

Consortium on Law and Values in Health, Environment & the Life Sciences 2017-18 Student Proposal Cover Page

Applicant Information

Applicant name(s):	Elena Falcettoni	Email:	falce001@umn.edu
Project title:	Primary Care is the New Specialist		
Department:	Economics	College:	College of Liberal Arts
Degree program:	PhD in Economics		
Faculty advisor:	Thomas J. Holmes	Faculty advisor email	holmes@umn.edu <input type="checkbox"/> No advisor
Dept. Head:	Christopher Phelan	Dept. Head's email:	cphelan@umn.edu
Dean:	John J. Coleman	Dean's email:	coleman@umn.edu

How did you hear about this funding opportunity?

Consortium e-mail
 Consortium website
 The Brief
 Dept. email/newsletter
 Other (specify)

Funding

Total amount of funding requested: **\$7000**

Executive summary (maximum 200 words)

My research combines economics in health to include two factors generally omitted in the health literature: 1) the differences in behavior between primary care physicians and specialists; and 2) the ability of the former to perform specialist procedures in more rural areas due to the lack of specialists. By looking at these factors' interaction with the incentives generated by the fee-for-service system, I have found that 1) fee-for-service leads to physicians picking more remunerative procedures, and 2) primary care physicians do so by performing more specialized procedures in more rural areas. I intend to analyze how these factors have financially incentivized doctors to pick rural placements, decreasing the shortage of rural physicians. While such a high growth in healthcare costs is unsustainable, there are crucial welfare effects coming from a higher access to physicians, not only for the 15% of the population living in rural counties, but for anyone living in small and micro urban areas with a currently greater doctors' availability. The tradeoff between higher costs and welfare gains is crucial, as a not-high-enough drop in costs could increase the physician shortage so much to not be able to overcome the welfare loss experienced by the affected population.

Approvals

Check all appropriate approvals required for your proposal. It is not necessary to have all approvals at the time of proposal submission; however, approvals must be obtained prior to receipt of funding. If you have applied for approval but have not yet received it, indicate that below.

IRB Yes No NA Application pending

Other Yes No NA Application pending Specify:

Checklist—for reviewer use

- The proposal is 1000 words or less excluding budget, biographies, references and citations.
- The proposal includes a work plan with a specific timeline using months or quarters to identify work to be done and completion dates.
- The proposal includes a 1-2 paragraph biography of the applicant and all co-investigators.
- The budget form is complete including the funds sought for this project, other pending applications for this project, and the amount/source of matching or other funds.
- The applicant's faculty advisor is copied on the application email. Professional students w/o advisors check No Advisor.
- All necessary approvals are pending or received.

Primary Care Is the New Specialist
Elena Falcettoni

Question

My previous work has shown that physicians' financial incentives affect the demand for specialized procedures due to doctors inducing demand for more remunerative procedures. There are many margins which can generate financial incentives for physicians. The key margin I have focused on is the urbanity level of the area where the doctor operates. I have shown that, due to the lower number of specialists in close proximity, primary care physicians are able to increase their share of specialist procedures in less urban areas. Since specialized procedures can be demanded more by populations with different health characteristics, I have modeled this issue controlling for location-specific observed and unobserved effects as well as for individual-specific heterogeneity. This finding led to the follow-up question of analyzing how medical students and residents pick their employment, as rural placements became more attractive financially. I have found that a greater share of residents has been going rurally, decreasing the shortage of physicians in rural America. Thanks to rich data coming from Medicare Physician Compare and augmented through manual directory search, I control for many physicians' characteristics and follow them through their residency and current employment choices by graduation year. Utilizing the great data I have already used, I plan to analyze how moving away from fee-for-service would affect the American population, especially rurally. While the growth of healthcare costs is not sustainable as is and its fiscal implications are quite worrisome, its effect on the decrease of the rural shortage of physicians has great welfare implications, especially for the roughly 50 million people living in rural counties in the US (without taking into consideration the population leaving in less rural areas who have also experienced a great increase in doctors' availability). This tradeoff is therefore an important factor to be considered, as the rural American population (~15% of the whole population) would experience such a deep welfare decrease if the shortage were to increase again, that a not-high-enough drop in the fiscal pressure could lead to an overall welfare loss for the country.

Methodology

I estimate this effect using Medicare (Part B) utilization data on physicians' reimbursements from 2012 through 2015, Medicare Physician Compare data, as well as some manual work to fill out medical school and residency information when needed. Since a fee-for-service system is the basis for the question analyzed in this paper, the Medicare reimbursement system established in 1992 serves itself perfectly for this purpose thanks to its pre-determined, geographically-adjusted fees. It has been largely documented that the Medicare reimbursement system largely influences the payment system of about 80% of American doctors (Clemens & Gottlieb (2017)), making these results applicable to a more general policy question.

In order to answer the question posed, I set up a model in which medical students pick their specialty (while picking their residency) first, therefore picking whether to be a "primary care" physician or a "specialist". I control for different characteristics of medical students, from age and gender to a proxy for their quality given by the ranking of their medical school. The share of medical students picking each specialty is determined by some specialty characteristics, such as the average income in each specialty as well as other factors, such as the length of residency. Once the specialty is picked, the now-residents choose again where to go given their specialty, picking the location that maximizes their utility. Location characteristics enter the utility function such as

the financial incentive as well as the location amenities. An updated quality variable, given now by both the quality of the medical school and the quality of the residency program, is also present as a doctor-specific characteristic. Since I observe what procedures physicians carry out in their offices, I use the reimbursement rates for each procedure to create a financial incentive proxy given by the weighted average of the reimbursement rates for each specialty and location, weighted by the frequency of each procedure. For robustness, I will also use the average total reimbursements received in each location by each specialty.

These estimates will give me everything I need to carry out the analysis. I will calculate the joint probability of a medical student choosing any location by multiplying the two probabilities. With the correct assumptions on the demographics distributions, their distributions can be integrated out of the joint probability, leaving me with an integral that can be estimated through simulated maximum likelihood to recover the model estimates, allowing me to calculate the distribution of doctors in each location.

Methodologically, I will use the BLP (1994) algorithm, estimating the model parameters fully structurally by matching the observed shares of doctors picking each choice in the data. This will allow me to not only account for everything observed in the data, but to also control for possible important characteristics in the data which are unobserved by the econometrician.

Welfare estimates and experiments varying the reimbursement effect follow then trivially from the model setup, completing the project proposed here.

Timeline:

Spring 2018: Medicare application for restricted data. **This part is not essential for the project.**

January-March 2018: Data analysis and model set-up. Meetings with health experts at the School of Public Health. Presentation at the Midwest Economics Association Conference.

April 2018: The model is set-up and preliminary results are created. Paper will be presented at the International Industrial Organization Conference to obtain feedback on the methodology and robustness from experts of the field.

May 2018: Estimation is finalized, robustness is executed, a preliminary draft is checked by the advisor.

June 2018: Paper presented at the American Society of Health Economists Conference to improve health-specific analysis.

Summer 2018: Paper is polished, robustness run.

Spring 2019: Any feedback received during fly-outs to other universities is included. All robustness and double-checks are run. If Medicare restricted data is obtained, further analysis with claims data is run for robustness and health outcomes are reported.

End of Spring/Early Summer 2019: All necessary reports are sent to the Consortium.

Word Count: 989.

Biography

Elena Falcattoni is a PhD candidate in economics at the University of Minnesota. She holds a Master's of Arts in Economics from the University of Minnesota, a Master's of Science in Finance from Bocconi University, a Bachelor's of Science in International Economics, Management, and Finance from Bocconi University. Elena's research interests are in industrial organization and applied microeconomics, with a passion for health economics. Her goal is to analyze healthcare issues that matter and impact the population directly to find ways to improve the American health system. Her previous work analyzed the differences in behavior between primary care physicians and specialists and how the urbanity of the area directly impacts physicians' response to financial incentives. Her current work uses her findings to analyze how the geographical distribution of doctors depends on the financial incentives present in each location. She has also taught and tutored for years, including two graduate courses of econometrics.

References

1. Anderson, Gerard F., et al. "Health Spending in the United States and the Rest of the Industrialized World." *Health Affairs* 24.4 (2005): 903-914.
2. Armour, Brian S., et al. "The Effect of Explicit Financial Incentives on Physician Behavior." *Archives of Internal Medicine* 161.10 (2001): 1261-1266.
3. Baker, Laurence C. "The Effect of HMOs on Fee-For-Service Health Care Expenditures: Evidence from Medicare." *Journal of Health Economics* 16.4 (1997): 453-481.
4. Berry, Steven, James Levinsohn, and Ariel Pakes. "Automobile Prices in Market Equilibrium." *Econometrica: Journal of the Econometric Society* (1995): 841-890.
5. Clemens, Jeffrey, and Joshua D. Gottlieb. "Do Physicians' Financial Incentives Affect Medical Treatment and Patient Health?." *The American Economic Review* 104.4 (2014): 1320-1349.
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8. Grant, Darren. "Physician Financial Incentives and Cesarean Delivery: New Conclusions from the Healthcare Cost and Utilization Project." *Journal of Health Economics* 28.1 (2009): 244-250.
9. Hall, Robert E., and Charles I. Jones. "The Value of Life and the Rise in Health Spending." *Quarterly Journal of Economics* 122.1 (2007): 39-72.
10. Levin, David C., and Vijay M. Rao. "Turf Wars in Radiology: The Overutilization of Imaging Resulting from Self-Referral." *Journal of the American College of Radiology* 5.7 (2008): 806-810.
11. Melichar, Lori. "The Effect of Reimbursement on Medical Decision Making: Do Physicians Alter Treatment in Response to a Managed Care Incentive?." *Journal of Health Economics* 28.4 (2009): 902-907.

**Consortium on Law and Values in Health, Environment the Life Sciences
Proposed Budget**

Project Title:

Provide justification along with costs.		Requested funding
Category& instructions	Justification	Amount
1 Your stipend <i>Maximum of \$5,000</i>	<i>Consider one year of work (it will most likely be more), only during working days (even though I work weekends as well), for four hours/day (even though I work many more hours), at \$20/hour (which is less than the rate offered to graduate students by the University: \$20*4*260=\$20,800. I will run all the data collection, cleaning, and analysis on my own as there are no co-authors.</i>	\$5,000
2 Speaker honoraria (for colloquia)	___ speakers x \$ _____ honorarium	\$0
3 Supplies & Services <i>Identify and explain use here or in the body of your proposal.</i>		
4 Equipment <i>Identify and explain use. Allowable only if the equipment is necessary for this project. All equipment must be given to your dept. at the completion of your project.</i>		\$0
5 Travel <i>Indicate the purpose of the travel, estimated dates of travel, transportation, housing and allowable per diem costs (see travel.umn.edu).</i>	1. Midwest Economics Association Conference, March 23-25: Airfare (187), Housing Total through Airbnb (132), Conference fees (85), per diem costs total with all adjustments (185), Transportation to and from airport (5) --> Total: \$594 2. International Industrial Organization Conference (best conference in industrial organization, with all experts of the field), April 20-22 (these fares are approximate): Airfare (505), Housing total through conference hotel (630), per diem costs total with all adjustments (135), Conference fees (unknown, say 130), transportation to and from airport (6) --> Total: \$1406 3. American Society of Health Economists Conference (best health economics conference, with all experts in health economics and in the health and medical professions), June 10-13 (these fares are approximate): Airfare (372), Housing total through conference hotel (826), per diem costs total with all adjustments (241.5), Conference fees (unknown, say 250 based on previous years), transportation to and from airport (5) --> Total: \$1694.5 (Taken care of through other funding)	\$2,000
Subtotal research expenses (2-5)		\$2,000
TOTAL BUDGET		\$7,000

Other funding: List other or matching funding you have requested for this project.

Funding source	Amount
Department fund for conference travel	127
Council of Graduate Students Conference Travel Grant (applied, unsure if it will be received)	900
Savings (to cover the difference, assuming \$7000 funding as well as the department funding and the COGS grant)	667.5