



Occupational differences in the wage penalty for obese women

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ABSTRACT

Prior research indicates overweight women are penalized with lower wages. The connection between weight and wages is tested for several occupational categories. The results suggest weight significantly reduces pay only for women in sales and service occupations, a finding consistent with customer discrimination. Obese females who are self-employed also receive a significant wage penalty in customer-oriented occupations, suggesting the pay discrepancy is not originating from employer discrimination.

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1. Introduction

Labor market research provides several results consistent with the theme that appearance affects earnings. [Hammermesh and Biddle \(1994\)](#) document a wage advantage for individuals with above average looks, and a wage penalty for those with below average looks. [Persico et al. \(2004\)](#) indicate taller males receive higher pay, although this finding is primarily driven by differences in adolescent height. In addition, several studies suggest a link between weight and wages. [Averett and Korenman \(1996\)](#) and [Cawley \(2004\)](#) find obese white women receive lower wages than their non-obese counterparts. Furthermore, [Baum and Ford \(2004\)](#) report a wage penalty for obese men and women.

This paper investigates occupational differences in the wage penalty associated with worker weight. The results suggest significant occupational differences are present, as only obese females in sales and service occupations receive a wage penalty. As most of the jobs within these two occupational categories require regular customer contact, the results indicate that customer discrimination may explain at least part of the wage penalty. Furthermore, although prior research generally suggests that overweight African American females are not penalized (e.g., [Averett and Korenman, 1996](#); [Cawley, 2004](#)), no statistically significant difference is found between blacks and non-blacks in sales and service occupations.

There are a number of issues related to the economic effects of weight, some of which are likely to become more important in the future. For instance, [Weis and Arneson \(2006\)](#) suggest that businesses may start to penalize overweight workers for health-cost reasons. If this penalty takes the form of lower wages, then the effects found in this paper may strengthen over time and encompass workers in a broader range of occupations. [Wolkinson and Roehling \(2008\)](#) discuss weight discrimination grievances in the United States, which they characterize as currently rather small. However, this could change significantly if other states follow Michigan and cover weight under state discrimination law. Furthermore, individuals with low socioeconomic status may be at a greater risk for obesity based on characteristics of the communities where they reside (e.g., [Morland et al., 2002](#); [Williams and Collins, 2001](#)). As such, the negative wage effects of weight may be disproportionately felt by lower income workers.

2. Customer discrimination

Customer discrimination has been widely documented in professional sports (e.g., [Longley, 2003](#); [Kanazawa and Funk, 2001](#)). Professional sports are somewhat unique, and it is not clear whether customer discrimination should manifest itself in a similar way for other occupations. Several studies, however, provide evidence of customer discrimination specific to sales and/or service occupations. For instance, [Holzer and Ihlanfeldt \(1998\)](#) find the racial composition of customers affects hiring decisions in metropolitan areas, "particularly in jobs that involve direct contact with customers in sales and service occupations." [Neumark et al.](#)

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(1996) find that high-price restaurants discriminate against female waitresses, a result they partly attribute to customer discrimination. Jasper and Klassen (1990) indicate that sales workers are less likely to work with overweight co-workers on team projects, perhaps because they anticipate lower group success. Additionally, Sartore and Cunningham (2007) find that, after controlling for qualifications, overweight applicants for jobs in the fitness industry are less likely to receive a hiring recommendation. Of particular interest to this study is the effect customer discrimination has on worker pay. Ihlanfeldt and Young (1994) suggest that customer discrimination negatively impacts the wage rates of fast-food workers in Atlanta. This is consistent with theoretical work provided by Kahn (1991), who indicates that, unlike employee or employer discrimination, customer discrimination can cause long-run wage differentials in a model with constant returns and free entry into the market.

The primary hypothesis of this paper is that customer discrimination may extend beyond race or gender differences. Specifically, customers may have a preference to be served by individuals who they find visually more appealing. Rothblum et al. (1988) find negative attitudes toward obese women which are primarily the result of differences in perceived attraction. If these attitudes carry over to the marketplace, overweight workers, all else constant, will generate less in sales revenue, and thus will be compensated at a lower rate. This would be especially true for workers in sales who are partly or entirely paid on commission. However, most jobs in the service sector also involve direct customer contact, and thus obese women in these fields may also be penalized relative to thinner women with similar qualifications. For instance, parents may be relatively less willing to leave their child at a daycare that is run by an obese female.

3. Data

The data are from the National Longitudinal Survey of Youth 1979 (NSLY79), which contains information for individuals born between 1957 and 1964. Respondents are surveyed on an annual basis, although some questions are only asked in select years. With the exception of height, all of the data are from the 1990 round, during which time respondents would have been between the ages of 26 and 33. Individuals were not asked about their height in 1990, thus the data for this question come from the 1982 round, which provides the most recent information on this variable. As such, reported height data were obtained when respondents were between 18 and 25 years of age, thus further growth could have occurred by 1990. On average, however, little growth would be expected to occur beyond this age. According to a report by the National Center for Health Statistics in conjunction with the National Center for Chronic Disease Prevention (2000), women, on average, grow less than one centimeter between the ages of 17 and 20.

For each respondent, a body mass index (BMI) is calculated using 1982 height and 1990 weight information. The BMI is used in prior studies of obesity and wages, and is determined from a standard formula. Women with a BMI in excess of 30 are generally considered obese, and women with a BMI between 25 and 30 are labeled overweight. A BMI less than 18.5 is typically classified as underweight. The initial occupational estimates will compare obese to non-obese women. However, additional weight categories will be analyzed in later sections of the paper. The wage is the reported hourly compensation, and this and all other relevant employment data refer to the current or most recent job. In addition to occupation, control variables in the initial OLS regressions include job tenure, education, race, and regional dummies. Other variables that were insignificant

Table 1
Distribution of occupations by 1980 three-digit census code.

Occupational category	Number	Three-digit codes
Professional, technical, managerial, etc. (three-digit codes: 3–235)	878	3–235
Sales (three-digit codes: 243–285)	309	243–285
Administrative support, clerical, etc. (three-digit codes: 303–389)	898	303–389
Services (three-digit codes: 403–469)	614	403–469
Production, operators, laborers, etc. (three-digit codes: 473–889)	380	473–889
Total observations	3079	

in all specifications, such as average weekly hours and worker age, are excluded from the final estimates.

The occupational classifications are determined by the three-digit codes used in the 1980 census. Table 1 provides a brief description of the five occupational categories analyzed in this study. A large number of occupations are crowded into the last category (production/operators, etc.), as these jobs have relatively few female workers. This category is assumed to represent occupations that require physical labor with limited customer contact. Additional descriptive statistics are provided in Table 2.

4. Occupational differences

Sales occupations should be prime candidates to experience customer discrimination, although service workers will likely be impacted as well. If the wage penalty for weight is based on issues unrelated to customer discrimination, then overweight females in all occupations should receive lower earnings. If, on the other hand, customer discrimination is the primary mechanism driving the low pay of overweight women, then the wage penalty should be smaller, or non-existent, in occupations with little direct customer contact.

Table 3 provides OLS estimates for the wage equations that include all female workers in the sample. Four interaction terms are included to test for occupational differences in the effect of obesity on wages. The omitted occupational group is that of production workers, as arguably occupations in this category would have the least customer contact. The interaction terms for sales and service occupations are negative and significant at the 1% level, indicating that obese women in these fields earn less than similar obese women in production occupations. Although the coefficients on the interaction terms are negative for professional and administrative occupations, they are not significant at the 10% level. Thus, while obese women in sales and service occupations earn approximately 25% less than obese women in production fields, obese women in professional and administrative jobs do not earn significantly more or less than obese women in the production category.

The remaining coefficients presented in Table 3 are all of the expected sign. Education and job tenure contribute to higher wages, with each additional year of school adding 7% to the hourly wage.

Table 2
Variable descriptions and summary statistics.

Variable	Description	Mean	S.D.
Wage	Hourly wage rate [ln(wage)]	6.65	.01
School	Years of education	13.27	2.24
Tenure	Tenure with current employer (weeks)	169.57	169.54
Age	Years	29.14	2.27
BMI	Body Mass Index	26.49	5.84
Obese	=1 if BMI > 30	.21	
Race	=1 if white	.70	
West	=1 if in west region	.10	
South	=1 if in south region	.40	
North Central	=1 if in north central region	.23	

Table 3
OLS estimates for all women: dependent variable = $\ln(\text{wage})$.

Variable	Unstandardized coefficient
Constant	5.70*** (44.78)
Obese	.07 (1.11)
Professional \times Obese	-.11 (1.45)
Sales \times Obese	-.24*** (2.72)
Administrative \times Obese	-.09 (1.26)
Services \times Obese	-.25*** (3.40)
Tenure	.0006*** (12.12)
School	.07*** (15.94)
Race	.03 (1.61)
Age	-.001 (0.33)
South region	-.21*** (8.60)
West region	-.08*** (2.87)
North central region	-.23*** (8.74)
Professional	.23*** (6.38)
Sales	-.03 (0.82)
Administrative	.11*** (3.34)
Services	-.19*** (5.22)
Adj-R ²	.31
Observations	3079

Note: Absolute values of t -statistics are in parenthesis; levels of statistical significance are represented by * (10%), ** (5%), and *** (1%).

With respect to the regional variables, all regions earn less than similar workers in the northeast. The occupational dummy variables compare wages of each classification to average wages for production workers, operators, laborers, etc. As expected, workers in professional occupations earn the most, and workers in service jobs have the lowest pay.

The actual wage penalty for obese women in sales can be found by adding the coefficients from the *obese* and *obese \times sales* variables. Thus, referring to Table 3, obese women in sales earn 17% less than non-obese women in sales with otherwise similar characteristics. For service occupations, an 18% wage penalty for obesity is indicated. Given the size and significance of the remaining weight-related coefficients, the results suggest no wage penalty for obese women in the three remaining occupational categories.

As further support for occupational variability in the wage penalty for obesity, the sample is split consistent with what the interaction terms suggest; sales and service occupations in one category and the remaining occupations in another category. Although not shown for brevity, an occupational interaction term was initially included in the regression for sales and service workers which confirmed no statistical difference in the wage penalty between these two occupational groups. In addition, more classifications of worker weight are added to the analysis. According to national standards, women with a BMI less than 18.5 are considered underweight. Given the images associated with beauty in the United States, it would seem less likely that underweight women would be subject to weight-based discrimination. Nonetheless, the variable *underweight* includes all women who fall into this category. Additionally, *overweight*, *obese*, and *sobese*, indicate BMIs of 25–29.99, 30–34.99, and 35+, respectively. The first two categories are associated with the standard definitions of overweight and obese. The last category is arbitrarily established to test whether women in this category fair even worse than mildly obese women.

The results are presented in Table 4. As suggested by the aggregate estimates of Table 3, there are significant occupational differences with respect to the weight variables. Within sales and service occupations, obese and severely obese women receive wage penalties of 11% and 25%, respectively. Women who are overweight, but not in the obese category, do not earn significantly less. For the remaining occupational groups, there is no statistically significant wage penalty associated with weight, even for women with a BMI of 35 or greater. Within sales and service occupations, the coeffi-

Table 4
OLS estimates by occupational grouping: dependent variable = $\ln(\text{wage})$.

Variable	Sales and service occupations: unstandardized coefficients	Professional, administrative, and production occupations: unstandardized coefficients
Constant	5.31*** (38.70)	5.73*** (76.25)
Underweight	-.26 (1.36)	.003 (0.03)
Overweight	-.03 (0.63)	.000004 (0.001)
Obese	-.11* (1.84)	.01 (0.21)
SObese	-.25*** (4.00)	-.06 (1.51)
Tenure	.0007*** (5.94)	.0006*** (9.95)
School	.09*** (8.78)	.07*** (12.91)
CB	.22*** (3.75)	.09*** (3.51)
PBP	.07* (1.76)	.03 (1.32)
YC	-.15** (2.95)	.006 (0.16)
Self	-.26*** (4.42)	-.08 (1.25)
Nonblack	.08* (1.81)	.03 (1.07)
Sales	.11*** (2.79)	
Professional		.24*** (7.59)
Administrative		.12*** (4.03)
West	-.10* (1.66)	-.09*** (2.70)
South	-.21*** (3.84)	-.19*** (7.04)
North central	-.33*** (5.97)	-.19*** (6.21)
Adj-R ²	.24	.24
Observations	881	2077

Note: Absolute values of t -statistics are in parenthesis; levels of statistical significance are represented by * (10%), ** (5%), and *** (1%).

cient on *underweight* is negative, but not significant at the 10% level. Although not shown for brevity, if the five occupational groups are estimated using separate regressions, the wage penalty for obesity continues to be significant only for sales and service occupations.

5. Differences in wage-setting behavior

Although the results are suggestive of customer discrimination, differences in method of pay between occupations could play a role as well. For instance, unions typically compress wages across workers, thus it is possible that obese women in union jobs would be relatively less affected. Within the sample, approximately 25% of workers in production occupations have their wages set by collective bargaining, as opposed to only 10% of sales workers. The remaining three occupational groups have similar levels of unionization (approximately 15%). The equations estimated in Table 4 include the variable *CB* to control for women who indicated their wages were determined by collective bargaining. The estimates suggest, as suspected, that union workers receive a wage advantage, with the effect stronger in sales and service occupations. However, inclusion of this variable does not alter the occupational differences in the weight-based wage penalty. Furthermore, the impact of union status on the wage penalty was directly tested by including interaction terms between *CB* and *obese*, and *CB* and *sobese*. In both cases, the interaction term was insignificant (t -statistics of 0.10 and 0.72, respectively), indicating that union status does not protect obese women from the negative wage effects associated with obesity.

Further differences in wage-setting behavior are also analyzed. Thirty-one percent of females in sales occupations indicated that their pay was tied to performance, and approximately 27% of service and production workers received performance based pay. However, only 16% of professionals and 11% of administrative workers had their earnings directly tied to performance. If the wage penalty is associated with customer discrimination, then women with performance based pay may be relatively more affected. Performance based pay (*PBP*) is included in the estimated equations summarized in Table 4. The coefficient is positive and significant for sales and service occupations, perhaps because workers with above average ability are more likely to be attracted to jobs with that type of com-

pensation scheme. Nonetheless, elimination of the variable *PBP* has little impact on the size of the weight-related coefficients, and no significant interaction was found between *PBP* and obesity.

If discrimination toward obese females originates from supervisors and/or managers, as opposed to customers, then women who are self-employed should be able to partially or totally avoid the weight-related wage penalty. Interestingly, service workers were at least four times more likely to be self-employed as women in any of the other occupational categories, yet service jobs, on average, receive a significant weight-based wage penalty. The variable *self*, representing self-employed women, is included in the equations estimated in Table 4. Self-employed workers, all else constant, receive significantly lower pay. Furthermore, when *self* is interacted with either *obese* or *sobese*, the coefficients are statistically significant at the 5% level (coefficients of $-.32$ and $-.41$, and *t*-statistics of 2.06 and 2.46, respectively). Specifically, obese self-employed women in sales and service occupations earn 32% less than similar obese women who are not self-employed. The additional wage penalty for self-employed severely obese women jumps to 41%. Thus, being self-employed does not protect obese women from lower wages. To the contrary, it actually enhances the wage penalty. The inclusion of the interaction term did not affect the statistical significance of the *obese* and *sobese* variables, thus women who are not self-employed in sales and service occupations continue to receive significantly less pay than their thinner counterparts.

The reason for the negative interaction between obesity and self-employment may be related to the types of occupations that are associated with self-employed workers. For instance, self-employed women are significantly over-represented in the following occupations: child care workers, household cleaners and servants, hairdressers, and cosmetologists. All of these occupations involve direct customer contact, and are likely to be associated with repeat business with the same customer. Furthermore, these occupations are arguably more customer oriented than occupations containing no self-employed workers in the sample (such as ushers and short order cooks). Thus, the especially severe wage penalty for self-employed workers may be interpreted as evidence in support of customer discrimination, as self-employed females are more likely to hold service jobs with a high degree of customer interaction.

Initial attempts to sort service occupations based on the extent of customer contact provided little additional insight, as sorting rules were either highly subjective or resulted in overly restrictive sample sizes. Thus, in order to make an effective occupational comparison, all service occupations were lumped together, with the understanding that the extent of customer contact varies within the occupational category. Nonetheless, nearly all occupations in the service category involve some level of direct customer contact, with short-order cook being one of the few exceptions.

6. Racial differences and pregnancy-related weight gain

Prior research suggests the wage penalty for being overweight is insignificant for African American females (e.g., Averett and Korenman, 1996; Cawley, 2004). There is evidence indicating African American women have less negative perceptions of weight compared to white and/or Hispanic women (e.g., Lovejoy, 2001; Ge et al., 2001). Thus, if the weight penalty is at least partially attributable to issues related to self-esteem, confidence, etc., then perhaps African American women are able to limit the negative effects associated with weight. However, if there is customer discrimination toward heavier women, then it would seem likely that obese women, regardless of color, may be penalized. Abrams et al. (1993) demonstrate that African American communities have

less negative attitudes toward weight than white communities. Furthermore, on average, African American women have higher BMI's than white women. For instance, 35% of African American women are considered obese according to national standards ($BMI > 30$), as compared to 16% for white women. Thus, if obese black women receive a wage penalty, it is likely to impact a greater percentage of their respective workforce.

The equations estimated in Table 4 classify the dummy variable associated with race to *nonblack*, which equals one for all races other than African American. There are some distinct differences in the types of jobs held by black women in the service category, but it is not clear that either racial group is relatively more represented in jobs involving the most interaction with customers. For instance, non-black females were more than twice as likely as blacks to be in real estate and insurance sales, where black females were more than twice as likely to be nursing aids or maids. When *nonblack* is interacted with *obese* or *sobese*, the coefficients are insignificant at the 10% level (*t*-statistics of 0.69 and 1.22, respectively). This suggests that, within sales and service occupations, there is no statistical difference in the wage penalty associated with obesity.

Weight may be correlated with a recent pregnancy, and children are known to reduce women's wages (e.g., Waldfogel, 1997). Thus, occupational differences in the presence of young children could impact the relative effect of weight on wages. Sixteen percent of females in sales occupations have a child less than 2 years of age in the home, as compared to 11–13% for the remaining occupations. The variable *YC* is included in the estimates reported in Table 4, which controls for all women with a child less than 2 years old in the household. The survey does not provide a mechanism to sort out those females who have a biological child less than 2 in the house, but inclusion of this variable should be a good proxy for women who have been pregnant in the recent past. The coefficient on *YC* is negative and significant in sales and service occupations. However, when young children (*YC*) is interacted with obesity, the interaction coefficient is insignificant, suggesting the size of the wage penalty is not related to pregnancy-related weight gain. Overall, controlling for differences in race, wage-setting behavior, and pregnancy-related weight gain does not alter the occupational differences in the wage penalty associated with obesity.

7. Discussion

Although the results appear consistent with customer discrimination, other explanations are worth exploring. However, for each of these potential explanations, it is not clear why a broader range of occupations would not be affected. For instance, if being overweight is associated with lower self-esteem, and lower self-esteem subsequently reduces worker productivity, then we might expect a wage disadvantage for overweight workers in professional and managerial occupations. Carr and Friedman (2005) indicate professional women are more likely than non-professional women to report employment discrimination. In addition, Haskins and Ransford (1999) report that weight is strongly related to income only for entry-level managerial and professional occupations. However, their sample is restricted to employment in one aerospace organization.

The analysis provided in this paper indicates there is no statistically significant connection between weight and pay for women in professional, managerial, and technical occupations. Perhaps consistent with this, Averett and Korenman (1996) conclude the wage penalty for overweight women is not related to low levels of self-esteem. Furthermore, if employer's discriminate against overweight women for reasons other than the perceived negative effect on customers, this presumably would occur across a wide

range of jobs, and not just in occupations with significant customer contact. Arguably, some professional occupations, such as physicians, do have contact with customers. Stearns et al. (2001) suggest overweight female physicians face negative gender effects that are much stronger than those associated with weight, thus the type of interaction between physicians and customers may be less likely to lend itself to weight-related customer discrimination. This same dynamic may be relevant for the small number of other professional occupations that involve some level of customer contact.

Overweight females in occupations that require more manual labor may be disadvantaged for several reasons. First, these jobs are generally considered male-oriented occupations, and thus female workers may be less accepted by co-workers. Tremblay (1988) does not find evidence of employee discrimination based on gender, but these jobs may nonetheless be less suitable for the average female. Only 12% of females in the sample are in occupations with three-digit codes 473–889, which includes jobs typically described as blue-collar. In contrast, 52% of male workers from the 1990 round of the NSLY survey are in these occupations. Second, if excess weight reduces the ability to perform blue-collar jobs, then overweight men and women will likely be penalized in a competitive labor market. The estimates presented in Tables 3 and 4 indicate that, if present, these effects do not have a significant effect on the pay of obese females.

Overall the occupational differences are consistent with, but not proof of, customer discrimination. Thus, non-appearance related characteristics associated with obese women may be relatively more damaging in certain occupations, thus contributing to the occupational differences based on weight. For instance, unobserved personality attributes, such as self confidence, may be associated with weight, and may subsequently affect worker productivity. Further research may determine whether these negative consequences are relatively more damaging to women who eventually take jobs that involve regular customer contact. However, in the absence of research suggesting such a link, customer discrimination appears to be the most likely explanation for the occupational differences found in this study.

As all women in the sample are between 26 and 33 years of age, the analysis is limited to women who are at a certain stage in life. Older women may not be held to the same weight and/or appearance standard by customers. Furthermore, negative health consequences related to obesity, which should not be more prevalent in sales and service occupations, may not begin to impact worker productivity until a relatively late age. Thus, an analysis of women in their 40s and 50s could indicate that the wage penalty for obesity varies little by occupation. Additionally, if obesity continues to become more common in the U.S., perhaps the negative attitudes toward weight will dissipate, thus reducing customer discrimination based on obesity. A more complete understanding of the interaction between weight and worker pay may be provided by analyzing generational differences in the relationship between weight and female earnings.

8. Conclusion

Previous research indicates overweight female workers receive a wage penalty relative to thinner women with similar socioeconomic characteristics. The mechanism by which this occurs could be internal to the individual, as the typical overweight woman may have lower levels of self confidence, self-esteem, etc. that could translate into lower job performance. Another explanation for this phenomenon could be related to labor market discrimination. If employers have a preference for women with low or normal weight, then they may be willing to offer higher wages to cur-

rent or prospective employees with these characteristics regardless of productivity. However, this would require a reduction in profits, and thus would be a hard policy to maintain in a competitive market. If, on the other hand, consumers have a taste for buying goods from women that are not overweight, employers will find it profit-maximizing to discriminate against heavier women in these occupations.

The wage penalty for overweight women is tested for female workers in five broad occupational categories. Two of the five categories, sales and services, are argued to require more customer contact than the remaining occupational groups. The estimates from the wage equations support the customer discrimination explanation. Specifically, the wage penalty is significant only in service and sales occupations, and is robust with respect to differences in wage-setting behavior between occupational groups. It is likely that the discrimination is not weight-based per se, but rather the result of a correlation between perceived beauty and weight in the United States. This notion is supported by the following statement from a female saleswoman quoted in Everett (1990), “you write more business when you look good. It’s disgusting to realize that, but it’s true”.

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