The Demography of Obesity within New York City: An Analysis of the NYC HANES

Extended Abstract

Gabriel Movsesyan[‡]

September 20, 2012

(Preliminary and incomplete. Do not share without the explicit permission of the author.)

Abstract

The NHANES dataset is an industry standard for evaluating obesity risk factors demographic analysis. As public health and economic policies are increasingly implemented on local levels by state, city, and regional private agencies, the need for specified local data has grown. The NYC HANES is a landmark effort in this mission, but research using it has been limited to the public health and medical fields. This paper contributes to the literature by analyzing the economic and demographic relationships to obesity within the NYC HANES. I propose an examination of obesity differentials within the NYC HANES across demographic characteristics that are crucial to a better understanding of potential public health measures. I also compare summary statistics across the NYC HANES and NHANES. Finally, linear and nonparametric regression analyses are used to predict potential changes in the next iteration of the NYC HANES, expected in 2013.

[‡]The author is an Economics Ph.D. Candidate at the City University of New York (CUNY) Graduate Center and Research Fellow, CUNY Institute for Demographic Research, 1 Bernard Baruch Way, Box D-901, New York, NY 10010, e-mail: gmovsesyan@gc.cuny.edu

1 Introduction

The intersection of demography and obesity is a burgeoning topic of investigation: the incidence of obesity in the population has rapidly increased, and the demand to understand its relationship with health, mortality, socio-economic status, and other aspects of life has risen accordingly. The National Health and Examination Survey (NHANES) is a prominent survey used by demographers, social scientists, and medical researchers to evaluate obesity's patterns along with its potential connections to other factors. It has been primarily relevant, though, for analysis on a national level. As state and local government and public health agencies have become more involved in addressing obesity and related issues, there is a greater need for more specific information at the local level. The New York City Health and Examination Survey (NYC HANES), conducted in 2004 and modeled on the NHANES, is a significant advance in this movement.

This paper is an economic analysis of the risk factors and socio-economic characteristics of obesity in New York City. To date, several epidemiology and public health studies have utilized the NYC HANES dataset, but none from an economic perspective.[1] I first compare the BMI distributions from the NYC HANES with the closest NHANES dataset (the 2003-2004 series). Next, the demographic variables within the NYC HANES are used to evaluate potential propensities for obesity among New Yorkers. Finally, regression analysis is performed in order to make predictions for the next iteration of the NYC HANES,

[1] Gwynn et al (2009) and White et al (2011) are two recent examples of epidemiology and public health analyses over specific demographic groups.

scheduled to be performed in 2013.

2 Data and Research

The NYC HANES is a population-based, cross-sectional study with data collected from a physical examination, clinical and laboratory tests, as well as a face-to-face interview and an audio computer-assisted self-interview. It was designed for adult New York City residents (20 years or older) via a three-stage cluster sampling plan. The final number of observations is 1999.

NYC HANES 2004 did not over-sample any particular race, ethnic, or geographic group. This is an important contrast to the general NHANES, but also reveals one of the unique impacts of such a survey for a large metropolitan area: New York City already includes higher proportions of black, Hispanic, and Asian residents compared to national averages.[2] The same is true for low-income residents, who are often at higher risk of obesity.

Table I lists the summary statistics for the NYC HANES sample. The median BMI for these race-sex groups range from 22.98 to 28.24. Some trends are similar to national ones: blacks and Hispanics are particularly susceptible to obesity, and females have a higher proportion of obese individuals. I will also utilize the NYC HANES to further decompose the obesity statistics for both US-born and foreign-born blacks. Similar analysis will be performed for US-born and foreign-born

[2]Another advantage of the NYC HANES is its unique response category for Asians within the race/ethnicity variable; the NHANES still places Non-Hispanic Asians within the "Other" category

Hispanics. The questionnaire also asks respondents about their country of origin and the number of years residing in the United States and in New York. Though the sample size starts to diminish quickly among these sub-groups, some revealing patterns could emerge that may contribute to the existing literature on obesity.

Table II displays a comparison of mean BMI and proportion obese between the NYC HANES and the 2003-2004 NHANES. This analysis will be expanded to include the category of overweight and t-tests to evaluate the statistical difference of the means. Examining obesity in a diverse area such as New York City allows investigation of potential contradictory influences. The comparison over these age groups shows that New York residents have lower BMI and obesity levels than the national sample in NHANES, but with the larger percentage of at-risk groups (such as lower-income residents), why would this be the case? Some clear candidates include the greater potential for more walking or commuting via methods other than driving, but other concerns also exist. The NYC HANES asks about exercise, smoking, modes of food consumption, among other factors that may influence obesity and BMI rates.

Although the NYC HANES is a single cross-section, we can still provide notable descriptive statistics about the obesity prevalence within New York City. Figures I and II are a visual comparison of the BMI distribution of the New York and national populations, with the dotted lines representing the 95th percentile of BMI. In Figure I, not only is the mean BMI value for New York City men below the national mean value, but nearly the entire right-hand side of the distribution is also lower than the national probability density. Figure II demonstrates the

same is not true for females, with significant crossovers over the various obesity classes. These statistics will be analyzed over different race, sex, and age groups. Nonparametric analysis will be particularly effective in evaluating the connection between socio-economic variables and propensity of obesity.

References

R. Charon Gwynn, Renu K. Garg, Bonnie D. Kerker, Thomas R. Frieden, and Lorna E. Thorpe. Contributions of a Local Health Examination Survey to the Surveillance of Chronic and Infectious Diseases in New York City. American Journal of Public Health: January 2009, Vol. 99, No. 1, pp. 152-159.

Kellee White, Luisa N. Borrell, David W. Wong, Sandro Galea, Gbenga Ogedegbe and M. Maria Glymour. Racial/Ethnic Residential Segregation and Self-Reported Hypertension Among US- and Foreign-Born Blacks in New York City. American Journal of Hypertension: August 2011. Vol. 24, No. 8, pp. 904-910.

Table 1				
	Median BMI	95th percentile BMI	Proportion Obese	N
		Male		
White	26.18	35.52	0.19	253
Black	25.59	38.69	0.22	143
Asian	24.4	32.19	0.08	108
Hispanic	27.5	37.98	0.31	233
		Female		
White	24.61	40.42	0.23	268
Black	28.24	43.05	0.39	237
Asian	22.98	32.75	0.08	137
Hispanic	27.41	37.45	0.32	376

Table 2

Mean BMI and proportion obese

N		NYC (2004) BMI	NYC (2004) Obese	National (2003-04) BMI	National (2003-04) Obese	N
			Male			
749	**Age 20-65**	26.89	0.212	28.20	0.314	1615
		(5.01)	(0.409)	(5.48)	(0.464)	
227	Age 20-29	26.09	0.186	27.05	0.255	405
		(5.29)	(0.391)	(6.17)	(0.436)	
193	Age 30-39	26.75	0.159	27.93	0.298	351
		(4.19)	(0.367)	(5.45)	(0.458)	
163	Age 40-49	27.73	0.276	28.68	0.339	369
		(5.42)	(0.449)	(4.84)	(0.474)	
166	Age 50-65	27.16	0.238	28.93	0.354	490
		(5.08)	(0.427)	(5.28)	(0.479)	
			Female			
1034	**Age 20-65**	27.41	0.278	28.31	0.337	1596
		(6.43)	(0.448)	(7.34)	(0.473)	
275	Age 20-29	25.57	0.199	26.39	0.249	342
		(6.07)	(0.400)	(7.24)	(0.433)	
248	Age 30-39	26.93	0.255	28.02	0.323	343
		(6.55)	(0.437)	(7.28)	(0.468)	
264	Age 40-49	28.12	0.290	29.17	0.385	374
		(6.26)	(0.455)	(7.36)	(0.487)	
247	Age 50-65	28.66	0.351	29.09	0.365	537
		(6.41)	(0.478)	(7.21)	(0.482)	

FIGURE I

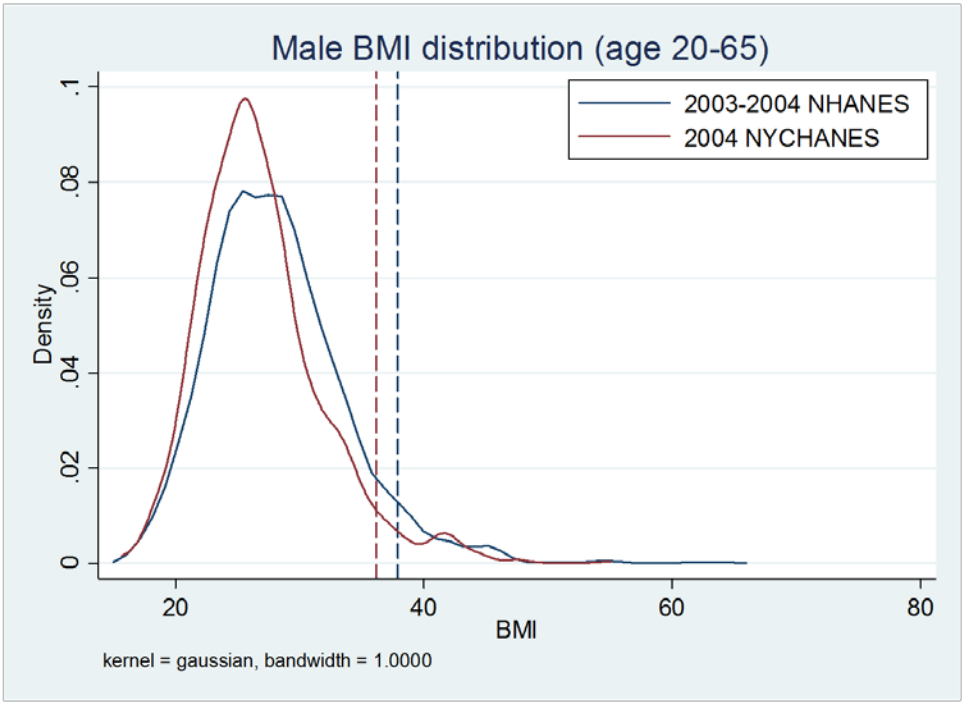
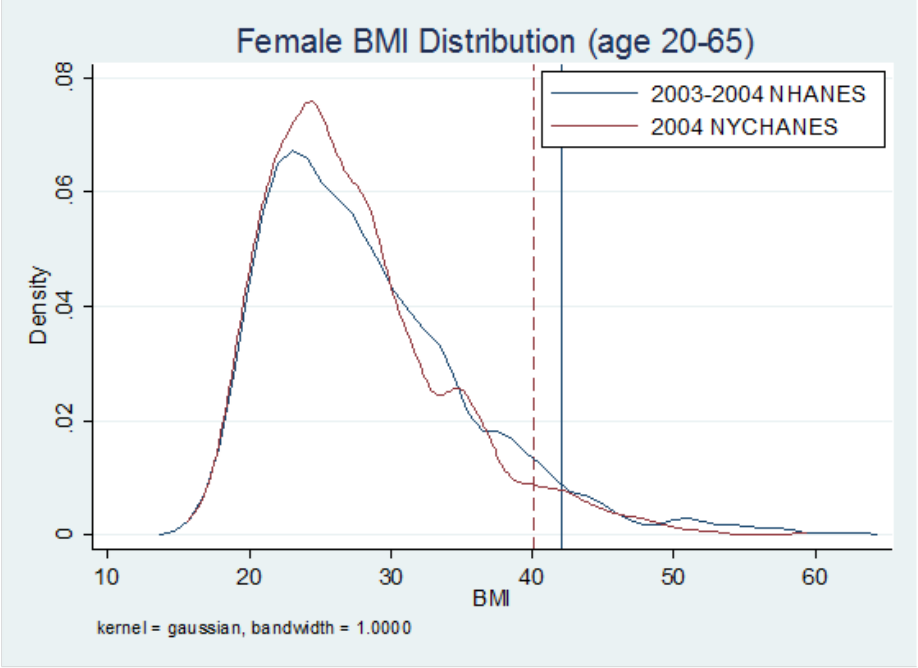
FIGURE II