

# Julian A. Gomez-Gelvez

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Ph.D. Candidate

Department of Agricultural and Resource Economics

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## FIELDS OF INTEREST

Transportation economics, environmental economics, industrial organization, public economics

## EDUCATION

Ph.D. Agricultural and Resource Economics (AREC), University of Maryland, College Park (expected Spring 2021)

M.Sc. Transportation, Massachusetts Institute of Technology (MIT), 2010

B.Sc. Industrial Engineering, *Magna Cum Laude*, Universidad de los Andes, Colombia, 2008

B.Sc. Civil Engineering, *Magna Cum Laude*, Universidad de los Andes, Colombia, 2007

## DISSERTATION

Title: *Market Structure and Congestion Externalities: Theory and application to the ride-hailing industry*

Committee: Drs. Robertson C. Williams III (chair), Joshua Linn, Andrew Sweeting

## ACADEMIC EXPERIENCE (research and teaching)

- Research assistant, AREC, University of Maryland, Fall 2015-Spring 2019. Supervisors: Drs. Anna Alberini, Robert G. Chambers and Jorge Holzer.
- Teaching assistant, AREC, University of Maryland, Fall 2019-Spring 2020. Microeconomic applications in Agricultural and Resource Markets (graduate, Drs. Robert G. Chambers and Jorge Holzer), The Chesapeake Bay Ecosystem: Intersection of Science, Economics and Policy (undergraduate, Drs. Jorge Holzer and Sara Lombardi).
- Instructor (researcher and undergraduate teaching in transportation), Department of Civil Engineering, Universidad de los Andes, Colombia, 2012-2014
- Research assistant, MIT Transit Lab, 2008-2010. Supervisor: Dr. Nigel Wilson.

## JOB MARKET PAPER

Congestion charges under market power: An application to ride hailing in Bogotá, Colombia (abstract below)

## PUBLICATIONS

1. Gomez-Gelvez, J.A. and Obando, C. (2014). Joint Disaggregate Modeling of Car and Motorcycle Ownership: Case study of Bogotá, Colombia. *Transportation Research Record: Journal of the Transportation Research Board*, 2451, 149-156.
2. Gomez-Gelvez, J.A. and Obando-Forero, C. (2014). Motorization, the Number of Trips and Modal Distribution in Bogotá: Past and Possible Future. *Revista de Ingenieria Universidad de los Andes*, 40, 6-13.
3. Gomez-Gelvez, J.A. and Obando, C. (2013). Modeling Car Ownership in Urban Areas of Developing Countries: Case study of Bogotá, Colombia. *Transportation Research Record: Journal of the Transportation Research Board*, 2394, 111-118.

## WORKING PAPERS

1. Gomez-Gelvez, J.A., Mojica, C.H., Kaul, V. and Isla, L. (2016). The incorporation of electric cars in Latin America. *Inter-American Development Bank Monograph 460*, Washington, DC.

## WORK IN PROGRESS

- Pricing congestible resources: Profit maximization vs. social optimality
- Modeling competition between ride-hailing platforms
- Gasoline prices, labor supply and the optimal gas tax

## CONFERENCE PRESENTATIONS

- 2019 *Is Uber's price right? Congestion vs. market power in the ride-hailing industry*, presented at the Summer Conference of the Association of Environmental and Resource Economists AERE, Incline Village, Nevada (May); and at the 1<sup>st</sup> DC Area Student/Professor Environmental and Energy Economics Workshop, University of Maryland, College Park (August).  
*Would a monopolist ride-hailing company charge a socially efficient price?* presented at the International Transportation Economics Association Annual Conference ITEA, Paris, France (June)
- 2018 *Private Ownership and Congestible Resources*, presented at the World Congress of Environmental and Resource Economists WCERE, Gothenburg, Sweden (June); and at the Institutional and Organizational Economics Academy IOEA, Cargese, Corsica, France (May)
- 2016 *Can Better Public Transportation Contain the Rise of Motorcycles in Colombia?* presented at the International Transportation Economics Association Annual Conference ITEA, Santiago, Chile (June)
- 2014 *Joint Disaggregate Modeling of Car and Motorcycle Ownership: Case study of Bogotá, Colombia*, presented at the Transportation Research Board 93rd Annual Meeting, Washington, DC (January)  
*Evaluación costo-beneficio ex-ante del SITP de Bogotá y su transformación tecnológica*, presented at the X International Conference in Sustainable Transportation, Mexico City, Mexico (October)
- 2013 *Modeling Car Ownership in Urban Areas of Developing Countries: Case study of Bogotá, Colombia*, presented at the Transportation Research Board 92nd Annual Meeting, Washington, DC (January)  
*Studying car and motorcycle ownership levels in developing countries using individual income distributions*, presented at the 13<sup>th</sup> World Conference in Transportation Research WCTR, Rio de Janeiro, Brazil (July)  
*El crecimiento de la motorización en Suramérica a 2040*, presented at the XVII Latin American Conference in Urban and Public Transportation, Guayaquil, Ecuador (April)

## FELLOWSHIPS AND AWARDS

- Prize as the most promising short presentation for *Is Uber's price right? Congestion vs. market power in the ride-hailing industry*, 1<sup>st</sup> DC Area Student/Professor Environmental and Energy Economics Workshop, University of Maryland, 2019
- Bruce and Mary Ann Gardner Dissertation Enhancement Award, AREC, University of Maryland, 2019
- Dr. Bruce L. Gardner Memorial Scholarship, AREC, University of Maryland, 2018
- Best Paper by a First-Year Student for *On the Short-run Economics of Telecommuting*, AREC, University of Maryland, 2016

- Fulbright-Colciencias Scholarship for Doctorate Studies, Colombia, 2015-2019
- Schoettler Fellowship for Master Studies, MIT, 2008
- First Place in Undergraduate Student Simulation Competition, Institute of Industrial Engineers and Rockwell Automation, Nashville, TN, 2007
- Academic Excellence Scholarship, Universidad de los Andes, Colombia, 2005
- Ramón de Zubiría Scholarship, Universidad de los Andes, Colombia, 2004

### **PROFESSIONAL EXPERIENCE**

- Consultant for the Inter-American Development Bank and the German Development Agency (electric vehicles, logistics and freight transportation), 2014-2015
- Advisor to the Deputy Minister of Transportation, Colombia, 2010-2011

### **ACADEMIC ORGANIZATIONS**

- Latin American and Caribbean Economic Association (LACEA)
- Latin American Association of Environmental and Resource Economists (LAERE)
- International Transportation Economics Association (ITEA)
- Association of Environmental and Resource Economists (AERE)

### **SKILLS**

Programming: Python, Matlab, R, Stata

### **REFERENCES**

Dr. Robertson C. Williams III  
 Professor  
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Dr. Joshua Linn  
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# **Congestion charges under market power: An application to ride hailing in Bogotá, Colombia**

## **Job Market Paper - Abstract**

The rapid growth of ride-hailing services over the last decade has caused concerns about their potential to worsen traffic congestion. Economists usually prescribe a Pigouvian tax or congestion charge to treat this illness and contain excessive growth. However, the ride-hailing market suffers from another ailment in that it is usually concentrated in the hands of very few digital platforms like Uber. Platforms can then exert market power and raise prices above competitive levels. Under these two conditions (negative externalities and market power), it is not clear whether imposing a congestion charge would increase or decrease overall welfare. In this paper, I build a structural model of ride hailing to find out whether a congestion charge is in fact beneficial for a ride-hailing market monopolized by a digital platform. I calibrate the model to the morning peak period in Bogotá, Colombia, in 2019 and find that even though the platform imposes a significant markup, the size of the congestion externality is larger and so a congestion charge is justified. The optimal congestion charge corresponds to 62% of the marginal external cost of congestion, or 17% of the ride-hailing fare. This optimal charge takes into account the price reduction that the platform executes as a response to the charge, which causes an incomplete pass-through of the charge to riders. The structural model has four components: (i) a demand model where travelers choose between ride hailing and other modes based on price, in-vehicle time and wait time, (ii) a supply of drivers that adjusts to achieve a fixed revenue per hour, (iii) an empirical estimate of the marginal effect of additional vehicles on traffic congestion, and (iv) a matching process between travelers and drivers in which travelers can observe the wait time to the closest idle vehicle before deciding to hail a ride.