Time Trends by Sex in the Misreporting of Body Weight

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ABSTRACT

I use data from the National Health and Nutrition Examination Survey between 1999 and 2010 to test for a time trend in the bias on self-reporting of body weight, focusing on differences in misreporting by sex. I find a decline in misreporting among women across the CDC categories of body weight, leading to increasingly accurate approximation of measured obesity rates. While men do not report more accurately than women across the spectrum of BMI, they do report more accurately around the cutoff defining obesity. While the findings support the argument that self-reported weight is not a strict proxy for physical measurement, the trend towards self-report producing more accurate estimates of measured obesity rates should be encouraging for researchers working with surveys that collect weight and height only via self-report. The findings additionally emphasize the need to consider misreporting separately for men and women, as it appears to reflect distinctly different social processes by sex.

Accurately assessing the prevalence of obesity has been challenging in many social surveys, as data on weight and height are frequently reported by respondents rather than measured. Although a wide array of technical details can influence measured weight, including variation in the scale used and the time of day a measurement is taken, such factors do not explain the group differences found in numerous studies of weight and height misreporting. Rather, age, race, gender, and overweight status have all been found to affect misreporting rates (e.g. Rowland 1990; Kuczmarski 2005; Gillum and Sempos 2005; Engstrom et al. 2010), and while correlations between self-reported and measured weight and height are generally high, misreporting has been found to have a meaningful effect on models estimating the relationship between BMI and an array of health outcomes (Keith et al. 2011).

While the sociodemographic factors predicting self-reporting bias have been explored (e.g. Rowland 1990; Kuczmarski 2005), whether and how the level of bias may have changed over the course of the obesity epidemic remains a subject of debate. Researchers have generated hypotheses for change in different directions: on one hand, an increase in average body fat could lead to fatness being normalized, potentially leading to more accurate reporting. Experimental studies and survey data alike support this finding in samples from the UK (Robinson and Kirkham 2013; Johnson, Cooke, and Croker 2008) and the US (Stommel and Osier 2012). On the other hand, studies on U.S. samples have suggested that the stigma of obesity and perceived weight discrimination may have grown with the obesity epidemic (Latner and Stunkard 2003; Andreyeva, Puhl, and Brownell 2008), a plausible reason to expect increased reticence to accurately disclose body weight (Shiely et al. 2013). Finally, it is possible that misreporting is staying relatively constant, regardless of the increase in the rate of obesity (Gorber and Tremblay 2012; Hattori and Sturm 2013).

Here I assess whether there exist time trends in the bias on self-reporting of body weight, specifically focusing on differences in patterns of misreporting by sex. I find a significant decline in bias among women, leading to increasingly accurate approximation of measured obesity rates using self-reported data. Furthermore, I find this trend to be significant for women across the CDC weight categories, contrary to previous findings of increasingly accurate reporting among obese women only (Stommel and Osier 2012). While the findings support the argument that self-reported weight is not a strict proxy for physical measurement, the trend towards more accurate reporting should be encouraging for researchers working with the wide range of surveys in which self-reported weight and height remain the only source for calculating respondent weight status. The findings additionally emphasize the need to consider misreporting separately for men and women, as it appears to reflect distinctly different social processes by sex.

Data and Analysis

Where many surveys contain either self-reported or measured body weight and height, the National Health and Nutrition Examination Survey (NHANES) collects both measurements from all respondents ages 16 or over, and has thus been a prime resource for assessing the extent of misreporting of body weight. NHANES is a stratified multistage probability sample of the civilian non-institutionalized US population, collected by the Centers for Disease Control and Prevention for generating statistics on health measures such as obesity (CDCa). Data was collected from 1971 through 1994 in three waves; continuous data collection started in 1999, with approximately 5,000 respondents sampled annually. In addition to measurements and self-report of height and weight, NHANES also includes a detailed questionnaire on weight history, diet history, and self-perceptions of weight. Rowland (1990), Keith et al (2011), and others have done cross-sectional assessments of underreporting in NHANES II and NHANES III; in the regression models presented here I use data from all available years of continuous NHANES, ranging from 1999 to 2010 and released in two-year increments. This decade of this study marks a heightened period of media attention and policy interventions targeting body weight, and arguably culminated with some stabilization in the rising rates of overweight and obesity in the U.S. (Flegal et al. 2002; Flegal et al. 2010; Han et al. 2011). Continuous NHANES has the additional benefit that the survey instruments were largely consistent across waves.

Self-reported weight and height is collected for all 34,319 Black, White, and Mexican-American continuous NHANES respondents above the age of 16. The sample for this analysis includes the 30,765 respondents—90% of the initial respondent population— for whom weight and height are both measured and self-reported. As over 70% of American adults are now classified as either overweight or obese, and the vast majority of the remaining population are classified as midweight, there was an insufficient population of underweight respondents for reasonable comparison (*n*= 266 men and 364 women, compared to ~5000 for all other groups). As underweight status may also signify an underlying medical condition, I exclude underweight respondents from the analyses. Response rates were at or above 90% for all variables, and item-level missing data were imputed in Stata 13[1] using 30 imputations.[2] Descriptive statistics are presented in table 1.

In figure 1, I first compare mean rates of misreporting of body weight across race and sex for the full sample. I calculate group means separately by the Center for Disease Control (CDCb) categories of body weight: midweight (e.g. "normal weight"), overweight, and obese. To code respondents into these categories, I use BMI calculated as measured weight in kilograms divided by measured height in meters squared (e.g. Garn**,** Leonard, and Hawthorne 1986). In figure 2, I plot misreporting by measured BMI as a line of best fit for all respondents midweight and over.[3]

I then assess whether the rate of underreporting changed over the decade of data collection, using the Ordinary Least Squares regression model

$$y_i = a_{id} + b_{Rd}R_{id} + b_{Yd}Y_{id} + b_{Md}M_{id} + b_{Ad}A_{id} + b_{Bd}B_{id} + e_{id} \ ,$$

in which *i* denotes an individual respondent, and the outcome of interest, *y*, is the measured weight in pounds of respondent *i* subtracted from the self-reported weight of respondent *i*. A value of zero will thus result if respondent *i* self-reported with perfect accuracy, while negative values result from underreporting, and positive values result from overreporting.

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[1] Data were imputed using the option for multivariate normal regression with 100 burn-in iterations and 10 iterations between data sets (Allison 2012).

[2] It is questionable whether education or household income are suitable for imputation, due to concerns that missingness on these variables might plausibly depend on the missing values themselves (Allison 2000). The decision to impute was based on supplemental analyses omitting the very few cases with missing values on these variables, which led to minimal variation in the magnitude of the coefficients of interest. Appendix A lists the exact percentages of imputed data for all variables where any data was missing.

[3] The sample in figure 2 is truncated at BMI=60 for scale, although inclusion of all outliers with BMI≥60 yields no meaningful effect. Nonparametric regression confirmed the appropriateness of the linear model in this case, with no meaningful differences in the intercepts with zero.

Misreporting might be expected to vary nonlinearly by body weight for a range of reasons: for instance, a respondent who weighs 800 pounds may go unnoticed underreporting by 200 pounds, whereas a respondent who weighs 150 pounds clearly cannot underreport by the same amount. Respondents who are underweight may be expected to overreport rather than underreport, as might men at the low end of the midweight category who are self-conscious of being smaller. However, nonparametric analyses suggest that the misreporting difference *y* across the full range of measured weight is indeed linear for women and for a majority of men, with nonlinearity only for men over ~350 pounds. On the other hand, relative misreporting (self-reported weight / measured weight) is not linear for either sex. To address differences in misreporting by weight and height even within BMI categories, *M* is measures of weight and height, as well as up to cubic terms on weight.

R is a set of indicators for race, Black and Mexican-American, with White as the reference category. *Y* is a set of indicators for the six available data releases, each including two years of data collection over the period 1999 through 2010. *A* is a set of indicators for roughly every twenty years of age: 30 through 49, 50 through 69, and 70 or more, with 16 through 29 as the reference category. While the effect of age as a continuous measure is non-linear, the effect is linear within the age categories used. Finally, *B* is a range of background measures suggested in prior literature to affect misreporting of weight: household size and household income;[4] education, reported as a five-category scale of degree attainment ranging from 1 (less than a ninth-grade education) to 5 (college graduate or beyond); and indicators of whether the respondent is currently employed, whether the respondent is married/cohabitating, whether a respondent is fully food-secure, and whether a respondent reports having altered their diet to affect weight loss or gain in the past year.

In tables 2 and 3**,** model 1 is the bivariate association, model 2 includes controls for weight, height, race and age dummies, and model 3 introduces the battery of background measures. To reflect the assumption that misreporting of body weight may reflect very different social pressures by sex, I run the models separately for men and women by weight category. Despite the nonlinearity of relative misreporting (self-reported weight / height) with respect to measured weight, as a robustness check I additionally ran the models in tables 2 and 3 using relative misreporting as the outcome to assess whether alternative specifications of misreporting alter the significance or direction of the time trends. I also ran the models using BMI misreporting rather than weight only, and pooling all weight categories. The direction, substantive magnitudes, and significance of coefficients were consistent across model specifications.

Finally, in figure 3, I calculate the percent of measured obese respondents who would be misclassified as non-obese by self-reported weight and height, separately by race, sex, and survey wave.

Results

Figure 1 presents mean misreporting by both race and sex across all BMI categories. White women are the only group for which even midweight respondents underreport, by a mean of 1.12 pounds less than their measured weight. This difference is statistically significant, as is

[4] Household income was transformed using the inverse hyperbolic sine (IHS) function, which approximates the logarithm in its right tail, but is symmetric and linear around the origin (Pence 2006).

the difference between this rate and the misreporting rates for midweight Black and Mexican-American women. Across all three BMI categories, patterns of weight misreporting for men look quite different than the patterns for women: midweight men of all races overreport, while overweight White and Mexican-American men are the only groups to report about accurately, with no significant difference between measured and self-reported weight. Among men of all racial groups, only those classified as "obese" underreport their true weight.

These differences by sex suggest that misreporting may be channeling very different social processes for men versus women, and thus estimates of misreporting bias that pool respondents of both sexes may be obscuring countervailing trends. Figure 2 emphasizes this point: women in all weight categories, from midweight through obese, underreport their weight on average. Only women at the lighter end of the midweight category overreport or report about accurately. In contrast, midweight men overreport their weight on average, only underreporting once they are nearing the cutoff defining obesity.

Tables 2 and 3 present regression models testing whether misreporting appears to be changing over time. As per table 2, the time trend is significant among women in all weight categories, with underreporting decreasing by about one-tenth of a pound per year. As per previous literature, race affects misreporting, with Black and Mexican-American women underreporting by less than do White women.[5] Age is also a significant factor, with each successively older age category underreporting by less than the category before. Having been on a diet in the past year is significantly associated with underreporting by an additional pound for midweight women, and by more than two pounds for overweight and obese women, supporting an interpretation of underreporting as channeling self-consciousness of weight.

The results for men (table 3) demonstrate patterns of misreporting to differ meaningfully by sex, and again also by race. First, the time trend in misreporting is non-significant for men across the BMI spectrum. Whereas White women consistently underreport by more than both Black and Mexican-American women (table 2), midweight and overweight Black men appear to misreport to a larger extent than do White men, while there is no significant difference in misreporting among Black and White men who are obese. Where Mexican-American women underreport by less than White women across all categories of BMI, Mexican-American men in the overweight category show no significant differences in misreporting relative to White men, although differences are significant in the midweight and obese categories.

Figure 3 puts the results of tables 2 and 3 in context: not only is the time trend in misreporting non-significant for men, but the reporting bias does not lead to significant misclassification of measured obese respondents into lower weight categories. This is consistent with figure 2, as the mean misreporting of weight among men is relatively small around the cutoff defining obesity. For women, on the other hand, the decline in reporting bias does have a meaningful effect, with self-report data leading to progressively more accurate approximations of the measured obesity rate over the decade of the NHANES continuous sample. The same holds when the NHANES II and III samples are taken into account: between the NHANES II sample and the 2009 release of NHANES continuous data, the percent of obese White women misclassified by self-report drops by nearly half (from 27 to 15 percent, $p<0.001$), and the percent of obese Black women misclassified by self-report drops by more than half (from 25 to

[5] Interactions between race and year were non-significant across all BMI categories. Higher-order terms on year were also non-significant, suggesting that the linear model is a reasonable approximation of the time trend.

12 percent, $p<0.001$). While the sample of Mexican Americans in the NHANES II sample was too small for comparison, between NHANES III and the 2009 release of NHANES continuous data, the percent of obese Mexican-American women misclassified by self-report drops by about one-quarter (from 27 to 20 percent, $p=0.029$). Over the same period, the percent of obese men misclassified by self-report hovers consistently near zero.

Discussion

While numerous studies in medicine and public health have investigated the accuracy of self-reported weight and height (Engstrom et al. 2010), the few studies of whether misreporting of body weight has changed as obesity rates have risen have yielded conflicting results. In this analysis, I build on prior research by considering separately the processes affecting misreport among men and women, as well as by controlling for a range of socioeconomic factors not previously considered in studies of time trends in misreporting. Net of an extensive battery of controls, I find a significant time trend among women across the CDC categories of body weight, with each additional year yielding more accurate self-report by approximately one-tenth of a pound. This trend is meaningful at the margins of the CDC cutoff defining obesity, as the percent of measured obese women misclassified as non-obese by self-report has declined over the study period for Black, White, and Hispanic women alike. For men, the time trend is not significant, nor is the effect meaningful at the margins of the CDC cutoff defining obesity**.**

Within the broader literature on self-reporting bias, this analysis adds additional support to the argument that self-reported weight and height data remain insufficient proxies of measured weight, as differences between measured and self-reported weight due to factors such as misremembering, variation between scales used, or time of day assessed would not be expected to account for the observed differences in misreporting by sex, race, and a range sociodemographic factors. To the contrary, age, education, employment, food insecurity, marital status, and whether a respondent has been dieting are all associated with the extent of reporting bias in the NHANES continuous sample. However, for simple calculation of obesity rates, self-report appears to be a viable proxy for mechanical measurement among men. Should the current trend towards more accurate reporting continue, the same may also be true for women in the near future. This finding does not suggest that men generally report their weight more accurately than do women, but rather, that men report more accurately than women around the cutoff defining obesity.

The patterns of underreporting presented here are consistent with differences found by sex and race in how self-concept is affected by weight status. Women are generally expected to be far more self-conscious of fatness than are men (Tiggemann and Pennington 1990**)**; conversely, smallness is arguably less socially acceptable among men than is excess body fat (Monaghan 2008). That NHANES women underreport their weight on average seems likely to reflect social pressure to be thinner across nearly the full spectrum of BMI for women, while lighter-weight men may be misreporting as heavier to align with social pressure against being too small. This finding deserves more detailed study, as under this interpretation the ideal socially-perceived BMI for men would fall in a range that the CDC classifies as overweight, reflecting a meaningful misperception regarding what constitutes a healthy body weight.

To the extent that reporting bias reflects self-consciousness of weight status, the decrease in bias found among women may reflect a decrease in individual self-consciousness of body fatness as overall obesity rates rise. The time trend in underreporting is consistent with the patterns found in studies on British samples **(**Johnson, Cooke, and Croker 2008; Robinson and

Kirkham 2013), which suggest that higher body weight has become increasingly normalized over the course of the obesity epidemic. The causal processes underlying the decline in self-reporting bias among women remain speculative: whether exposure to an increasingly overweight population leads women to feel less like individual outliers, whether the increase in public discourse around weight makes accurately disclosing one's weight a more commonplace experience, or some combination of these and other factors. Although absolute levels of discrimination are exceedingly difficult to quantify, the finding here is plausibly consistent with Andreyeva, Puhl, and Brownell's (2008) assertion of higher *perception* of weight discrimination among Americans, as increasing comfort accurately disclosing one's weight could well come with increased sensitivity to or willingness to admit discrimination on the basis of that weight.

Although mechanical measurement remains the ideal method of assessing weight and height, the results presented here should be encouraging for researchers using data sources in which the only available measure of obesity is self-report. Furthermore, to the extent that increasingly accurate self-reporting is channeling increasing comfort with higher levels of body fatness among women—as is suggested by both the patterns of misreporting across race and sex, and the differences in misreporting by women who have and have not been recently dieting—the findings here also suggest that more attention might be paid to reporting bias as itself a proxy for self-consciousness of weight. Where the level of bias has implications for correctly estimating the relationship between obesity and other health outcomes, individual self-concept of weight should be considered policy-relevant as well, as it has the potential to affect behavioral responses to interventions targeted at curbing unhealthy levels of body fatness.

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Table 1. Means and Standard Deviations, National Health and Nutrition Examination Survey (NHANES), 1999-2010

	Full	**White**	**Black**	**Mexican-American**
SR-M Weight difference	-1.654	-1.859	-1.691	-1.279
	(0.060)	(0.077)	(0.162)	(0.130)
Weight (lbs)	174.555	176.202	184.215	166.428
	(0.245)	(0.354)	(0.586)	(0.469)
Self-reported Weight (lbs)	172.901	174.343	182.524	165.149
	(0.235)	(0.344)	(0.543)	(0.449)
Height (cm)	167.694	169.412	169.508	163.610
	(0.054)	(0.078)	(0.113)	(0.110)
SR height (in)	66.484	67.217	67.129	64.840
	(0.022)	(0.032)	(0.047)	(0.046)
Age				
16-29	0.310	0.234	0.369	0.409
	(0.002)	(0.003)	(0.006)	(0.006)
30-49	0.289	0.284	0.285	0.285
	(0.002)	(0.004)	(0.005)	(0.005)
50-69	0.249	0.257	0.251	0.226
	(0.002)	(0.003)	(0.005)	(0.005)
70+	0.152	0.225	0.094	0.079
	(0.002)	(0.003)	(0.003)	(0.003)
Education	3.107	3.484	3.007	2.386
	(0.007)	(0.009)	(0.013)	(0.014)
Employed	0.535	0.532	0.510	0.552
	(0.003)	(0.004)	(0.006)	(0.006)
Household Income (IHS)	10.997	11.208	10.840	10.743
	(0.016)	(0.017)	(0.031)	(0.040)
Food Security	0.752	0.852	0.700	0.617
	(0.002)	(0.003)	(0.006)	(0.006)
Married or Cohabiting	0.595	0.640	0.460	0.609
	(0.005)	(0.007)	(0.012)	(0.011)
Household size	3.305	2.793	3.355	4.201
	(0.009)	(0.011)	(0.020)	(0.021)

Diet last year	0.672	0.665	0.696	0.667
	(0.003)	(0.004)	(0.006)	(0.006)
Female	0.510	0.506	0.507	0.508
	(0.003)	(0.004)	(0.006)	(0.006)
White	0.466	1.000	0.000	0.000
	(0.003)	(0.000)	(0.000)	(0.000)
Black	0.219	0.000	1.000	0.000
	(0.002)	(0.000)	(0.000)	(0.000)
Mexican-	0.209	0.000	0.000	1.000
American	(0.002)	(0.000)	(0.000)	(0.000)
Total	31407	16402	7528	7195

Figure 1: Mean Differences Between Self-Report and Measured Weight (lbs.)

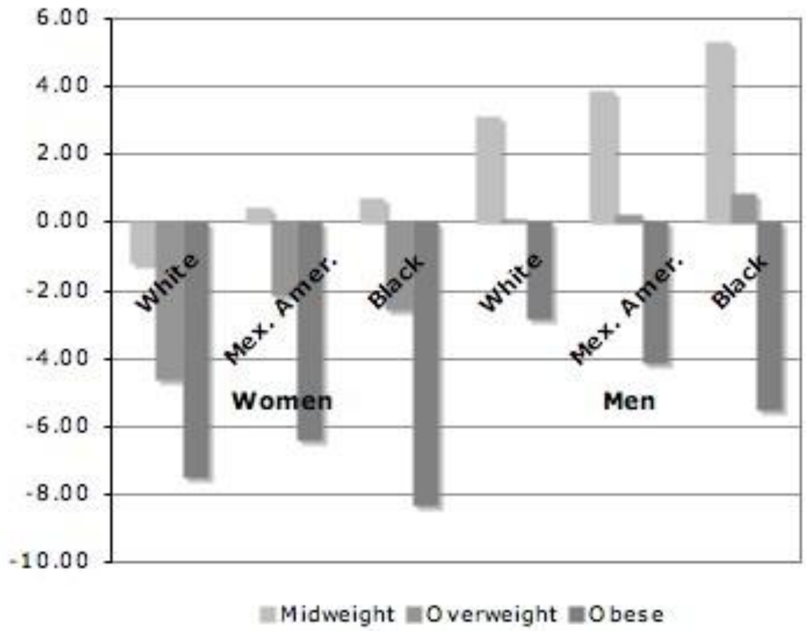

Figure 2: Misreported Weight by Measured BMI

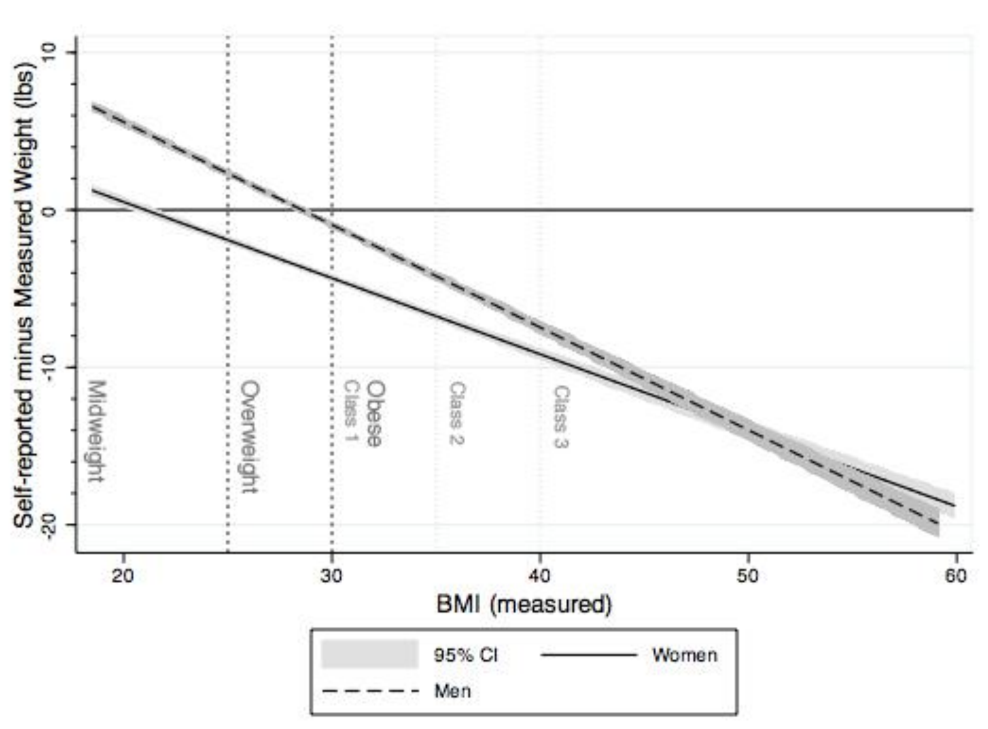

Table 2. Factors associated with the misreporting of body weight (self-reported-measured) among women in the NHANES continuous sample, 1999-2010
(*reference category: White women ages 16-29*)

	Midweight				**Overweight**				**Obese**		
	Model 1	*Model 2*	*Model 3*		*Model 1*	*Model 2*	*Model 3*		*Model 1*	*Model 2*	*Model 3*
Year	0.063**	0.075***	0.083***		0.150***	0.118***	0.130***		0.170**	0.115*	0.107*
	(0.023)	(0.022)	(0.022)		(0.037)	(0.036)	(0.036)		(0.055)	(0.053)	(0.053)
Black		1.973***	1.780***			2.941***	2.757***			0.655	0.446
		(0.207)	(0.212)			(0.321)	(0.326)			(0.427)	(0.436)
Mexican-		1.530***	1.105***			2.620***	1.823***			0.644	0.536
American		(0.207)	(0.214)			(0.321)	(0.340)			(0.494)	(0.516)
30s-40s		0.940***	1.279***			3.369***	3.609***			6.168***	6.302***
		(0.188)	(0.195)			(0.330)	(0.331)			(0.494)	(0.499)
50s-60s		1.948***	2.502***			5.438***	5.791***			7.552***	7.598***
		(0.218)	(0.231)			(0.343)	(0.357)			(0.507)	(0.529)
70+		2.355***	3.258***			6.421***	7.077***			8.155***	8.374***
		(0.243)	(0.283)			(0.396)	(0.452)			(0.653)	(0.718)
Weight		-1.050*	-1.046*			0.619	0.489			-0.326	-0.355*
		(0.485)	(0.482)			(0.980)	(0.971)			(0.173)	(0.173)
Weight^2		0.007	0.007			-0.005	-0.004			0.001	0.001
		(0.004)	(0.004)			(0.006)	(0.006)			(0.001)	(0.001)
Weight^3		-1.75e-05	-1.74e-05			1.04e-05	9.09e-06			-1.58e-06	-1.69e-06*
		(9.61e-06)	(9.55e-06)			(1.29e-05)	(1.28e-05)			(9.01e-07)	(8.99e-07)
Height		0.117***	0.143***			0.063	0.099**			-0.010	0.008
		(0.015)	(0.016)			(0.034)	(0.034)			(0.034)	(0.035)
Education			-0.428***				-0.754***				-0.160
			(0.072)				(0.112)				(0.173)
Employed			0.611***				0.437				0.082
			(0.165)				(0.274)				(0.406)
Income			-0.064				-0.020				-0.025
(IHS)			(0.053)				(0.074)				(0.101)
Food			-0.341				0.207				-1.175**
secure			(0.196)				(0.306)				(0.436)
Married/			-0.099				-0.497*				-0.642
Cohabiting			(0.101)				(0.232)				(0.332)
Household			0.174***				0.148				-0.143
Size			(0.052)				(0.085)				(0.123)
Dieting			-0.880***				-2.094***				-2.085***
			(0.182)				(0.260)				(0.378)
Constant	-126.651**	-114.590*	-131.120**		-304.406***	-273.842**	-289.657***		-348.243**	-207.516*	-185.531
	(46.106)	(48.287)	(49.049)		(75.024)	(88.073)	(87.891)		(109.693)	(105.839)	(107.140)
R^2	0.0012	0.1107	0.1244		0.0032	0.1193	0.1409		0.0016	0.0943	0.1022
N		6153				4962				6085	

Table 3. Factors associated with the misreporting of body weight (self-reported-measured) among men in the NHANES continuous sample, 1999-2010
(*reference category: White men ages 16-29)*

	Midweight			**Overweight**			**Obese**		
	Model 1	*Model 2*	*Model 3*	*Model 1*	*Model 2*	*Model 3*	*Model 1*	*Model 2*	*Model 3*
Year	-0.032	-0.010	0.015	0.005	0.006	0.006	0.026	0.022	0.034
	(0.032)	(0.031)	(0.033)	(0.030)	(0.030)	(0.030)	(0.057)	(0.052)	(0.053)
Black		2.223***	2.122***		1.044***	0.807**		-0.675	-0.817
		(0.260)	(0.268)		(0.278)	(0.281)		(0.448)	(0.452)
Mexican-		1.084***	0.762*		0.517	-0.215		-0.574	-1.019*
American		(0.300)	(0.316)		(0.272)	(0.290)		(0.491)	(0.515)
30s-40s		1.713***	1.699***		1.082***	1.220***		4.739***	4.875***
		(0.281)	(0.290)		(0.297)	(0.305)		(0.492)	(0.519)
50s-60s		1.726***	1.904***		1.541***	1.786***		5.355***	5.476***
		(0.311)	(0.326)		(0.304)	(0.323)		(0.496)	(0.553)
70+		2.352***	2.836***		2.118***	2.562***		5.239***	5.558***
		(0.344)	(0.390)		(0.344)	(0.400)		(0.640)	(0.733)
Weight		0.715	0.605		-0.992	-0.960		-1.017***	-1.032***
		(0.544)	(0.543)		(0.634)	(0.632)		(0.156)	(0.156)
Weight^2		-0.007	-0.006		0.004	0.004		0.004***	0.004***
		(0.004)	(0.004)		(0.003)	(0.003)		(0.001)	(0.001)
Weight^3		1.60e-05*	1.45e-05		-5.25e-06	-5.18e-06		--5.14e-06***	-5.19e-06***
		(7.79e-06)	(7.78e-06)		(5.94e-06)	(5.92e-06)		(5.95e-07)	(5.96e-07)
Height		0.239***	0.245***		0.134***	0.154***		0.214***	0.245***
		(0.022)	(0.022)		(0.027)	(0.027)		(0.033)	(0.033)
Education			-0.320**			-0.570***			-0.769***
			(0.100)			(0.092)			(0.167)
Employed			0.913***			0.579*			0.903*
			(0.245)			(0.255)			(0.423)
Income			-0.050			0.017			0.031
(IHS)			(0.069)			(0.088)			(0.160)
Food			-0.295			-0.904**			-0.488
secure			(0.262)			(0.277)			(0.529)
Married/			-0.310*			-0.017			0.066
Cohabiting			(0.140)			(0.208)			(0.427)
Household			-0.043			-0.020			-0.199
Size			(0.072)			(0.074)			(0.128)
Dieting			0.066			0.075			-1.282***
			(0.385)			(0.260)			(0.359)
Constant	67.784	-34.770	-78.148	-10.638	42.722	39.324	-56.476	5.906	-17.077
	(64.316)	(68.049)	(70.256)	(60.102)	(71.116)	(71.403)	(114.736)	(106.067)	(107.734)
R^2	0.0002	0.0634	0.0691	5.40e-06	0.0166	0.0275	4.27e-05	01749	0.1818
N		5616			6047			4929	

Figure 3. Percent measured obese who self-report as non-obese in the NHANES sample, 1976-2010