

Health Services and Outcomes Research, Ph.D.

Degree Offered

- Doctor of Philosophy

Nature of the Program

WHAT IS HEALTH SERVICES AND OUTCOMES RESEARCH?

The Health Services and Outcomes Research program emphasizes population-based, health services delivery and outcomes, and policy research.

Health services research examines how people get access to health care, how much care costs, and what happens to patients as a result of this care. The main goals of health services research are to identify the most effective ways to organize, manage, finance, and deliver high quality care; reduce medical errors; and improve patient safety. (AHRQ, 2002)

Outcomes research refers to the scientific design, data collection, and analysis of the end results of medical care. It focuses on quality, cost-effectiveness and the effect of treatment on quality of life in patients. Outcomes research evaluates the effectiveness of health interventions through changes in outcomes such as improvements in patient functional status, satisfaction with care, and mortality. Apart from traditional experimental and quasi-experimental designs, outcomes research methodology embraces epidemiological research designs (such as retrospective or prospective, longitudinal or cross-sectional, case-control or cohort study designs), pharmacoeconomic modeling (such as decision analysis, cost-benefit analysis, cost-effectiveness analysis), health data science (such as predictive modeling, machine learning), and survey research methods (such as quality of life measurements, satisfaction with care).

WHY STUDY HEALTH SERVICES AND OUTCOMES RESEARCH?

With health care costs increasing five fold in the last two decades, there has been increasingly greater accountability demanded of health care systems and providers. There has been growing recognition that resources are limited, and health care interventions have to be cost-effective, and not just efficacious in clinical trials. Three particular factors have contributed to growing interest in determining effectiveness of health care interventions: (1) unexplained differences in quality of care or effectiveness by region, population, and type of systems; (2) the desire to control rising health care costs and spread the availability of services to those who do not currently have access; and (3) concern that cost-containment strategies and improving quality of health care are two competing goals.

HOW IS OUTCOMES RESEARCH USED?

Data collected from outcomes research provide patients, providers, payers, and decision makers information about what does and does not work in real life settings. It provides other measures of effectiveness such as what treatment provides the best return on investment, and from a patient perspective, what is the most preferred or satisfying treatment option. Comparative effectiveness research of technology and drugs; structure of healthcare delivery, process, quality and outcomes; pharmacovigilance; patient-centered care; and evaluating the intended and unintended consequences of health policy are some of the major aspects of outcomes research. Overall, outcomes research will lead to better use of limited resources, informed decision-making by patients, providers, and payers; development of guidelines for better disease management - especially for chronic diseases, and better health policy decisions.

WHAT ARE THE GOALS OF THE GRADUATE PROGRAM IN HEALTH SERVICES AND OUTCOMES RESEARCH?

The focus of Health Services and Outcomes Research is to prepare highly qualified graduate students for careers in academia, industry, government, and institutional settings such as insurance companies through training in health outcomes and policy research. Areas of specialization include: pharmacoeconomics, health services research, machine learning, pharmacoepidemiology, health behavior and risk. The core courses include pharmacoepidemiology, pharmacoeconomics, patient-centered outcomes, large data analysis, econometrics, social and behavioral theory, machine learning, survey methods and the evaluation of health policies, programs and interventions. Several courses include research projects that result in peer-reviewed publications. Based on your research experience and interests, you can select your area of emphasis, which include quantitative, behavioral, health policy, epidemiology, health management, disease management, data science and/or healthcare administration. The coursework and research experiences are designed to equip you with the conceptual thinking, analytical and problem-solving skills necessary to find innovative solutions to complex healthcare problems.

WHAT ARE THE JOB OPPORTUNITIES FOR GRADUATES OF THE PROGRAM?

Job opportunities for individuals with a Ph.D. in this field are excellent and growing. Our students have had 100% job placements at reputable universities, pharmaceutical companies, government agencies, clinical research organizations and in the managed care industry. Please visit the Alumni section of our website at PSP alumni (<https://pharmacy.wvu.edu/pharmaceutical-systems-and-policy/phd-program-in-health-services-and-outcomes-research/information-for-new-applicants/alumni-where-are-they-now/>) to view job placements of our Ph.D. graduates.

Frequently Asked Questions

Does this program offer a Master's degree?

At this time, the program does not have a terminal Master's degree.

How long does it take to finish a PhD degree in this field?

Typically, a student starting without a research Master's degree could take anywhere from 4 to 5 years to complete all of the degree requirements. Students who already have a research Master's degree take less time, about 3 to 4 years.

Is financial assistance available?

A limited number of teaching and research assistantships (with a stipend of \$30,000 per year) are available within the department. Several fellowships may also be available to apply for depending on criteria for eligibility. These include an annual stipend and full tuition waiver with the student required to perform 20 hours/week of assistantship duties. Students with assistantships have to pay approximately \$693/semester towards the use of the recreation center, the public rapid transport system (PRT), and other such conveniences. The assistantships are available to students for at least 3 years as long as they are performing well in their duties, and making satisfactory progress toward their degree objective. The stipends are sufficient for graduate students to live comfortably and devote sufficient time to their educational program and research training. These assistantships are awarded on a competitive basis each year with the highest ranked applicants given the first offer of available assistantships. Some qualified students may be offered admission without an assistantship. These students are provided guidance to seek other campus employment opportunities subject to Immigration and Naturalization Services' regulations in case of foreign students.

Is a BS in Pharmacy or Pharm.D. degree (or a pharmacy background) required for admission?

No. Generally, a professional degree in pharmacy, medicine, or a health-related discipline is preferred. Students with Master's Degrees in related fields such as epidemiology, economics, and public health are encouraged to apply. Students with a Master's degree in marketing management, psychology, or sociology with a demonstrated interest or experience in health care may also apply.

What is the entry date into the program?

Based on the sequence of core courses, students are admitted in the Fall semester only, which typically begins in the middle or last week of August every year. In very rare instances, a student may be admitted in the Spring semester if they already have a research Master's degree, and if the PSP faculty agree that the circumstances of his/her admission warrant special consideration.

How do I apply to the program and what is the application deadline?

All application materials, transcripts, test scores, three letters of recommendation, curriculum vitae of educational qualifications, training and job experiences, and statement of purpose must be submitted to WVU Graduate Admissions (https://wvu.my.site.com/wvugrad/TX_SiteLogin/?startURL=%2Fwvugrad%2FTargetX_Portal__PB) by **February 1st** for consideration of admission in the Fall semester of that year. It is best to start the admission process by September of the year before the Fall semester that you want to be considered to give yourself sufficient time to complete the process and not be affected by unexpected delays. Reviews are completed by the middle or end of March, and applicants are notified of acceptance or rejection with a signed acceptance from those offered an admission required no later than April 15.

How many applications do you receive each year?

The number of applications we receive vary from year to year but has shown a dramatic increase in the last few years. In recent years the numbers have ranged from 25 to 40.

How many students are accepted each year?

The number of students accepted each year vary depending on the number of students who have graduated in the preceding year. Typically, 2-3 students have been admitted per year in the recent past. A total number of **10-12** students are maintained in the program to enable close mentoring and training relationships with faculty advisors.

How is an application to the graduate program evaluated?

An application to the graduate program along with all supporting materials is reviewed by all members of the department admission committee. Each application is holistically reviewed first in terms of meeting the minimum academic (a 'B' average or a 3.0 GPA on 4.0 scale) and TOEFL (550 on the paper-based exam, 79-80 on the Internet exam, or 213 on the computer-based exam) criteria. Applications not meeting these criteria are immediately rejected. The subsequent reviews take place in a committee meeting in which all applications are discussed and ranked through a consensus process. While individual faculty may weigh each criteria slightly different, sustained academic excellence, good to outstanding GRE scores, past work or research experience in areas of interest, well written statement of purpose, leadership and extracurricular activities are all considered important and considered in a holistic way. Telephone or personal interview are typically required by the admission committee. Students ranked according to merit are offered admission with an assistantship in the order of listing until no more assistantships are available. A few additional students may be offered admission without an assistantship. An offer by email is made to students who are offered admission with assistantships, and upon acceptance of the offer, are sent formal letters of acceptance.

How are grades and GRE scores considered in the overall admissions evaluation?

While sustained academic excellence is considered to be among the best predictors of academic performance, GRE scores are also important to compare students from different domestic and international education systems. For students from English speaking parts of the world, quantitative and analytical scores are given more weight than the verbal scores. Faculty participating in application reviews typically look for overall educational achievements, competitive GRE scores, extracurricular and leadership activities, and demonstrated interest in research in the chosen area of study.

What role does TOEFL play in the admission process?

Since all of the education process and research training is in English, students from non-English speaking parts of the world are required to provide TOEFL scores by the University with a score TOEFL iBT (Home Edition is accepted): 79, Academic IELTS: 6.5 TOEFL Essentials: 9.0, Duolingo English Test: 105, and PTE Academic: 53 Once admitted, and if awarded a Teaching Assistantship, students are also required to pass a test of spoken English before they are allowed to teach in classes or labs.

Can English Language Proficiency test be waived?

Students who have citizenship or a bachelor's degree from one of the following countries do not need to submit scores to meet the English Language proficiency requirement: Anguilla, Antigua, Australia, Barbados, Belize, Bermuda, British Virgin Islands, Canada, Cayman Islands, Dominica, Ghana, Grenada, Guyana, India, Jamaica, Kenya, Liberia, Montserrat, Nepal, New Zealand, Nigeria, Pakistan, Republic of Ireland, South Africa, St Kitts and Nevis, St Lucia, St Vincent, The Bahamas, Trinidad and Tobago, Turks and Caicos, United Kingdom, and United States and its territories.

What are acceptable GRE scores?

Scores on the GRE are reported in terms of percentiles. So, for example, if a student scores at the 65th percentile, this means that he or she scored at or better than 65 percent of the students who took that test. We obviously want the best students who apply.

If my GRE or TOEFL scores are not good, should I retake these exams?

These tests are standardized tests, and typically, student scores do not change much on retaking of these exams. Make sure that you are familiar with the format of these tests and the time constraints for their completion. Practice books are available to familiarize yourself with the exam. If you take these exams and are not satisfied with your scores, you should retake them only if you feel certain that retaking them will help you improve your test scores. If you do retake them, Educational Testing Service will report the results of all attempts within the previous three years.

Are applicants interviewed?

Yes. Chosen applicants may be interviewed either by video conference (e.g., Zoom) or in person in Morgantown.

Can I transfer graduate coursework from my current institution if I have not completed a Masters degree?

Yes, on admission to the graduate program and upon forming a PhD committee with an advisor, the committee will take into consideration whatever recent graduate coursework you have completed that can contribute to your plan of study given your educational goals and program needs. WVU allows up to 18 credit hours of coursework to be transferred that are not part of a degree program. See **Application for Transfer of Graduate Credit to WVU**

Are there examples of completed PhD dissertations from recent graduates in the Health Services and Outcomes Research program?

Yes, please visit Recent MS thesis and PhD dissertations (<https://pharmacy.hsc.wvu.edu/pharmaceutical-systems-and-policy/phd-program-in-health-services-and-outcomes-research/information-for-new-applicants/phd-dissertations/>) for titles completed by recent graduates.

What is it like to study at West Virginia University (WVU) and live in Morgantown?

West Virginia University, founded in 1867, is located in Morgantown, West Virginia, is one of only 46 public universities that serve their state as research and land-grant institutions. Through 15 colleges and schools, WVU offers 193 bachelors, master's, doctoral and professional degree programs. WVU was ranked in the top 3% of 19,000 universities worldwide by the Center for World University Rankings.

WVU is a Doctoral/ Research University - Extensive as classified by the Carnegie Classification of Institutions of Higher Education -- based on the complexity and breadth of the institution's mission. As West Virginia's major research and development center and only comprehensive doctoral-granting institution, WVU faculty conducts over \$150 million in sponsored contracts and grants per year.

The WVU System spans the state, including 518 buildings on 15,880 acres (main campus 430 buildings/1,456 acres). Eleven main campus buildings are on the National Register of Historic Places, and WVU operates eight experimental farms and four forests throughout the state. The University's total operating budget is approximately \$900 million. WVU's student body is comprised of over 31,524 students with 28,776 on the Morgantown campus. These students hail from all West Virginia counties, nearly all 50 states, and close to 100 foreign nations. Chartered in 1873, the WVU Alumni Association is made up of more than 190,000 graduates worldwide in some 135 nations. For more information about West Virginia University and a virtual tour of the campus, visit: <http://www.wvu.edu/>.

Morgantown, W.Va., population 30,347 (US Census Bureau, 2021), was rated "No. 1 place to live in West Virginia" out of the best place to live in every state by *Money* magazine. Morgantown was named one of the "South's Best Small Towns" by *Southern Living*. Morgantown is one of the "Best Affordable Places to Live" by *Livability*. Within easy traveling distance of Washington, D.C., to the east, Pittsburgh, Pa., to the north, and Cleveland and Columbus, Ohio, to the northwest. WVU has divisional campuses in Charleston, Keyser, Martinsburg and Montgomery.

Monongalia County in which Morgantown is located is a community of about 80,000 people in the Appalachian Mountains on West Virginia's northern border. While the state is rural and the community quiet, Morgantown is within easy traveling distance from Pittsburgh, which is 75 miles (115 kilometers) north, and Baltimore and Washington, both of which are 200 miles (325 kilometers) east. Two major four-lane highways, Interstate 79 and Interstate 68, pass through Morgantown. U.S. 19 and U.S. 119 also pass through Morgantown.

For information about the Morgantown area, students can visit the Greater Morgantown Convention and Visitors Bureau homepage at www.tourmorgantown.com/ (<http://tourmorgantown.com/>) or the City of Morgantown homepage at www.morgantownwv.gov (<http://morgantownwv.gov/>) (<http://morgantown.com/>)

What if I have more questions or concerns?

If your question is not addressed anywhere in the list of frequently asked questions...

- For questions about other programs, life at WVU, and other information for prospective students please visit Graduate Education at <http://graduate.wvu.edu/>.
- For questions about University policies on graduate programs at West Virginia University, please visit: Undergraduate, Graduate, and Health Sciences Center Catalogs (<http://catalog.wvu.edu/>).

For application related inquiries, status of application file, confirmation of materials, scores, received, admission status, or HSOR graduate program related inquiries etc., please contact:

Khalid Kamal, MPharm, PhD
Professor and Chair
Acting HSOR Graduate Program Director
Pharmaceutical Systems & Policy
E-mail: pharmacyhsor@hsc.wvu.edu

For more details about the PhD program in HSOR go to: WVU School of Pharmacy HSOR Program (<https://pharmacy.hsc.wvu.edu/pharmaceutical-systems-and-policy/phd-program-in-health-services-and-outcomes-research/>)

Admissions for 2026-2027

Applicants considered for admission to the doctoral program must meet the following minimum requirements.

- A professional degree in Pharmacy (Pharm.D.), Medicine (M.D.), or a Master's degree in pharmacy administration. Students with a Master's degree in related fields such as epidemiology, public health, health care administration, are also encouraged to apply. Students with a Master's degree in related fields such as marketing, management, economics, psychology, or sociology with a demonstrated interest or experience in health care may also apply.
- Outstanding students with a B.S. in pharmacy or pharmaceutical sciences may be considered for direct admission into the Doctoral program
- College transcript with a minimum of a B average (3.0 on a 4.0 scale)
- GRE or GMAT scores (International applicants must meet WVU's minimum score requirements for English language proficiency (<https://graduateadmissions.wvu.edu/how-to-apply/apply-for-2024-2025/international-graduate-applicant/english-language-proficiency-requirements/>)) evaluating potential for graduate studies
- Supportive letters of recommendation (at least three)
- Satisfactory personal or telephone interview (whenever possible)
- Statement (one page) of personal goals describing background, academic/ research interests and career objectives
- A resume or curriculum vitae listing educational and employment history
- Application deadline is February 1st of each year

INTERNATIONAL APPLICANTS

International students should also be aware of the following:

- International applicants must present the Test of English as a Foreign Language or TOEFL minimum score requirements (<https://graduateadmissions.wvu.edu/how-to-apply/apply-for-2024-2025/international-graduate-applicant/english-language-proficiency-requirements/>) if they are from a non-English speaking country or the official language of the country is not English. Applicants are urged to arrange for one of these tests well in advance of the desired enrollment period.
- International students who have completed a M.S. degree or any degree in the U.S. may request a waiver for submitting TOEFL results. They should contact the Office of International Students and Scholars (<https://oiss.wvu.edu/>) for approval.
- International students should not plan to leave their country without a formal notification of admission from the Office of Admissions at WVU. International students admitted without an assistantship must submit a statement of financial status in order to be registered at WVU.
- International students admitted to the program must report to the Office of International Students and Scholars upon arrival at WVU. Students are responsible for making sure that they are in compliance with immigration requirements.

APPLICATION PROCESS (MAJOR CODE 8980)

DEADLINE: FEBRUARY 1

Application to the Health Services and Outcomes Research PhD program is completed electronically here (https://wvu.my.site.com/wvugrad/TX_SiteLogin/?startURL=%2Fwvugrad%2FTargetX_Portal__PB).

Please choose Major Code: **8980**.

West Virginia University requires the following information for application through the WVU online application portal. Please note that all materials are submitted through the portal. Do not send materials to the School of Pharmacy unless instructed to do so by the Office of Student Services.

1. One copy of official transcripts (original or certified; minimum of a B average or a 3.0 GPA on a 4.0 scale) in a sealed envelope from each college you have attended.
2. Original or certified copies of all degrees/diplomas/certificates received in the original language.
3. Translation of an applicant's foreign transcripts and diplomas/certificates may be sent directly to a foreign transcript service for evaluation. If using a foreign transcript service, please have the evaluated documents submitted to the WVU Office of Graduate Admissions.
4. Official GRE Scores and TOEFL or IELTS scores.
5. Statement of personal goals describing your background, academic interests, and career objectives.
6. A resume or curriculum vitae listing educational and employment history.
7. Three letters of recommendation from persons who are in a position to evaluate your potential for graduate school. At least one recommendation must be from a person at the last school you attended for full-time study, unless you have been out of school for five years or longer.

Direct admission related inquiries to:

Khalid Kamal, MPharm, PhD

Professor and Chair

Acting HSOR Graduate Program Director

Pharmaceutical Systems & Policy

E-mail: pharmacyhsor@hsc.wvu.edu

Students considered for admission will participate in an interview and will be notified of their candidacy in the spring prior to admission.

See more at: WVU School of Pharmacy HSOR Program (<https://pharmacy.hsc.wvu.edu/department-of-pharmaceutical-systems-and-policy/phd-program-in-health-services-and-outcomes-research/>).

Major Code: 8980

Curriculum Requirements

Code	Title	Hours
HPML 502	U.S. Healthcare Organization and Delivery	3
PHAR 769	Advanced Health Service Research Methods	3
PHAR 757	Patient Reported Outcomes	3
BIOS 501	Applied Biostatistics 1	3
BIOS 503	Applied Biostatistics 2	3
PHAR 755	Pharmacoeconomics	3
PHAR 753	Social and Behavioral Theory and Health Outcomes Research	3
PHAR 793	Special Topics (Introduction to SAS)	2
PHAR 756	Health Survey Research Methods	3
BMS 720	Scientific Writing	2
PHAR 785	Pharmacoepidemiology	3
PHAR 786	Health Services Research and Secondary Database	3
PHAR 777	Health Outcomes Research Designs	2
PHAR 754	Decision Analysis in Healthcare	3
BMS 700	Scientific Integrity	1
BMS 701	Scientific Rigor and Ethics	1
Research		6
PHAR 797	Research	
Seminar		6
PHAR 788	Graduate Seminar in Health Outcomes Research	
Electives (from Suggested Electives or potentially other relevant courses as approved)		12
Total Hours		65

Suggested Electives

Code	Title	Hours
Quantitative Emphasis		
BIOS 610	Biostatistical Methods and Inference	3
BIOS 611	Data Management and Reporting	3
BIOS 612	Biostatistical Theory	3
BIOS 620	Applied Linear Models HS	3
BIOS 621	Categorical Data Analysis HS	3
Seminar in Methodology		3
PSYC 711	Seminar in Methodology	
PHAR 768	HEOR/HSOR Internship	1 to 6
Behavioral Emphasis		
PHAR 759	Clinical and Population Practicum	1
PUBH 613	Public Health Program Evaluation	3
SBHS 761	Qualitative Research Methods	3
Health Policy Emphasis		
HPML 601	Health Policy, Law, and Ethics	3
HPML 622	Analytic Methods for Health Policy, Management, and Leadership	3
HPML 624	Advanced Issue Analysis for Health Policy	3
HPML 670	Policy Analysis for Population Health 1	3
HPML 671	Population Health Policy Analysis Informatics 1	3
Epidemiology Emphasis		
EPID 611	Concepts and Methods of Epidemiology	3
EPID 712	Quantitative Methods in Epidemiology	3
Health Care Administration		
PUBA 671	Healthcare Organization and Operation	3
PUBA 672	Healthcare Finance	3

Major Learning Outcomes

The overall goals of the PhD program in Health Services and Outcomes Research are:

1. To educate and train highly qualified individuals to pursue independent research in health services and outcomes research (HSOR) within interdisciplinary teams, and to function and contribute as a member of a research team.
2. To prepare competent scientists able to contribute to health-related research, industrial research and development, pharmaceutical education, and scholarship.
3. To advance research in pharmaceutical and healthcare delivery.
4. To provide leadership for the pharmacy profession in research, graduate education, and health policy making.

The program is designed to prepare students to become independent researchers. Students will develop competencies in the scientific research process through didactic studies and conceptualizing, designing, conducting, and reporting original research.

Didactic Studies

1. To learn basic principles and apply these principles to specific disciplines and related fields to cultivate a broad background of knowledge.
2. To develop research skills, including scientific communication and critical thinking/problem solving abilities by participating in seminars and designated research skill courses.

Research Training

1. To acquire practical experience in conducting original research, including acquisition of background information (e.g. literature research), problem development, experimental design and experimentation, collecting primary data and using secondary data, and data analyses.
2. To foster research communication skills by writing abstracts for research presentations, manuscripts for publication, research grant proposals, and a thesis or dissertation.
3. To gain additional insight into research and scholarship by participating in scholarly exchanges with faculty and students in the WVU School of Pharmacy, the Health Sciences Center (HSC), as well as the national and international healthcare community.