

CHARLES VINCENT GRAY

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The Wharton School, University of Pennsylvania
Department of Healthcare Management
3641 Locust Walk
Philadelphia, PA 19104

chgray@wharton.upenn.edu
www.charlesvgray.com
(267) 406-0588
US Citizen

EDUCATION

University of Pennsylvania, The Wharton School 2018 - 2024 (expected)
PhD, Applied Economics: Healthcare

Dissertation Committee and References:

Abby Alpert
Assistant Professor
Department of Healthcare Management
University of Pennsylvania, The Wharton School
alpertab@wharton.upenn.edu

Alexander Olssen
Assistant Professor
Department of Healthcare Management
University of Pennsylvania, The Wharton School
olssen@wharton.upenn.edu

Guy David
Professor
Department of Healthcare Management
University of Pennsylvania, The Wharton School
gdavid2@wharton.upenn.edu

Neeraj Sood
Professor
Sol Price School of Public Policy
University of Southern California
nsood@healthpolicy.usc.edu

Drexel University 2014-2016
MS, Economics

Vassar College 2007-2011
AB, Economics

RESEARCH INTERESTS

Health Economics, Industrial Organization, Public Economics

WORKING PAPERS

The Incidence of the 340B Program: The Effects of Contract Pharmacies on Part D Premiums and Reimbursements (*Job Market Paper*). Available at <https://www.charlesvgray.com/publications>.

Empirical evidence has shown in many contexts that taxes levied against producers are passed through to consumers in the form of higher prices. This paper asks whether a “tax” on drug manufacturers is passed through to insurers and patients enrolled in their plans. The federal 340B Program effectively taxes drug manufacturers by requiring them to provide large discounts on drugs purchased by eligible safety-net providers (e.g., DSH hospitals). I assess to what degree insurer premiums are impacted by drug manufacturer pass-through of 340B discounts by exploiting a major expansion in 340B discounts claimed through contract pharmacies. Historically, a 340B provider could claim discounts for prescriptions its patients filled at a single pharmacy with which it contracted—a so-called *contract pharmacy*. In 2010, a policy change permitted 340B providers to partner with an unlimited number of pharmacies causing exponential growth in the number of contract pharmacies and a massive expansion

in the number of prescriptions eligible for discounts. Between 2010 and 2021, the number of contract pharmacies eligible for 340B discounts increased from fewer than 5,000 to 30,000, or one out of every two pharmacies. Using detailed claims and plan-level data for Medicare Part D, I use a two-way fixed effects strategy to estimate the pass-through of 340B discounts to premiums. This strategy leverages changes to the proportion of an insurer’s drug expenditures that may be subject to a 340B discount after the 2010 policy change. There is significant geographic variation in contract pharmacy growth across areas over this time period, and insurers are differentially affected by the policy based on their initial enrollment shares across areas. In a second complementary strategy, I use variation in contract pharmacy growth that occurred after the 2014 Medicaid expansions. Both strategies yield evidence that premiums increase in response to expansions in 340B discounts. I find that reducing an insurer’s spending that is potentially subject to a 340B discount by 10 percentage points reduces monthly premiums by \$3.33 (≈ 6.4 percent). This finding is consistent with the economic theory of pass-through, but challenges the commonly held presumption by 340B advocates that the 340B Program comes at no cost to taxpayers.

Disadvantaging Rivals: Vertical Integration in the Pharmaceutical Market, Submitted, (*with Abby Alpert and Neeraj Sood*). Available at NBER Working Paper No. 31536.

The pharmaceutical market has experienced a massive wave of vertical integration between pharmacy benefit managers (PBMs) and health insurers in recent years. Using a unique dataset on insurer-PBM contracts, we document increasing vertical integration in Medicare Part D—vertically integrated insurers’ market share increased from about 30% to 80% between 2010 and 2018. Next, we evaluate a large insurer-PBM merger in 2015 to assess the trade-offs of vertical integration—harms to competition due to input and customer foreclosure on the one hand and improved efficiency on the other. We find premium increases after the merger for insurers who bought PBM services from rivals, which is consistent with vertically integrated PBMs raising costs through input foreclosure.

The Impact of 340B Contract Pharmacies on the Gross-to-Net Price Gap, In Progress, (*with Neeraj Sood and Karen Van Nuys*).

PUBLICATIONS

Cooper Z, Craig S, **Gray C**, Gaynor M, Van Reenen J. Variation in health spending growth for the privately insured from 2007 to 2014. *Health Affairs*. 2019 Feb 1;38(2):230-6. Available at <https://doi.org/10.1377/hlthaff.2018.05245>

RESEARCH EXPERIENCE

University of Pennsylvania		
Research Assistant to Professor Abby Alpert		2020-Present
Research Assistant to Professor Ashley Swanson and Professor Matthew Grennan		2019-2020
Economic Consultant for litigation with Professor Lawton R. Burns		2019
Yale University		
Predoctoral Fellow to Professor Zack Cooper and Professor Fiona Scott Morton		2016-2018
Drexel University		
Research Assistant to Professor Genevieve Kanter		2014-2016

INVITED CONFERENCE PRESENTATIONS

Conference of the American Society of Health Economists (ASHEcon) - St. Louis, MO	2023
Conference of the American Society of Health Economists (ASHEcon) - Austin, TX	2022

TEACHING EXPERIENCE

Teaching Assistant Spring 2023
Lecturer: Alex C. Sapir
Management and Economics of the Pharmaceutical & Biotech Industries
BA, MS, and MBA
University of Pennsylvania, The Wharton School

Teaching Assistant Spring 2021, 2022
Professor: Abby Alpert, PhD
Management and Economics of the Pharmaceutical & Biotech Industries
BA, MS, and MBA
University of Pennsylvania, The Wharton School

Teaching Assistant Spring 2015, 2016
Professor: Genevieve Kanter, PhD
Health Economics II
MPH and PhD (Public Health)
Drexel University Dornsife School of Public Health

Teaching Assistant Winter 2015, 2016
Professor: Genevieve Kanter, PhD
Health Economics I
MPH and PhD (Public Health)
Drexel University Dornsife School of Public Health

HONORS, AWARDS, AND FELLOWSHIPS

Robert R. Nathan Fellowship (Wharton)	2023
International Honor Society of Business: Beta Gamma Sigma (Drexel)	2016
Applied Econometrics Award (Drexel)	2015
LeBow Merit Scholarship (Drexel)	2014-2016
International Honor Society for Economics: Omicron Delta Epsilon (Vassar)	2011

PREVIOUS EMPLOYMENT

Economists Incorporated	2013-2014
Analyst	San Francisco, CA
Economists Incorporated	2011-2013
Research Associate	Washington, DC

PROFESSIONAL ACTIVITIES

Member of American Society of Health Economists (ASHE)	2022-Present
Associate Fellow, Leonard Davis Institute of Health Economics at UPenn	2018-Present

TECHNICAL SKILLS

Programming Languages: Stata, Python, MATLAB, R, SQL, SAS, Visual Basic for Applications, Batch Scripting (Windows), Bash Scripting (Unix/Linux)
Typesetting: L^AT_EX, R Markdown