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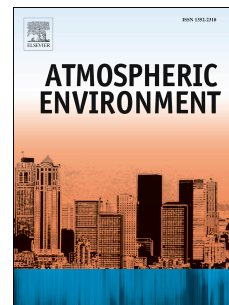
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1 Variability in Impact of Air Pollution on Subjective Well-being

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6 Japan7 ^cUrban Institute, School of Engineering, Kyushu University, Fukuoka, Japan8 ^dCorresponding author9 **Abstract**

10 This paper examines the impact of variability in impact of air pollution on life satisfaction
11 (LS). Previous studies have shown robust negative impact of air pollution on subjective
12 well-being (SWB). However, empirical studies that consider variability in air pollution
13 effects through comparative city study are limited. This study provides comparative
14 evaluation of two major Chinese cities: Beijing and Shanghai. We apply a geo-statistical
15 spatial interpolation technique on pollution data from monitoring sites to estimate the Sulfur
16 Dioxide (SO₂), Nitrogen Dioxide (NO₂), coarse particles with a diameter between 2.5 and 10
17 μm (PM₁₀) and fine particles with a diameter of 2.5 μm or less (PM_{2.5}) pollution exposure of
18 respondents of a survey conducted in 2016. The results show that all pollutants have robust
19 negative impacts on LS for Beijing residents, whereas only SO₂ and NO₂ have significant
20 negative impacts on LS for Shanghai residents; Per unit impact of SO₂ is greater in Shanghai,
21 and that of NO₂ is greater in Beijing. Beijing and Shanghai residents have almost same
22 monetary valuation for SO₂ reduction but Beijing residents place approximately 1.5 times
23 valuation on NO₂ reduction compared to Shanghai residents. Moreover, the LS of Beijing
24 residents is sensitive to temporal changes in the pollution level, whereas Shanghai residents
25 are unaffected by such changes.

26
27 **Keywords:** Subjective well-being; Life satisfaction; Air pollution; Geo-statistical spatial
28 interpolation; China

29
30 **JEL:** Q51, Q52, Q53

31
32 **1. Introduction**

33 Understanding people's subjective perception of environmental problems is crucial in the
34 field of environmental economics and environmental impact assessment. Subjective
35 evaluation allows us to incorporate people's environmental concerns in addition to the
36 stated-preference (e.g., Wang and Mullahy, 2006) or revealed-preference approaches (e.g.,
37 Kim et al., 2003) that have traditionally been used by economists to incorporate subjectivity

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