

Consortium on Law and Values in Health, Environment & the Life Sciences
Award Report for the 2017-18 Academic Year

“Primary Care is the New Specialist”
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Project Summary

A long-standing challenge in the US health care system is the provision of medical services to rural areas, where 25% of the population live, but only 10% of physicians operate. This paper develops a model of physicians’ location choices and uses it to explore the impact of policy changes (loan forgiveness and salary incentives) on the geographical distribution of physicians. To do so, I utilize micro data that I collected that contain detailed information on how physicians are compensated and on their work and training history. I then use the data to estimate a structural equilibrium model of the industry with both supply and demand of physicians. I find that physicians respond more to amenities than to income, so that only up to 1.2% more physicians picked rural areas due to the current policies. I also find that there are key differences between specialists and primary care physicians in their productivity structure. Specialists value interacting with each other, which leads to a stronger concentration of specialists in cities.

A key insight is that primary care physicians and specialists are different, and that the mix of treatments they carry out differs according to the location—as shown in my previous work—which impacts their reimbursements, a key component of their total compensation which is usually ignored. I allow the two different specialty groups to have different preference parameters. I also allow for top candidates and foreigners to have different preferences.

To estimate this model, I need detailed data on total compensation, amenities, and on physicians’ choices. I build my dataset starting from detailed physician-procedure level data from Medicare, where I can observe the procedures physicians carry out and the reimbursements associated with them as well as the malpractice insurance rates. I then use BLS data for salaries and Census data for housing costs. I then collect data from physicians’ directories to know when they graduated medical school and the residency they attended and to match those to public rankings. I also use this to approximate their student loans and foreign status, based on the school they attended.

The dataset I created is key in the estimation. The microdata allows me to create a comprehensive measure of compensation that includes salary, reimbursements, housing cost, malpractice insurance, and student loans. Since I can follow physicians through their residency, I can also estimate their value for remaining close to their residency location. This is important because the medical literature has identified this as a key factor of physicians’ location choice. The microdata on reimbursements is not only necessary for the compensation measure, but also for identification in the second stage. I use the large variation in the procedures carried out in different locations and the exogenous policy-set rates for each of these procedures to create a Bartik shift-share instrument. This is correlated with compensation as physicians generate a lot of income through fee-for-service, and it fits the data reasonably well.

I find that physicians care more about amenities than compensation, as expected. The productivity structure is very interesting, as specialists value interacting with each other, unlike primary care physicians. I find that all residents display a strong retention preference and that primary care physicians in particular are 3.5 times more likely to pick a job within the same state and 4 times more likely to pick a job within the same area as their residency. I then use the model to analyze the performance of current policies targeted at bringing physicians to rural areas. Through counterfactuals, I find that current policies have led to a 1.2% increase in the number of physicians choosing rural areas. Policies aimed at using the current spending on loan forgiveness for higher salary incentives for rural employment would lead to almost 6 times more primary care physicians choosing rural areas. Finally, the average quality of physicians attracted to rural areas would be higher under salary incentives than loan forgiveness.

Results

Paper: *The Determinants of Physicians' Location Choice: Understanding the Rural Shortage*

1. Submitted to economics journal
2. Heller-Hurwicz Economics Institute policy brief (invited)

Publicity:

- **Institutions that read my paper and that I met with during the ASSA meetings in Atlanta, the European Economic Association meetings in Naples, and the Simposio de la Asociación Española de Economía in Madrid, Spain:**

Sciences Po (invited for presentation), European Institute on Economics and the Environment, Universität Mannheim, NERA Europe (invited for presentation), Banco de España, Bates & White, Universidad del Rosario, University of Missouri, NERA, Compass Lexecon (invited for presentation), Southwestern University, Washington & Lee, Pontificia Universidad Católica de Chile (invited for presentation), Vassar College, McGill University (invited for presentation), Wake Forest University (invited for presentation), Texas A&M, ITAM (invited for presentation), Charles River Associates (invited for presentation), Universidad de Chile, University of North Carolina, Acumen, Arizona State University, University of Melbourne (invited for presentation), McKenna College, Board of Governors of the Federal Reserve System (invited for presentation), RAND Corporation, Temple University, University of New South Wales (invited for presentation), École Polytechnique, Rennselaer College, Insper, Amazon (invited for presentation), Pontificia Universidad Javeriana, University of Geneva (invited for presentation).

- **Presentations (completed and planned):**
 1. Midwest Economics Association Conference (Evanston, IL) 2018
 2. American Society of Health Economists Conference (Atlanta, GA) 2018
 3. Warwick Ph.D. Economics Conference (Warwick, United Kingdom) 2018
 4. University of Minnesota (Minneapolis, MN) 2018
 5. Simposio de la Asociación Española de Economía (Madrid, Spain) 2019
 6. Board of Governors of the Federal Reserve System (Washington, DC) 2019

7. Wake Forest University (West Salem, NC) 2019
8. McGill University (Montreal, Canada) 2019
9. Sciences Po (Paris, France) 2019
10. University of New South Wales (Sydney, Australia) 2019
11. International Industrial Organization Conference (Boston, MA) 2019
12. American Society of Health Economists Conference (Washington, DC) 2019
13. 3rd Workshop on Mechanism Design for Social Good (Phoenix, AZ) 2019

- **Twitter attention and retweeting by many economists**

Future project plans

1. I am very grateful for the grant as it is also thanks to this support that I was offered to join the Board of Governors of the Federal Reserve System as an economist starting Summer 2019. My presentation of this project landed my Department one of the top placements of the year.
2. This paper will be part of my dissertation, which will be submitted by July 31st, 2019 and of my final defense presentation (June 19th, 2019).
3. Further research:
 - a. Project on a similar analysis on nurse practitioners' decisions to locate and their effect on the physician distribution according to their ability to operate independently or not.
 - b. Effect of the physician workforce on health, given the fewer physicians rurally.
 - i. Project is already ongoing and can be seen on my website: www.elenafalcettoni.com
 - c. Dynamic version of this project, where physicians are allowed to pick locations repeatedly over time (so that physicians who move and those who retire can be accounted for instead of only the new ones).
 - d. Version of this project in which physicians make two choices: residency first (which also leads to specialty choice) and job location after.