

# Author's Accepted Manuscript

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PII: S0095-0696(17)30122-5  
DOI: <http://dx.doi.org/10.1016/j.jeem.2017.02.008>  
Reference: YJEEM2010

To appear in: *Journal of Environmental Economics and Management*

Received date: 18 May 2016  
Revised date: 15 February 2017  
Accepted date: 26 February 2017

Cite this article as: Fernando M. Aragón, Juan Jose Miranda and Paulina Oliva  
Particulate matter and labor supply: the role of caregiving and non-linearities  
*Journal of Environmental Economics and Management*  
<http://dx.doi.org/10.1016/j.jeem.2017.02.008>

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# Particulate matter and labor supply: the role of caregiving and non-linearities\*

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February 2017

## Abstract

This paper examines the effect of air pollution on labor supply in Lima, Peru. We focus on fine particulate matter ( $PM_{2.5}$ ), an important pollutant for health according to the medical literature, and show that moderate levels of pollution reduce hours worked for working adults. Our research design takes advantage of rich household panel data in labor outcomes to address omitted variables. This research design allows us to investigate whether the response to air pollution is non-linear. We find that the effect of moderate pollution levels on hours worked is concentrated among households with susceptible dependents, i.e., small children and elderly adults; while the highest concentrations affect all households. This suggests that caregiving is likely a mechanism linking air pollution to labor supply at moderate levels. We provide further evidence of this mechanism using data on children morbidity. Finally, we find no evidence of intra-household attenuation behavior. For instance, there is no re-allocation of labor across household members, and earnings decrease with air pollution.

Keywords: Labor supply; Air pollution; Developing Countries

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\*We thank the Comité de Gestión de la Iniciativa de Aire Limpio para Lima y Callao for sharing their pollution data. We are grateful to Thiemo Fetzner, Joshua Graff-Zivin, Rema Hanna, Willa Friedman and seminar participants at University of British Columbia, University of Washington, IZA meetings, Southern Methodist University, University of Houston, and the World Bank for useful comments and suggestions. The views expressed here do not necessarily reflect those of the World Bank or their member countries. All errors and opinions are our own.

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