

Introduction

Project 20/20 was started in March 2008 by Brown University students with the goal of reducing carbon emissions in the greater Providence community by replacing incandescent lighting with more efficient compact fluorescent lamps (CFLs) for free of charge in low-income households. CFLs have traditionally been more difficult to market to this economic group due to higher upfront costs. These bulbs, however, use about a quarter of the energy incandescents use and ultimately save \$10-15/month in electricity costs throughout the lifetime of the bulbs.

CFLs and funds graciously donated by Wal-Mart, as well as a generous grant from the University helped jumpstart the program. With only three students doing installations in March, we have made tremendous progress with over 60 students working now and 1,800 installations completed. We are, however, only a fraction of the way to reaching our goal, aiming to complete 5,000 households by 2009. The purpose of this GIS project is to evaluate the progress of Project 20/20 and to make recommendations for the future of Project 20/20 and other similar programs that may be implemented around the country.

Questions to Answer

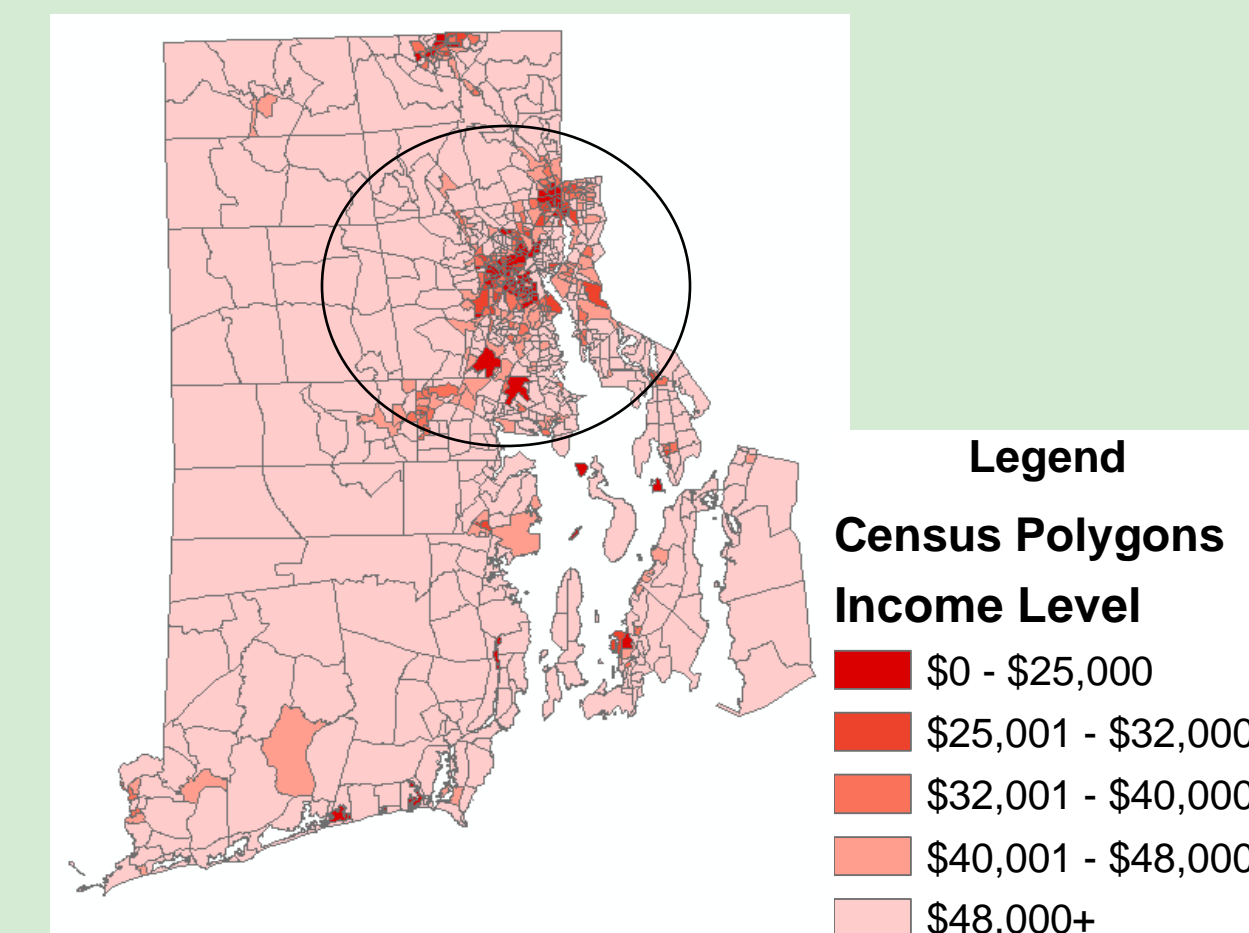
- Is 20/20 really doing installs in low-income areas? Where should we focus our efforts now?
- Why has the Spanish speaking team been the most successful? What strategies can we learn from them?
- Are there enough facilities that recycle CFLs to handle this large influx of CFLs in RI?
- Are we being as efficient as we could be?



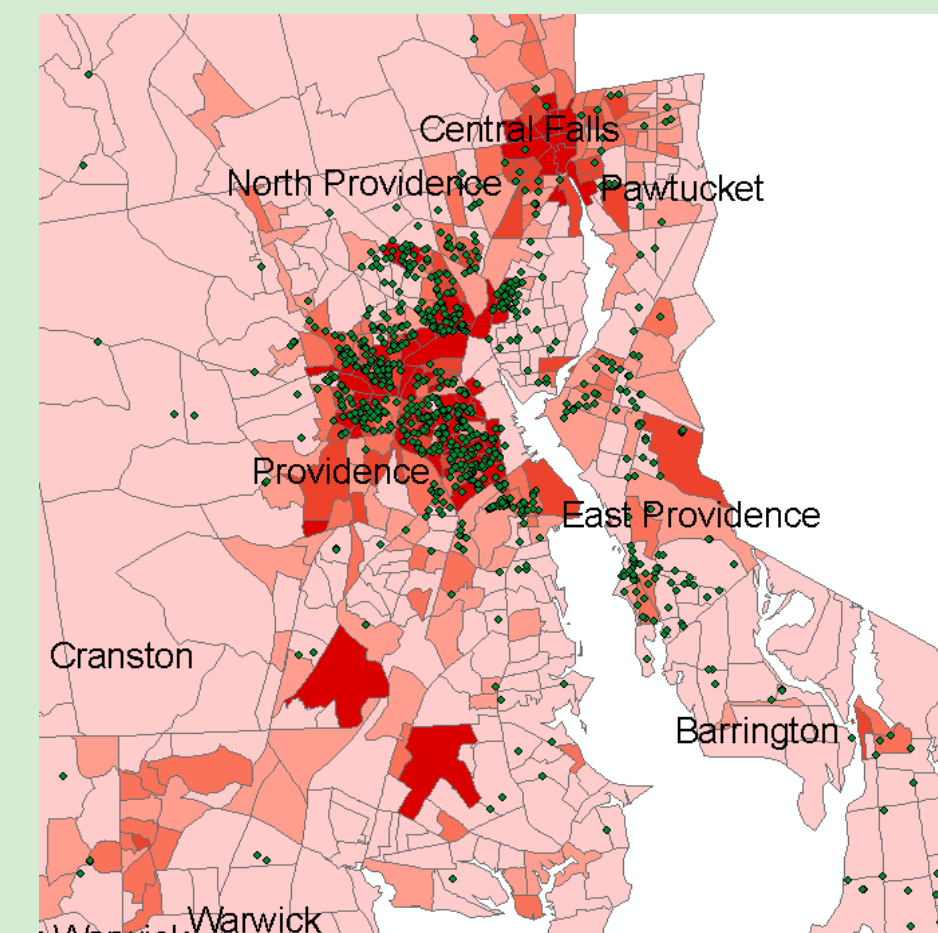
Methods

1. I first created two foundation maps using 2000 Census data. The first map classifies the block groups in Rhode Island by income level while the second map classifies the block groups by Spanish speaking households. The darker red areas symbolize the lowest income areas and the predominantly Spanish speaking areas.
2. I then gathered all of the addresses from the Project 20/20 database and separated them into four different Microsoft Excel spreadsheets – completed addresses, prospect addresses, completed Spanish households, and Spanish prospects. I then geocoded or mapped out the addresses in each group to create four different maps. I had to correct many of the addresses from the database using Google Maps and/or the White Pages before they could be properly geocoded.
3. Afterwards, I obtained a list of public housing complexes in Rhode Island, added them into an Excel spreadsheet, and geocoded these addresses as well. Many of these addresses were not matched using the geocoding process so I had to create a separate point shapefile using Google Earth to display them on the map.
4. Finally, I created a spreadsheet of all the CFL recycling centers, namely Ikea, Home Depot, and the Central Landfill in Johnston and geocoded them. I then created a separate point shapefile and placed points in areas where we do many installations. From here, I assumed that people recycling CFLs wouldn't drive more than 15 miles to the nearest center, driving an average speed of 40 mph, which translates into a maximum of 15 miles. I finally created multiple buffer zones at 5, 10, and 15 miles from these points to approximately determine how far away each recycling center is from the areas where we've installed CFLs.

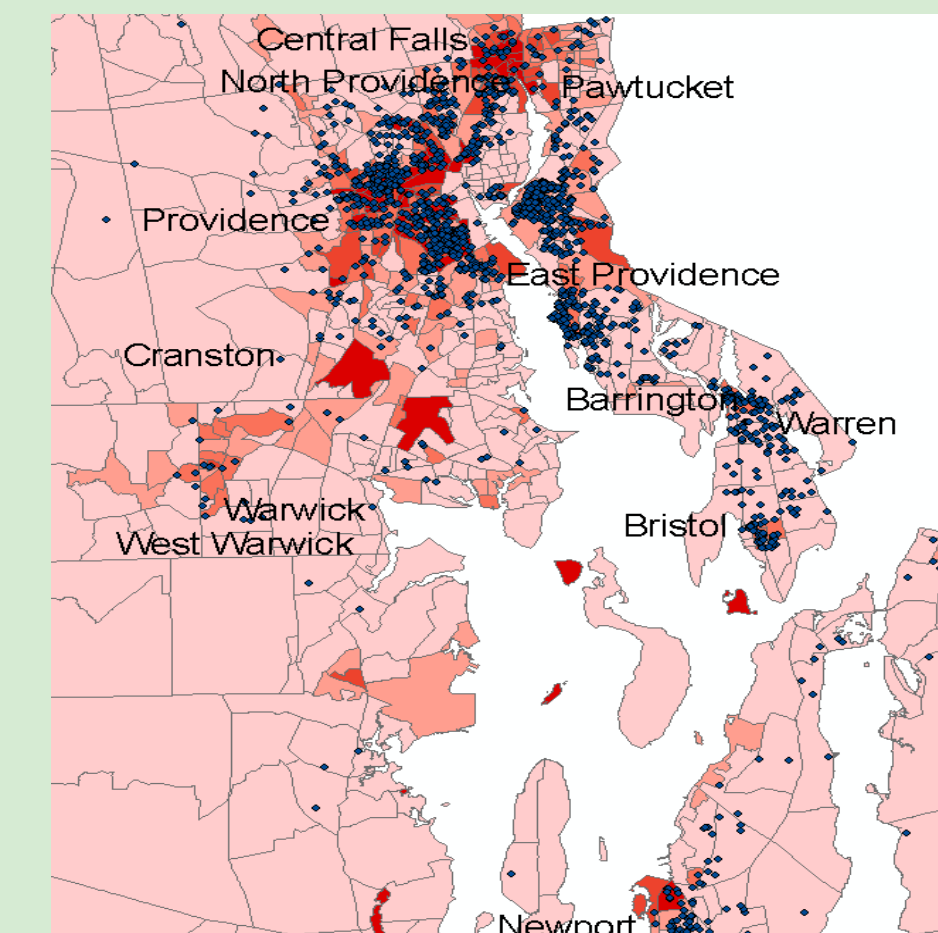
Results



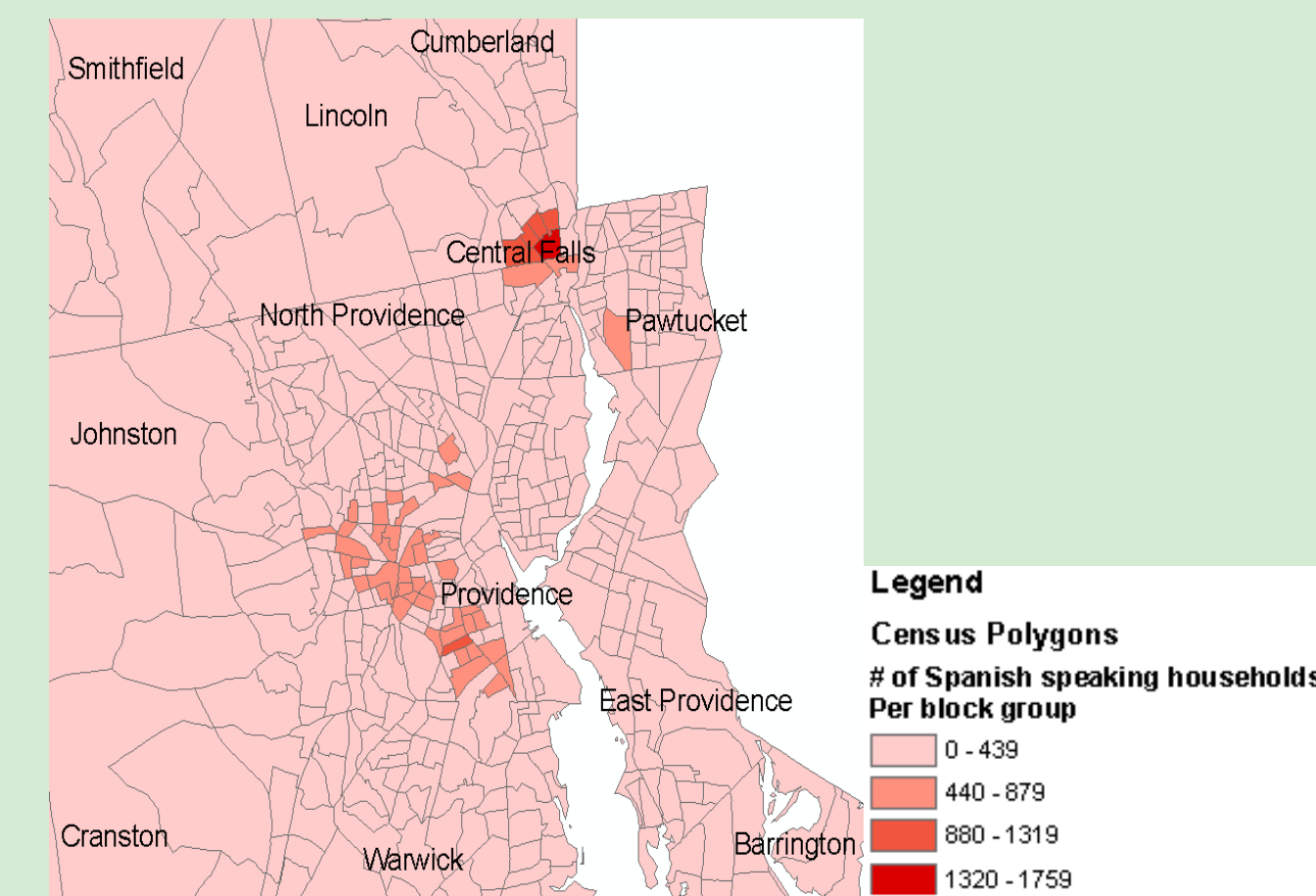
Map 1
Backdrop displaying lower income areas in darker red



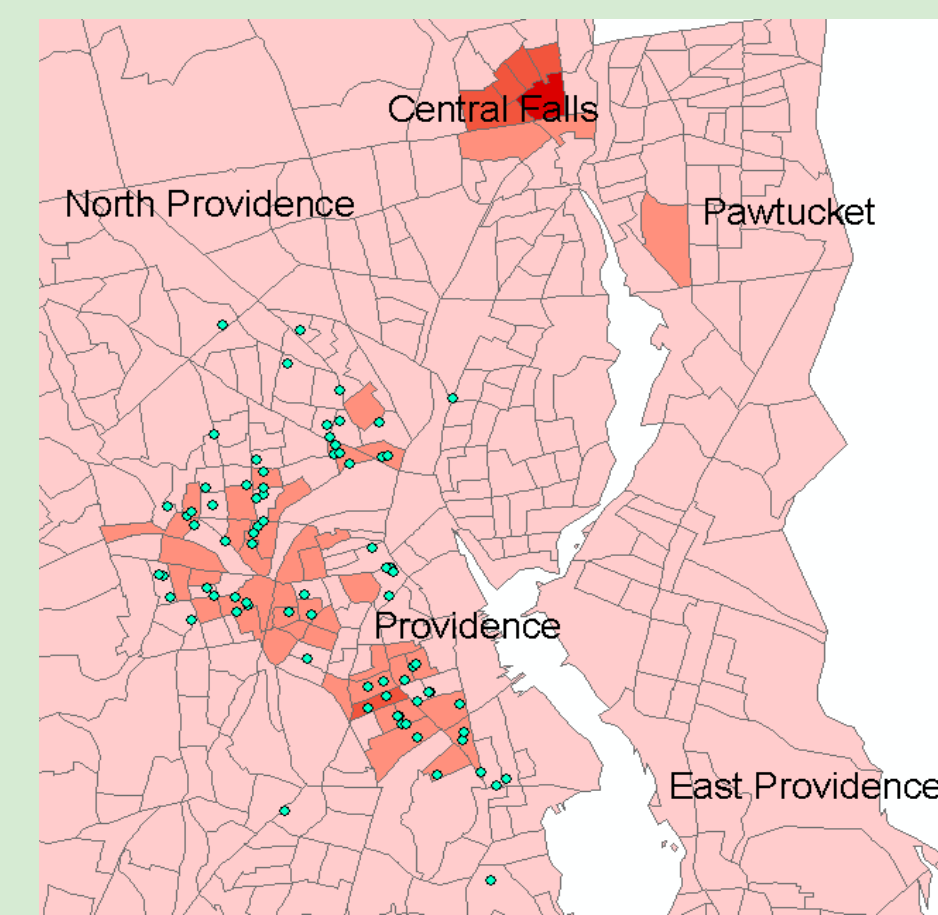
Map 1A
Close up of areas where installs have been completed



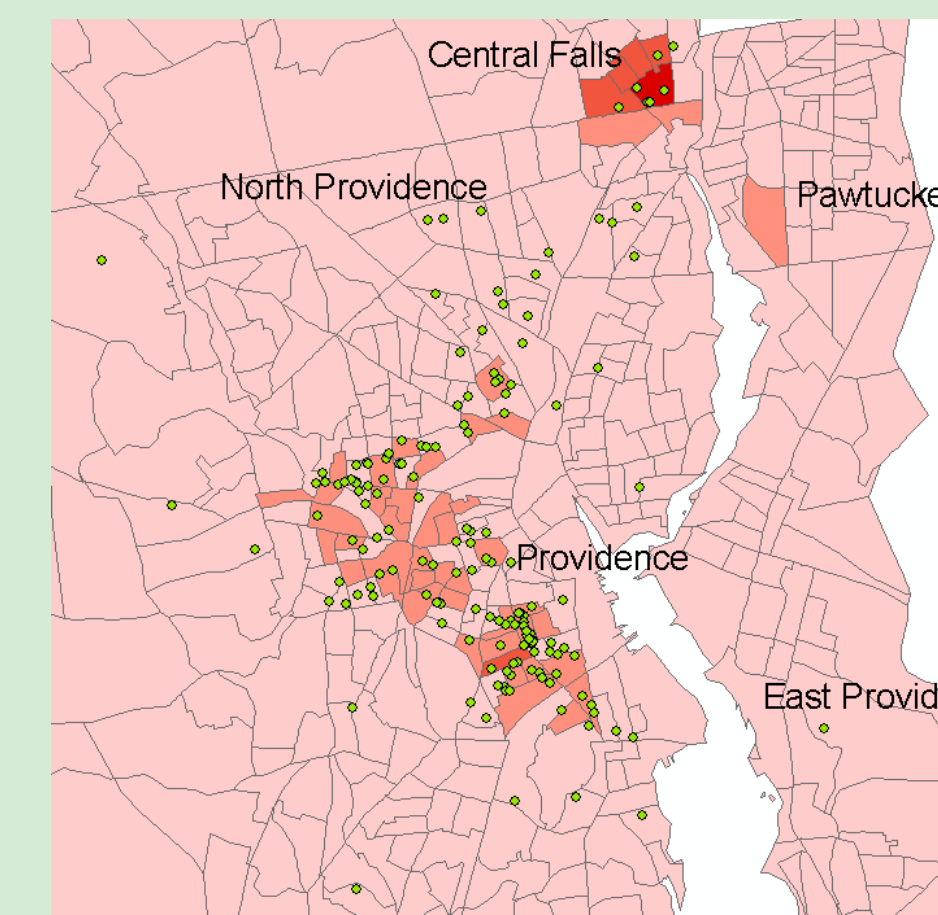
Map 1B
Close up of areas where many prospects are located



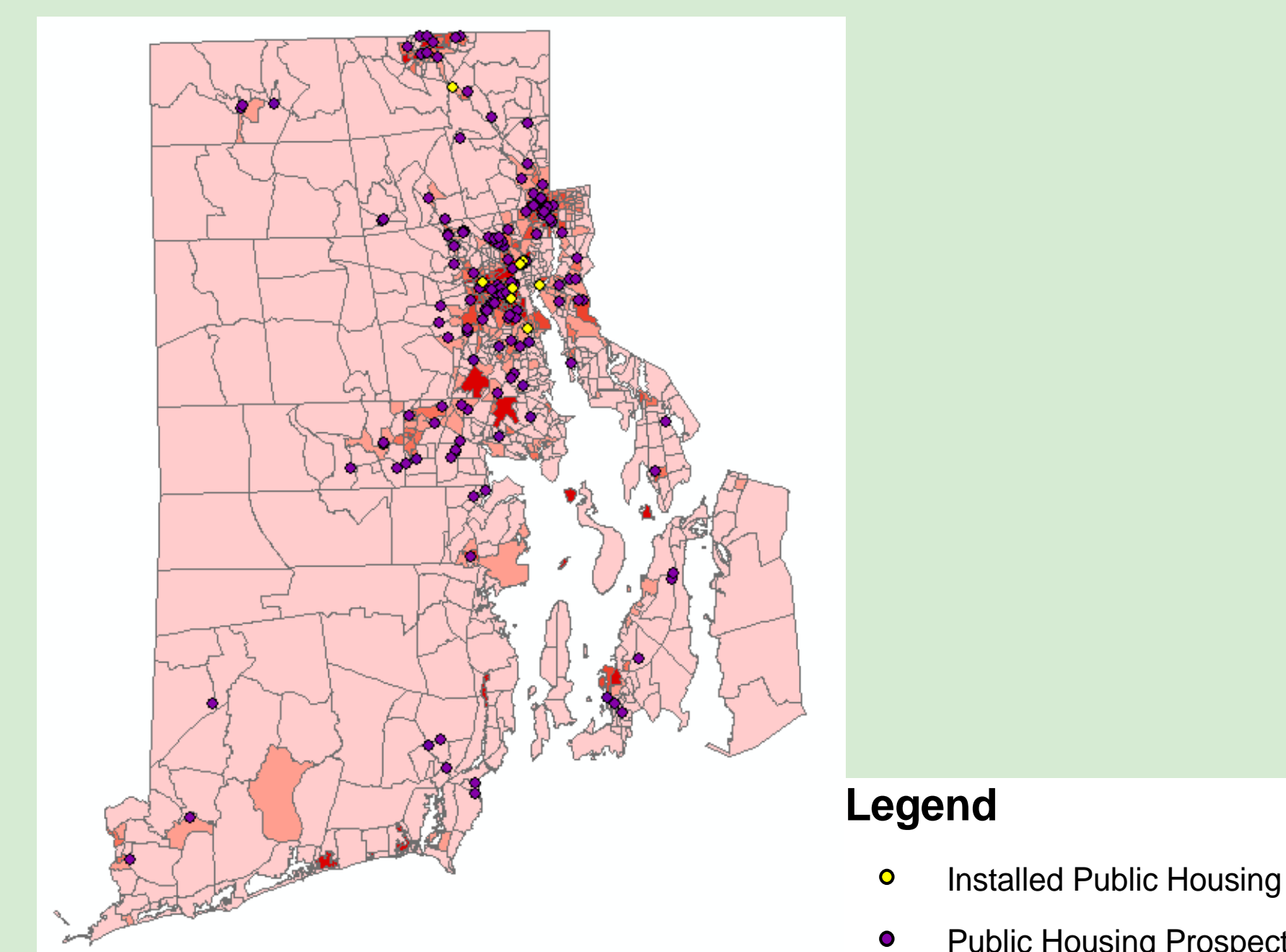
Map 2
Predominantly Spanish speaking areas only in Providence & Central Falls



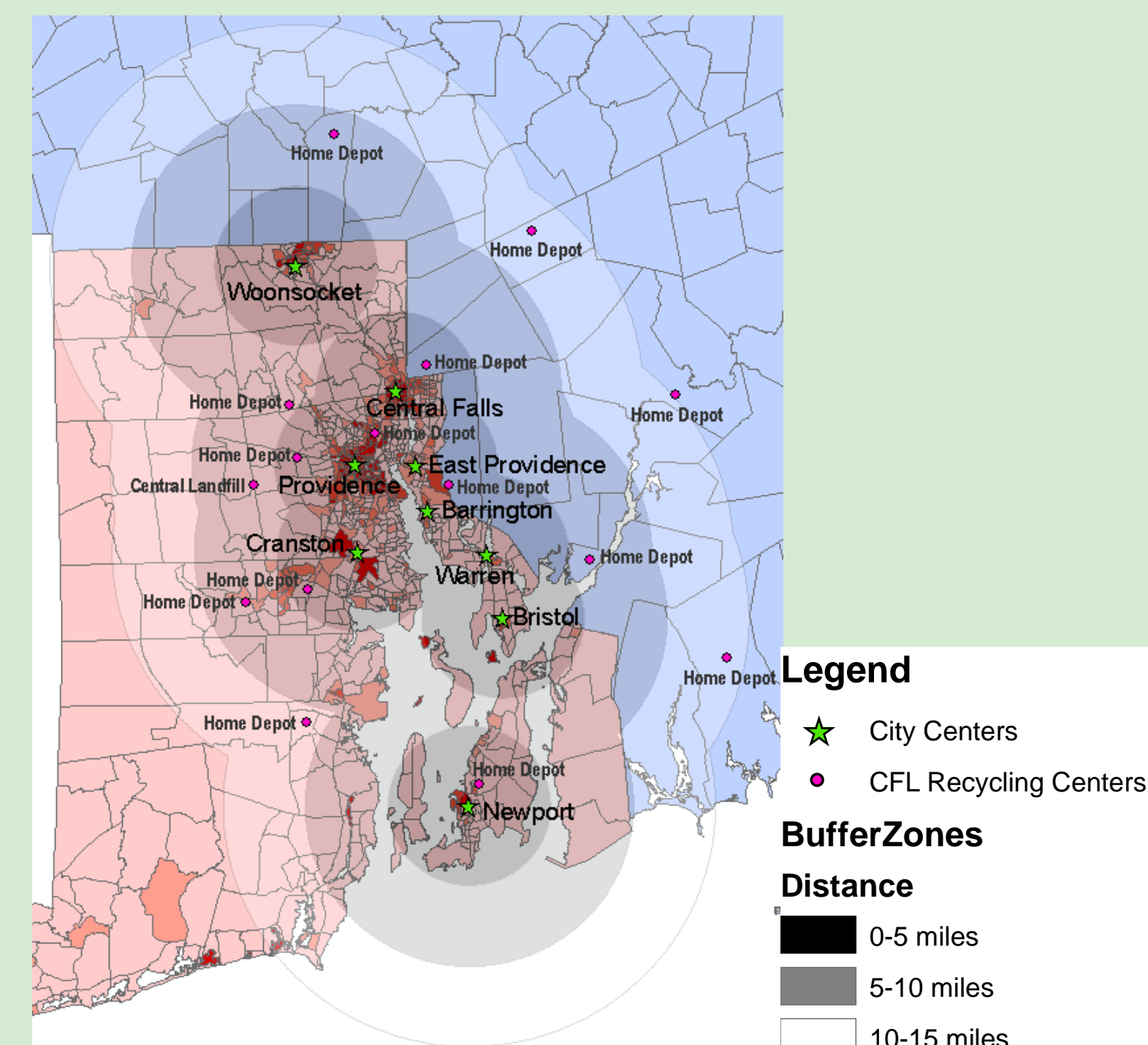
Map 2A
Completed Spanish installs



Map 2B
Spanish Prospects



Map 3
All Public Housing Complexes in RI



Map 4
CFL Recycling Centers in RI

Other Cities/Towns	# of Completed Installs	# of Prospects	Avg. Income of Area
Central Falls	2	19	\$30,254
Cranston	24	66	\$52,314
Cumberland	3	10	\$63,312
Lincoln	4	6	\$60,095
N. Providence	8	28	\$50,949
Pawtucket	38	80	\$42,326
Providence	813	619	\$42,526
Warwick	13	24	\$56,294
Woonsocket	117	130	\$39,409
Total	1022	986	\$47,272

East Bay Cities/Towns	# of Completed Installs	# of Prospects	Avg. Income of Area
Barrington	7	47	\$85,265
Bristol	27	84	\$58,451
East Providence	122	399	\$49,941
Middletown	6	27	\$59,878
Newport	22	83	\$61,701
Portsmouth	2	13	\$40,042
Warren	5	127	\$50,977
Total	191	780	\$56,105

Regular Households	\$0-\$25,000	\$25,001-\$32,000	\$32,001-\$40,000	\$40,001-\$48,000	+\$48,000
Installed	35.0%	12.4%	14.6%	13.6%	22.2%
Prospects	19.2%	10.2%	16.7%	16.6%	36.6%

Spanish Households	0-439	440-879	880-1319	1320-1759
Installed	46.5%	51.2%	2.3%	0.0%
Prospects	59.8%	35.3%	2.7%	2.2%

Recycling Centers	5 mi	10 mi	15 mi
Woonsocket	0	3	4
Central Falls	2	3	2
Providence	2	5	1
E. Providence	2	1	7
Barrington	1	3	6
Cranston	1	4	4
Warren	1	1	5
Bristol	0	2	4
Newport	1	0	1

Discussion

Key Findings

- Majority of our installations (35.0%) are in the lowest income areas (\$0-\$25,000), however our next highest percentage installations (22.2%) have been above our cut off income level (\$48,000)
- Many East Bay prospects do not fall within our target income level
- There are some extremely low income areas in Central Falls, Pawtucket, Warwick, Cranston and even Providence where we have barely done any installs in
- The Spanish team's installs are within a very concentrated area, suggesting that their success is due to geographic efficiency.
- We have barely touched upon the many public housing complexes in Rhode Island
- There is a sufficient amount of CFL recycling facilities to handle all the CFLs we have installed. There are no Ikea's, however, within 15 miles of where we've done an install.

Recommendations

- We should refrain from some of the East Bay prospects and do more outreach in Central Falls, Pawtucket, Warwick, and Cranston
- We should focus more on areas with tight-knit communities, like Spanish speaking areas or apartment complexes, rather than single zip codes. We are most efficient when we work in these types of communities.

Limitations

- 2000 Census data is dated information
- Many of the completed Spanish installations have not been accounted for due to downfalls with paperwork
- This analysis does not include a lot of the work we've done with Community Walk, a new program implemented recently which we believe has increased efficiency

Future Studies

- Evaluate the efficacy of Community walk
- Obtain information on the number of units in each public housing complex to target the those with the most units

Conclusions

- Despite firm direction at the beginning of the Project, our outreach methods have been fairly effective at targeting low-income families
- Working on the community level, rather than in one zip code generates the most installs
- Geographic efficiency is the key to reaching our goal
- We are not being as efficient as we could be, but with these recommendations we can reach peak efficiency
- This Project can be extended into other cities
- Our dedication and processes of trial and error will continue to make us more successful



Acknowledgements

Special thanks to Lynn Carlson for helping me construct all of my maps, David Fox for creating the Project 20/20 database, Libby Kimzey for providing me the information on public housing in RI, and Joey Bernhardt for advising my poster layout. I could not have done this without you!