

Preferential Vandalism of Stop Signs Based on Sign Language

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Abstract: This project tests the hypothesis that vandals of a certain mother tongue are less inclined to vandalize stop signs of the same language. It is predicted, for example, that areas with more individuals of English mother tongue have more severely vandalized French stop signs. The severity of vandalism on 2472 stop signs are considered in this analysis, and correlated with the proportions of the population with English or French as a mother tongue. Though data analysis fails to support this hypothesis, there emerge several other trends deserving of future exploration.

Introduction

As an effort to promote French as Quebec's only official language, former Premier René Lévesque passed an order to replace all English with French stop signs by 1987 (New York Times, "Quebec"). However, a significant proportion of stop signs in the city of Montreal and in the surrounding municipalities still bear the English word "stop" or are bilingual (bearing both the words "stop" and "arrêt"), providing an interesting situation in which a road sign meant for a single function can be further subdivided by language. In this analysis, I attempt to identify differences in the degrees of vandalism, as stickers and/or graffiti, on English and French stop signs. I advance the hypothesis that the perpetrators of vandalism are biased towards one language or the other (i.e., the vandalism of stop signs is not random with respects to language), depending on his or her own mother tongue.

The severity of vandalism found on French and English stop signs in a given census tract (CT) is correlated with the percentage of the population with English or French as its mother tongue in that area. I test the notion that areas with more individuals of English mother tongue have more severely vandalized French stop signs, and that areas with more individuals of French mother tongue have more severely vandalized English stop signs. In other words, I predict that vandals of a certain mother tongue are less inclined to vandalize stop signs of the same language. As the percentage of the population with English as a mother tongue increases, the degree of vandalism in English stop signs should decrease, while the degree of vandalism in French stop signs should increase. Likewise, as the percentage of the population with French as a mother tongue increases, the degree of vandalism in French stop signs should decrease, while the degree of vandalism in English stop signs should increase. I will look for these trends in my graphic analysis of the data in order to support or reject my hypothesis.

Mother tongue, rather than the language spoken most often at home, is chosen because it is assumed that one is more attached to the language one first speaks from birth, than a language that is later learned. If this assumption holds true, then vandals are less likely to vandalize stop signs of their mother tongues because of the stronger sentiment attached to the language. In addition, a partiality for vandalizing stops signs of the French or English language may be indicative of French and English linguistic tensions that exist amongst those who vandalize stop signs, and possibly even amongst members of the municipality at large.

Methods

N=2816 stop signs in 73 census tracts were assessed, by visual inspection on a scale from 0-3 (3 being the most severe), for levels of wear, damage, and vandalism in terms of stickers and graffiti (see Figures 1-4 for examples of stop sign vandalism within each category). Graffiti is defined as any type of drawing or writing on the stop sign regardless of the medium used, though spray paint is most commonly utilized. It is worth mentioning that vandalism and wear can overlap, in that vandals may choose to scratch the stop sign rather than spray paint, write on, or paste it with stickers. Therefore, scratches and wear could indeed have resulted from vandalism rather than natural causes like weathering, but for the purposes of this study, vandalism is considered to be exclusively composed of graffiti and stickers, whether they are prominent, faded, or removed.

Levels of vandalism were defined on a scale of 0-3 according to the following guidelines:

- 0: None: No visible writing or stickers
- 1: Low: One sticker or one word covering no more than 20% of the surface
- 2: Mid: Two or more stickers/words, or one sticker/word covering 20-50% of the surface.
- 3: High: Three or more stickers/words, or 1-2 stickers/words covering 51%+ of the surface.

In addition to vandalism, the number of horizontal crossbeam supports in the back of the stop sign, the language of the stop sign, luminescence, and the orientation of each stop sign at a given intersection were also recorded. Stop signs that were part of all-way stop sign intersections were indicated as such, though this information is irrelevant for my research question. Each stop sign was also photographed in the front, and as a general rule, the backs of stop signs were photographed only when vandalism was present. A "total vandalism assessment" (TVA) was calculated by the algebraic summation of vandalism in the front and back of the stop signs, so that the TVA ranges from 0-6 for each stop sign. The average degree of vandalism per stop sign was calculated as the sum of all TVAs, divided by the number of stop signs (Tables 2 and 3).

N=344 stop sign data entries were ignored for various reasons. These include stop signs which were noted to be folded or hinged, as complete data about the vandalism on the front and back of these stop signs were not possible to obtain. I have also omitted stop signs for which vandalism data, either for the front or the back, was incomplete for any other reason. In addition, bilingual stop signs (bearing both the words "arrêt" and "stop") are ignored; my project focuses on stop signs which are dichotomously either French or English, for stop signs which are both French and English further complicates the data analysis I need to perform. Future analyses may choose to incorporate them for another purpose.

Each stop sign was then correlated to a 2006 census tract (CT) as compiled by Statistics Canada (Statistics Canada, "Census Tract Profiles"). Since my research question concerns only the number of people who have French or English as their mother tongues (hitherto referred to as "mother tongue data"), only such data was recorded for each CT. Data concerning members of the population with neither English nor French as their mother tongue are not included for this analysis.

In an effort to create units of study with adequate sample sizes, multiple CTs were combined into "CT sets", so that each CT set has a minimum of n=150 and a maximum of n=300 stop signs (Table 1; Appendix A). In addition, CTs were combined in such a way that each CT set contains between 20% and 50% of the total as English stop signs, with the exception of CT 4620370.00, which had n=276 stop signs (after justified eliminations from the data set) and was not combined with any other CT to form a CT set (Appendix B). Formation of CT sets was done so that comparisons between English and French stop signs, and the vandalism they may display, can be done for each unit of study, for many CTs were comprised exclusively of either French or English stop signs (Appendix B). CT 4620370.00 stands alone as one CT set because weighted averages of vandalism data for each CT set was not taken, so that a CT containing stop signs as numerous as CT 4620370.00 (n= 276) would have had as much contribution to the vandalism final average as a CT of only 60 stop signs. Therefore, it was most sensible not to combine CT 4620370.00 with any other CT.

After formation of CT sets, mother tongue data was pooled together for each CT set, so that the mother tongue data of each CT set is an algebraic sum of its individual CT components. Such a method

of pooling smaller sample units into larger, more practical units has been previously found to be of use (Sullivan, 1992). However, while Sullivan combined units based on spatial continuity, I have pooled CTs in a fashion that allows for 20-60% of stop signs in each CT set to be English (Table 3).

Consideration of the CT data necessitates further elimination of stop sign data from the population that I analyze for this study. For example, the mother tongue data for several CTs (CTs 4620130.00, 4620057.00) could not be retrieved from Statistics Canada, for they were omitted "to further protect the confidentiality of individual respondents' personal information." (Statistics Canada, "X area"). In addition, CTs containing 5 or fewer stop signs were omitted, for during the pooling of CTs into CT sets, population statistics from such CTs with drastically fewer stop signs would be algebraically added to CTs of with many more stop signs. It is statistically unsound that the data from such CTs with drastically fewer stop signs be weighed as equal to that of CTs with more far stop signs. A weighted average, in which CTs with more stop signs contribute more to the study of mother tongues per CT set, can be done, but for this study this step is avoided; my goal is to detect a significant difference in the degrees of vandalism on French and English stop signs, and a difference, if significant, should be detectable by the methods I employ.

I am aware that there is an extreme outlier in the stop sign population distribution, again, CT 4620370.00, with a number of stop signs ($n=276$) nearly 6 standard deviations greater than the mean number of stops signs per CT tract (Table 1; Appendix A). Fortunately, this is the only existing extreme outlier and I will allow its data to be incorporated, for omitting this outlier would mean dismissing a significant proportion of the data (11.2% of the finalized stop sign pool).

After all necessary eliminations from the data, a total of $n= 2472$ stop signs remain to be studied from 65 CTs (Appendices B and C). Of these, 1008 are in English and 1464 are in French, and these were grouped into 12 CT sets (data summarized in Table 3; raw data available in Appendix B). There has not been a significant alteration to the distribution of the original data even after all the previously mentioned and justified eliminations ($p=0.94$, Table 1; Appendix A.). In addition, the average degree of vandalism on French and English stop signs has not been significantly altered after my eliminations ($p=0.72$ for English stop signs, $p=0.59$ for French stop signs, $p=.40$ for all stop signs, Table 2).

The remaining stop sign data is then graphed to find correlations between the percentage of the population who have English and French as their mother tongues, and the degree of vandalism on French and English stop signs (Figures 5 and 6).

Results



Figure 1: Stop sign 19-18-3 (zone-intersection-sign)

An example of a stop sign for which severity of vandalism would be categorized as "0": No visible writing or stickers.

See Appendix C for more information on this stop sign



Figure 2: Stop sign 31-11-1 (zone-intersection-sign)

An example of a stop sign for which severity of vandalism would be categorized as "1": One sticker or one word covering no more than 20% of the surface
See Appendix C for more information on this stop sign.



Figure 3: Stop sign 21-19-4 (zone-intersection-sign)

An example of a stop sign for which severity of vandalism would be categorized as "2": Two or more stickers/words, or one sticker/word covering 20-50% of the surface.

Team mate Katherine Tong is seen taking field notes in the background.

See Appendix C for more information on this stop sign.



Figure 4: Stop sign 25-18-7 (zone-intersection-sign)

An example of a stop sign for which severity of vandalism would be categorized as "2": Three or more stickers/words, or 1-2 stickers/words covering 51%+ of the surface.

This stop sign is an example of how lighting and weather conditions can affect categorization of vandalism on the stop sign. Though the graffiti on the top of the stop sign is prominent, faded writing below the word "stop" would have been more easily missed if the lighting was dim, or if it was raining.

See Appendix C for more information on this stop sign.

Before Eliminations (total # stop signs: N=2816)		After Eliminations (total # stop signs: N=2472)	
Min.	1.00	Min.	6.00
1st Qu.	13.00	1st Qu.	15.00
Median	24.00	Median	24.00
Mean	38.58	Mean	38.00
3rd Qu.	55.00	3rd Qu.	52.00
Max.	341.00	Max.	276.00
Standard deviation	46.07	Standard deviation	39.96
Total # of CTs	73	Total # of CTs	65
Comparison of CTs before and after eliminations: $p = .94$			

Table 1: Distribution data for the number of stop signs in each CT

Distribution data for both before and after justified eliminations are given. Refer to Appendix A for raw data and box-plots from which these values are derived.

Language of Stop Sign	Before Eliminations (total # stop signs: N=2816)			After Eliminations (total # stop signs: N=2472)			Comparison of Average Degree of Vandalism per Stop Sign, Before and After Eliminations
	TOTAL # of Stop Signs	Average Degree of Vandalism per stop sign	Standard deviation	TOTAL # of Stop Signs	Average Degree of Vandalism per stop sign	Standard deviation	
English	1013	0.363	0.831	1008	0.350	0.796	P= 0.72
French	1522	0.588	1.108	1464	0.568	1.060	P= 0.59
Bilingual	221	0.439	0.826	Eliminated	Eliminated	Eliminated	N/A
Other*	60	_____	_____	Eliminated	Eliminated	Eliminated	N/A
Grand Total	2816	0.502	0.960	2472	0.479	1.001	P= 0.40
	The significance of the difference in total degrees of vandalism on French vs. English Stop signs is $p < 0.0001$ (two-tailed T test).			The significance of the difference in total degrees of vandalism on French vs. English Stop signs is $p < 0.0001$ (two-tailed T test).			

Table 2: Summary of stop sign data, by Language and Vandalism

A comparison is made between stop sign data before and after eliminations from the data.

*"Other" refers to stop signs for which the language was unable to be determined. Most of these stop signs were hinged and folded, and vandalism data on these stop signs are incomplete, for the vandalism on the front of the stop sign was inaccessible. Therefore, an average degree of vandalism was not calculated for stop signs that fall into the "other" category.

Refer to Appendix C for raw data on stop signs after eliminations.

CT Set #	Mother Tongue		Average Degree of Vandalism per Stop Sign	
	% English	% French	English Stop Signs	French Stop Signs
1	33.14%	23.56%	0.358621	0.928223
2	28.40%	28.82%	0.150133	0.941413
3	24.42%	31.94%	1.386364	0.785478
4	27.65%	35.71%	0.655172	1.006108
5	35.02%	19.96%	0.326923	0.533607
6	27.68%	32.78%	0.837838	0.508484
7	40.02%	23.16%	0.307692	0.598608
8	36.08%	12.77%	0.125832	0.317180
9	38.84%	21.15%	0.141941	0.194063
10	34.34%	24.50%	0.621053	0.602564
11	49.30%	19.63%	0.266667	0.154472
12	60.90%	13.87%	0.067460	0.178571
Avg of CT sets	36.32%	23.99%	0.437141333	0.56239759

Table 3: Summary of CT Sets

The values presented here were used to create Figure 5 and 6. Raw data utilized for this table can be found in Appendix B.

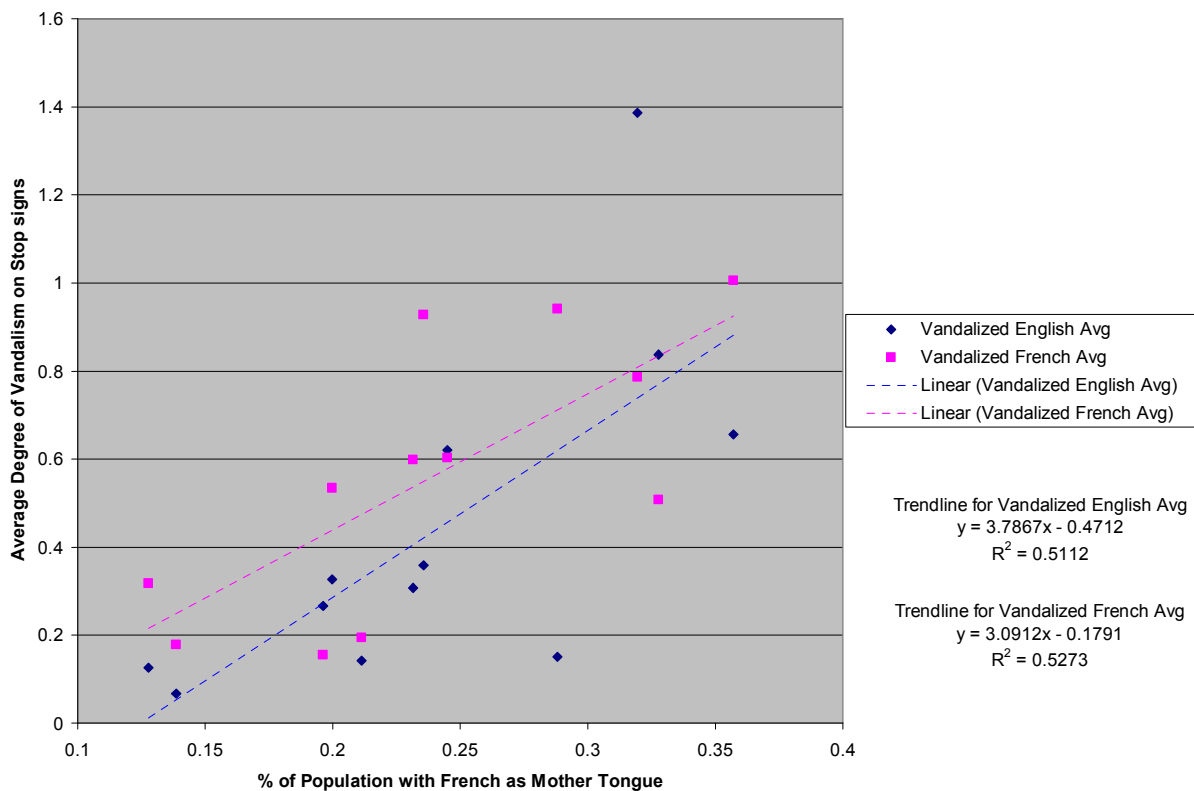


Figure 5: % Population with French as Mother Tongue vs. Average Degree of Vandalism on French and English Stop Signs.

Linear trendlines and r^2 values added for the graphs of both French and English stop sign average degrees of vandalism. In both cases, r is positive, indicating a positive relationship between the X and Y variables; $r^2 > 0.5$ for both trendlines, indicating a moderately good fit of the data to the trendline. Refer to Table 3 for the data used to create this graph.

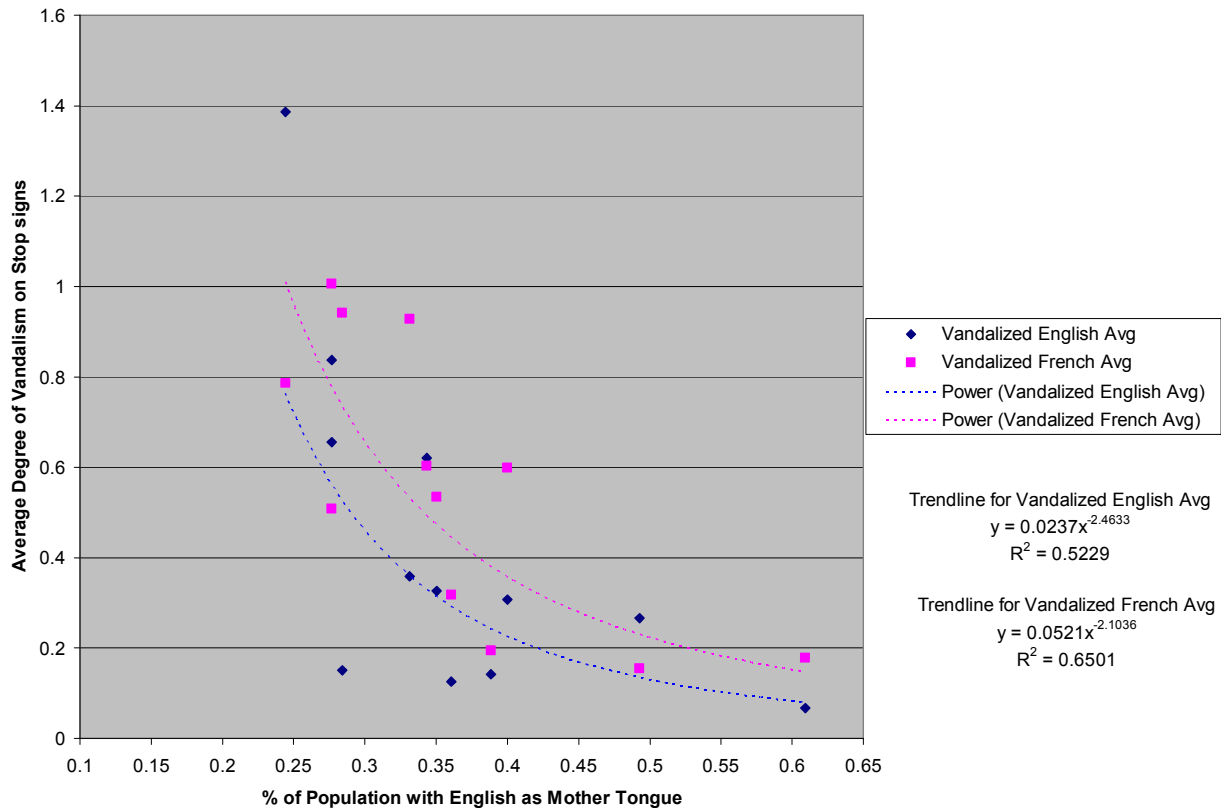


Figure 6: % Population with English as Mother Tongue vs. Average Degree of Vandalism on French and English Stop Signs.

Linear trendlines and r^2 values added for the graphs of both French and English stop sign average degrees of vandalism. R^2 for vandalized English average is 0.3836, indicating a weaker fit than that of the trendline for vandalized French averages ($r^2 = 0.5464$). In both cases, however, the correlation between X and Y variables is positive.

Refer to Table 3 for the data used to create this graph.

Discussion

Before analysis of the results begins, there needs to be mention of the arbitrariness with which the stop sign data were collected. Every stop sign was assessed visually and by numerous different groups of surveyors, and in transferring qualitative observation into numerical data, personal preferences could certainly have been introduced. Each group may have interpreted the guidelines for assessing vandalism, which were previously given in this report, differently from another group. In addition, stop signs were surveyed during different times of the day, in different days and in different weather conditions, all of which were not controlled for and may have introduced bias into the assessment of vandalism on each stop sign. During sunny days, for example, faded stickers and faded or smudged graffiti would be more visible than during days of rain or during the times of day when sunlight is not as prominent (Figure 4 gives an example). In addition, degrees of vandalism and degrees of wear can

overlap, in that vandals may choose to scratch the stop sign rather than spray paint it or paste it with stickers. Therefore, scratches and wear could indeed have resulted from vandalism, but each group may have interpreted and classified these characteristics of wear versus vandalism differently. Despite these issues, however, the large number of stop signs surveyed and the effort invested into surveying each stop sign justifies serious consideration of the data, which, though imperfect, is substantial.

As previously discussed, $n = 344$ stop signs were eliminated from the original data compilation for various reasons. Though this elimination did not cause a significant differences between the original and finalized data pools ($p = 0.72$ for English stop signs, $p = 0.59$ for French stop signs, $p = .40$ for all stop signs, Table 2), it certainly resulted in alterations which I cannot fully account for. My report should thus be regarded as a harbinger of general trends in the relationship between stop sign vandalism and stop sign language, and future reports can perform further analysis in which stop sign data eliminations are minimized or done so in a more controlled fashion.

There is, furthermore, an underlying assumption in my research that stop signs within each CT were vandalized by the occupants of the same CT, and that vandals from one CT did not migrate into a neighbouring CT to vandalize stop signs there. This assumption was made because of the necessity of correlating CT census data to its corresponding CT, and the inability, during this study, of tracking vandals and their migration patterns. Within legal limits of personal privacy, future studies can certainly follow the paths and travelling habits of the perpetrators of vandalism to observe what proportion of vandalism within and beyond a CT were done by the same person.

We move now to a consideration of the data results, which fail to support my hypothesis that vandals of a certain mother tongue are less inclined to vandalize stop signs of the same language. Rather, the results suggest that as the percentage of the population with French as their mother tongue increases, degrees of vandalism on *both* English and French stop signs also increase (Figure 5). Conversely, as the percentage of the population with English as their mother tongue increases, degrees of vandalism on *both* English and French stop signs decrease (Figure 6). Though the fit of the trendline is not very strong for any of the graphs, ($r^2 < 0.7$ for all graphs, Figures 5 and 6), the general increasing or decreasing nature of the graphs is still apparent and cannot be dismissed. Furthermore, English stop signs overall tend to be less vandalized than French stop signs (English stop signs: 0.35; French stop signs: 0.568. $p < 0.0001$, Table 2; in addition, the average English stop sign vandalism trendline falls below the average French stop sign vandalism trendline, in both Figures 5 and 6).

Though not predicted for in my hypothesis, the observation of such trends between mother tongue and the language of the vandalized stop signs is intriguing, and I will offer some thoughts and possible questions for future study. It may be that the dominant mother tongue in a CT is only a marker of some other underlying cause behind the vandalism; for example, the prevalence of schools in the district that happen to be mostly French, and economic status differences in the individuals who occupy French versus English dominated areas can both contribute to vandalism of stop signs in a given area. It is also possible that CTs dominated by those of English mother tongue belong to wealthier municipalities, which can afford to replace stop signs more rapidly as they become vandalized, for vandalized stop signs may be unsightly and can lower property value. It can be tested whether stop signs close to schools, and thus are located in close proximity to members of a certain age group, and in economically disadvantaged districts are also more heavily vandalized.

I am aware that others may have done studies pertinent to the correlation between presence of schools and distributions of vandalism, as well as correlations between average financial income and vandalism within a CT. What remains to be done, then, is a consolidation of this data in a meta-analysis that ties together all observed trends between vandalism and various community parameters, including factors such as average age, income, and population density. Indeed, the factors behind stop sign vandalism must not be as simple as the percentage of speakers of a certain mother tongue in a given area. Future studies may even examine the effects of non-English and non-French speakers in a CT and relate these factors to the degrees of vandalism.

Another observation from my research is the phenomenon of both degrees French and English stop sign vandalism rising and falling together, with respects to both mother tongues as the X-axis variable (Figures 5 and 6). While this certainly contradicts my hypothesis, which proposed that English stop sign vandalism should fall as French stop sign vandalism rose and vice versa with respects to mother

tongues, it is worthy to discuss why this parallel relationship between English and French stop sign vandalism exists. The data results suggest that language does not influence perpetrators of vandalism when they select stop signs to work upon. The accessibility of the stop sign surfaces, in term of height off the ground, another sign placed against the back of the stop sign, and branches or other obstacles obstructing the view of the stop sign can all hinder attempts at vandalism. Likewise, stop signs are possibly spared from vandalism in areas lacking pedestrian sidewalks, or in areas with heavy traffic and thus more danger to pedestrians. The activity of police and other law enforcement officials, as well as the number of on-lookers who might catch the perpetrator in the act, can also act to deter vandalism. More research into this matter is certainly suggested. It is possible that, through this analysis, the optimal positioning of stop signs and road signs in general can be deduced so that sign vandalism can be reduced for any given municipality.

Finally, there is the observation that French stop signs are in general more heavily vandalized than are English stop signs (English stop sign vandalized average: 0.350; French stop signs vandalized average: 0.568. $p < 0.0001$, Table 2). This is yet another issue which, though beyond the exploration of this research topic, deserves to be addressed and can be further pursued. Population parameters previously mentioned, such as mean income and educational backgrounds of those living in a given CT, may interplay and integrate into a complex explanation for the higher incidence of vandalized stop signs. We may ask questions such as: are CTs dominated by those who speak English as a mother tongue wealthier? Did the occupants of these CTs also obtain higher degrees of education? Are more wealthy municipalities less likely to have vandalism? Do higher degrees of education correlate with wealthier occupants in a given CT? Lastly, do the municipalities or CTs dominated by those of English mother tongue have higher proportions of English stop signs, than those dominated by those of French mother tongue? We may hypothesize, as an integration of all these questions, that there are more English stop signs in English neighbourhoods, which are also more wealthy and less likely to have vandalism (or can replace vandalized stop signs more readily); it results, therefore, that English stop signs will have less vandalism than French stop signs in general. Indeed, these questions are numerous. A meta-analysis combining the works of several stop sign projects, as well as more research, will be needed to begin addressing these issues.

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Appendix A: Comparison of CTs, Before and After Justified Eliminations from Total Compiled Data

(See attached pdf file)

Appendix B: Raw Data for CT sets

CT SET 1	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total
	0063.00	6	0	6		0.333333	165	80	340
	0065.01	10	0	10		0.5	1,210	945	6,170
	0065.02	6	0	6		0.833333	33	900	2,580
	0066.01	9	0	9		1.333333	33	660	2,555
	0095.00	6	0	6		1.166666	67	1,005	2,030
	0099.00	73	0	73		0.5616438	36	2,110	4,715
	0106.00	7	0	7		0.8571428	57	555	1,860
	0107.00	6	0	6		0.1666666	67	455	1,370
	0138.00	8	0	8		1.625	585	645	2,000
	0060.00	8	0	8		2.5	105	505	1,715
	0061.00	9	0	9		0.333333	115	270	510
					0.5172413				
	0350.00	29	29		79		1,025	455	2,265
	0382.01	49	49		0.2		1,610	720	3,570
					0.7172413	10.210452			
TOTALS		226	78	148	79	69	10500	7465	31680
Percentages		X	0.3451	0.6548			0.3314	0.2356	
			327	673			39394	37626	X
Averages					0.358621	0.928223	807.69	574.23	2436.923
							2308	0769	077

CT SET 2	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total
	0097.02	14		14		0.6153846	15	1,090	3,410
	0117.00	11		11		0.7272727	27	725	4,155
	0115.01	15		15		0.0666666	67	530	2,005
	0137.00	16		16		1.5625	365	375	1,050
	0110.00	15	1	14	0	0.8666666	67	1,095	3,865
	0103.00	18		18		2	920	1,000	2,410
	0133.00	12		12		1.4705882	35	545	1,075
	0135.00	18		18		0.2222222	22	220	1,675
	0383.01	38	38	0	0.3002665	65	1,270	685	2,820

TOTALS		157	39	118	0.3002665	7.5313011			
Percentages	X		0.2484	0.7515	65	33	6760	6860	23800
			076	924			0.2840	0.2882	
Averages					0.150133	0.941413	33613	35294	X
							751.11	762.22	2644.444
							1111	2222	444

CT SET 3	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total
	0056.00	19	0	19		1.2105263	105	305	1,175
	0058.00	11	0	11		1.5454545	80	475	950
	0066.02	22	0	22		0.2272727	145	425	765
	0096.00	13	0	13		1.4166666	880	735	2,125
	0097.01	19	0	19		0.5294117	65	2,095	1,045
	0115.02	12	0	12			0	915	2,295
	0120.00	19	0	19		0.1578947	37	1,005	720
	0161.00	18	0	18		1.3888888	89	180	1,095
	0163.00	18	0	18		0.5931864	1	955	1,225
	0352.00	43	43		1.3863636	36		1,390	485
									2,655

TOTALS		194	43	151	1.3863636	7.0693020			
Percentages	X		0.2216	0.7783	36	56	7750	8805	28700
			495	505			0.2700	0.3067	
Averages					1.386364	0.785478	34843	94425	X
							775.00	880.50	2870.000
							0000	0000	000

CT SET 4	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total
	0059.00	23	0	23		1.6521739	160	725	1,325
	0105.00	23	0	23		0.7391304	35	1,110	1,460
	0108.00	23	0	23		0.4347826	09	1,600	1,265
	0112.02	17	0	17		0.1764705	88	1,120	315
	0132.00	23	0	23		1.4090909	09	1,040	1,785
	0139.00	24	0	24			1.625	580	1,695
	0355.00	61	61	0	0.6551724	14			

TOTALS		194	61	133	0.6551724	6.0366484			
Percentages	X		0.3144	0.6855	14	54	5610	7245	20290
							0.2764	0.3570	X

es			33	67			90882	72449	
Averages					0.655172	1.006108	935.00	1207.5	3381.666
							0000	00000	667

CT SET 5	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total
	0101.01	31	0	31		0.4137931	1,575	440	4,245
	0101.02	27	0	27		0.4444444	1,420	420	3,815
	0104.00	28	0	28		1.1428571	975	1,380	2,700
	0118.00	30	0	30		0.1333333	865	725	4,415
	0382.02	52	52	0	0.3269230	77	2,050	960	4,485

TOTALS		168	52	116	0.3269230	2.1344280	6885	3925	19660
Percentages		X	0.3095	0.6904	77	23	0.3502	0.1996	
Averages			238	762			03459	43947	X
					0.326923	0.533607	1377.0	785.00	3932.000
							00000	0000	000

CT SET 6	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total
	0162.00	36	0	36		0.6252525	260	895	1,545
	0136.00	37	0	37		0.9189189	510	1,325	2,740
	0114.00	38	0	38		0.1842105	735	530	2,050
	0116.00	36	0	36		0.3055555	900	2,225	6,680
	0351.00	63	63	0	0.8378378	38	2,615	970	5,120

TOTALS		210	63	147	0.8378378	2.0339375	5020	5945	18135
Percentages		X	0.3	0.7	38	26	0.2768	0.3278	
Averages					0.837838	0.508484	12793	19134	X
							1004.0	1189.0	3627.000
							00000	00000	000

CT SET 7	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total
	0062.00	49	2	47	0	1.1860465	145	425	765
	0102.00	44		44		0.5909090	1,470	1,595	4,035
	0112.01	53		53		0.0188679	1,725	325	5,185
	0353.00	75	75	0	0.6153846	25	1,845	655	2,970

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TOTALS		221	77	144	0.6153846	1.7958235			
Percentages	X		0.3484	0.6515	15	28	5185	3000	12955
Averages			163	837			0.4002	0.2315	
							31571	70822	X
							1296.2	750.00	3238.750
					0.307692	0.598608	50000	0000	000

CT SET 8	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total		
	0094.01	47	0	47		0.3404255	32	2,220	940	5,915	
	0119.00	61	0	61		0.4253623	19	1,275	555	6,635	
	0383.02	58	52	6	0.1258322	0.1857523	24	66	3,655	1,035	7,265

TOTALS		166	52	114	0.1258322	0.9515402			
Percentages	X		0.3132	0.6867	24	17	7150	2530	19815
Averages			53	47			0.3608	0.1276	
							37749	8105	X
							2383.3	843.33	6605.000
					0.125832	0.317180	33333	3333	000

CT SET 9	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total		
	0128.00	56	7	49	0.1428571	0.2244897	43	96	1,610	925	3,580
	0111.00	56	0	56		0.1636363	64	1,950	1,550	6,480	
	0380.00	78	78	0	0.1410256		41	1,895	495	3,985	

TOTALS		190	85	105	0.2838827	0.3881261			
Percentages	X		0.4473	0.5526	84	6	5455	2970	14045
Averages			684	316			0.3883	0.2114	
							94446	63154	X
							1818.3	990.00	4681.666
					0.141941	0.194063	33333	0000	667

CT SET 10	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total	
	0113.00	65	0	65		0.3384615	38	980	1,210	5,100
	0100.00	73	0	73		0.8666666	67			
	0354.00	100	100	0	0.6210526		32	1,865	820	3,185

TOTALS		238	100	138	0.6210526	1.2051282				
Percentages	X		0.4201	0.5798	32	05	2845	2030	8285	
			681	319			0.3433	0.2450		
Averages					0.621053	0.602564	91672	21123	X	
							1422.5	1015.0		4142.500
							00000	00000		000

CT SET 11	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total
	0098.00	122	0	122		0.1544715			
						45	2,645	945	5,490
	0356.00	110	110	0	0.2666666		1,060	530	2,025
					67				

TOTALS		232	110	122	0.2666666	0.1544715				
Percentages	X		0.4741	0.5258	67	45	3705	1475	7515	
			379	621			0.4930	0.1962		
Averages					0.266667	0.154472	13972	74118	X	
							1852.5	737.50		3757.500
							00000	0000		000

CT SET 12	CT (462xxxx.xx)	Signs	English	French	Vandalized English Avg	Vandalized French Avg	MT English	MT French	Population Total
	0370.00	276	248	28	0.0674603	0.1785714			
					17	29	4,260	970	6,995

TOTALS		276	248	28	0.0674603	0.1785714				
Percentages	X		0.8985	0.1014	17	29	4260	970	6995	
			507	493			0.6090	0.1386		
Averages					0.067460	0.178571	06433	70479	X	
							4260.0	970.00		6995.000
							00000	0000		000

Appendix C: Raw Finalized Data, After Eliminations

See attached excel file.