparison, the magnet school application rates need also to be mapped. Map 6 (below) demonstrates where Hispanic applicants were actually more (green) or less (pink) likely to apply. Hispanic applicants were more likely to apply if they resided in the south end (and the Wish zone) as opposed to being less likely to apply if they resided in the north end.

Map 6. *Statistical Representativeness of Hispanic Applicants*

Hispanic Magnet Applicants who were Statistically More likely and Less likely to apply by Hartford Elementary School Zones for 2007-08 School Year

Making a comparison between maps 5 and 6, it is obvious that applications to elementary magnet schools for Hispanic applicants did not come from the school zones that they were expected. Hispanic families were actually less likely to apply if they resided in the south end (and Wish) as opposed to being more likely to apply if they resided in the north end. It would appear that, similar

to Black students, Hispanic students are more likely to apply if they are a racial minority in their school zone.

This data (similar to the Black applicants) also suggests that race plays a role in school choice, not the commonly held belief of school quality. This unexpected spread of Hispanic student applications may also be explained in terms of alienation at school or in their neighborhood. A Hispanic student may not feel entirely comfortable being in a school that is predominately Black. Again, this cannot be validated through these quantitative measures

Magnet School Attractiveness

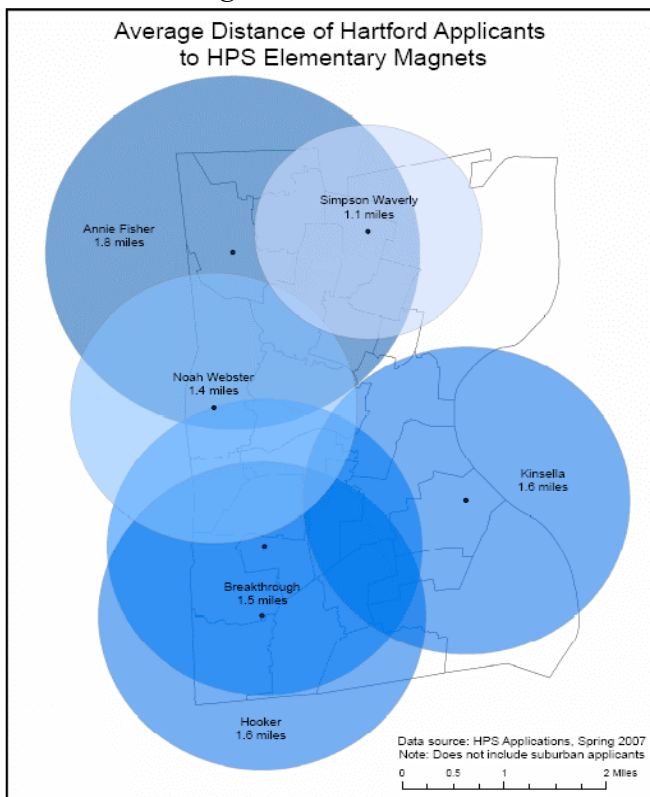*Map 7. Average Distance of Applicant's Residence to Magnet School*

Table 7. Average Distance of App's Residence to Magnet School

Magnet School	Distance (Miles)
Simpson Waverly	1.114
Noah Webster	1.402
Breakthrough	1.541
Hooker	1.586
Kinsella	1.599
Annie Fisher	1.833

The final piece of analysis dealt with the "magnetic" nature of each individual elementary magnet school in Hartford. As mentioned earlier, this is determined by average distance of a group of points (applications) from a single point (a school). A school that is more magnetic is one whose average distance of applications is larger than the rest. Likewise a less magnetic school is one whose average distance of

applications is smaller. This was determined for the six elementary magnet schools. Results indicate that the six magnet schools pull students from different distances. Looking more closely at Map and Table 7 (above), you will notice Annie Fisher and Simpson-Waverly (located toward the north end of Hartford). Even though these two magnets are located very close to one another, they pull applicants from very different distances. At one end, Annie Fisher pulls applicants from an average distance of 1.833 miles. On the other extreme, Simpson-Waverly only pulls applicants from an average distance of 1.114 miles. This is a rather surprising finding considering that it was only five years ago that Simpson-Waverly was the highest performing school in the city of Hartford and Annie Fisher is a school that has only been in operation as a magnet for two years. However, as with most data analysis, this finding isn't fully supported due to the fact that this data does not incorporate population density within Hartford.

Discussion

As citizens of the United States we are granted many rights including the freedom of speech, freedom of the press and freedom of racial suffrage. However, the freedom to equal education is not one of our rights and it constantly must be fought for in the courts. It is an unfortunate truth that quality education is all too often linked to race. It is also unsettling that this link is incredibly hard to extinguish. In America, the cities are no longer the melting pots they used to be and instead have taken a dramatic hit. Low-class minorities have been restricted to our urban areas as a result of racism and development (Gotham, 2002). While the cities have sunk lower and lower, the suburbs have only risen which has caused great disparity that is nearly impossible to rectify.

In what has been considered a futile attempt, schools have been given the lead on making racial changes to equalize our society. Different school choice strategies such as city-suburban transfer programs and magnet schools have grown exponentially in response to the need for immediate desegregation. Magnet schools are designed to allow children with particular interests in subjects to attend schools that are designed around those interests (Brint, 1998). Most of these magnet schools are located in urban areas with enrollments of more than 10,000 students in attempts to draw the affluent suburban families and the disadvantaged urban families together in the same schools to help promote more meaningful interactions (Golding & Smrekar, 2002). However, as I have shown in my analysis, magnet schools are not without dispute and many question their ability to attract families at equal rates, regardless of race.

The results of my study disproved the commonly held belief that school quality is a central factor in school choice. The results also indicate that families are not applying to HPS elementary magnets equally. At the neighborhood school zone level, Blacks are more likely to apply to opt out of their neighborhood school if they are a racial minority within their zone. Likewise Hispanic applicants are also more likely to apply if they are a racial minority in their school zone and less likely to apply if they are a racial minority.

It is possible that those students who are in a racial minority in their current neighborhood school feel uncomfortable for racial, cultural, or social reasons and feel the need to try and opt out to a school where they will be in contact with more students similar to them. This ethnocentric hypothesis simply means that a person feels more comfortable with people whom are similar to them (Reynolds, Falger &Vine, 1987). These results should begin to call alarm to educational policy-makers in the area. The

truth is that it does not appear that magnet schools are serving as the vehicle for integration that they were originally intended for. Students aren't applying to opt out in order to integrate with other races; rather students are applying to opt out if they are a racial minority. If magnet schools aren't doing the job they were meant to do, it might perhaps be time to take a new approach toward improving education.

Unfortunately there is no simple solution to the problem with magnet schools in Hartford. Most tend to be above 70% minority students and with a majority of applications being minority students. If students are uncomfortable with being a minority within their already minority school zones, perhaps measures should be taken to address this on a school-by-school basis. Even with data pointing toward lack of progress on integration Elizabeth Horton-Sheff, plaintiff in the *Sheff v O'Neill* Hartford desegregation case still maintains that integration is the key: "While minimal progress has been made, the state is not fully committed to the desegregation of our schools" (Simpson, 2006). It will be interesting to see what the court rules in the wake of the state's failure to meet the 30% goal. The ruling could end up re-shaping boundaries and take an entirely different approach to desegregation than the state has ever seen before, only time will tell.

Limitations of the Study & Future Studies

To bring everything back to scale, there are some methodological limitations of the study that should not be overlooked. One important factor is that the magnet application data may not have been entirely accurate. The data was received from the HPS magnet office in six individual excel worksheets which were manually typed in. It is possible that any part of the data was entered incorrectly due to the inability to decipher

hand-writing or by typing errors. Also, it is not uncommon for applicants to misrepresent themselves in order to increase their chances of being accepted in the lottery.

The application itself also limits analysis that can be done. The *Sheff* desegregation case basically outlined two types of isolation, both economic and racial. However, the application itself gives no indication of the parents' socio-economic status and therefore no concrete information about this important factor. This application can be found in the appendix of this report.

The data used for school zone enrollment was the best available data but not the most precise. School zone enrollment only accounted for students who attended the neighborhood school and did not account for students who may live in that zone but attend a private, charter or parochial school or may be enrolled in the city-suburban transfer program, Project Choice. A more precise analysis would have track backed each of these individual students to determine which neighborhood school they would have attended.

Finally, future studies should conduct an in depth application pattern analysis on all of the twenty-two interdistrict magnet schools and compare findings on an individual level. Also, a more comprehensive study would link racial, ethnic, and socio-economic data to application patterns in Hartford to address the true essence of *Sheff*. In addition to this, qualitative research can shed more light on which aspects motivate parents to apply to magnet school and which aspects do not. A mixture of qualitative and quantitative would make it easier to paint a more complete picture of the relation of race, socio-economic status and schooling in the Hartford area.

Appendix

APPLICATION FOR SEPTEMBER 2007

HARTFORD HOST INTERDISTRICT MAGNET SCHOOLS

1. **It is expected that parents and students understand and intend to comply with the academic, program and uniform requirements of each Magnet School selected on this application.**
2. **Only _one_ application per student.**
3. Application _will_ _not_ be processed unless all requested information is provided.
4. Indicate your school selection or selections for Hartford Host Magnet Schools only.
5. The form _must_ be signed by a parent or legal guardian.
6. Please notify the Magnet School Office of any address or telephone changes.
7. RETURN APPLICATION TO THE MAGNET SCHOOLS OFFICE BY: **FRIDAY, FEBRUARY 16, 2007, 3:30 pm**

Hartford Public Schools	Tel: 860-695-8839	**HARTFORD RESIDENTS ONLY**
Magnet School Office	Fax: 860-722-8514	Are you selecting a Magnet School(s) as a No Child Left Behind request?
960 Main Street – 5th Floor	Hours: 8:30 a.m. – 3:30 p.m.	☐ YES ☐ NO
Hartford, Connecticut 06103	**www.hartfordschools.org**	

Please **PRINT** the following information:

1. Name of Student: _____
                       LAST NAME   FIRST NAME   M.I.

2. Address: _____
         NO.   STREET   APT. NO.   CITY   ZIP CODE

3. Student's Date of Birth: _____ Gender (check one): ☐ Female   ☐ Male

4. Race (Please check only one): ☐ American Indian ☐ Asian ☐ Black ☐ Hispanic ☐ Caucasian
   We are required by law to report racial information about our applicant and enrollment pools.

5. Print Parent/Legal Guardian Name: _____ Home Phone _____

6. Parent /Legal Guardian Work Phone: _____ Cell: _____

7. Student's current school: _____ City: _____

8. Grade applying to for **NEXT** school year (September, 2007): _____

9. School Selections: Please indicate school name in order of preference:

   1st Selection (school name): _____

   2nd Selection (school name): _____

10. List any brothers or sisters, living with applicant, attending one of the Magnet Schools selected above:

NAME OF CHILD	PRESENT MAGNET SCHOOL	GRADE

11. How did you hear about Magnet Schools? (Check all that apply):

☐ TV ☐ Newspaper ☐ Website ☐ School ☐ Friends/Family ☐ Mailer ☐ Other _____

X _____
   SIGNATURE OF PARENT OR LEGAL GUARDIAN (REQUIRED FOR APPLICATION TO BE VALID)   DATE

I am applying for placement of my child at the Magnet School(s) indicated on this form. I understand that the information provided by me on this application will be checked for accuracy, and that false information will disqualify the applicant.

KEEP YELLOW COPY FOR YOUR RECORDS

References

Archbald, D. (1996). Measuring school choice using indicators. *Educational Policy*, 10, 88-108.

Archbald, D. (2004). School Choice, Magnet Schools, and the Liberation Model: An Empirical Study. *Sociology of Education*, 77, 283-310.

Brint, S. (1998). *Schools and Societies.* CA: Pine Forge Press.

Carrison, M. (1981). Do magnet schools really work? *Principal*, 61, 32-35.

Dougherty, J. et al. (2007) *Missing the Goal: A Visual Guide to Sheff vs. O'Neill School Desegregation: June 2007*. Report by the Cities, Suburbs and Schools Research Project at Trinity College & the University of Connecticut Center for Education Policy Analysis. <http://www.trincoll.edu/depts/educ/CSS>

Estevez, N. & Dougherty, J. (2006). "Are Magnet Schools Attracting All Families Equally? A GIS Mapping Analysis of Latinos." Conference paper presented at the American Educational Research Association, April 2006. http://www.trincoll.edu/depts/educ/CSS/research

Frahm, R. (2007, June 13) Desegregating Hartford's Schools: A losing battle, so far. *The Hartford Courant,* p.A.1

Glass, G.V. & Hopkins, K.D. (1984) *Statistical Methods in Education and Psychology*. MA: Allyn & Bacon.

Goldring, E. & Smrekar, C. (2002). *Magnet Schools: Reform and race in urban education*. NY: The Clearing House.

Gorr, W.L. & Kurland, K.S. (2005). *GIS Tutorial: Workbook for ArcView 9.0*. NY: ESRI

Moore, D.R. & Davenport, S. (1989). *The new improved sorting machine.* Chicago:

Designs for Change.

Reynolds, V., Falger, V., & Vine, I. (Eds.) (1987). The Sociobiology of Ethnocentrism.

Athens, GA: University of Georgia Press.

Saporito, S. & Sohoni, D. (2006). Coloring Outside the Lines: Racial Segregation in

Public Schools and Their Attendance Boundaries. *Sociology of Education*, *79*(2),

81-105.

Simpson, S. (2006, July 23). A decade of half measures: 10 years after a Hartford mother

and son forced city schools to integrate progress has dragged. *The Hartford*

Courant, New England Section.

Smrekar, C., & Goldring, E. (1999). *School Choice in Urban America: Magnet Schools*

and the Pursuit of Equity. New York: Teachers College Press.