

# Assessment of the PharmD Pharmacoeconomics Educational Environment in the United States

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## Abstract

**OBJECTIVES:** In an era of expanding health sectors and rising costs, pharmacists are expected to have a working knowledge of pharmacoeconomics (PE) to use resources better and improve health outcomes and quality of care. However, PE education is not uniformly provided to pharmacy students in the United States (US). This study investigates the current status of PE education in the didactic and experiential curriculum of Doctor of Pharmacy (PharmD) programs in the US.

**METHODS:** The website and curriculum of all US-based colleges and schools of pharmacy with accredited professional degree programs were searched to identify relevant PE content and investigate the discrepancies in education.

**RESULTS:** 111 out of 141 pharmacy programs (~79%) had information about PE education on their websites. All the programs provided some required level of PE education. The goals and descriptions of PE contents were broad, mainly covering introductory concepts and principles of PE. At most institutions (48%), PE instructions primarily occurred in the third year. The nature of the delivery of PE varied between programs, with some institutions teaching PE jointly with or embedding the content within another course, such as pharmacy administration, pharmacoepidemiology, or population health. The number of credit hours provided to PharmD students ranged from 1 to 7. Only a few institutions had stand-alone courses in PE course.

**CONCLUSION:** While challenges remain in thoroughly integrating all its contents into the PharmD curricula, it is safe to argue that adequate PE knowledge can significantly expand the pharmacist's scope of practice. Given that the Accreditation Council for Pharmacy Education has incorporated pharmacoeconomics as a required component of pharmacy curricula, obtaining more specific recommendations concerning what topics should be included in the PharmD curricula is essential. Curricula must also ensure that PharmD students are provided with opportunities to apply skills taught in PE to “real world” problems.

## Introduction

- Over the last few decades, the role of pharmacists in the United States has evolved along with the healthcare needs of the population.<sup>1</sup>
- The role of pharmacists has extended beyond medication distribution to promoting cost-effective and clinically-sound drug therapy.
- Pharmacoeconomics occupies an uncertain place within professional pharmacy programs.
- As it has been the case in the past, there is currently a lack of information about the contents of pharmacoeconomics taught in the PharmD curriculum at US pharmacy programs from recent years.<sup>2,3</sup>

## Methods & Results

### Methods

- To identify relevant pharmacoeconomics content, we systematically searched all 141 U.S.-United States-based colleges and schools of pharmacy programs with accredited (full or candidate status) professional degree programs curriculum websites.
- Graduate, post-doctoral, and fellowship training were excluded from the data collection due to the study's emphasis on the PharmD degree.
- Search also did not cover elective courses because our assessment strictly focuses on required courses in the core curriculum.
- Location of the pharmacy programs were regionally classified based on four geographic regions established by the US United States Census Bureau (the Northeast, the Midwest, the South, and the West).

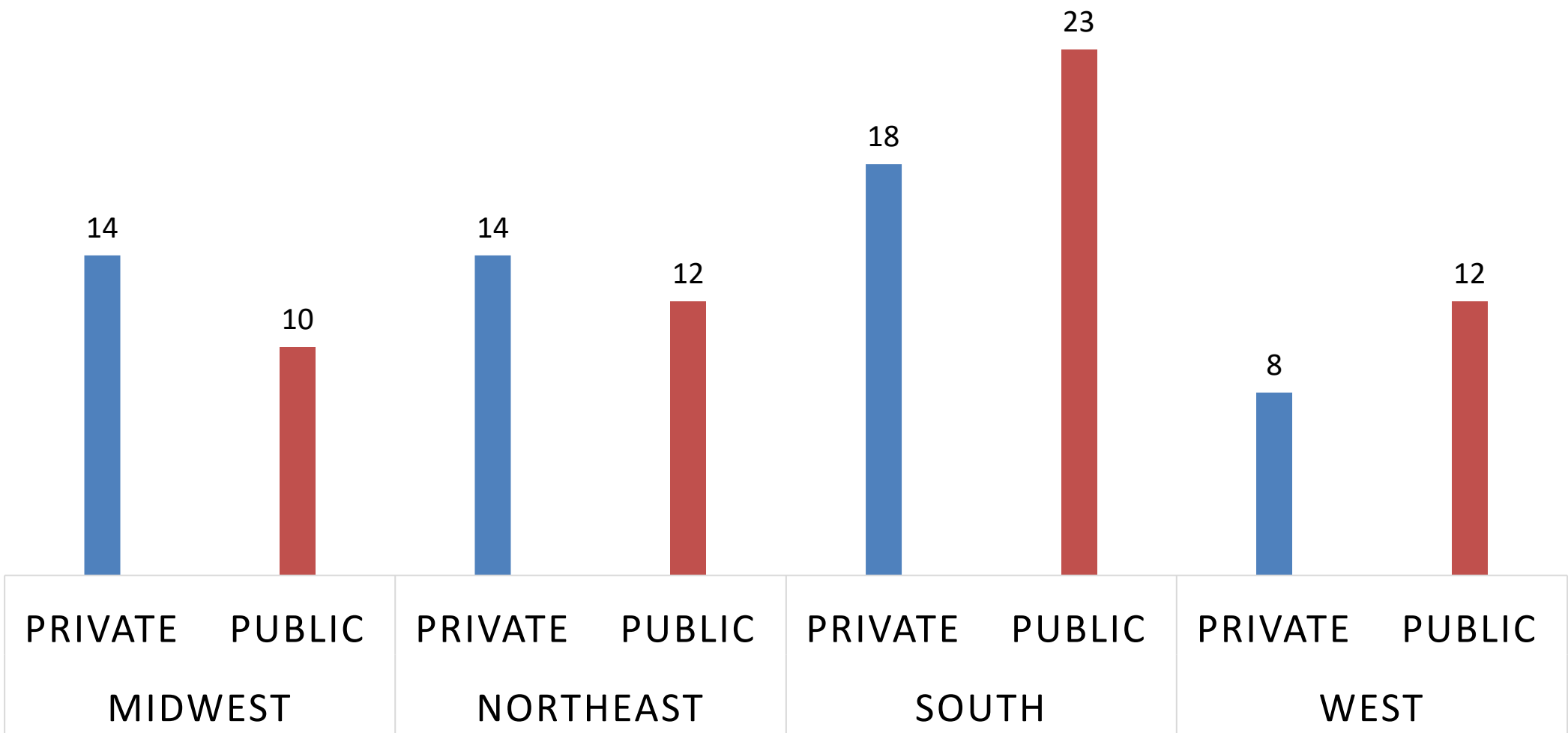


Fig 1. Geographic Distribution of PharmD Programs

1. Define pharmacoeconomics
2. Identify and determine relevant costs and consequences associated with pharmacy products and services
3. Define the differences between cost-benefit analysis (CBA), cost-effectiveness analysis (CEA), cost-minimization analysis (CMA), and cost-utility analysis (CUA)
4. Discuss the importance of specification/selection of perspectives to be included in the analysis
5. Outline the steps for conducting a pharmacoeconomic analysis
6. Critique current pharmacoeconomic literature
7. Identify potential applications of pharmacoeconomics in various pharmacy settings

Table 1. Common learning objectives and outcomes for PharmD introductory PE courses

### Results

- A total of 111 out of 141 pharmacy programs of varying sizes had publicly available information on pharmacoeconomics contents on their websites.
- Of the pharmacy programs, we obtained data from, 57 (51%) were public, and 54 (49%) were private (Figure 1).
- Across syllabi, The course descriptions were broad goals and descriptions were broad, but they mainly aimed at equipping students with introductory concepts or principles of pharmacoeconomics.
- Pharmacoeconomics instructions mainly occurred in the third professional year (n=53; 48%) and the second professional year (n=39; 35%) (Figure 2).
- The number of credit hours devoted to pharmacoeconomics education ranges from one to seven.
- While most programs offered a required core course in pharmacoeconomics at several institutions, some jointly taught it with related topics, such as pharmacoepidemiology, population health, and pharmacy administration.
- Teaching methods include didactic lectures, guest speakers, videos, research projects, problem-based learning, case studies, and article-critiquing assignments.
- Some syllabi listed unique assignments designed to promote students' ownership of their learning and encourage productive. Such assignments include research projects, presentations, and group work.

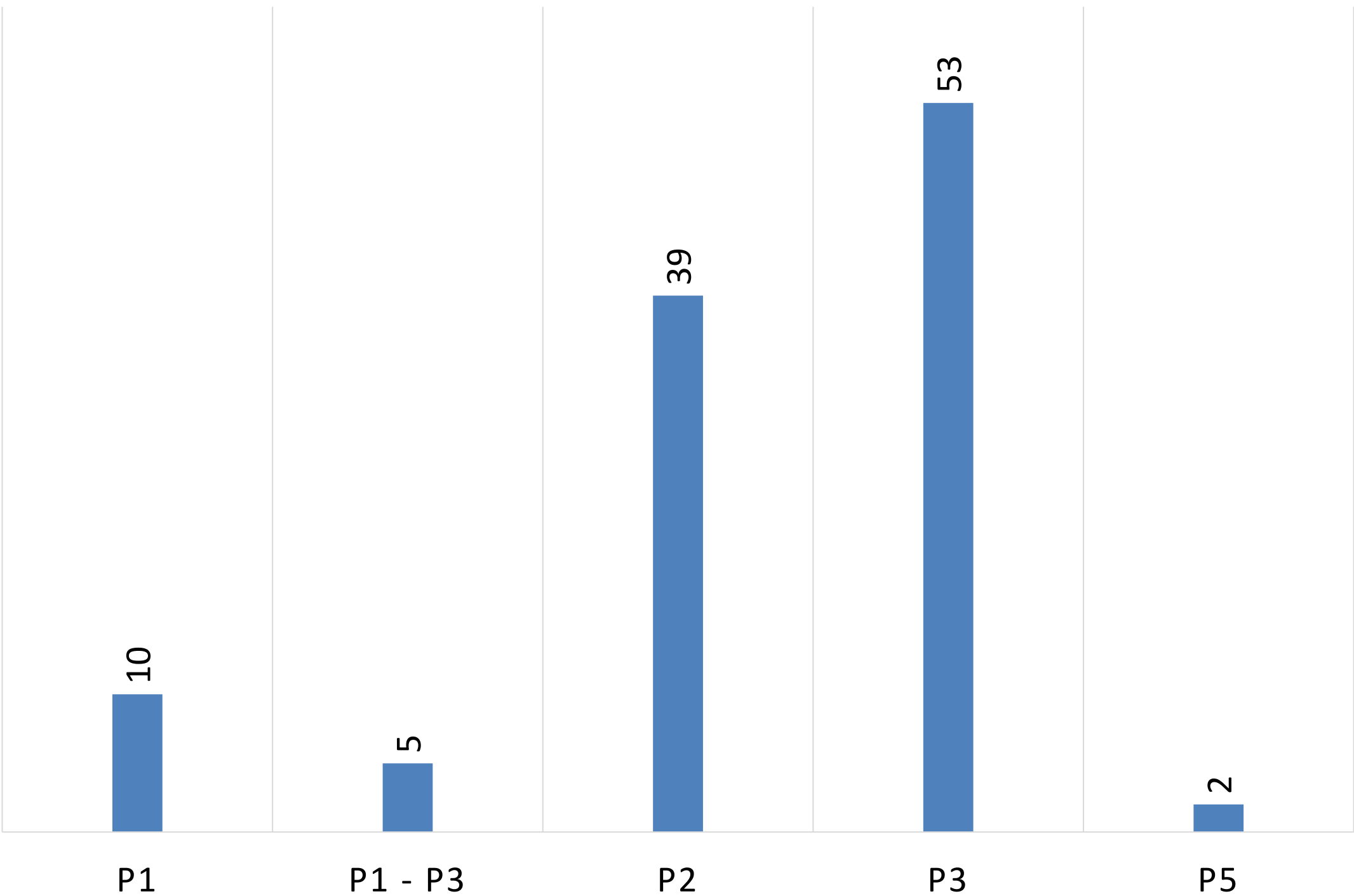


Fig 2. Pharmacoeconomics Course Occurrence by Professional Year.

## Discussion

- Our evaluation of the curriculum curricula and instructional methods for pharmacoeconomics indicate a shift toward more active learning, but the impact of this change has yet to be assessed.
- A comprehensive literature search uncovered two studies that evaluated application-based or active learning in a pharmacoeconomics course in the US PharmD curriculum.
- Learning modality for pharmacoeconomics should occur in three stages.

- Knowledge base, best learned through didactic training.
- Behavioral skills, best learned through laboratory training.
- Judgment competencies, best learned through field placement training.

- Several pharmacy programs did not have their curriculum information posted on their main website, making it impossible for the investigators to assess it.
- Our search was solely based on the mention of pharmacoeconomics-related contents, we could have missed other courses that do not explicitly mention pharmacoeconomics but cover concepts related to pharmacoeconomics.

## Conclusion

- Despite the proven importance of pharmacoeconomics in evidence-based care and drug prescription processes, it remains uncertain that all pharmacy programs across the US dedicate sufficient credit hours to teaching pharmacoeconomics principles in their curricula.
- Because of its relevance to drug affordability and the prescription process, teaching pharmacoeconomics may answer many other issues related to drug affordability, such as drug access, poor medication adherence, poor patient outcomes, and widening health disparities.
- Pharmacy programs that plan to prepare today's pharmacy students for meeting tomorrow's healthcare challenges to find the appropriate balance between pharmacoeconomics course content, contact hours, and delivery methods that meet the needs of students' future career goals.

## References

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