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The Effects of the Implementation of Green Carts on New Yorkers' BMI

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by

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I. Introduction

Obesity is a major health problem in the United States. Over the last several decades, the percentage of adults suffering from obesity has increased from 15% in 1980 to 33% in 2004 (Odgen, Carrol, McDowell, & Flegal, 2007). Many factors such as an unhealthy diet, lack of exercise and genetics can contribute to obesity but several studies have linked high obesity rates to socioeconomic factors. Low income Americans are more likely to be overweight and have higher rates of diabetes than other groups.

Obesity can lead to serious health problems such as diabetes, high blood pressure, coronary disease and even cancer (Odgen, et al., 2007). In New York City, obesity and diabetes have increased rapidly. It is now one of the leading causes of hospitalization and death. In lower income neighborhoods the rate of hospitalization is almost three times higher than in wealthier neighborhoods. In 2004, 34.5 % of adults were overweight and 12.5% had diabetes. African American and Hispanic adults had the highest rate of prevalence. The mortality rate among New Yorkers living in high-level poverty neighborhoods is much higher than those who live in low-level poverty neighborhoods (Kim, Berge, & Matte, 2006). The 2012 New York City Obesity Task Force Plan to Prevent and Control Obesity noted that residents of the low income neighborhood Bedford Stuyvesant are four times more likely to die of diabetes compared to the residents of the wealthy Upper East Side neighborhood. .

Obesity is not only a health concern and problem that affects low income New Yorkers. Obesity costs the government billions of dollars. In 2006, the government spent $147 billion in medical costs; these costs were widely financed by Medicaid and Medicare which are funded by state and federal budgets. Between 1990 and 2003, the cost of hospitalization due to diabetes nearly doubled from $242 million to $481 million

Food deserts are one of the reasons attributed to the high obesity rates of low income New Yorkers. Food deserts are defined as areas where fresh produce is not easily available to its residents[1]. Many New Yorkers residing in these areas purchase food from small grocery stores called 'bodegas' where fresh produce is not always available. Instead bodegas seem to promote unhealthy products such as sugary drinks, alcohol, and tobacco (Segal, 2010). Additionally, fast food restaurants are common food establishments in food deserts. Exemplifying this is the Crotona-Tremont neighborhood in the South Bronx, where there are 4 fast food restaurants for every supermarket as described in a 2014 brief by the Department of Health and Mental Hygiene (DOMH).

Around the country food policy is taking an important role in the fight against obesity. Programs such as the U.S Department of Agriculture's Farmers Market Promotion Program (FMPP) provide communities with access to locally grown produce. Other policies help consumers make healthier diet decisions as it is the case with the U.S Food and Drug Administration's Calorie Labeling which requires chain restaurants to include calorie labels on menus and menu boards. Similarly New York City's Sodium Warning Labels for Chain Restaurants indicates high levels of sodium next to menu.

In New York City, The Bloomberg administration created many programs to help improve access to healthier foods including the Green Cart Initiative. In 2008, the Mayor's Office of Food Policy, the DOHMH, and the Laurie M. Tisch Illumination Fund together launched the Green

[1] The USDA states "There are many ways to measure food store access for individuals and for neighborhoods, and many ways to define which areas are food deserts—neighborhoods that lack healthy food sources. Most measures and definitions take into account at least some of the following indicators of access: Accessibility to sources of healthy food, as measured by distance to a store or by the number of stores in an area; Individual-level resources that may affect accessibility, such as family income or vehicle availability; Neighborhood-level indicators of resources, such as the average income of the neighborhood and the availability of public transportation (USDA, 2016)."

Cart Initiative. Green Carts are food carts that sell fresh produce in designated New York City areas where people do not have easy access to fresh fruits and vegetables. The program's main goal is reduce health issues due to an unhealthy diet by increasing demand for fruits and vegetables (Leggat, Bonni, Nonas, & Elliott, 2012). Policy makers believed that Green Carts were the fastest and cheapest way to bring fresh produce to food deserts.

The goal of this study is to find the effects of the Green Cart Initiative on the weight of New Yorkers. Body Mass Index (BMI) is the measurement that will be used to study the effects, as it takes into account subjects' height and weight. The statistical method that will be used to study the effects of the policy is Difference-in-Differences, which compares the average BMI three years before Green Carts began operating and three years after. This study will also compare the average BMI between New Yorkers living in Green Cart zones to New Yorkers that reside in other parts of the city. This study will focus on minorities given that in New York City minorities are the most affected group by high obesity rates and food deserts. This study will take into account gender and age differences in body fat percentages by analyzing men and women as well as age groups separately[2].

II. Literature Review

It is not surprising that income disparities affect the diet of low income New Yorkers. Twenty-three percent of residents from low income neighborhoods who participated in the 2004 community health survey reported not having consumed any fruits or vegetables the prior day. Income plays a big role on what households purchase for their everyday consumption. Food-assistant programs such as the Supplemental Nutrition Assistance Program (SNAP) and the

[2] Women and older people tend to have higher percentages of body fat than their counterparts (Gallagher et al., 1996).

Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) are intended to supplement those with low incomes and enable them to purchase healthier foods. However, some suggest that the problem is not only monetary but the scarcity of food establishments supplying healthy food in low income neighborhoods. In New York City, as in many places around the United States, food insecurity affects mostly low income neighborhoods. In the 2011 "Measuring food deserts in New York city's low-income neighborhoods", researchers conducted an assessment of food establishments block-by-block between 2004 and 2005. The neighborhoods of interest (North and Central Brooklyn, East and Central Harlem) were low-income and predominantly African American and Hispanic. Research was also conducted in a portion of the Upper East Side neighborhood as comparison due to its contrasting characteristics. Block groups were used as a proxy for residence and a food desert index was used to indicate levels of healthy food options. Blocks were assigned a food index score of "1" if the food available at local establishments were unhealthy and a maximum score of "3" if the food available was healthy. Block groups with a majority of African Americans residents had bodegas that sold mostly unhealthy foods and fewer supermarkets. Hispanic blocks had a better food desert index score as their blocks contained a significantly higher number of bodegas that sold healthier foods. Blocks with mostly white residents were much better off than either the African American or Hispanic groups. Their blocks received a higher food desert index score and had notably more supermarkets (Gordon, et al., 2011).

Diet-related chronic diseases such as diabetes have been on the rise in the United States. According to Kim, Berge and Matte (2006), 34% of adults in New York were found to be overweight and 20% obese. When comparing low income to high income New Yorkers, the report finds low income New Yorkers to have a greater probability of being overweight or obese

and to suffer from diabetes. The American Diabetes Association warns that "Being overweight raises your risk for type 2 diabetes, heart disease and stroke" (2016). The Obesity Society states "Almost 90% of people living with type 2 diabetes are overweight or have obesity" (2016). Diabetes is reported to be more common among minorities with a prevalence rate of 12% among blacks and 13% of Hispanics. Diabetes is attributed to be one of the main causes of hospitalization as well as a leading cause of death. In 2003, there were 191,366 hospitalizations and the estimated total cost with a principal diagnosis of diabetes was $481 million. Diabetes can lead to more complications like end-stage renal diseases where patients need dialysis or in some cases kidney transplants, there is also the risk of non-traumatic amputations and death. In 2003, Diabetes was listed as the underlying cause of 1,819 deaths and it was the 4th leading cause of death (Kim, et al., 2006).

Nationwide food policy is trying to address some of the problems believed to contribute to obesity. The FDA's Farmers Markets Promotion Program (FMPP) provides grants, technical assistance and even training to qualified individuals or entities such as farmers and vendors to increase consumption of locally grown food in areas with low income households and with scarce access to fresh food. FMPP has also helped increase access to federal nutrition programs like Electronic Benefit Transfer (EBT) and Supplemental Nutrition Assistance Program (SNAP) in farmers markets (Miller & Roper, 2013). With many Americans eating their meals outside of home, educating them is necessary to help them make better dietary decisions. As a result of the Affordable Care Act mandate for chain restaurants to list their food's calorie count, starting December 2016 the FDA will require chain restaurants, with at least twenty stores and which sell ready to eat food, to label calorie count in their menu items. Additionally the restaurants have to

place statements informing consumers that the recommended average calorie intake is 2,000 calories and that menu items' nutritional information is available upon request (Goldman, 2015).

In order to address growing obesity rates and diet-related diseases, the Mayor's Office of Food Policy was created under the Bloomberg administration in 2007. The main goal was to increase access to fresh produce in food deserts. One of the healthy food programs implemented was the Green Carts Initiative. It was believed that by providing neighborhoods with fresh produce, it would increase consumption of healthy food. The program initially faced heavy opposition and only passed after negotiations reduced the proposed number of cart permits. Local law 9 was signed in 2008 allowing 1,000 permits for Green Carts to become available. Neighborhoods with poor access to fresh produce and high rates of obesity were designated as Green Cart zones. The program received support from the Laurie M. Tisch Illumination Fund, which provided a $1.5 million grant and agreed to assume a leadership role together with the city. To make launching the program easier and faster, Green Carts were to be provided with low cost permits, training, marketing support and low-interest loans (Fuchs, Holloway, Bayer, & Feathers, 2014). Like farmer’s markets, Green Carts are allowed to accept SNAP benefits. Green Carts face no restrictions as to where it sets up as long as it is within the designated Green Cart Zone.

In 2014, the Centers for Disease Control and Prevention conducted an evaluation on the placement of Green Carts. The evaluation found that Green Carts were clustered around high-traffic areas. These areas were also likely to be close to other stores already providing healthy food. Moreover, it was revealed that not all Green Carts accepted Electronic Benefit Transfer (Li, Cromley, Fox, & Horowitz, 2014). In defense, it has been argued that Green Carts are operating in their designated zones and that these small businesses need to be in high-traffic areas to make a profit so they may continue to operate. A study conducted by Columbia

University (2014) on the effectiveness of Green Carts at the request of the Tisch Illumination Fund, located 166 active carts in several designated zones throughout New York City. The study noted that despite their clustering, Green Carts were operating in zones with low access to fresh produce; therefore, achieving their primary goal of providing fresh fruits and vegetables to neighborhoods in need.

III. Data and Empirical Strategy

A. Data

For the analysis, repeated cross-sectional data was obtained from the New York City Department of Health and Mental Hygiene (DOHMH) which conducts an annual telephone survey known as the Community Health Survey (CHS). Participants from all over New York City are asked questions ranging from demographics to health and mental well-being. CHS data is publically available from 2002 to 2014 and the data sets can be downloaded from the DOHMH website. In order to study the effects of the policy, this analysis uses data from 2008 to 2013. Local law 9 was signed in 2008, however this study sets 2011 as the year Green Carts started operating, as the only information found publicly available of the locations of carts was in a survey conducted between June and September of 2013 by Columbia University in their assessment of Green Carts. Vendors were asked for how long they have been operating their carts with 50.39% stating 2 or more years, 31% less than two years and 18.60% who didn't know (Fuchs, Holloway, Bayer, & Feathers, 2014). Given that only half the vendors were operating for 2 or more years, and the exact year is not clear, 2011 was seen as the appropriate year where enough Green Carts could have been operating.

B. Variables

The variable of interest in this study is Body Mass Index [BMI= weight (kg)/height (m^2)], as this measure considers a person's height and weight and is a better indicator of high levels of body fat. BMI will be analyzed separately for men and women and the subgroup of minorities and specific age groups because BMI has been found to vary systematically across these groups. Many studies have indicated women's body fat tends to be significantly higher and that women and men with similar BMI differ considerably in the percentage of body weight that is fat (Gallagher et al., 1996). Minorities are analyzed as a subgroup as they are the group of interest in this study. Minority includes all respondents who identify as Black, African American, Hispanic, Asian and other races. A large number of minorities live in Green Cart zones, 84% of the 21,607 respondents living in Green Cart are minorities. As stated in the introduction and literature review, minorities have the highest prevalence of obesity and diet-related diseases. In addition, BMI for two different age groups will be analyzed separately as a similar problem as with gender arises. People with similar BMI but in different age groups have different percentages of body weight as fat. Older individuals have a greater percentage of body fat than their younger counterparts (Gallagher, et al., 1996).

The explanatory variables considered in the study include gender, sex, race, age group, zone of residence, marital status, household size, education, at home language, number of children in the household, whether the participant was born in the US and long in the U.S for when a participant has been living in the country for 10 or more years. Sex is a binary variable that equals one for men and zero for women. Using the race variable, a dummy variable of "Minority" was created. Minority is set at a value of one whenever race was African American, Hispanic, Asian and other races; Minority is set at 0 whenever race was white. Survey participants' ages ranged from 18 to

98 years old. The Survey provided multiple different age groups. However, for this study the sample was divided in two age groups. Group one includes participants ages 18 to 49 and group two comprises participants ages 50 and older. Dividing the sample in two age groups was done so that each group has an even proportion of the sample[3]. For the variable marital status, the observations were divided into 2 groups as well. The group "not married" includes single, divorced, separated, and widowed, while the variable "married" consists of participants who are married and living together. Household size and number of children are both continuous variables, and were included to provide insight into whether the number of family members affected an individual's weight. Education includes less than high school, high school graduate, some college, and college graduate. US born is a binary variable that equals one if the individual was born in the United States and zero otherwise. Home language includes English, Spanish, and other language. For demographics the Survey uses 34 United Hospital Fund (UHF) zones instead of zip codes or neighborhoods, 14 of the 34 UHF zones are Green Cart zones, 10 of those zones have operating Green Carts.

C. Demographic Characteristics

This study focuses on the effects of the policy on minorities. Minorities account for 58.27% (30,556 observations) of the overall sample. Table 4 displays demographic characteristics for all women and minority women. Table 5 displays characteristics for all men and minority men. The first column illustrates percentages of each gender from the overall sample, while the second and third columns provide percentages of each of the minority age groups from the overall sample. Minority women accounted for 36.71% of the sample while minority men accounted for 21.5%

[3] Multiple methods for dividing the age groups were considered. Ultimately, dividing into more than two groups resulted in sample sizes that would be too small and thus provide insufficient precision for determining results.

of the sample. Women in the treated group accounted for 20.53% of the sample, while men in the treated group accounted for 11.07% of the sample.

E. Methods

Because Green Carts started operating only in designated zones, their entry provided a natural experiment setting where only a group of New Yorkers were exposed to the carts. The effect of the policy on New Yorker's weights can be studied with the Difference-In-Difference method (DID) as people living in Green Cart areas can be considered the treatment group while other New Yorkers are the untreated or control group. We consider two periods, (1) before the policy from 2008 to 2010 when both groups are untreated, and (2) the period after the policy from 2011 to 2013 when the treatment group is exposed. DID works by comparing the BMI of those in the treatment group and the control group and by taking into account BMI before and after the treatment. The equation below describes the main regression, where "GC" is a dummy variable equal to one if the zone is a Green Cart area and zero otherwise; "t" is a dummy equal to one after the policy and zero before the policy. An interaction term: $GC \cdot t$, is created by multiplying Green Cart Zone and time. The interaction term is also a dummy that equals one when the Green Cart area has been treated. A full set of UHF34 dummy variables were included in the regression, which take into account treated areas, while another set of six dummy years considers the periods before and after the policy.

$$E\left(BMI_{i,GC,t}|T,t\right) = \alpha + \beta GC \cdot t + \sum_{j=1}^{J} \lambda_j \, UHF_j + \sum_{t=1}^{T} \sigma_t \, \mathrm{T}_t$$

Four regressions were run for men and four regressions for women respectively. The first regressions included all men and all women, while the second regression considered minority

men and minority women. The third regressions was for minority men and minority women 49 and younger and the forth regression is for minority men and minority women age 50 and older. The regressions were clustered with United Health Fund Hospital zones (uhf34) to indicate that the observations in the study are clustered into the UHF zones and that there is a possibility that the observations might cluster within the zones, however still independent between the UHF zones.

IV. Results

A. Results for Women

Table 6 illustrates results for four regressions run for women. The first regression for all women as well as the second regression for minority women reveal no statistically significant treatment effects. The two regressions among minority women by age groups subsamples also reveal no statistically significant treatment effect. Based on this evidence, it appears that the average BMI of women stayed flat over the six year period, providing no evidence that Green Carts had an impact on the BMI of women.

Age was positive and statistically significant at the 1% level for both all women and minority women consistent with the belief that BMI increases as women get older. For every additional year in age, all women's BMI is higher by 0.0221, while minority women's BMI is higher by 0.0371. U.S. born was positive and statistically significant at the 1% level for all women, minority women, and for both minority women 49 and younger and minority women 50 and older. Number of years in the U.S. is positive and statistically significant at the 1% level for all women, minority women, and for minority women 49 and younger. Results for minority women 50 and older were statistically insignificant. All women born in the United States have a 0.722 higher BMI than women born in other countries. For minority women, BMI is 1.304 higher with

minority women 49 and younger having a 1.488 BMI higher and minority women 50 and older having a 1.131 higher BMI than their counterparts. Women born in the United States had similar results as people who had been here for 10 years or more, the BMI for women born in the U.S. and women who had lived in the country for a long time was higher relative to those who were not born in the United States and had been in the country for less than 10 years. The BMI for all women who have been here for more than 10 years is 0.935 higher; minority women's BMI is 0.653 higher with minority women 49 and younger having a 0.883 higher BMI. For minority women 50 and older long in the U.S was statistically insignificant.

Spanish as the at home language was only positive and statistically significant at the 10% level for the regression which includes all women; BMI is 0.592 higher for women who speak Spanish at home compared to those who speak English. Other language was negative and statistically significant at the 1% level for minority women, and minority women in both age groups. Other language was statistically insignificant for all women. Minority women who speak another language have a -0.404 lower BMI, minority women 49 and younger have a -1.792 lower BMI and minority women 50 and older have a -2.841 lower BMI than women who speak English at home. Not married was positive and statistically significant at the 5% level for the first regression that included all women and it was negative and statistically significant for the regression for minority women 49 and younger. Unmarried women in the first regression have a 0.322 higher BMI than married women. Minority women 49 and younger who are unmarried have - 0.409 lower BMI than women who are married.

For education all women, minority women, and minority women in both age groups who graduated high school have a lower BMI than women with less than high school education. All women have a -0.755 lower BMI, minority women have a -0.558, minority women 49 and

younger have a -0.949 lower BMI, and minority women 50 and older have -0.309 compared to women with less education, all women that have some college or graduated college are also likely to have lower BMI than women who have less than high school as education. In the first regression including all the women in the sample, women with some college have a BMI -1.000 lower, and those with a college degree have a -2.197 lower than women with an education less than high school. Both results were negative and statistically significant at the 1% significant level. For minority women who attended some college their BMI is -0.856 lower, while for minority women who graduated college their BMI is -2.103 lower than their counterparts. minority women 49 and younger with some college have a BMI -1.240 lower, if they graduated college their BMI is -2.529 than women with less than high school education. Minority women in 50 and older with some college education have a BMI -0.669 lower while those who graduated college have a BMI -1.783 lower than women with less than high school education. All the results for minority women were negative and statistically significant at the 1% level. The more education women have, the lower their BMI.

Household size was also included in the four regressions to analyze the effect on the BMI of participants. The only significant result was for minority women 49 and younger whose BMI have a negative relationship with household size. For every additional member in a household, their BMI decreases by -0.170. Lastly, number of children in the household was positive and statistically significant for minority women at the 5% level and minority women 49 and younger at the 1% level. BMI has a positive relationship with the number of children in the household. For every additional child in a household, minority women's BMI increases by 0.210, for minority women 49 and younger, an additional child increases their BMI by 0.386. The set of UHF34 dummy variables take into account treated areas, while the set of dummy years

considers the periods before and after the policy. These variables were included in the regression but omitted from the table.

B. Results for Men

Table 7 shows results for the four regressions for men. The estimated treatment effect in first regression, estimated on all men, was negative and statistically significant at the 5% level . The estimated treatment effect in the subsample of minority men, was also statistically significant at the 5% level showing that there was a decline in the average weight of male minorities in the treatment group. The last two regressions among age subgroups of minority yielded interesting results. The estimated treatment for minority men ages 49 and younger was not statistically significant; men in the age group saw no change in weight during the six years of study. Among minority men 50 and older the results reveal a negative and statistically significant treatment effect. Minority men age 50 and older saw a drop of 0.358 in their BMI. This result suggests the Green Carts led to a decline in BMI among minority men 50 and older.

For all men and minority men, age was statistically significant at the 5% level - BMI increases as men get older. BMI for all men is higher by 0.00606, while minority men's BMI is higher by 0.00770 with every additional year. Born in the US was statistically significant at the 1% level for all men, minority men, and minority men in both Age Groups. All men born in the United States have a 0.853 higher BMI. Minority men have a 1.106 higher BMI, minority men 49 and younger have a 1.177 higher BMI, and minority men 50 and older have a 1.023 higher BMI than men born outside the United States. For all men, minority men and minority men 49 and younger , long in the US was statistically significant at the 1% level while Long in the U.S. for minority men 50 and older was statistically significant at the 5% level. All men who have been living in the country for more than 10 years have a 0.908 higher BMI, minority men have a 0.750 higher

BMI, minority men 49 and younger have 0.941 higher BMI and minority men 50 and older have a 0.587 higher BMI than men who have lived in the country for less than 10 years. These results are similar to the results for women born in the U.S. or women who had been in the U.S. for more than 10 years. BMI is higher for men and women born in the U.S. or have been in the country for long.

Spanish as the at home language was statistically significant at the 1% level for all men, and minority men 49 and younger. For all minority men, Spanish as the at home language was statistically significant at the 5% level. For minority men 50 and older the results were statistically insignificant. Men who speak Spanish at home have a 0.503 higher BMI, minority men have a 0.385 higher BMI and minority men 49 and younger have a 0.614 higher BMI then those who speak English at home. In general men that speak Spanish at home are likely to have a higher BMI in comparison to men who speak English at home. Other language was statistically significant for all the regressions at the 1% level. All men who speak another language at home have a -0.883 lower BMI than those who speak English. Minority men have a -1.765 lower BMI, minority men 49 and younger have a -1.469, and minority men have a -1.936 lower BMI than men who speak English at home. Not married was statistically significant for all men, minority men and minority men 49 and younger. In the first regression that included all men, unmarried men have a -0.481 lower BMI than men who are married. minority men's BMI is -0.642 lower, minority men in 49 and younger have a -1.088 lower BMI than men who are married. Single men have lower BMI than men who are married.

High school education was statistically significant for all men, minority men, and minority men 49 and younger. Men who have a high school education have a -0.253 lower BMI than men who have less than high school education. This result was statistically significant at the 10%

significant level. Minority men with a high school education have a -0.286 lower BMI, while minority men 49 and younger have a -0.750 lower BMI than men with less than a high school education. Surprisingly for some college, only minority men 49 and younger have statistically significant results at the 5% significant level, with a BMI -0.663 lower than those with a less than high school education. College graduate was statistically significant for all men, minority men, and minority men 49 and younger at the 1% significant level. Men with a college degree have a -0.744 lower BMI than men with less than high school education. Minority men's BMI is -0.600 lower, minority men 49 and younger have a BMI -1.174 lower than men with a less than high school education. Household size and number of children in the household was statistically insignificant in all the regressions. The set of UHF34 dummy variables take into account treated areas, while the set of dummy years considers the periods before and after the policy. These variables were included in the regression but omitted from the table.

C. BMI Trends

Table 2 and Table 3 present trends for the control and treated groups for periods after and before the policy for women and men respectively. These tables also display trends for subgroups minority, age group 18-49, and age group 50-98. Trends for the control group were overall flat for both men and women and for all the subgroups.

V. Conclusion

This study on the effects of the Green Cart Initiative on the BMI of New Yorkers has produced interesting results. The BMI of women living in areas where Green Carts were located stayed flat for the six year period analyzed, while minority men ages 50 and older in those areas saw a decline in average BMI. The treatment effect results suggest that the city's efforts to reduce the obesity epidemic by introducing Green Carts had an impact for Minority Men ages 50 and older.

As mentioned earlier in this paper, minority men are the most affected by obesity and diet-related diseases in New York City. It is also important to note that New York City has other programs in place to fight obesity such as educating the public about the importance of healthy foods with ads in bodegas, subways and promoting healthy diets for children who attend public schools and daycares.

Further research can be done to find the reason the Green Cart initiative is not having the same impact for minority women as for minority men. The findings in this study can also push for food policies that would have a greater impact for minority women and other groups who do not seem to be affected by the current policies.

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VII. Tables

Table 1: Variables

Variables	**Description**
Sex	Male= 1 Female=0
Race	White =1 Black =2 Hispanic =3 Asian/PI =4 Other= 5
Minority	Minority =1 if respondent is a minority
Age	Respondent's age (18-98)
49 and younger	18-49 years old
50 and older	50-98 years old
U.S Born	Respondents born in the U.S
Long in the US	Respondent has been in the U.S for 10 or more years
At home language	English Spanish Other
Marital Status	Married Not Married
Education	Less than High School High School Graduate Some College College Graduate
Children	Number of children in the household
Household Size	Total household adults & children
United Hospital Fund	34 United Hospital Fund neighborhoods

Table 2: BMI Trends for Women

	Control		Treated	
	Before	**After**	**Before**	**After**
All Women	26.13	26.19	28.21	28.6
Minority	27.25	27.12	28.56	28.9
Age (18-49)	26.48	26.52	28.03	28.23
Age (50-98)	28.17	27.82	29.07	29.6

Table 3: BMI Trends for Men

	Control		Treated	
	Before	**After**	**Before**	**After**
All Men	26.94	26.86	27.53	27.55
Minority	26.72	26.79	27.65	27.64
Age (18-49)	26.7	26.73	27.77	27.65
Age (50-98)	26.8	26.95	27.56	27.6

Table 4: Demographic Characteristic for Women

		All Women	Minority Women Age (18-49)	Minority Women Age (50-98)
	N	Percentage of all Women in the Sample	Percentage of Minority Women in the Sample	Percentage of Minority Women in the Sample
Percentage of the sample	31,396	59.87%		
Control	20,630	39.44%		
Treated	10,766	20.53%		
Minority	19,246	36.71%		
U.S Born	18,795	35.80%	8.77%	8.73%
Long in the U.S	11,787	22.48%	7.26%	10.23%
At home language - English	22,928	43.72%	11.87%	10.57%
At home language - Spanish	5,308	10.12%	4.74%	5.24%
At home - Other Language	3,036	5.79%	1.56%	1.54%
Not Married	19,721	37.60%	11.18%	12.77%
Married	11,386	21.73%	6.97%	4.67%
Less than H.S	5,120	9.76%	3.23%	5.56%
High School	7,233	13.80%	4.55%	4.53%
Some College	6,564	12.52%	4.70%	3.34%
College Graduate	12,311	23.48%	5.72%	3.86%

Table 5: Demographic Characteristic for Men

		All Men	Minority Men Age (18-49)	Minority Men Age (50-98)
	N	Percentage of all Men in the Sample	Percentage of Minority Men in the Sample	Percentage of Minority Men in the Sample
Percentage of the sample	21,044	40.13%		
Control	15,237	29.06%		
Treated	5807	11.07%		
Minority	11,306	21.56%		
U.S Born	12,586	24.00%	5.34%	4.12%
Long in the U.S	7,376	14.07%	4.51%	5.91%
At home language - English	15,370	29.31%	7.06%	5.60%
At home language - Spanish	2,857	5.45%	2.91%	2.46%
At home - Other Language	2,749	5.24%	1.60%	1.56%
Not Married	9,379	17.86%	6.03%	4.20%
Married	11,530	21.99%	5.50%	5.42%
Less than H.S	2,946	5.62%	2.06%	2.82%
High School	4,477	8.54%	3.37%	2.45%
Some College	4,096	7.81%	2.83%	1.79%
College Graduate	9,391	17.91%	3.28%	2.51%

Table 6: Results for Women

VARIABLES	(1) All Women	(2) Minority	(3) Age (18-49)	(4) Age (50-98)
Treatment effect	0.186	0.152	-0.0493	0.302
	(0.136)	(0.140)	(0.262)	(0.265)
Age	0.0221***	0.0371***		
	(0.00424)	(0.00508)		
Born in the U.S	0.722***	1.304***	1.488***	1.131***
	(0.0953)	(0.0939)	(0.143)	(0.159)
Long in the U.S	0.935***	0.653***	0.883***	-0.420
	(0.179)	(0.188)	(0.208)	(0.545)
At home language	0.592*	0.0445	0.0734	0.0797
Spanish	(0.330)	(0.234)	(0.241)	(0.261)
Other at home	-0.404	-2.324***	-1.792***	-2.841***
language	(0.323)	(0.300)	(0.322)	(0.409)
Not married	0.322**	-0.237	-0.409**	-0.0230
	(0.144)	(0.160)	(0.190)	(0.210)
H.S Graduate	-0.755***	-0.558***	-0.949***	-0.309**
	(0.0996)	(0.0979)	(0.225)	(0.137)
Some College	-1.000***	-0.856***	-1.240***	-0.669***
	(0.140)	(0.166)	(0.401)	(0.203)
College Grad	-2.197***	-2.103***	-2.529***	-1.783***
	(0.207)	(0.204)	(0.378)	(0.185)
Household Size	0.0130	-0.00608	-0.170**	0.109
	(0.0473)	(0.0622)	(0.0741)	(0.0744)
Children	0.0888	0.210**	0.386***	0.0924
	(0.0626)	(0.0867)	(0.114)	(0.122)
Constant	24.29***	24.91***	25.87***	28.75***
	(0.390)	(0.397)	(0.428)	(0.531)
Observations	28,563	17,529	8,938	8,591
R-squared	0.093	0.082	0.085	0.070

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

34 United Hospital Fund neighborhoods dummies and 6 years dummies were included in the regression but omitted in the table.

Table 7: Results for Men

VARIABLES	(1) All Men	(2) Minority	(3) Age (18-49)	(4) Age (50-98)
Treatment effect	-0.295**	-0.358**	-0.261	-0.561**
	(0.132)	(0.165)	(0.268)	(0.259)
Age	0.00606**	0.00770**		
	(0.00249)	(0.00360)		
Born in the U.S	0.853***	1.106***	1.177***	1.023***
	(0.0725)	(0.0828)	(0.118)	(0.188)
Long in the U.S	0.908***	0.750***	0.941***	0.587**
	(0.147)	(0.174)	(0.219)	(0.252)
At home language	0.503***	0.385**	0.614***	0.192
Spanish	(0.169)	(0.171)	(0.188)	(0.252)
Other at home	-0.883***	-1.765***	-1.469***	-1.936***
language	(0.172)	(0.217)	(0.283)	(0.279)
Not married	-0.481***	-0.642***	-1.088***	-0.116
	(0.109)	(0.128)	(0.173)	(0.180)
HS Graduate	-0.253*	-0.286*	-0.750***	-0.0867
	(0.131)	(0.145)	(0.223)	(0.191)
Some College	-0.00745	-0.00703	-0.663**	0.428
	(0.156)	(0.167)	(0.247)	(0.294)
College Grad	-0.744***	-0.600***	-1.174***	-0.298
	(0.147)	(0.171)	(0.243)	(0.210)
Household Size	0.0143	0.0405	0.0180	0.0996
	(0.0388)	(0.0412)	(0.0563)	(0.0746)
# of children	0.0271	0.00400	-0.0607	-0.129
	(0.0649)	(0.0876)	(0.107)	(0.110)
Constant	25.87***	26.47***	27.35***	26.79***
	(0.278)	(0.296)	(0.348)	(0.482)
Observations	20,063	10,640	5,739	4,901
R-squared	0.050	0.058	0.070	0.057

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

34 United Hospital Fund neighborhoods dummies and 6 years dummies were included in the regression but omitted in the table.

VII Figures

Figure 1: BMI Distribution for All Women

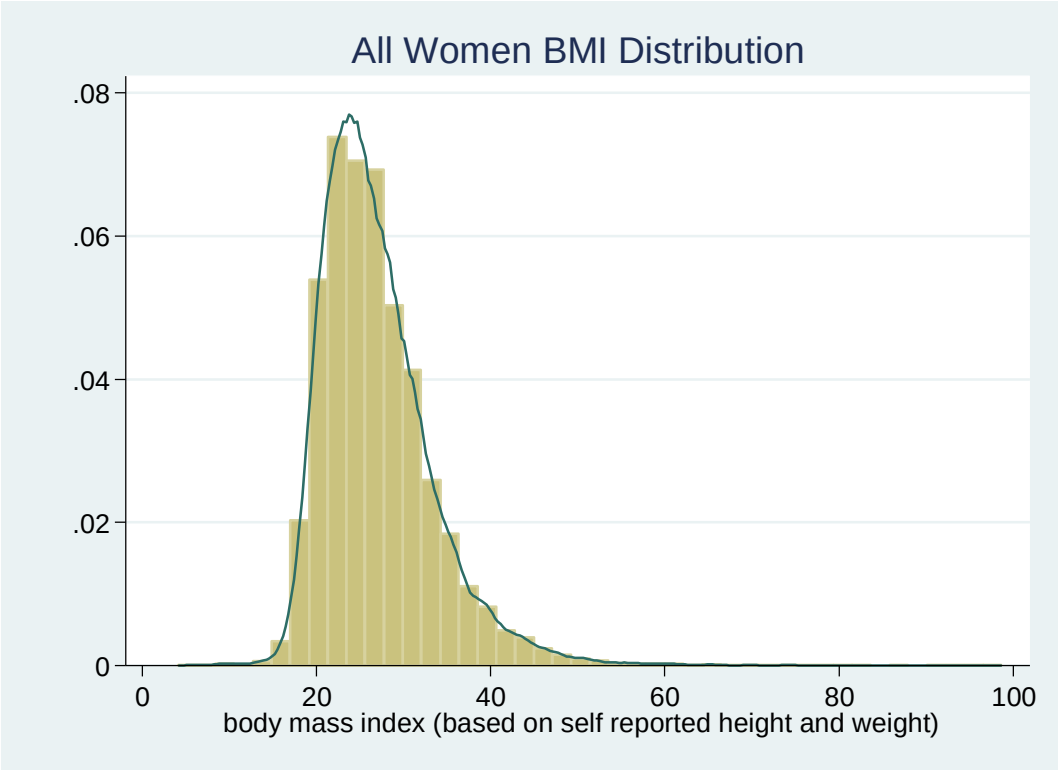

Figure 2: BMI Distribution for Minority Women

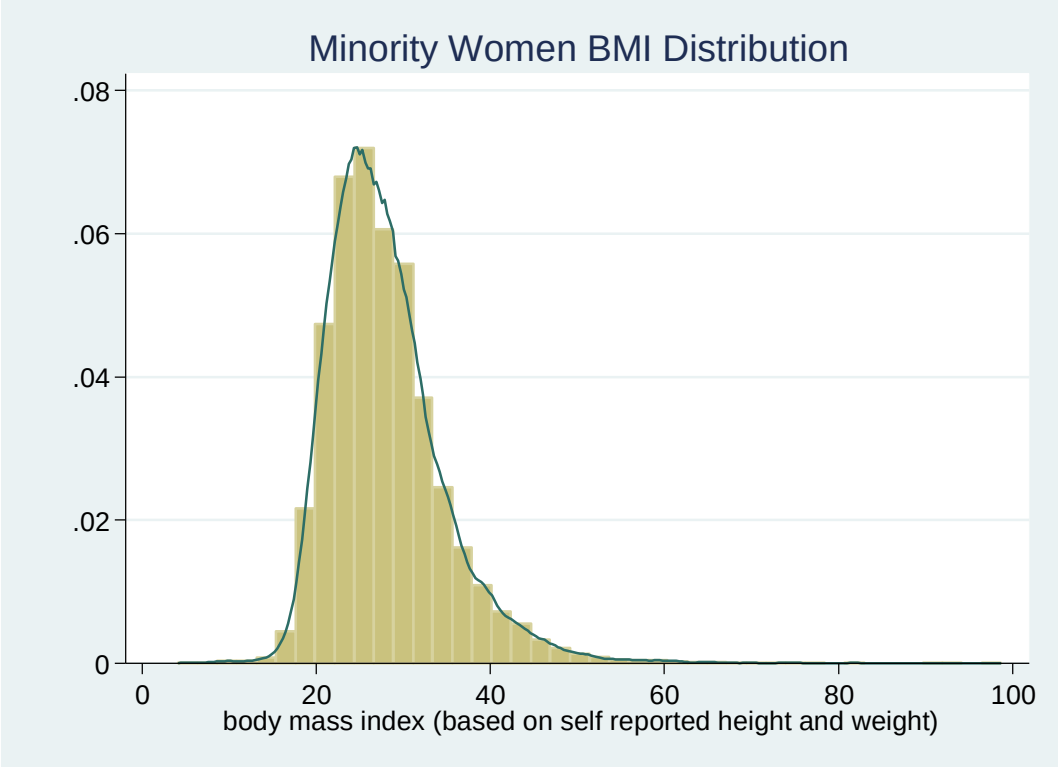

Figure 3: BMI Distribution for All Men

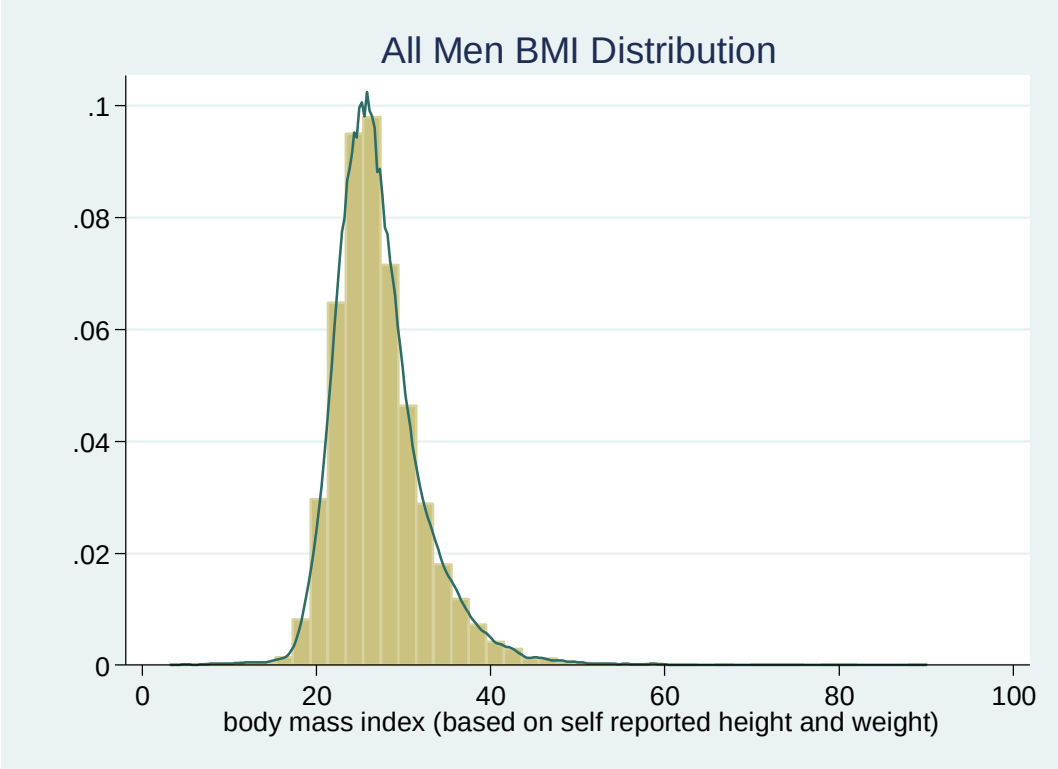

Figure 4: BMI Distribution for Minority Men