

## Part VI: Results and Discussion

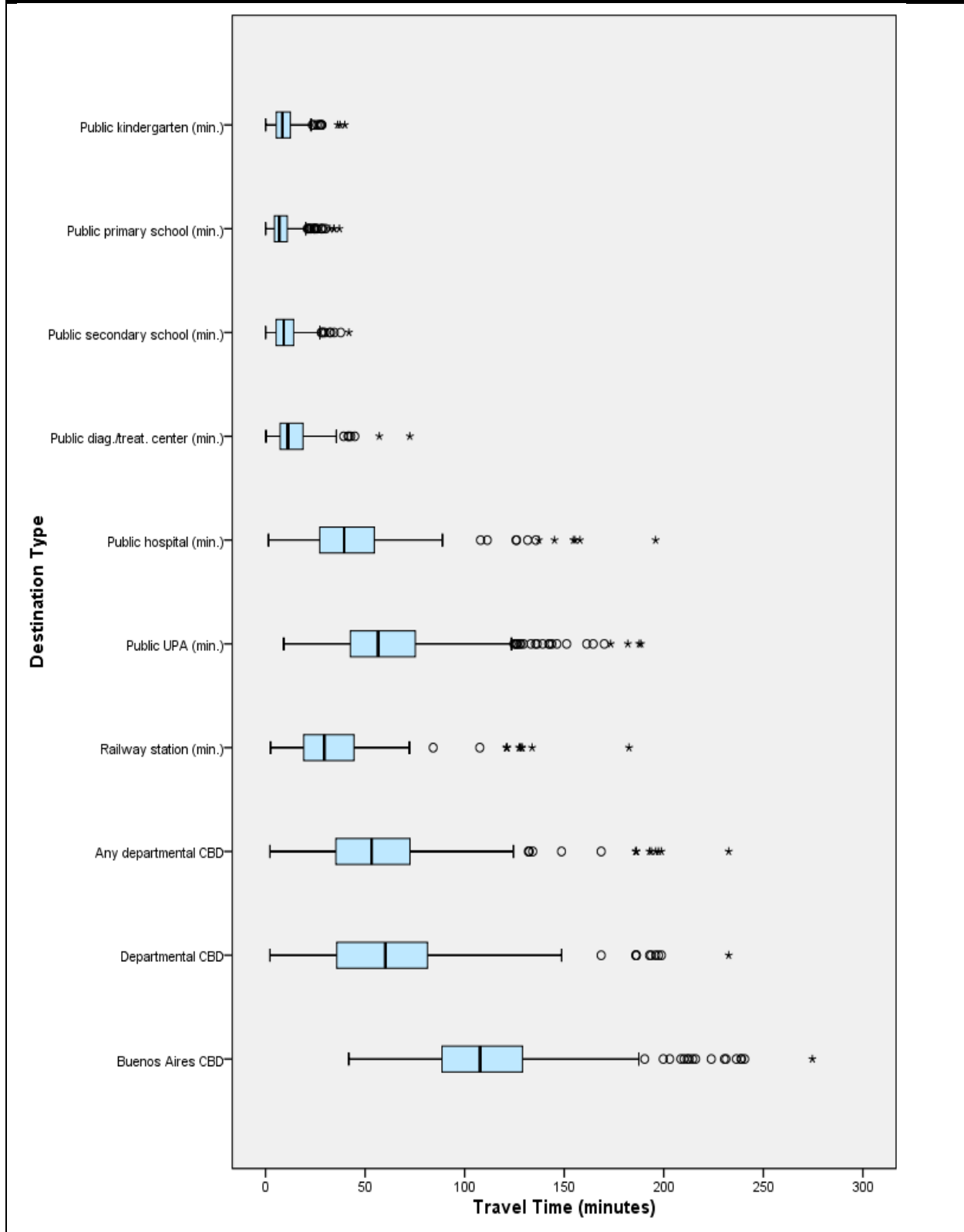
### Part VI(a): Metropolitan-wide patterns and trends

Before performing either of the difference-of-means tests, I first inspected the descriptive statistics for travel times throughout AGBA. I collected the average, standard deviation, minimum, and maximum travel time values for all trips (as well as for the four overlap categories: majority, minority, any, and none) to each of the ten destination categories. The raw values for all radios and destinations are shown in **Table 5.1a** and the range of values for each destination type are shown on the box plots in **Figure 5.1b**. Lastly, the average times for each of the five overlap categories—vis-à-vis destination types—are shown on the line graph in **Figure 5.1d**.

**Table 5.1a – Descriptive Statistics**

Sample	Statistic	Buenos Aires CBD	Departmental CBD	Nearest CBD	Railroad Station	UPA	Hospital	Diag./Treat.	Kindergarten	Primary School	Secondary School
All	Average	114.09	64.74	59.75	34.53	63.48	44.70	14.67	11.73	10.01	10.79
	St. Dev.	40.51	39.62	38.15	24.46	34.30	27.62	10.40	9.03	8.68	8.35
	Minimum	41.85	2.20	2.20	2.55	9.15	1.50	0.22	0.08	0.08	0.10
	Maximum	274.60	232.60	232.60	182.55	188.53	195.88	72.48	54.92	50.63	57.50
Majority	Average	123.33	80.71	76.66	42.31	56.97	54.18	14.36	9.50	9.31	11.17
	St. Dev.	37.10	40.33	39.32	28.32	26.44	30.01	8.60	6.53	6.96	7.40
	Minimum	66.63	12.68	12.68	12.67	17.68	11.18	4.07	2.15	2.20	2.82
	Maximum	274.60	232.60	232.60	182.55	129.55	195.88	39.02	40.22	42.50	42.37
Minority	Average	122.92	72.23	67.09	39.96	64.89	52.10	16.14	13.88	12.33	12.31
	St. Dev.	43.33	38.15	38.09	23.98	40.53	26.19	10.87	8.68	9.22	7.68
	Minimum	56.63	8.22	8.22	11.25	11.00	8.75	0.22	1.50	1.62	0.88
	Maximum	240.60	198.82	198.82	133.87	188.53	157.90	43.05	42.28	49.07	41.25
Any Overlap	Average	123.07	75.37	70.63	40.83	61.94	52.87	15.49	11.28	12.88	11.23
	St. Dev.	40.97	39.04	38.69	25.58	36.02	27.57	10.10	7.38	8.31	8.56
	Minimum	56.63	8.22	8.22	11.25	11.00	8.75	0.22	0.88	1.50	1.62
	Maximum	274.60	232.60	232.60	182.55	188.53	195.88	43.05	41.25	42.37	49.07
No Overlap	Average	105.23	54.26	49.03	28.23	64.99	36.66	13.83	10.30	10.57	8.79
	St. Dev.	38.18	37.46	34.53	21.60	32.58	25.28	10.66	9.22	9.58	8.66
	Minimum	41.85	2.20	2.20	2.55	9.15	1.50	1.18	0.10	0.08	0.08
	Maximum	238.68	193.68	193.68	128.73	187.65	155.43	72.48	57.50	54.92	50.63

**Figure 5.1b**



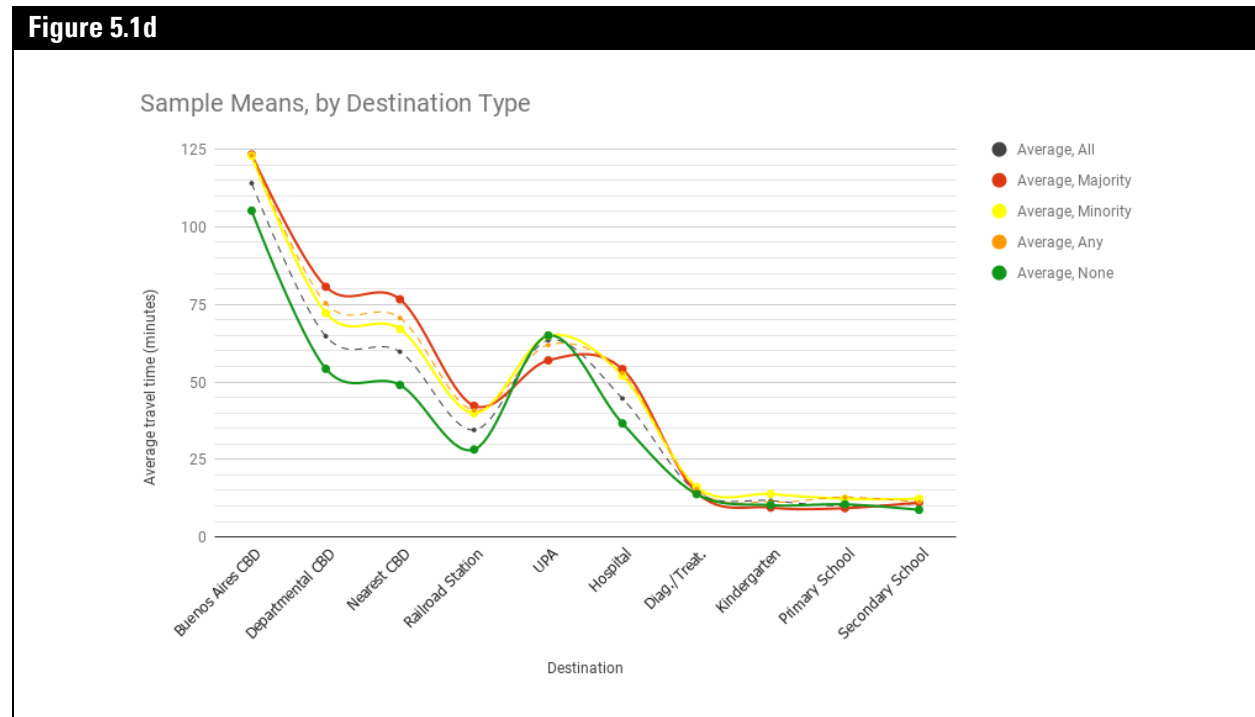
There are some noteworthy, if unsurprising, initial results. For one, the range of expected values is substantially different between the destination categories. Noteworthy on **Figure 5.1b**, nearly all the schools, as well as the diagnostic/treatment centers, were within an hour's minimum travel, regardless of where in the conurbation those trips originated. Conversely, the range of values for the central business districts are enormous, with trips ranging from less than half-an-hour to some requiring nearly four hours of transit-based travel. Each distribution presents a right-ward skew, with abundant outliers, suggesting that there are some radios with unusually long travel times to destinations, even those that appear more accessible like schools. The skew, meanwhile, is to be expected given the improbability of extreme negative outliers (i.e. sub-zero values) with time-based values.

Given the spatial distribution of these types of opportunity sites, these results, are not surprising (even before differentiating between those that originated in radios with *asentamientos* and those that did not). Those locations with more iterations, like schools, will generally require less average travel than those with fewer, like the central business districts, hospitals, and railway stations. This is indicative of the importance of gravity-based accessibility models, which can account for these variations in attractiveness. One other thing to mind when inspecting these data is that they include values from across the region, so values from Pilar (which is naturally further from CABA than Quilmes) skew the distribution to the right. This demonstrates the importance of differentiating between the different study areas, as I do below.

One of the weaknesses of this study, and all Google Distance Matrix API data in Buenos Aires, is the difficulty in verifying these travel times. There are no ways, without measuring on the ground, to determine if these estimations are entirely accurate—even those studies that looked at *accessibility* from the *asentamientos* never considered time. Perhaps the only comparison point are those trip times reported to ENMODO; the table below shows the travel times recorded by respondents based on trip-type and modal selection. School trips most commonly took only 10 to 20 minutes, whereas work trips and health-trips frequently required more than a half-an-hour. A similar pattern is observed with my data, with schools requiring less time than the other two.

Table 5.1c								
Travel Time	Trip Mode			Trip Types				
	Public Transit	Bus	Rail	Workers	Study	School, Primary	School, Secondary	Health
< 10 minutes	2%	2%	1%	17%	26%	36%	27%	8%
11-20 minutes	11%	12%	3%	20%	29%	37%	30%	20%
21-30 minutes	17%	19%	7%	18%	19%	16%	21%	25%
31-60 minutes	34%	35%	30%	27%	18%	9%	18%	31%
60 > minutes	36%	32%	59%	18%	8%	<5%	5%	16%
Source: ST 2011								

These data only reveal so much before sub-dividing the travel times based on whether they represent radios that contain *asentamientos*. The graph below, **Figure 5.1d**, depicts the variation in the mean expected travel time values to each destination for each category of census radio—majority-, minority-, any-, and no-overlap. A preview of the difference-of-means tests listed below, there are some clear trends.



The travel times associated with the majority- and minority-overlap radios are substantially higher than those with no-overlap for five of the first six destination categories: the three central business districts, railway stations, and hospitals (all activity sites with dispersed patterns). In the case of the local CBD measures, these gaps are wide, with thirty minutes separating the two. The gap lessens for the Buenos Aires CBD, railway station, and hospital measures but nonetheless remains. Conversely, however, there is little-to-no gap for any of the schools or the diagnostic/treatment centers, although this is likely related with the minimal absolute variance in travel time scores associated with these destination types relative to the others. The urgent care units (UPA's) provide an unexpected result: the no-overlap radios enjoy *worse* travel times than those radios that overlap an *asentamiento*, a trend worthy of further consideration.

Exploration of these trends within the individual case studies, as well as performing statistical tests on these differences to determine significance, will clarify whether these trends are meaningful. The table below presents the results from the ANOVA and t-tests for all of the sampled radios, regardless of district.

**Table 5.1e – ANOVA and independent-sample t-tests**

Samples of Comparison	Statistic	Buenos Aires CBD	Departmental CBD	Nearest CBD	Railroad Station	UPA	Hospital	Diag./Treat.	Kindergarten	Primary School	Secondary School
ANOVA											
Majority, Minority, None	F-statistic	6.830	11.160	12.941	9.764	1.103	12.835	1.387	2.381	4.916	3.886
	p(F)	0.001	0.000	0.000	0.000	0.333	0.000	0.252	0.094	0.008	0.022
T-Tests											
Any vs. None	t-statistic	3.702	4.553	4.861	4.389	-0.732	5.055	1.341	2.170	2.380	0.991
	p(t)	0.000	0.000	0.000	0.000	0.465	0.000	0.181	0.031	0.018	0.323
	Mean diff.	17.841	21.118	21.604	12.602	-3.057	16.210	1.659	2.310	2.432	0.982
	St. Err. (diff.)	4.819	4.639	4.445	2.871	4.179	3.207	1.237	1.064	1.022	0.991
Majority vs. Minority/None	t-statistic	1.794	3.210	3.542	2.516	-1.488	2.718	-0.237	-0.496	-0.757	-1.234
	p(t)	0.074	0.001	0.000	0.012	0.138	0.007	0.813	0.620	0.451	0.218
	Mean diff.	11.339	19.574	20.717	9.540	-7.979	11.612	-0.378	-0.688	-0.857	-1.580
	St. Err. (diff.)	6.321	6.098	5.849	3.792	5.362	4.273	1.599	1.387	1.133	1.280
Majority vs. Minority	t-statistic	0.055	1.221	1.393	0.515	-1.367	0.423	-1.080	-1.887	-2.207	-2.315
	p(t)	0.956	0.224	0.166	0.607	0.174	0.673	0.282	0.061	0.029	0.022
	Mean diff.	0.403	8.480	9.572	2.350	-7.914	2.085	-1.786	-2.708	-3.023	-2.811
	St. Err. (diff.)	7.346	6.945	6.871	4.562	5.791	4.929	1.654	1.435	1.369	1.215
Minority vs. None	t-statistic	3.170	3.451	3.640	3.778	-0.021	4.362	1.594	2.652	2.958	1.724
	p(t)	0.002	0.001	0.000	0.000	0.983	0.000	0.112	0.009	0.003	0.086
	Mean diff.	17.691	17.977	18.059	11.738	-0.104	15.438	2.313	3.302	3.539	2.011
	St. Err. (diff.)	5.581	5.208	4.961	3.107	4.970	3.539	1.451	1.245	1.196	1.166
Majority vs. None	t-statistic	2.887	4.188	4.663	3.613	-1.561	3.984	0.319	0.404	0.386	-0.575
	p(t)	0.004	0.000	0.000	0.000	0.120	0.000	0.750	0.686	0.700	0.566
	Mean diff.	18.094	26.457	27.631	14.088	-8.018	17.522	0.527	0.593	0.516	-0.800
	St. Err. (diff.)	6.267	6.318	5.925	3.899	5.138	4.398	1.648	1.467	1.336	1.392

The ANOVA tests for six of the destinations were significant at a 99% confidence level (all the central business districts, the railway stations, public hospitals, and, curiously, primary schools), one at 95% (kindergartens and secondary schools), and another at 90% (kindergartens). There does indeed seem to be a statistically-significant difference in the average travel times between those census radios showing majority-, minority-, and no-overlap; we can reject the null hypotheses that those samples are drawn from the same population. Nevertheless, as noted before, this does not immediately prove my overarching hypothesis about relative accessibility in the *asentamientos*;

these differences between each of these overlap-categories need to be considered individually, using t-tests, to see exactly where these differences lie.

Looking first at the six destinations whose ANOVA tests were highly-significant, their t-tests returned remarkably similar patterns. For the central business districts, railway stations, and hospitals, the greatest differences, as it appears, were between those radios with any degree of overlap (majority/minority) with an *asentamiento* and those without; the t-tests were highly significant (+99% confidence) for those comparing majority- to none-, minority- to -none-, and any- to none-. These provide stronger evidence that the *asentamientos* enjoy worse relative access to these activity sites than their neighbors, in support of the project hypothesis. In the case of the local CBD's, the t-tests comparing the majority-overlap radios with all others were also very significant, suggesting that, in these cases, the radios with the greatest likelihood of representing *asentados* are those with the worst travel times.

The schools, on the other hand, present more interesting results. While they each returned ANOVA tests of differing levels of significance, the differences-in-means seem to lie between different overlap-categories than the five discussed above. For the kindergartens and primary schools, the greatest differences, per the t-test results, are between the minority- and no-overlap radios (both 99%+ significance) with less of a difference between those in the majority and minority samples and any and none (~95% significance). This suggests that, while there appears to be some difference in estimated travel time between the *asentamientos* and their neighbors, those differences are greatest in those census radios that are less likely to fully consist of *asentados*. The secondary schools, meanwhile, only display a significant difference (95% confidence) between the majority- and minority-overlap radios (the significance for this test was equal to that for the ANOVA for the same activity sites). These results, while interesting, do not lend as strong support for the overarching project hypothesis.

All the while, the inequalities in accessibility exhibited by the schools illustrate the importance of measuring access in a *relative* manner; even though there are hundreds of schools scattered across AGBA—with average travel times around fifteen minutes for each sub-category—there are still students with longer voyages than their classmates. The absolute differences may not be much (i.e., forty-five minutes or an hour) but a difference exists nonetheless, a burden on those few students who must take extra steps or acquire the fare to account for an earlier departure in the morning or late arrival home in the evening.

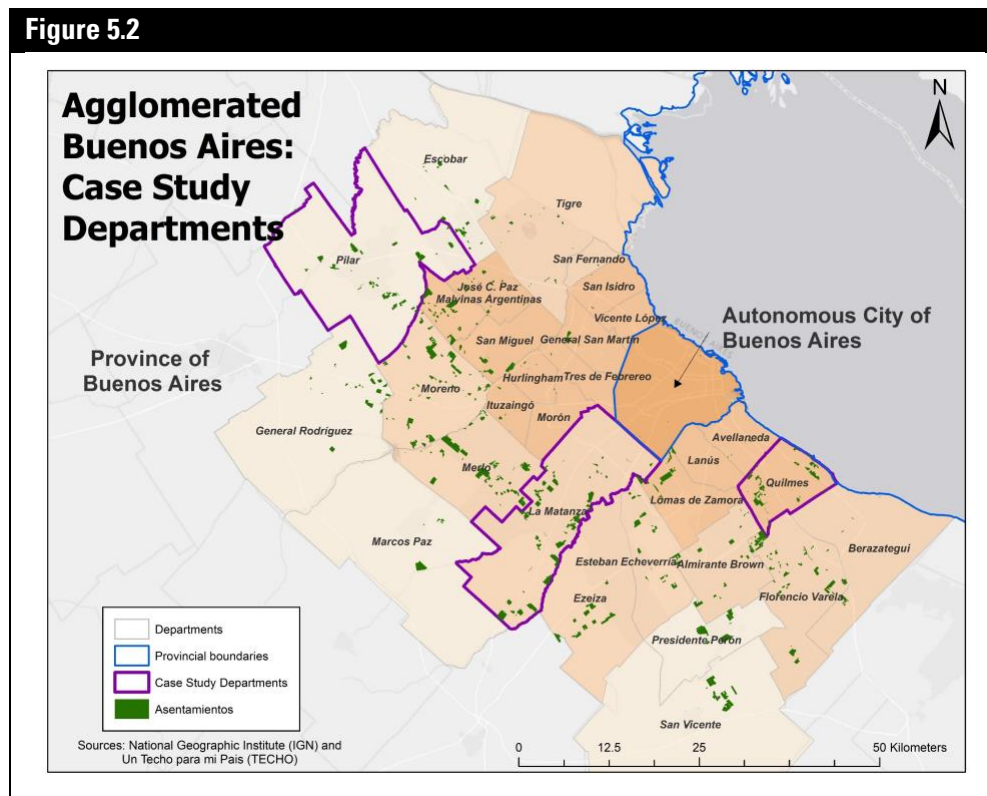
The last two activity sites, the urgent care centers and diagnostic/treatment centers, returned insignificant results for all tests. This initially suggests a degree of equity in the distribution of these opportunities, since all census radios seem to enjoy a similar degree of time-based access; this is especially interesting for the UPA's since there are just over a dozen across the entirety of AGBA. Perhaps this reflects good locational planning by public officials.

While these initial findings provide, in some cases, strong support for the argument that there is an inequality in access, vis-à-vis public transportation, in the *asentamientos* of metropolitan Buenos Aires, additional results are needed to fully characterize, especially in terms of identifying spatial patterns in accessibility, these findings. Looking at region-wide travel times, for instance, can only illustrate so much, especially given the unique geographies and urban landscapes found in

Quilmes, La Matanza, and Pilar. The raw travel time estimations for each of these study areas are vastly different and reflective of different urban environments; while Quilmes, for instance, features the shortest travel times to all activity sites, this does not necessarily indicate equitable accessibility for all residents. Consideration must be given to variations within the territory of each case study.

### Part VI(b): Case study patterns

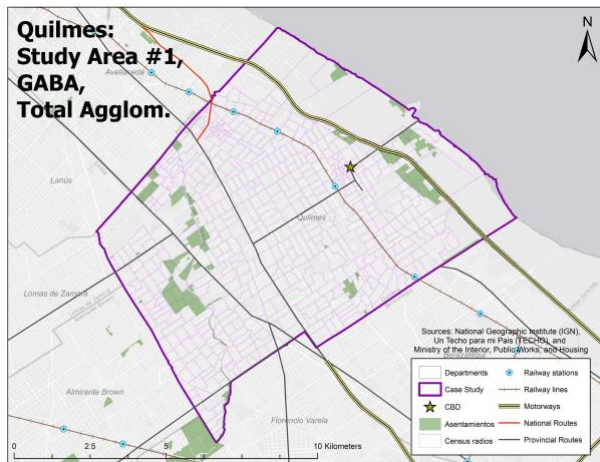
In the subsequent sub-sections, I explore the results for Quilmes, La Matanza, and Pilar to see how the *asentados* fare relative to their neighbors when living in different urban/suburban environments (shown again on **Figure 5.2** below). To review the INDEC classification of each, Quilmes represents fully-urbanized departments within traditional “greater Buenos Aires” (GABA), La Matanza for the partially-urbanized departments in GABA, and Pilar those departments not historically considered part of the conurbation but that are being progressively urbanized and enveloped into the agglomeration at large. As will be seen, these characteristics are reflected in the corresponding travel time patterns.



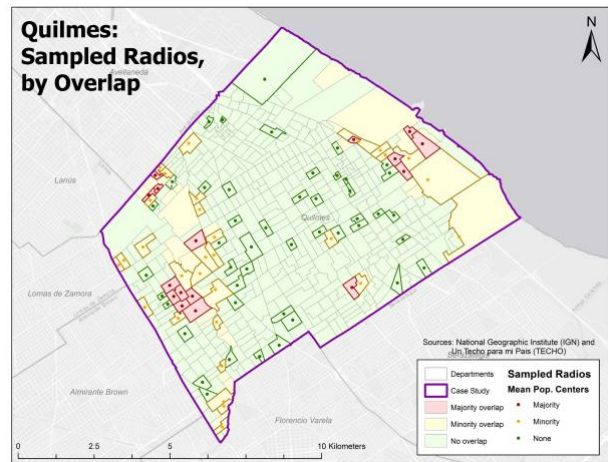
## Part VI(b.1): Quilmes – Totally Urban, GABA

The first of the case studies is Quilmes, located to the southeast of CABA. As with each of the other subsequent cases, I will first showcase its descriptive statistics and then explore the results of its differences-of-means tests. Maps of Quilmes and its asentamientos are shown below.

**Figure 5.3a-i**



**Figure 5.3a-ii**





**Table 5.3b**

Sample	Statistic	Buenos Aires CBD	Departmental CBD	Nearest CBD	Railroad Station	UPA	Hospital	Diag./Treat.	Kindergarten	Primary School	Secondary School
<b>All</b>	<b>Average</b>	<b>81.19</b>	<b>48.96</b>	<b>43.34</b>	<b>33.96</b>	<b>46.28</b>	<b>33.42</b>	<b>8.62</b>	<b>8.12</b>	<b>6.90</b>	<b>10.82</b>
	<b>St. Dev.</b>	18.14	22.22	19.07	15.62	19.39	13.64	4.85	3.90	3.42	5.13
	<b>Minimum</b>	41.85	7.62	7.62	2.55	11.00	6.98	0.22	1.87	0.10	1.73
	<b>Maximum</b>	118.70	95.08	81.03	69.73	100.67	64.95	30.90	24.08	19.62	28.33
<b>Majority</b>	<b>Average</b>	<b>90.40</b>	<b>53.21</b>	<b>50.17</b>	<b>41.93</b>	<b>51.47</b>	<b>37.52</b>	<b>8.77</b>	<b>8.55</b>	<b>7.96</b>	<b>12.53</b>
	<b>St. Dev.</b>	15.25	23.19	21.68	14.80	22.53	15.53	2.68	4.47	4.00	5.69
	<b>Minimum</b>	66.63	12.68	12.68	17.53	17.75	11.18	4.37	2.15	2.20	4.35
	<b>Maximum</b>	108.65	81.03	81.03	69.73	82.03	64.95	14.67	16.50	16.00	22.05
<b>Minority</b>	<b>Average</b>	<b>85.03</b>	<b>55.96</b>	<b>48.73</b>	<b>37.60</b>	<b>41.01</b>	<b>37.12</b>	<b>8.03</b>	<b>8.19</b>	<b>7.30</b>	<b>11.86</b>
	<b>St. Dev.</b>	16.02	20.13	16.70	12.75	22.23	12.51	6.01	3.36	3.09	5.28
	<b>Minimum</b>	56.63	8.22	8.22	11.78	11.00	8.75	0.22	1.87	1.65	1.73
	<b>Maximum</b>	118.70	82.58	73.30	58.67	100.67	53.70	30.90	16.03	15.33	24.97
<b>Any Overlap</b>	<b>Average</b>	<b>86.90</b>	<b>55.01</b>	<b>49.23</b>	<b>39.11</b>	<b>44.65</b>	<b>37.26</b>	<b>8.29</b>	<b>8.31</b>	<b>7.53</b>	<b>12.09</b>
	<b>St. Dev.</b>	15.80	21.02	18.35	13.49	22.65	13.47	5.08	3.73	3.40	5.37
	<b>Minimum</b>	56.63	8.22	8.22	11.78	11.00	8.75	0.22	1.87	1.65	1.73
	<b>Maximum</b>	118.70	82.58	81.03	69.73	100.67	64.95	30.90	16.50	16.00	24.97
<b>No Overlap</b>	<b>Average</b>	<b>75.47</b>	<b>42.92</b>	<b>37.44</b>	<b>28.81</b>	<b>47.92</b>	<b>29.58</b>	<b>8.96</b>	<b>7.93</b>	<b>6.27</b>	<b>9.56</b>
	<b>St. Dev.</b>	18.69	21.94	18.10	16.04	15.56	12.83	4.64	4.10	3.36	4.58
	<b>Minimum</b>	41.85	7.62	7.62	2.55	11.23	6.98	2.68	1.90	0.10	3.23
	<b>Maximum</b>	108.98	95.08	76.98	67.90	77.47	58.83	24.08	24.08	19.62	28.33

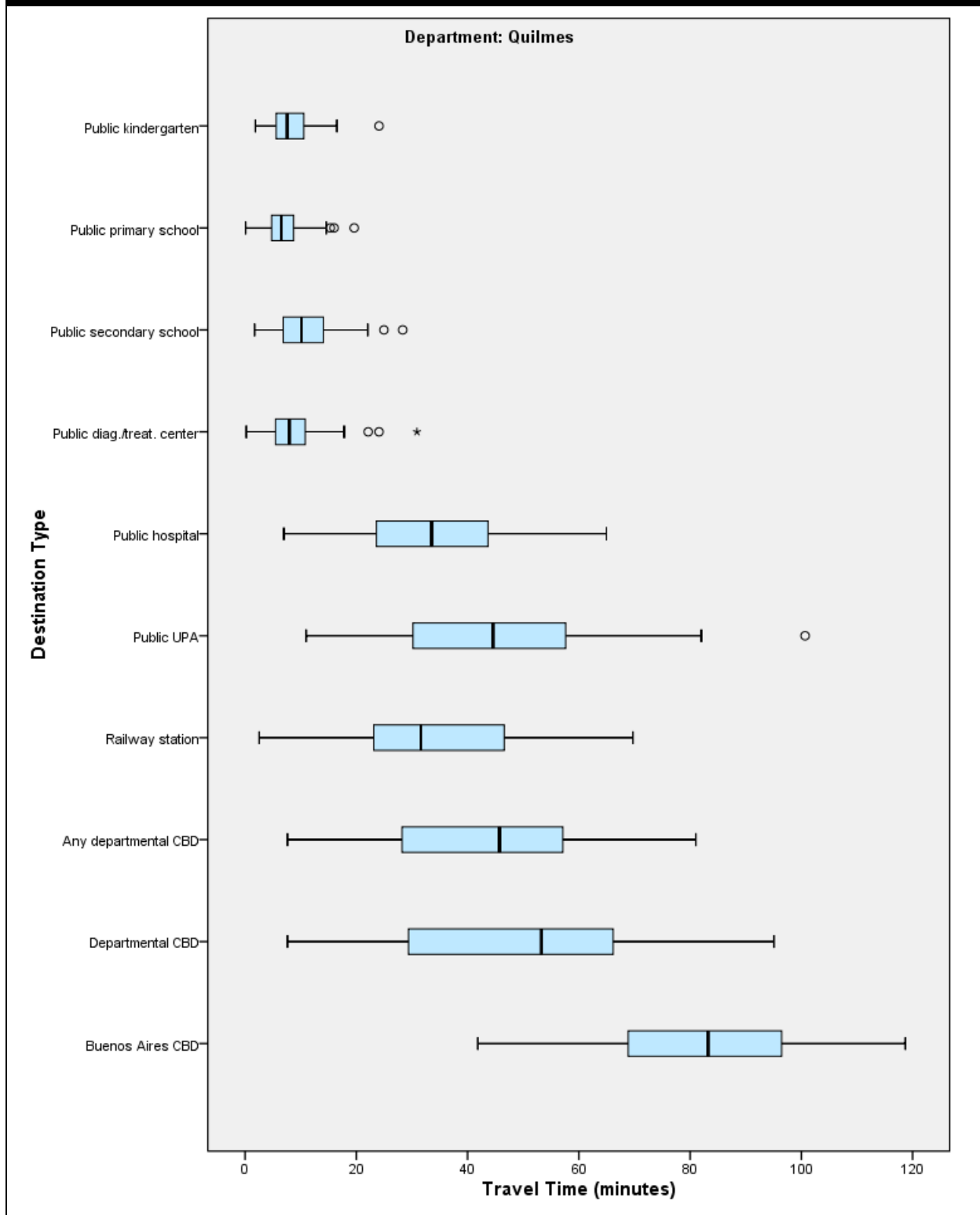
Looking only at the distribution of estimated travel times in Quilmes, there are some trends that warrant attention. For one, the ranges of the travel times for each destination are considerably smaller than AGBA, with less absolute variance. This is reflected in the relatively small number of outliers; some of the activity site categories have none at all. Nevertheless, schools and diagnostic/treatment centers again exhibit the shortest travel times (despite being the only features to show outliers) whereas longer travel times are expected for the central business districts, railway stations, urgent care centers/UPAs, and hospitals (most of which require around 45 minutes, on average). Unlike the other two case studies, there are no trips longer than two hours and, when considering trips whose destination is within Quilmes' boundaries, the upper limits decreases to only 90 minutes.

Exploring the history of Quilmes, representative of other fully-urbanized departments proximate to CABA, can explain some of these tendencies. According to Keeling (1996), Quilmes was first settled as a suburb of Buenos Aires during the 1950s; people working in the factories on

the southern side of Buenos Aires City lived in its neighborhoods and commuted to their jobs using the commuter railway line (the Roca Line) that connected CABA with Quilmes and the other departments on the city's southeastern flank. Most of its urbanization took place rapidly during the 1960s and 70s as more and more working- and lower-class people settled within its confines. Consequently, Quilmes is one of the poorest departments in the city, a haven for working-class porteños and, once the *asentamiento* proliferated as a housing recourse, “a favored location for self-help settlements due to its proximity to the Federal District and to industrial plants (pg. 56).”

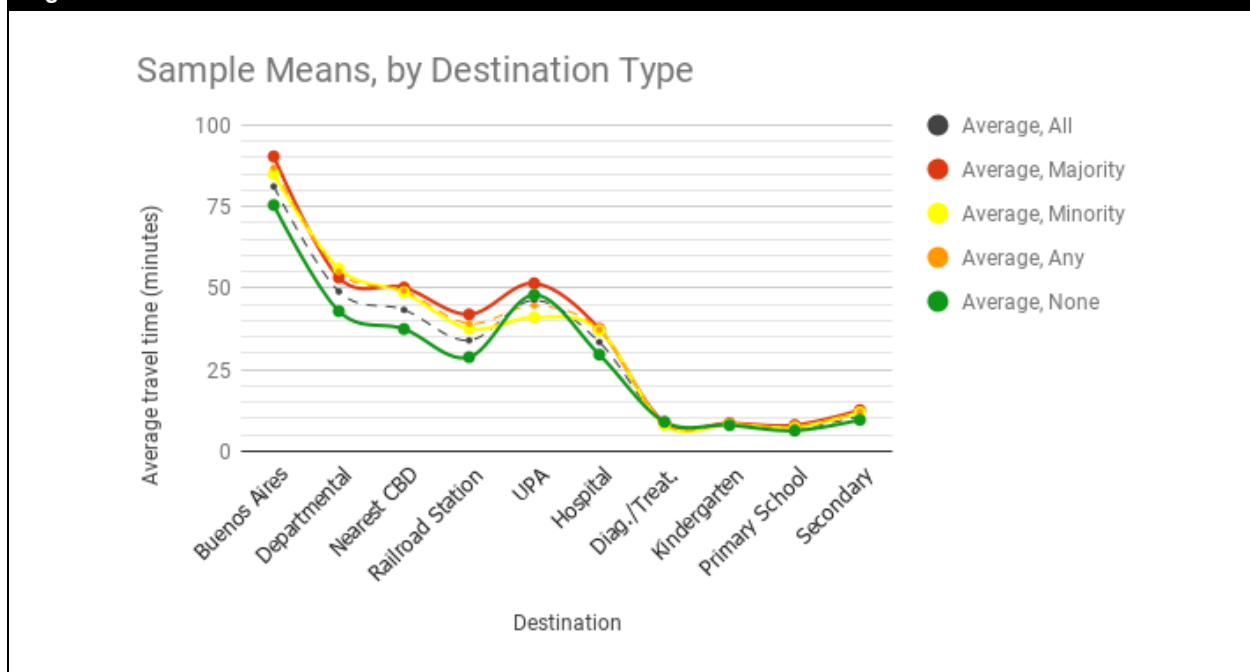
Providing services to traditional neighborhoods, let alone informal settlements, has been a struggle for the cash-strapped municipality, whose population jumped from 300,000 in 1970 to over 500,000 in 1991 and then nearly 600,000 in 2010 (Keeling, 1996; INDEC 2010). While its small size (relative to those departments on Buenos Aires' periphery) means that travel times within the district are relatively short, its location and working-class legacy have meant it bears an unusually large share of *asentados* within its boundaries. Geographically, most of its *asentamientos* are along a riverbank on its western edge and along the Buenos Aires-La Plata motorway that runs along its northern boundary (**Figure 5.3a**).

**Figure 5.3c**



More interesting, however, are those travel times when disaggregated based on whether they originate in radios that overlap with an *asentamiento*. The corresponding averages are depicted on **Figure 5.3d** below, showing that the “majority-overlap” radios enjoy the longest travel times, compared to the other categories, for nearly every destination class; accessibility is markedly worse for these radios than those with “no overlap” for six for the first activity sites (CBD’s, railroad stations, UPA’s, and hospitals) while also marginally higher for primary and secondary schools. Those with “minority-overlap” are also worse than their “no overlap” counterparts in each of those same categories, save the urgent care units. Looking only at raw travel times, the schools all showed similar average travel times, just like was observed at the regional level. The gaps that exist between the “majority” and “minority” overlap radios and the “no” overlap radios, while still noticeable, are smaller than AGBA overall, with the difference hovering around 15-minutes.

**Figure 5.3d**



The table below, **Table 5.3e**, presents the results of the difference-of-means tests for Quilmes. Looking first to the ANOVA tests, the F-statistic was very highly significant (99%) for two categories, the Buenos Aires CBD and the railroad stations, highly-significant (95%) for three (Quilmes’ CBD, the nearest departmental CBD, and public hospitals), and moderately-significant (90%) for one (secondary schools); the remaining four were insignificant. These results provide initial evidence, at least for the very-highly- and highly-significant destinations, to support the hypothesis that the *asentamientos* enjoy poor relative accessibility. Among these five, we can reject the null hypothesis that the independent samples (majority-, minority- and no-overlap radios) came from the same population.

Table 5.3e

Samples of Comparison	Statistic	Buenos Aires CBD	Departmental CBD	Nearest CBD	Railroad Station	UPA	Hospital	Diag./Treat.	Kindergarten	Primary School	Secondary School
<b>ANOVA</b>											
<b>Majority, Minority, None</b>	F-statistic	<b>5.517</b>	<b>3.692</b>	<b>4.792</b>	<b>5.997</b>	<b>1.881</b>	<b>3.886</b>	<b>0.337</b>	<b>0.153</b>	<b>1.783</b>	<b>3.037</b>
	p(F)	<b>0.006</b>	<b>0.029</b>	<b>0.011</b>	<b>0.004</b>	<b>0.159</b>	<b>0.024</b>	<b>0.715</b>	<b>0.859</b>	<b>0.174</b>	<b>0.053</b>
<b>T-Tests</b>											
<b>Any vs. None</b>	t-statistic	<b>3.167</b>	<b>2.699</b>	<b>3.102</b>	<b>3.334</b>	<b>-0.808</b>	<b>2.801</b>	<b>-0.662</b>	<b>2.437</b>	<b>1.786</b>	<b>0.472</b>
	p(t)	<b>0.002</b>	<b>0.008</b>	<b>0.003</b>	<b>0.001</b>	<b>0.421</b>	<b>0.006</b>	<b>0.510</b>	<b>0.017</b>	<b>0.078</b>	<b>0.638</b>
	Mean diff.	11.426	12.091	11.788	10.303	-3.276	7.683	-0.671	2.538	1.259	0.386
	St. Err. (diff.)	3.608	4.480	3.801	3.090	4.052	2.743	1.015	1.041	0.705	0.817
<b>Majority vs. Minority/None</b>	t-statistic	<b>2.286</b>	<b>0.841</b>	<b>1.589</b>	<b>2.299</b>	<b>1.178</b>	<b>1.330</b>	<b>0.133</b>	<b>1.475</b>	<b>1.372</b>	<b>0.477</b>
	p(t)	<b>0.025</b>	<b>0.403</b>	<b>0.116</b>	<b>0.024</b>	<b>0.242</b>	<b>0.187</b>	<b>0.894</b>	<b>0.144</b>	<b>0.173</b>	<b>0.634</b>
	Mean diff.	11.152	5.148	8.267	9.655	6.273	4.968	0.179	2.066	1.286	0.515
	St. Err. (diff.)	4.878	6.121	5.202	4.199	5.323	3.736	1.342	1.401	0.937	1.078
<b>Majority vs. Minority</b>	t-statistic	<b>1.1</b>	<b>-0.418</b>	<b>0.25</b>	<b>1.038</b>	<b>1.513</b>	<b>0.095</b>	<b>0.467</b>	<b>0.4</b>	<b>0.625</b>	<b>0.305</b>
	p(t)	0.277	0.678	0.804	0.305	0.138	0.924	0.643	0.691	0.535	0.762
	Mean diff.	5.366	-2.749	1.433	4.331	10.457	0.402	0.741	0.672	0.663	0.356
	St. Err. (diff.)	4.879	6.569	5.742	4.174	6.914	4.215	1.587	1.679	1.06	1.167
<b>Minority vs. None</b>	t-statistic	<b>2.303</b>	<b>2.617</b>	<b>2.739</b>	<b>2.527</b>	<b>-1.483</b>	<b>2.529</b>	<b>-0.758</b>	<b>2.017</b>	<b>1.345</b>	<b>0.291</b>
	p(t)	<b>0.024</b>	<b>0.011</b>	<b>0.008</b>	<b>0.014</b>	<b>0.145</b>	<b>0.014</b>	<b>0.451</b>	<b>0.047</b>	<b>0.183</b>	<b>0.772</b>
	Mean diff.	9.559	13.047	11.29	8.797	-6.913	7.543	-0.929	2.304	1.029	0.262
	St. Err. (diff.)	4.151	4.986	4.122	3.481	4.662	2.982	1.226	1.142	0.765	0.898
<b>Majority vs. None</b>	t-statistic	<b>2.875</b>	<b>1.594</b>	<b>2.3</b>	<b>2.874</b>	<b>0.583</b>	<b>2.019</b>	<b>-0.153</b>	<b>2.099</b>	<b>1.651</b>	<b>0.508</b>
	p(t)	<b>0.006</b>	<b>0.116</b>	<b>0.025</b>	<b>0.006</b>	<b>0.567</b>	<b>0.048</b>	<b>0.879</b>	<b>0.040</b>	<b>0.104</b>	<b>0.614</b>
	Mean diff.	14.925	10.298	12.723	13.127	3.544	7.946	-0.188	2.976	1.692	0.618
	St. Err. (diff.)	5.192	6.46	5.531	4.567	6.082	3.935	1.229	1.418	1.025	1.217

Supplementing these results with the t-tests helps to understand whether these ANOVA captured variance that fully pertains to the research question. For all five activity sites that returned highly-significant F-statistics, the t-tests indicate that most of the variation between those three independent samples was between, on the one side, the radios with “majority” and “minority” overlap and, on the other side, those without any. Very-highly significant differences were registered between the “any” and “none” radios for all five activities (e.g. CBD’s, railway stations, and hospitals), with very-highly- or highly-significant differences recorded individually between the “majority” and “minority” radios and those with “none”. The differences within the “minority” and

“minority” radios were insignificant. This presents strong evidence that there is an inequality in transit-facilitated access to CBD’s, public hospitals, and railway stations between Quilmes’ *asentamientos* and their neighbors. Confidence is especially strong for travel to the Buenos Aires CBD and to railway stations since the largest differences are for those majority-overlapped radios where we can be most certain *asentados* are living.

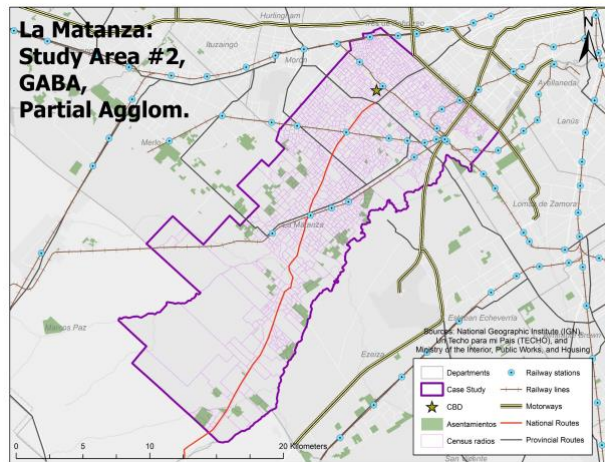
As for the other five activity sites—UPA’s, diagnostic/treatment centers, and all three schools—they seem to be transit-accessible in a much more equitable manner. The two health centers, alongside primary schools, showed no significant differences at all, whereas secondary schools curiously, only showed a mildly-significant difference (90%) for the ANOVA tests, with nothing at any other level. The most interesting of these classes, however, are the kindergartens: the ANOVA test showed very little significant variance between the three primary classes (minority, majority, and none) but then showed highly-significant differences between the no-overlap radios and those with minority, majority, and any overlap.

While Quilmes’ relatively-compact size produces absolute travel times shorter than the other two study areas, it still exhibits inequalities between its likely-*asentados* and their neighbors; differences are greatest when considering travel to hypothesized employment/commercial-centers like central business districts and railway stations.

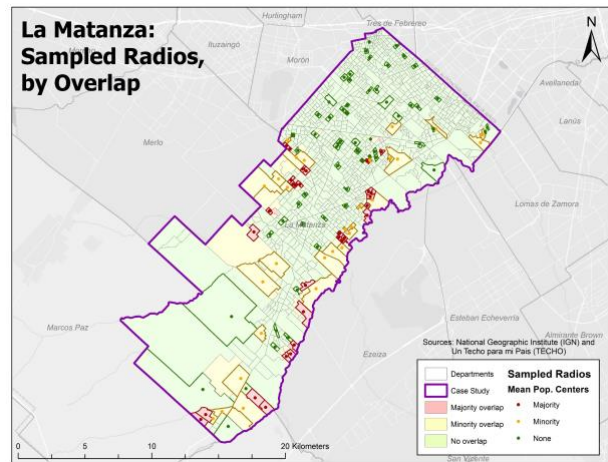
## Part VI(b.2): La Matanza – Partially-urban, GABA

The second case study is La Matanza, located to the southwest of CABA. For reference, maps of Quilmes and its asentamientos are shown below in **Figure 5.4a**.

**Figure 5.4a-i**



**Figure 5.4a-ii**



**Table 5.4b**

Sample	Statistic	Buenos Aires CBD	Departmental CBD	Nearest CBD	Railroad Station	UPA	Hospital	Diag./Treat.	Kindergarten	Primary School	Secondary School
<b>All</b>	<b>Average</b>	<b>129.47</b>	<b>79.68</b>	<b>78.14</b>	<b>37.63</b>	<b>55.18</b>	<b>55.20</b>	<b>17.41</b>	<b>9.75</b>	<b>8.89</b>	<b>9.41</b>
	<b>St. Dev.</b>	40.45	47.35	47.42	33.04	19.38	35.48	11.12	7.14	7.45	7.85
	<b>Minimum</b>	57.80	2.20	2.20	7.13	9.15	1.50	1.18	0.10	0.08	0.08
	<b>Maximum</b>	274.60	232.60	232.60	182.55	129.55	195.88	72.48	40.22	42.50	42.37
<b>Majority</b>	<b>Average</b>	<b>143.38</b>	<b>96.84</b>	<b>95.93</b>	<b>45.98</b>	<b>52.63</b>	<b>64.94</b>	<b>18.18</b>	<b>10.15</b>	<b>10.19</b>	<b>9.66</b>
	<b>St. Dev.</b>	35.81	40.07	40.55	35.42	20.45	34.62	9.40	7.85	8.49	8.33
	<b>Minimum</b>	103.32	48.57	48.57	12.67	17.68	16.55	4.07	2.83	2.82	2.93
	<b>Maximum</b>	274.60	232.60	232.60	182.55	129.55	195.88	39.02	40.22	42.37	42.50
<b>Minority</b>	<b>Average</b>	<b>143.84</b>	<b>102.85</b>	<b>98.96</b>	<b>48.16</b>	<b>55.47</b>	<b>72.41</b>	<b>21.91</b>	<b>12.78</b>	<b>13.02</b>	<b>12.56</b>
	<b>St. Dev.</b>	40.51	43.93	45.92	35.67	17.64	32.24	10.58	7.33	7.71	7.25
	<b>Minimum</b>	93.95	35.38	35.38	11.25	20.30	28.12	4.00	0.88	1.50	1.62
	<b>Maximum</b>	239.07	198.82	198.82	133.87	91.37	157.90	42.82	36.23	34.50	34.38
<b>Any Overlap</b>	<b>Average</b>	<b>143.62</b>	<b>99.95</b>	<b>97.50</b>	<b>47.10</b>	<b>54.10</b>	<b>68.80</b>	<b>20.05</b>	<b>11.46</b>	<b>11.60</b>	<b>11.11</b>
	<b>St. Dev.</b>	37.98	41.86	43.06	35.25	18.93	33.32	10.10	7.64	8.17	7.88
	<b>Minimum</b>	93.95	35.38	35.38	11.25	17.68	16.55	4.00	0.88	1.50	1.62
	<b>Maximum</b>	274.60	232.60	232.60	182.55	129.55	195.88	42.82	40.22	42.37	42.50
<b>No Overlap</b>	<b>Average</b>	<b>115.79</b>	<b>60.08</b>	<b>59.43</b>	<b>28.47</b>	<b>56.23</b>	<b>42.06</b>	<b>14.77</b>	<b>8.03</b>	<b>7.22</b>	<b>6.66</b>
	<b>St. Dev.</b>	38.26	44.27	44.09	28.13	19.91	32.66	11.54	6.20	6.93	6.30
	<b>Minimum</b>	57.80	2.20	2.20	7.13	9.15	1.50	1.18	0.10	0.08	0.08
	<b>Maximum</b>	238.68	193.68	193.68	128.73	86.23	155.43	72.48	39.83	41.87	34.38

More than any of the other cases, La Matanza exhibits the widest ranges of travel times, with values ranging from less than 5 minutes for some radios to as great as three hours for others. La Matanza is an interesting case, as reflected by its INDEC classification: it is part of the area traditionally considered to be “greater Buenos Aires” but, unlike some of its contemporaries (like Quilmes), it is not fully urbanized and, therefore, not entirely part of agglomerated Buenos Aires. As noted by Keeling (1996), La Matanza is one of the departments whose incomplete urbanization is explained by the fact that they “may still have land available for ranching, agriculture, or leisure (pg. 49).” A large territory, it extends from the border of CABA off towards the southwest. As of 2010, it has the largest population of any department within AGBA.

Within its expansive territory, La Matanza represents both sides of development in Buenos Aires’ urban periphery: intense urbanization to the east and agrarian lands to the west. Located along the banks of the La Matanza River, which forms its south-western boundary, there are over one million people living in its eastern half. Its citizens are primarily from the middle- and working-

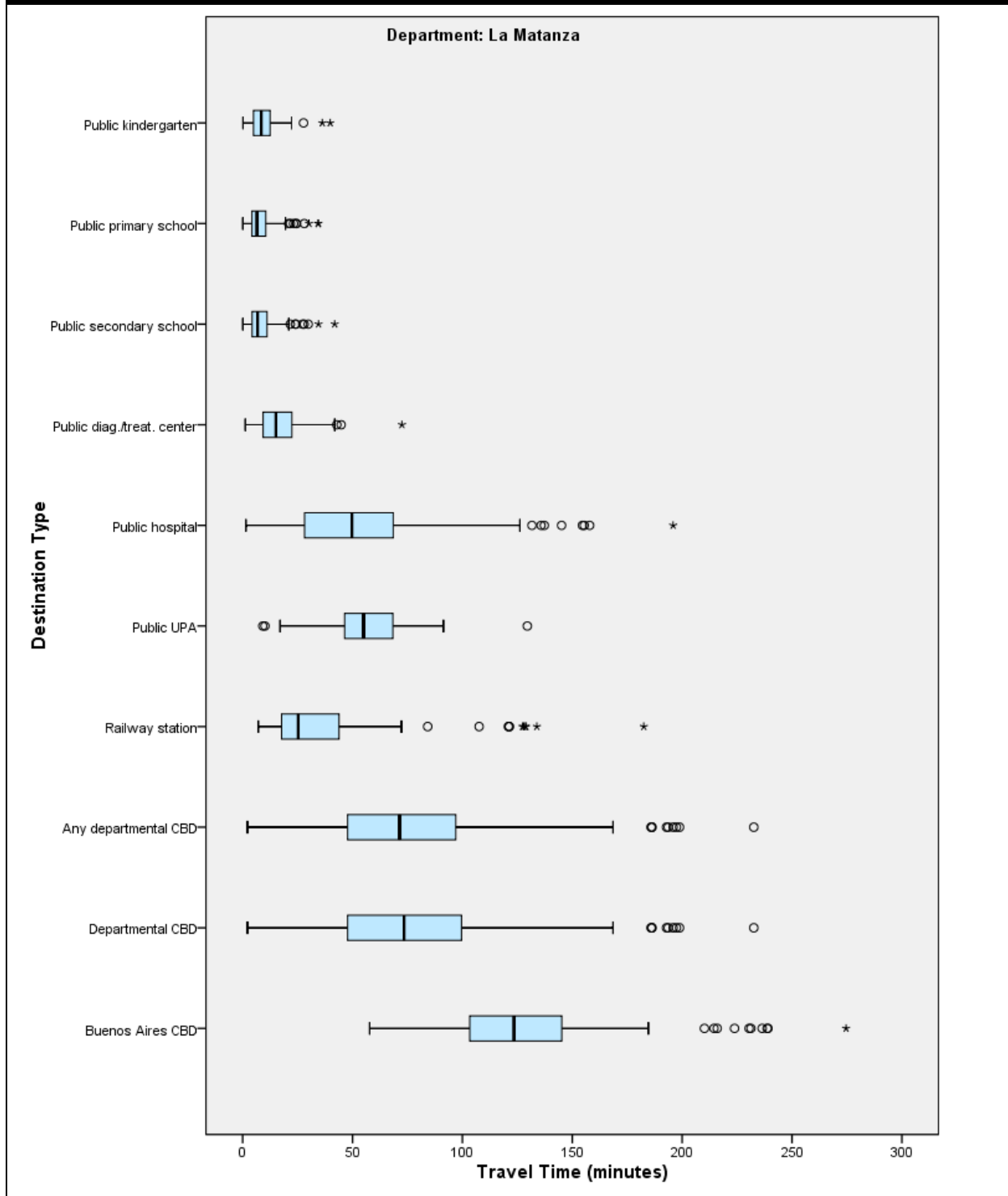


classes, with many commuting into service-sector jobs in CABA or working in one of the district's many factories and industrial centers. Keeling (1996) also remarks that the development of the eastern half of the district closely followed the railroad, with the highest densities around stations. These neighborhoods, he notes, follow a pronounced grid pattern, dispersing outward from these original nodes. The other half of the district, though, is sparsely populated, with substantial open land dedicated to agriculture and horticulture. Nevertheless, growth has been continual, population increasing from 700,000 in 1970 to 1 million in 1990 and now 1.8 million (Keeling 1996, pg. 50).

In some ways, this east-west dichotomy is reflected in the map of *asentamientos* in La Matanza (Figures 5.4a above). There are none in the northern or eastern quadrants of the cities—the most densely-populated part of the municipality where, presumably, all the vacant space has long-since been occupied by formal housing units. All its precarious settlements, meanwhile, are along the two edges of the city, far from its active railway lines and even the major national highway that cuts down the length of the department. In fact, those on the south-eastern edge of the department are up against its namesake river, an example of how they are often found on hazard-prone territory. The peripheral nature of the *asentamientos* is accentuated in La Matanza, where residents are away from the core, isolated from the employment opportunities that it presents.

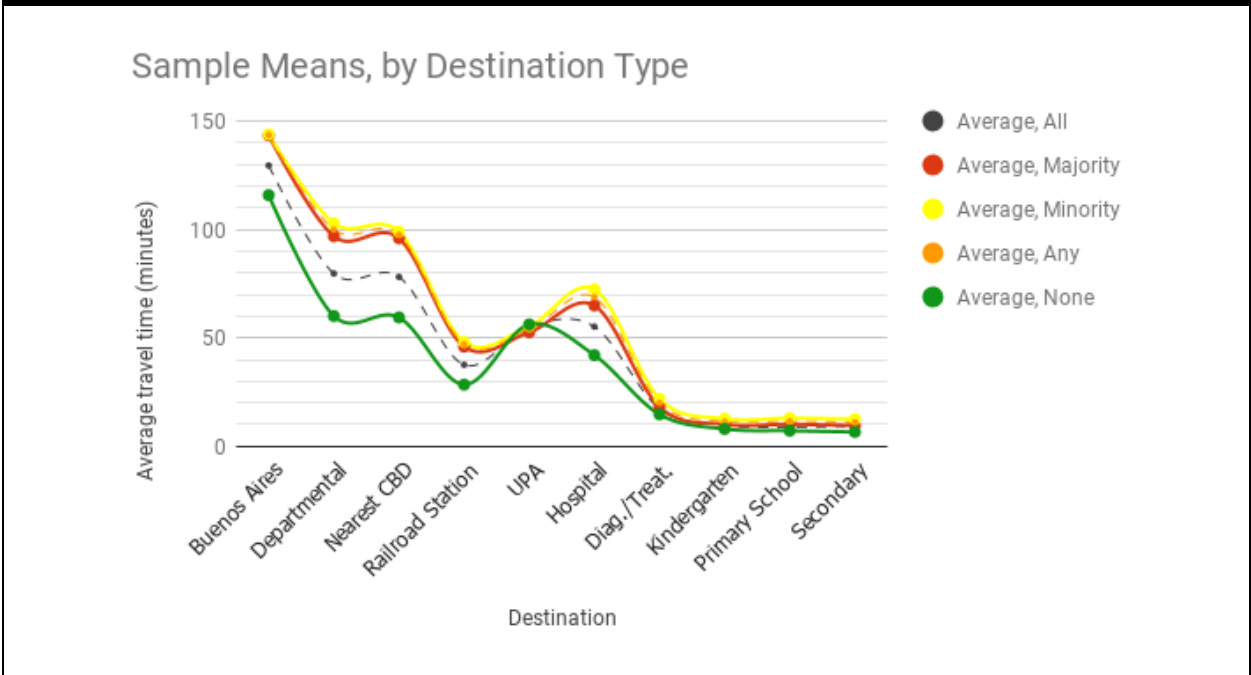
With such a large expanse, it is not surprising to see such a huge variance in travel times in La Matanza. Travel times to the central business districts, for instance, range from less than 15 minutes all the way to four hours; public hospitals displayed a similar variance whereas UPA's and railway stations, relative other features with similarly-dispersed patterns, were somewhat more compact. Illustrating the large size of the department, there are several radios requiring more than three hours' time on public transportation just to reach the municipal center of their own department! While people in these positions may not need to make this journey often (perhaps only for governmental issues requiring travel to municipal offices), this is an incredible burden, especially to someone with no other mobility options. Schools and diagnostic/treatment centers, however, featured the shortest travel times of any activity site, with few accessibility scores above sixty-minutes. All features showed numerous outliers, with right-ward skews present for all opportunity classes.

**Figure 5.4c**



Like with the prior case studies, the most interesting findings for La Matanza concern the degree of overlap between the sampled census radios and the *asentamientos*. In turn, the results are quite like those from Quilmes, with the “majority” and “minority” radios showing markedly higher expected travel times across most of the categories—twenty to thirty additional minutes of travel are required to most destinations (e.g. the CBD’s, railroad stations, and public hospitals) for people living in a radio that overlaps with an *asentamiento*. Values are higher, although by a smaller absolute margin, for those same people when traveling to school or diagnostic/treatment center. The only exceptions, curiously, are travel times to urgent care centers, which are actually *longer* for non-*asentados*. These results show initial evidence to confirm the project hypothesis.

**Figure 5.4d**



The statistical tests for La Matanza provide overwhelming evidence of access inequalities in the department. The ANOVA tests produced very highly-significant (99% confidence) F-scores for eight of the ten destination categories and a highly-significant statistic (95%) for another. The outliers are the urgent care units, which showed little-to-no difference between the three study samples: majority-, minority-, and no-overlap census radios.

Consulting the results of the t-tests indicates that individual differences-of-means contributing to the high ANOVA scores are those between those radios of “any” overlap (whether minority *or* majority) and “none”; the t-tests for “any-none” and “minority-none” are very-highly significant (99%) for all of the destination categories. For hospitals, CBDs, and railroad stations, the “majority-none” distinction was also at least highly-significant (95%+); the “majority-minority” difference was insignificant across the board.

**Table 5.4e**

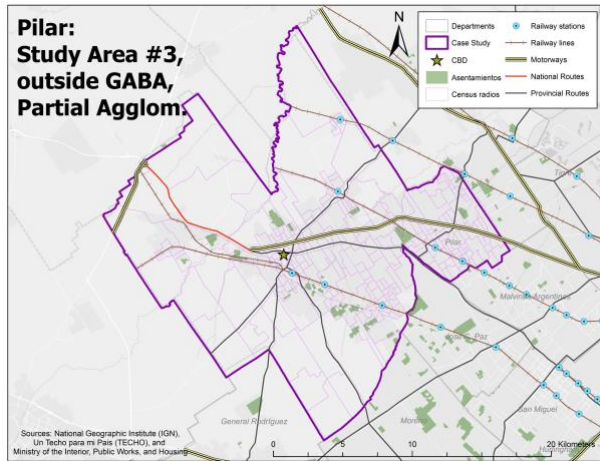
Samples of Comparison	Statistic	Buenos Aires CBD	Departmental CBD	Nearest CBD	Railroad Station	UPA	Hospital	Diag./Treat.	Kindergarten	Primary School	Secondary School
<b>ANOVA</b>											
<b>Majority, Minority, None</b>	F-statistic	7.792	12.684	11.194	5.046	0.331	10.039	4.464	4.776	7.162	6.123
	p(F)	0.001	0.000	0.000	0.008	0.719	0.000	0.014	0.010	0.001	0.003
<b>T-Tests</b>											
<b>Any vs. None</b>	t-statistic	<b>3.965</b>	<b>5.025</b>	<b>4.743</b>	<b>3.179</b>	<b>-0.597</b>	<b>4.402</b>	<b>2.663</b>	<b>3.167</b>	<b>3.415</b>	<b>2.703</b>
	p(t)	0.000	0.000	0.000	0.002	0.552	0.000	0.009	0.002	0.001	0.008
	Mean diff.	27.830	39.875	38.071	18.632	-2.137	26.741	5.273	4.379	4.448	3.435
	St. Err. (diff.)	7.020	7.936	8.026	5.861	3.579	6.074	1.980	1.383	1.303	1.271
<b>Majority vs. Minority/None</b>	t-statistic	<b>2.115</b>	<b>2.234</b>	<b>2.315</b>	<b>1.539</b>	<b>-0.797</b>	<b>1.675</b>	<b>0.436</b>	<b>0.621</b>	<b>0.655</b>	<b>0.353</b>
	p(t)	0.037	0.027	0.022	0.126	0.427	0.097	0.664	0.536	0.513	0.725
	Mean diff.	18.240	22.510	23.325	10.943	-3.349	12.760	1.025	1.031	1.031	0.533
	St. Err. (diff.)	8.626	10.077	10.076	7.109	4.201	7.620	2.352	1.660	1.574	1.511
<b>Majority vs. Minority</b>	t-statistic	<b>-0.046</b>	<b>-0.543</b>	<b>-0.266</b>	<b>-0.233</b>	<b>-0.567</b>	<b>-0.851</b>	<b>-1.445</b>	<b>-1.353</b>	<b>-1.439</b>	<b>-1.344</b>
	p(t)	0.964	0.589	0.791	0.816	0.573	0.398	0.154	0.181	0.156	0.184
	Mean diff.	-0.462	-6.007	-3.032	-2.179	-2.838	-7.473	-3.734	-2.833	-2.901	-2.635
	St. Err. (diff.)	10.069	11.067	11.408	9.340	5.005	8.778	2.584	2.094	2.017	1.960
<b>Minority vs. None</b>	t-statistic	<b>3.216</b>	<b>4.332</b>	<b>3.955</b>	<b>2.856</b>	<b>-0.179</b>	<b>4.173</b>	<b>2.842</b>	<b>3.603</b>	<b>3.980</b>	<b>3.223</b>
	p(t)	0.002	0.000	0.000	0.005	0.859	0.000	0.006	0.001	0.000	0.002
	Mean diff.	28.053	42.775	39.535	19.684	-0.766	30.348	7.140	5.795	5.899	4.752
	St. Err. (diff.)	8.724	9.874	9.996	6.891	4.291	7.272	2.512	1.608	1.482	1.474
<b>Majority vs. None</b>	t-statistic	<b>3.214</b>	<b>3.737</b>	<b>3.708</b>	<b>2.499</b>	<b>-0.784</b>	<b>3.003</b>	<b>1.399</b>	<b>1.771</b>	<b>1.905</b>	<b>1.395</b>
	p(t)	0.002	0.000	0.000	0.014	0.435	0.004	0.165	0.080	0.060	0.166
	Mean diff.	27.591	36.768	36.503	17.504	-3.604	22.876	3.405	2.962	2.998	2.117
	St. Err. (diff.)	8.584	9.840	9.844	7.005	4.595	7.618	2.434	1.673	1.573	1.518

These results provide strong evidence in favor of transit-based access inequalities within La Matanza department. For nine of ten activity sites, census radios containing some proportion of an *asentamiento* displayed significantly longer travel times. When it comes to accessibility vis-à-vis CBD's, public hospitals, and railway stations, some of the most significant gaps are for those radios that most likely represented the disaffected *asentados* (i.e. majority overlap). La Matanza's geography may inherently provide for longer travel times but it seems that the longest of those trips are still being made by some of its most marginalized people; the current transportation system appears to be neglecting in its responsibility to effectively serve the mobility needs of all.

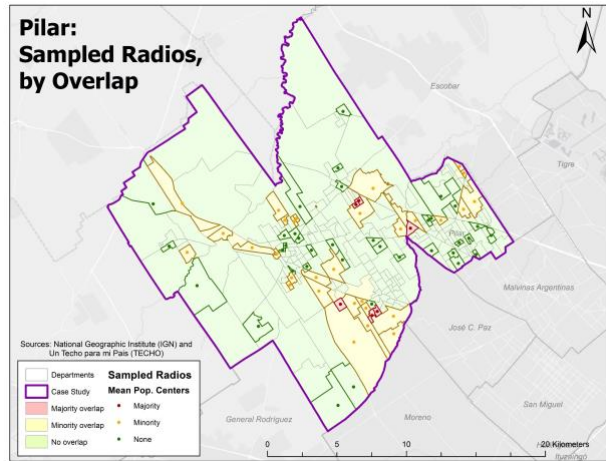
#### Part VI(b.3): Pilar – Partially-urban, Non-GABA

The last of the three case studies is Pilar, located to the northwest of CABA. For reference, the original maps of Pilar and its asentamientos are shown below.

**Figure 5.5a-i**



**Figure 5.5a-ii**



**Figure 5.5b**

Sample	Statistic	Buenos Aires CBD	Departmental CBD	Nearest CBD	Railroad Station	UPA	Hospital	Diag./Treat.	Kindergarten	Primary School	Secondary School
<b>All</b>	<b>Average</b>	<b>134.29</b>	<b>59.72</b>	<b>49.11</b>	<b>29.47</b>	<b>106.14</b>	<b>41.47</b>	<b>17.90</b>	<b>15.94</b>	<b>16.75</b>	<b>15.85</b>
	<b>St. Dev.</b>	33.99	33.21	20.84	12.42	39.87	16.72	11.12	11.62	12.33	11.97
	<b>Minimum</b>	95.67	3.00	3.00	7.45	35.42	10.35	2.65	1.68	1.67	0.77
	<b>Maximum</b>	240.60	148.70	115.98	54.27	188.53	111.38	57.13	57.50	54.92	50.63
<b>Majority</b>	<b>Average</b>	<b>117.55</b>	<b>78.77</b>	<b>57.38</b>	<b>26.24</b>	<b>91.94</b>	<b>48.42</b>	<b>10.14</b>	<b>8.81</b>	<b>12.44</b>	<b>11.14</b>
	<b>St. Dev.</b>	10.34	42.08	9.60	6.41	37.45	7.56	3.54	3.42	5.42	5.72
	<b>Minimum</b>	104.12	45.38	45.38	16.13	48.70	37.55	6.55	3.60	6.77	5.97
	<b>Maximum</b>	134.20	133.73	69.77	33.78	128.23	58.45	14.72	13.68	21.40	21.43
<b>Minority</b>	<b>Average</b>	<b>144.14</b>	<b>55.02</b>	<b>50.86</b>	<b>33.24</b>	<b>106.51</b>	<b>45.70</b>	<b>18.49</b>	<b>15.96</b>	<b>16.75</b>	<b>17.13</b>
	<b>St. Dev.</b>	38.32	21.46	15.11	12.53	47.37	10.80	10.30	9.20	11.43	12.19
	<b>Minimum</b>	105.98	19.00	19.00	12.30	35.42	18.90	2.65	2.40	1.67	1.77
	<b>Maximum</b>	240.60	105.37	77.77	54.27	188.53	63.27	43.05	41.25	42.28	49.07
<b>Any Overlap</b>	<b>Average</b>	<b>138.82</b>	<b>59.62</b>	<b>52.12</b>	<b>31.93</b>	<b>103.60</b>	<b>46.23</b>	<b>17.09</b>	<b>14.77</b>	<b>16.03</b>	<b>16.13</b>
	<b>St. Dev.</b>	36.05	27.47	14.32	11.87	45.35	10.20	9.98	8.89	10.73	11.53
	<b>Minimum</b>	104.12	19.00	19.00	12.30	35.42	18.90	2.65	2.40	1.67	1.77
	<b>Maximum</b>	240.60	133.73	77.77	54.27	188.53	63.27	43.05	41.25	42.28	49.07
<b>No Overlap</b>	<b>Average</b>	<b>129.75</b>	<b>59.82</b>	<b>46.09</b>	<b>26.85</b>	<b>108.69</b>	<b>36.72</b>	<b>18.76</b>	<b>17.11</b>	<b>17.46</b>	<b>15.57</b>
	<b>St. Dev.</b>	31.76	38.57	25.68	12.65	34.12	20.44	12.31	13.85	13.87	12.55
	<b>Minimum</b>	95.67	3.00	3.00	7.45	50.87	10.35	4.32	1.68	2.22	0.77
	<b>Maximum</b>	203.00	148.70	115.98	53.97	187.65	111.38	57.13	57.50	54.92	50.63

Travel time variance in Pilar falls between that for Quilmes and La Matanza, an interesting finding given that Pilar is not one of the departments traditionally considered part of Greater Buenos Aires and is primarily suburban with large areas still dedicated to agriculture. The ranges for the travel times to the CBD's, public hospitals, and railway stations were not nearly as large as those for La Matanza; nearly all trips to destinations within Pilar were under two hours. Like the other two study areas, trips to schools and diagnostic/treatment centers were relatively invariant and short, with few trips over an hour. The biggest difference between Pilar and the other study sites, however, was the distribution of travel times to the urgent care centers; values are all greater than forty-five minutes, with some past three hours—hardly useful for urgent care! Nevertheless, few of the destinations display outliers even if all the distributions are again skewed to the right.

Observing the history of Pilar, however, makes these initial results somewhat surprising. Pilar is perhaps the most unique of the three case studies, especially from an urban-geographic perspective. Frequently cited as the epitome of socio-economic spatial inequality in Buenos Aires, Pilar is home to both ends of the region's socioeconomic spectrum: wealthy gated communities and lower-class settlements. After the upgrade of its highway during the 1990s, Pilar saw a boom in the construction of gated communities. Built on formerly-agricultural land, upper- and middle-income *porteños* moved into these North American suburb-style developments, immense growth came to a municipality that had previously been nothing more than a few small towns around railway stations at the far-end of one of Buenos Aires' commuter railway lines.

As more suburbs have been constructed, other types of low-density development have followed: industrial plants, office parks, shopping centers, and private universities are but a few examples. While the old urban centers remained in place—clustered along the rail lines—major developments crowded along the highways, where commuters would stop along their way to and from work in the city. According to Keeling (1996), Pilar experienced 50% growth between 1980 and 1991; it was just 47,000 in 1970 and is now over 200,000 (pg. 46; INDEC 2010). While these developments, all private, provide their inhabitants with basic utilities, the communities outside of their walls have seen little benefit, with many lacking clean water, telephone service, and sewerage. A previous table noted now Pilar had the lowest rates of service provision of the three study areas, despite some of the highest rates of car ownership and university education. In fact, several *asentamientos* have appeared nearby to these developments as housing for workers seeking low-skill, low-income employment in the gated communities and other service-sector jobs that have followed families into Buenos Aires' new "suburbs".

In terms of transportation, all the newest developments are automobile-centric, with large distances separating housing units, shopping centers, and employment sites (Blanco 2014). With most of the development taking place along motorway exits, and away from the handful of small towns along Pilar's railway that mark its historic urban center, even residents of the department's traditionally most-developed zones face prolonged journeys. Bus services, along with the commuter rail line, are low-quality and infrequent; Blanco and Apaolaza (2018) noted that automobile licenses are especially uncommon among Pilar residents from the lowest income bracket, suggesting a reliance on these unreliable modes of travel. Walking and biking are non-options to many given the prioritization of automobiles on local streets and the great distances separating low-income housing from the entrances and driveways of the dispersed, low-density gated communities (De Duren 2006; Blanco 2014). Photos from some of these developments, as well as other parts of Pilar, are shown below.



**Figure 5.5c-i – Gated community, “Villa del lago”**



**Figure 5.5c-ii – Highway exit commercial center**



**Figure 5.5c-iii – “Pilar Villages”**



**Figure 5.5c-iv – Strip mall development in Pilar**



**Figure 5.5c-v – Industrial plant in Pilar, along highway**



**Figure 5.5c-vi – Large private health university, Pilar**





**Figure 5.5c-vii – Public bus, Pilar**



**Figure 5.5c-viii – Gated community, “La Delfina”**



**Figure 5.5c-ix – Car along arterial road, Pilar**



**Figure 5.5c-x – Bus top along arterial road, Pilar**



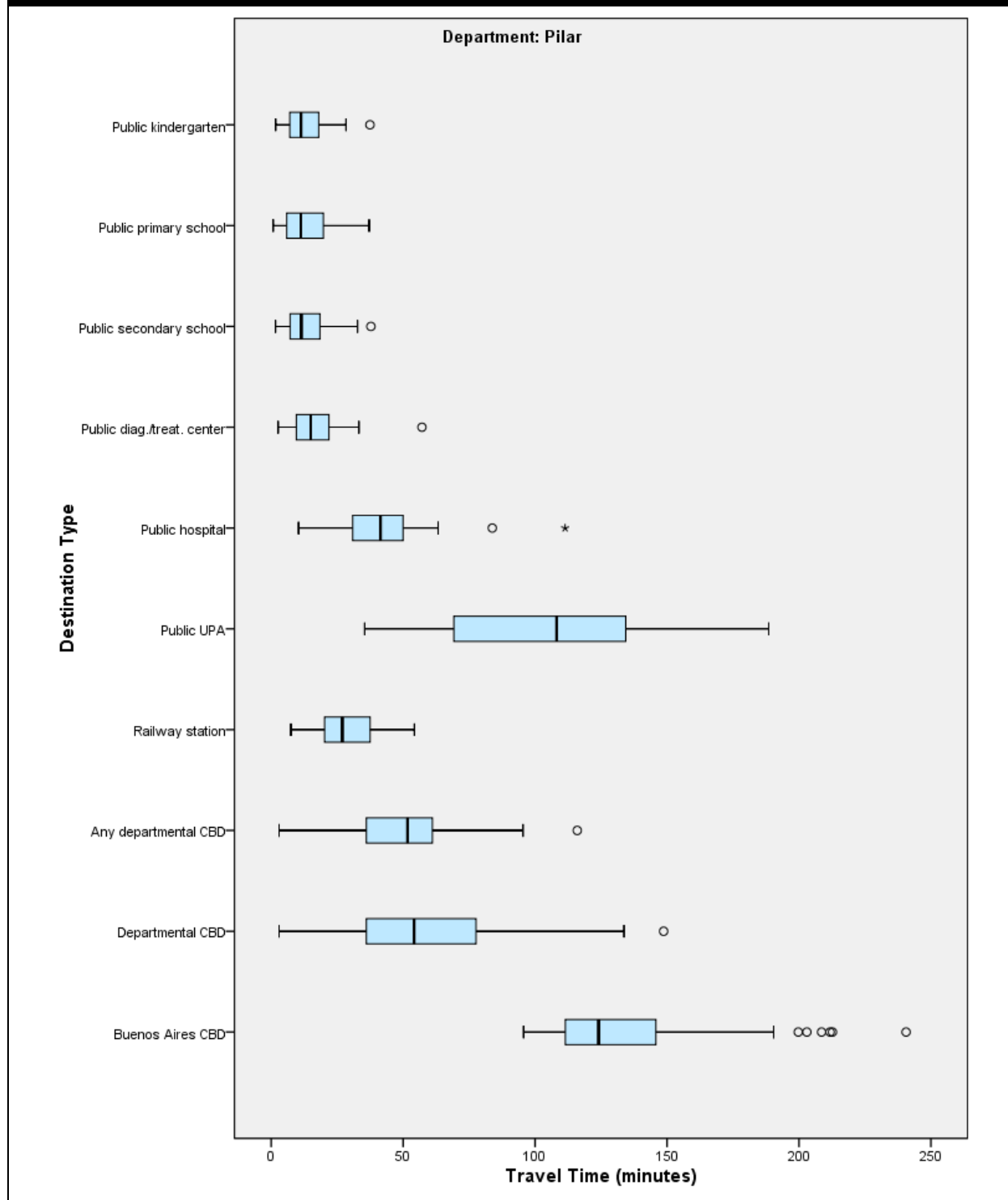
**Figure 5.5c-xi – Mercedes-Benz dealership in what appears to be a former church, Pilar**



**Figure 5.5c-xii – New commercial development, along highway between CABA and Pilar**

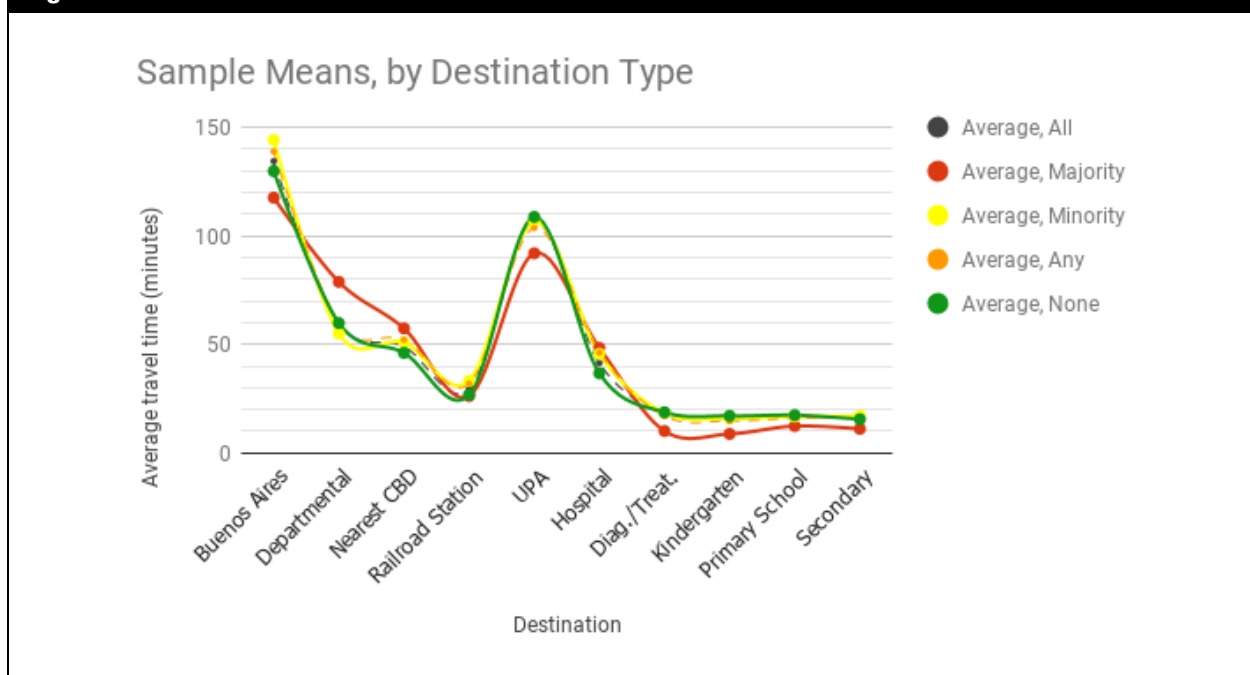


**Figure 5.5d**



When it comes to the differences in travel times between the different census radios in Pilar, the results are quite interesting and (at least without context) unexpected. Those radios with no overlap enjoy *worse* transit-based access for six of the ten destinations (Buenos Aires CBD, UPA's, diagnostic/treatment centers, and all schools). Radios with "majority" overlap have longer travel times to only two destination categories (departmental CBD and nearest CBD) and are essentially equal with the other two categorizations for railroad stations and public hospitals. The radios with "minority" overlap more closely follow the "no" overlap radios, with similar accessibility values in nearly all categories (there were, after all, only six majority-overlap radios in Pilar, by far the smallest total among the study areas). Given the results of the prior two case studies, these results are initially surprising—how could the *asentados* have *better* access than their neighbors? Considering the department's socio-economic geography, however, explains these results, as well as those produced by the corresponding difference-of-means tests, quite easily.

**Figure 5.5e**



Looking at the test results in **Table 5.5f** below, we see that *none* of the ten ANOVA tests returned very-highly- or highly-significant (99%, 95%) F-statistics; only one, public hospitals, returned a value of moderate-significance (90%). This contrasts with the other study areas, as well as AGBA overall, which all showed differences between the majority-, minority-, and no-overlap samples in their respective territories.

**Table 5.5f**

Samples of Comparison	Statistic	Buenos Aires CBD	Departmental CBD	Nearest CBD	Railroad Station	UPA	Hospital	Diag./Treat.	Kindergarten	Primary School	Secondary School
<b>ANOVA</b>											
<b>Majority, Minority, None</b>	F-statistic	2.075	1.248	0.882	2.146	0.434	2.715	1.632	1.327	0.642	0.419
	p(F)	0.135	0.295	0.419	0.126	0.650	0.074	0.203	0.272	0.529	0.659
<b>T-Tests</b>											
<b>Any vs. None</b>	t-statistic	<b>1.034</b>	<b>-0.024</b>	<b>1.142</b>	<b>1.631</b>	<b>-0.491</b>	<b>2.318</b>	<b>-0.622</b>	<b>-0.489</b>	<b>0.200</b>	<b>-0.855</b>
	p(t)	0.306	0.981	0.259	0.108	0.626	0.025	0.536	0.626	0.842	0.396
	Mean diff.	9.068	-0.208	6.031	5.079	-5.086	9.508	-1.660	-1.429	0.569	-2.345
	St. Err. (diff.)	8.772	8.505	5.280	3.115	10.361	4.102	2.671	2.922	2.840	2.743
<b>Majority vs. Minority/None</b>	t-statistic	<b>-2.911</b>	<b>1.493</b>	<b>1.023</b>	<b>-1.142</b>	<b>-0.919</b>	<b>1.073</b>	<b>-1.817</b>	<b>-0.892</b>	<b>-1.008</b>	<b>-1.588</b>
	p(t)	0.008	0.141	0.310	0.280	0.362	0.287	0.074	0.375	0.317	0.117
	Mean diff.	-18.594	21.091	9.155	-3.576	-15.781	7.698	-8.487	-4.696	-5.142	-7.783
	St. Err. (diff.)	6.388	14.124	8.949	3.132	17.179	7.173	4.671	5.265	5.102	4.901
<b>Majority vs. Minority</b>	t-statistic	<b>-2.991</b>	<b>1.341</b>	<b>1.001</b>	<b>-1.950</b>	<b>-0.698</b>	<b>0.582</b>	<b>-1.942</b>	<b>-1.416</b>	<b>-1.859</b>	<b>-3.276</b>
	p(t)	0.006	0.231	0.325	0.070	0.491	0.565	0.060	0.176	0.082	0.003
	Mean diff.	-26.586	23.751	6.514	-7.000	-14.576	2.727	-8.344	-4.308	-5.997	-7.154
	St. Err. (diff.)	8.888	17.707	6.508	3.589	20.883	4.688	4.296	3.042	3.227	2.184
<b>Minority vs. None</b>	t-statistic	<b>1.509</b>	<b>-0.590</b>	<b>0.820</b>	<b>1.894</b>	<b>-0.189</b>	<b>1.983</b>	<b>-0.094</b>	<b>-0.224</b>	<b>0.512</b>	<b>-0.390</b>
	p(t)	0.137	0.558	0.416	0.064	0.851	0.052	0.925	0.823	0.610	0.698
	Mean diff.	14.386	-4.805	4.770	6.392	-2.170	8.980	-0.270	-0.711	1.568	-1.153
	St. Err. (diff.)	9.534	8.150	5.814	3.375	11.501	4.529	2.858	3.169	3.062	2.959
<b>Majority vs. None</b>	t-statistic	<b>-1.701</b>	<b>1.087</b>	<b>1.052</b>	<b>-0.174</b>	<b>-1.081</b>	<b>1.372</b>	<b>-1.686</b>	<b>-0.868</b>	<b>-0.843</b>	<b>-3.079</b>
	p(t)	0.101	0.285	0.300	0.864	0.287	0.179	0.100	0.391	0.404	0.004
	Mean diff.	-12.201	18.946	11.284	-0.608	-16.746	11.707	-8.614	-5.019	-4.429	-8.307
	St. Err. (diff.)	7.173	17.436	10.726	3.490	15.486	8.534	5.110	5.782	5.251	2.698

The independent-sample t-tests add little evidence to support the overarching hypothesis that there are inequalities in transit-facilitated access in the study areas. In fact, only four tests returned highly-significant values, half of which were between majority- and minority-overlap radios. The fact that majority-overlap radios were on one side of some of the more significant test adds some credence to possibility inequalities in access to Buenos Aires' CBD and public secondary schools, although neither destination's travel times returned a significant F-statistic. A similarly lukewarm conclusion can be drawn for access to public hospitals, which only display

moderately- and highly-significant differences vis-à-vis its “minority-overlap” radios, which are less likely to fully represent *asentados* as their “majority-overlap” counterparts.

These results—when only considered alongside the results of the other two case studies—are somewhat surprising. However, Pilar’s socio-territorial configuration provides significant context. For one, the sample of no-overlap radios includes many that are spatially distant from Pilar’s main corridors of development, whether the older, railroad-centric town centers or the new highway-centric industrial/commercial centers. As a result, they naturally have longer travel times than even the *asentamientos*, which are (relatively) more centrally-located. Furthermore, these peripheral locations are typically occupied by either farms or, as is increasingly common, gated communities, neither of which requires transit services. In fact, the latter are intensively automobile-centric and rarely have transit access (Blanco 2014). In fact, null values were returned for transit-based travel times from many of those radios along the edge, suggesting that the average travel times for Pilar’s “no overlap” radios may, in fact, be an *under-estimation*.

While it would be easy to suggest that it is unimportant that transit access is poor in these areas, since their residents have cars to cover these distances (let alone the fact that families in gated suburbs are not likely to be attending public schools or healthcare sites in the first place), it is important to remember that these gated communities are still employment *destinations* for many, especially people from Pilar’s *asentamientos* (De Duren 2006). While this project only simulates trips that originate from people’s homes, it still has implications for trips in the other direction, especially in these unique cases where “home-sites” double as sites of employment. The fact that transit does not service these neighborhoods in a time-efficient manner tells us that arriving at work would be a struggle for those without a car.

This is a clear example of Blanco and Apaolaza’s (2018) argument that accessibility is just as much as about territory as it is about socio-economics; the same transportation system that advantages Pilar’s drivers disadvantages it carless. It also invokes Handy and Neimeier’s plea to carefully consider the measure of travel impedance and destination types; while these transit-access time estimates could be compared with driving times to those destinations preferred by gated community residents, it would be meaningless for *asentados*. All the while, these travel times would, at a minimum, provide context to the transit-based access scores here. It would reflect the real disparity in accessibility that exists between Pilar’s disparate communities. That an *asentado* can arrive in Buenos Aires’ CBD in twelve-minutes faster than the resident of a non-overlapping radio means little when the latter group can make the same trip in 45 minutes in his or her car.

While the statistics seem to show that there is relative parity in transit-facilitated accessibility patterns in Pilar, deeper considerations suggest that inequalities are nonetheless present. Careful consideration must be given to the travel modes and activity sites that pertain to different social groups and how accessibility looks vastly different depending on the context. While Pilar is a glaring example of disparities in mobility, and therefore accessibility, that exist within AGBA, these problems surely take other forms in Quilmes, La Matanza, CABA, and every other part of the agglomeration.