Laugh and Grow Fat:
Happiness Affects Body Mass Index among Urban Chinese Adults

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1. Aim
Using data combined from four Chinese General Social Survey datasets between 2010 and 2013, this study explores whether subjective well-being (SWB) affect body mass index among them.

2. Data & Methods
Data. The richness of the data from a leading nationwide survey project, the Chinese General Social Survey, has given us the opportunity to explore the potential effect of subjective wellbeing on BMI among urban Chinese.

Methods. <u>*Dependent variable.*</u> Following standard practices, we classify BMI into four classes, namely, underweight, normal weight, overweight, and obesity. In addition, we also treat BMI as a continuous variable. <u>*Core predictors.*</u> As the main explanatory variable, subjective well-being is captured by a single item asking respondents 'Generally speaking, how happy do you feel about your life?', with five possible ordered responses: 'very unhappy', 'unhappy', 'so-so', 'happy', and 'very happy'.

Methods: OLS and OProbit Models were used. We also employed IV models as auxiliary analyses for checking robustness and exploring the underlying causal direction.

3. Results
As expected, happiness is of substantial importance to BMI. Compared to those who feel very happy about lives, respondents feeling very unhappy are slimmer as the BMI of them are 0.51 lower. In fact, results from Probit models are similar with those from OLS models. The figure advantage brought by turning from being very happy to unhappy is around 0.043, suggesting that such a change of subjective wellbeing will lead to a 0.043 lower probability of being overweight.

To instrument the level of happiness, we exploited the novel data from Spatial Explorer of Religion to obtain the provincial numbers of Christian churches (churches of the Catholic and Protestant denominations of Christianity) built between 210CE to 1949, just before the CCP came into power. We performed a series of conditional mixed process (CMP) IV tests allowing for different variable types of BMI and endogenous happiness. The CMP analysis uses full-information maximum likelihood (FIML) to simultaneously estimate two equations and directly tests the significance of the correlation between the error terms in the two equations. The IV results clearly show that the level of happiness significantly predict BMI, taking into account the potential mutual causality and omitted variable problem.

4. Conclusion
After extensively controlling for a set of individual sociodemographic and health attributes, we find that those who have higher level of happiness tend to have higher BMI. Furthermore, we used the historical density of Christian churches of each province as the instrumental variable to resolve endogeneity problems arising from mutual causality (e.g., obesity can cause unhappiness) and omitted-variable bias. The instrumental variable estimation also supports "laugh and grow fat".

5. References
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