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## Impact of body mass on job quality

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## ABSTRACT

The current study explores the association between body mass and job quality, a composite measurement of job characteristics, for adults. We use nationally representative data from the Korean Labor and Income Panel Study for the years 2005, 2007, and 2008 with 7282 person-year observations for men and 4611 for women. A Quality of Work Index (QWI) is calculated based on work content, job security, the possibilities for improvement, compensation, work conditions, and interpersonal relationships at work. The key independent variable is the body mass index ( $\text{kg}/\text{m}^2$ ) splined at 18.5, 25, and 30. For men, BMI is positively associated with the QWI only in the normal weight segment (+0.19 percentage points at the 10th, +0.28 at the 50th, +0.32 at the 75th, +0.34 at the 90th, and +0.48 at the 95th quantiles). A unit increase in the BMI for women is associated with a lower QWI at the lower quantiles in the normal weight segment (−0.28 at the 5th, −0.19 at the 10th, and −0.25 percentage points at the 25th quantiles) and at the upper quantiles in the overweight segment (−1.15 at the 90th and −1.66 percentage points at the 95th quantiles). The results imply a spill-over cost of overweight or obesity beyond its impact on health in terms of success in the labor market.

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## 1. Introduction

Individuals in the labor market want to have a good job and having a good job is an important measure of labor market success. There are various job characteristics that make a job desirable. Even jobs with a similar level of monetary compensation may have different characteristics, such as non-monetary compensation in the form of fringe benefits, autonomy, possibilities for promotion, or social status. Workers' subjective satisfaction is also an important aspect determining a good job.

Monetary compensation is commonly used in economics as an objective measurement of success in the labor market. Studies also point out that jobs with relatively poor work environments or work contents offer higher wages to compensate for such a poor quality of work if the market is in a state of competitive equilibrium (Smith, 1979; Brown, 1980). However, there is only sparse empirical evidence supporting the economic theory on compensating wage differentials, and only job characteristics with respect to the extreme aspects of a job, such as a risk of death appear to be compensated for with wage differentials (Duncan and Holmlund, 1983; Brown, 1980). Despite the fact that wage paid for a job is one of the most important aspects determining whether the job is good or bad, wages only partially represent global job aspirations (Clark, 1998; Freeman, 1978), as wages may not represent the non-pecuniary objective

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aspects of a job (Jencks et al., 1988) or workers' subjective evaluations of their own jobs (Clark, 1998).

Research suggests that overweight or obese workers could be less successful in the labor market if they have low productivity due to limited mobility or sickness, or potentially a high discount rate and low investment level on long-term outcomes such as healthy behaviors and human capital (Bhattacharya and Bundorf, 2009; Baum and Ford, 2004; Cawley, 2000; Carr and Friedman, 2005; Han et al., 2011; Pagan and Davila, 1997). Other explanations for body mass penalty in the labor market include concerns about customers' distaste for overweight or obese employees, particularly in occupations requiring interactions with customers such as sales (Everett, 1990; Puhl and Brownell, 2001; Han et al., 2009, 2011). All of these potential mechanisms suggest a lower likelihood of success for overweight or obese workers in the labor market.

Substantial research has focused on the outcomes of overweight/obesity in the labor market in terms of wages, the probability of employment, and occupational classifications, reporting an obesity or body mass penalty, particularly among white women (Atella et al., 2008; Averett and Korenman, 1996; Baum and Ford, 2004; Brunello and D'Hombres, 2007; Caliendo and Lee, 2013; Cawley, 2004; Conley and Glauber, 2005; Greve, 2008; Han et al., 2009; Lundborg et al., 2007; Morris, 2007; Norton and Han, 2008; Pagan and Davila, 1997; Paraponaris et al., 2005; Sabia and Rees, 2012; Sarlio-Lahteenkorva and Lahelma, 1999; Tunceli et al., 2006; Villar and Quintanan-Domeque, 2009; Wada and Tekin, 2010).

However, only a few related studies have explored the association between body mass index (BMI) and the non-monetary attributes of a job, such as job security or work content. Using German data, Muenster et al. (2011) reported that obese adults are 2.55 times more likely to feel job insecurity (measured as 100% probability for losing the job in the following two years) than their non-obese counterparts. Based on U.S. data, Pronk et al. (2004) report that obesity is related to more difficulty in social relationships with coworkers, implying that obesity has a significant impact on work performance.

In this study, we focus on global job quality as a comprehensive measurement of job characteristics that reflect the desirability of a given job and explore the impact of body mass on global job quality. The quality of work index in the current study is based on previous studies and accounts for not only monetary characteristics but also non-monetary objective characteristics as well as individual evaluations of a job. We specifically considered six aspects of a given job: work content, job security, the possibilities for improvement, monetary compensation, the work conditions, and interpersonal relationships at work. Therefore, the quality of work index in our study measures overall success in the labor market (Phang et al., 2007).

We use a quantile regression model to investigate the heterogeneity in the association between body mass and job quality across the entire conditional distribution of the continuous measurement of the job quality index. A study by Atella et al. (2008) is by far the only previous

study demonstrating variations in the characteristics of the association between obesity and wages across a conditional wage distribution using a quantile regression model. Other relevant evidence also suggests heterogeneity in the appearance (including obesity)-wage relationship; for example, appearance accounts for performance only at the top of the wage distribution (Hamermesh and Biddle, 1994). Such heterogeneity in the association between obesity or appearance and wages at different points of the wage distribution raises a similar concern about the association between body mass status and the composite job quality index. If body mass status is associated with job quality only at the bottom or top of the distribution of the job quality index, mean estimations can mask potential statistical significance at the ends of the conditional distribution of the job quality index and erroneously yield no association between body mass status and job quality.

This study extends the existing literature by assessing the presence of a body mass penalty with regard to labor market success, using a composite indicator of success which reflects both objective job characteristics and subjective individual evaluations of jobs. The study results provide empirical support of the importance of interventions to manage overweight/obesity in Korea and can add to the global evidence in earlier works.

## 2. Materials and methods

### 2.1. Data

We use the Korean Labor and Income Panel Study (KLIPS), a survey of individuals and their co-inhabitants from 5000 households annually from 1998 to 2009. The survey sample design is complex in order to produce nationally representative estimates. KLIPS collected a broad range of information regarding the respondents' work such as wages, job training, work hours, and job satisfaction, as well as other demographic and socioeconomic characteristics. Our study uses data from three years of the survey (2005, 2007, and 2008) in which the respondents' body weights and heights were collected. The final sample includes 11,893 person-year observations (7282 men and 4611 women) after excluding those who are younger than 20 or older than 65 years of age, unemployed or self-employed, and lacking valid information on covariates.

### 2.2. Variables

The contribution of each attribute of the job characteristics to the overall job quality can vary according to the society, as specific cultural and contextual environments influence the assessment of the role of each factor. Therefore, we adopt the quality of work index (QWI), which was developed based on information in the KLIPS data and the literature (Phang et al., 2007). The QWI measures job quality according to six aspects of a given job: (1) work content, (2) job security, (3) the possibilities for improvement, (4) monetary compensation, (5) work conditions, and (6) interpersonal relationships at work.

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