

## AAIM Perspectives

AAIM is the largest academically focused specialty organization representing departments of internal medicine at medical schools and teaching hospitals in the United States and Canada. As a consortium of five organizations, AAIM represents department chairs and chiefs; clerkship, residency, and fellowship program directors; division chiefs; and academic and business administrators as well as other faculty and staff in departments of internal medicine and their divisions.

# Participation in Health Services/Population Health Research in US Departments of Medicine



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### INTRODUCTION

Health services research, inclusive of population health, is broadly defined as “a multidisciplinary field of inquiry, both basic and applied, that examines access to, and the use, costs, quality, delivery, organization, financing, and outcomes of healthcare services to produce new knowledge about the structure, processes, and effects of health services for individuals and populations.”<sup>1</sup> These fields help to link together medicine and public health with health care delivery and serving the community. In fact, there is increased interest and focus on health services/population health research, and many academic medical centers are now forming formal departments of population health.<sup>2,3</sup>

The term *population health* often refers to the health or determinants of health among a group of patients receiving health care from a health care delivery system or academic institution. The term is also used when referring to the health and determinants of health of persons residing in a particular geographic area or specific community, regardless of their receipt of health care services. A comprehensive view of population health considers health care one of many determinants of population health.<sup>3</sup>

Through the Research Committee of the Alliance for Academic Internal Medicine (AAIM), a nonprofit, 501 (c)(3) professional academic association that promotes the advancement of faculty and administrators who oversee and administer the training of future physicians, a Population Health Subcommittee was formed in 2019. The subcommittee included AAIM members who are population health subject matter experts and other professionals active in population health and health services research. The subcommittee was charged with determining the extent to which faculty and trainees of US academic departments of medicine are actively engaged in research focused on health

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services and population health. The subcommittee addressed this by developing a research survey instrument with input from the Society of General Internal Medicine (SGIM) Research Committee (<https://www.sgim.org>). The survey was designed to determine the extent to which faculty in US departments of medicine participate in health services/population health research.

## METHODS

A web-based survey was used of 137 US internal medicine designated Vice Chairs of Research and Department of Medicine Chairs whose medical school held AAIM membership in good standing and held Liaison Committee on Medical Education (LCME) accreditation as of September 2019. In September 2019, AAIM Surveys Staff extracted an electronic roster of those member schools and isolated the population to individual members of the Association of Professors of Medicine (APM, an AAIM charter organization) whose professional title denoted them as “Vice Chair of Research.” Additionally, APM “Departmental Chairs” were included to ensure that departments of medicine without a verifiable vice chair of research (in AAIM member records) would receive a survey email invitation.

To ensure internal validity, the instrument was pre-tested, and the web survey was pilot tested by members of AAIM’s Research Committee and select members of AAIM’s standing survey committees (the latter of whom were blinded to the Population Health Subcommittee), all of whom have extensive experience as faculty or faculty-leaders in departments of medicine. The Population Health Subcommittee then reviewed and addressed any pilot test comments that warranted attention, and the web survey was further revised. The survey instrument consisted of 18 questions, including logical skip logic patterns and conditional display logic; not all questions necessarily were answered by all respondents. Question types included closed-ended, multiple-choice select one/select all (some including an open-text field for responses of “other”); numeric-only fields; open-ended text response fields; and 5-point Likert scale questions. To respect respondents’ right to skip questions they did not wish to answer, the survey software was

programmed to alert respondents of questions they did not answer, but it did not prevent them from proceeding. The web-based survey was fielded using Qualtrics Survey software, with unique participation URLs being disseminated to the population via the software’s email platform, and the survey landing page included an informed consent statement.

The survey defined “participation” in health services/population health research as any level of involvement in health services/population health research. A single response from the leadership of each department of medicine was solicited; Vice Chairs of Research were the intended population but Department Chairs whose APM membership record did not specify a Vice Chair of Research were included in the initial invitation. An email pre-survey notification was sent to the population on October 9, 2019, and the survey launched on October 15, 2019. Five email reminders were sent to nonrespondents and the survey closed on December 27, 2019. During fielding it was confirmed that a select number of Vice Chairs of Research positions no longer held their positions and, thus, were replaced by the department chair. Institutional Review Board (IRB)

exemption was granted by Case Western Reserve University (CWRU) for this study (CWRU IRB #: STUDY20191127).

## PERSPECTIVES VIEWPOINTS

- The majority participate and have formal education programs in health services/population health research.
- Research occurred in department, section, or divisions with independent schools of public health, a multidepartment center, or the Veterans Affairs (VA) Health Services Research and Development (HSR&D)-funded Center of Innovation (COIN).
- Collaboration occurred in pediatrics, biostatistics/medical informatics, epidemiology, and nursing.
- The majority currently are engaged in models that deliver high-quality, cost-efficient care.
- A total of 71.1% agreed or strongly agreed that their “Internal medicine faculty participate in the leadership of this new care delivery model.”

## Data Security and Confidentiality

Project personnel holding valid human subjects research training certificates (MK; AAIM Surveys staff) conducted data collection. The data management plan only permitted the project personnel to handle personal and institutional information during data collection. Immediately after survey closure, the final survey data set was downloaded as a read-only archive accessible to project personnel only on a networked drive and then purged all data files/records from the survey software server. Prior to removing all personal and institutional identifiers from the survey data set, the following variables were merged in supporting institutional data from AAIM member records, including medical school type (public/private), US Census Bureau region,<sup>4</sup> sex, position type of respondent (Vice Chair of Research or Department Chair), and AAIM medical school size classification. The summary results report was provided to the subcommittee, including a de-identified data set.

## Statistical Analysis

Data analysis was conducted in *Stata SE 16*.<sup>5</sup> Descriptive statistics included measures of central tendency for continuous variable (ie, mean, median, standard deviation, interquartile range) and frequencies and percentages for categorical variables. Item nonresponse (number of nonrespondents for each question) was reported. To assess the representativeness of the results, essential characteristics of respondents' medical schools were compared to those of the survey population using Pearson's  $\chi^2$  (or, when anticipated cell sizes were less than 5, Fisher exact test). Group-based differences were reported using medical school US Census Bureau region, medical school type (public or private), and size of medical school (number of enrolled students). Significance levels were set to 0.05 for all statistical tests. A simple content summary/listing of open-ended text responses was also summarized (detailed data not shown).

## RESULTS

The survey response rate was 44.5%, or 61 of 137. **Table 1** demonstrates the general representativeness of the results by comparing respondents to nonrespondents. There were no statistically significant differences based on medical school type (public or private), size

of medical school, and gender. With the exception of the South, where there was slight overrepresentation among respondents (47.5% and 30.3%, respectively;  $P=0.038$ ), there were no significant differences based on Census Bureau region of medical school. The overrepresentation of schools in the South likely can be explained by the Census Bureau categorization of regions, which collapses a small number of mid-Atlantic states with southern states. As expected, a higher percentage of respondents consisted of Vice Chairs of Research than Department Chairs (60.7% and 39.4%, respectively;  $P=0.002$ ).

**Table 2** summarizes the results from 55 of 61 (90.2%) respondents who reported that their faculty participate in health services/population health research as a field of inquiry. On average, 25.6 faculty (range 16-84), 17.1 trainees (range 10-68), and 26.5 staff (range 10-200) per department participated in this line of inquiry. For the majority of departments this type of research was conducted in their own department, section, or division, but this type of research also was conducted in partnership with independent schools of public health, a multidepartment center, or the Veterans Affairs (VA) Health Services Research and Development (HSR&D)-funded Center of Innovation (COIN). On average, the groups within departments, sections, or divisions and in independent schools of public health

**Table 1** Core Characteristics of Responding and Nonresponding Medical Schools: 2019 Survey of Participation in Health Services/Population Health Research

	Respondents (n = 61) No. (Column %)	Nonrespondents (n = 76) No. (Column %)	Total (n = 137) No. (Column %)	P Value*
Medical School Type				
Public	33 (54.1)	49 (64.5)	82 (59.9)	0.218
Private	28 (45.9)	27 (35.5)	55 (40.2)	
US Census Bureau <sup>†</sup>				
Northeast	14 (23.0)	18 (23.7)	32 (23.4)	0.920
Midwest	12 (19.7)	21 (27.6)	33 (24.1)	0.319
South	29 (47.5)	23 (30.3)	52 (38.0)	<b>0.038</b>
West	6 (9.8)	13 (17.1)	19 (13.9)	0.369
Medical School Size <sup>‡</sup>				
100 or more students	25 (41.0)	31 (40.8)	56 (40.9)	0.982
65-99 students	20 (32.8)	24 (31.6)	44 (32.1)	0.880
Less than 65 students	14 (23.0)	20 (26.3)	34 (24.8)	0.694
Medical school with no internal medicine residency program	2 (3.3)	1 (1.3)	3 (2.2)	0.585
Respondent Type <sup>‡</sup>				
Vice Chair of Research	37 (60.7)	25 (32.9)	62 (45.3)	<b>0.002</b>
Department Chair (of Medicine)	24 (39.3)	51 (67.1)	75 (54.7)	
Gender of Vice-Chair of Research or Department Chair <sup>‡</sup>				
Female	13 (21.3)	11 (14.5)	24 (17.5)	0.295
Male	48 (78.7)	65 (85.5)	113 (82.5)	

\*Tests difference between "Respondents" and "Nonrespondents." Pearson  $\chi^2$  with 1 degree of freedom used for categorical variables; P value  $\leq 0.05$ ; Fisher exact test used when anticipated cells sizes were 5 or less.

<sup>†</sup>Excludes 1 U. territory-based medical school because of small cell sizes/data confidentiality.

<sup>‡</sup>Obtained from Alliance for Academic Internal Medicine membership database in September 2019.

**Table 2** Health Services/Population Health Research and Delivery of High-Quality and Cost-Efficient Care in US Academic Medical Departments: 2019 Survey of Participation in Health Services/Population Health Research

Faculty members participate in health services/population health research (n = 55)	No. with Characteristic/No. Respondents	Percentage
Where health services/population health research is conducted within department or academic health center <sup>*,†</sup>		
Department of medicine center, section, or division	45/52	86.5
Independent, multidepartmental academic center	35/52	67.3
Independent school of public health	23/52	44.2
VA COIN funded by VA Health Services and Development Service	18/52	34.6
Other academic departments that participate in health services/population health research (4 highest) <sup>†,‡</sup>		
Pediatrics	28/35	80.0
Biostatistics/Medical Informatics	27/35	77.1
Epidemiology	23/35	65.7
Nursing	20/35	57.1
One or more of faculty participate in administrative leadership role within organizational structure that supports/facilitates health services/population health research ("YES")	41/50	82.0
Sources of funding support for health services research/population health: department-level (2 highest) <sup>†</sup>		
NIH	42/48	87.5
PCORI	36/48	75.0
Sources of funding support for health services research/population health: academic institution (two-highest) <sup>†</sup>		
NIH	36/47	76.6
AHRQ	33/47	70.2
Has formal educational program for which your faculty or trainees are eligible and would learn about health services/population health research ("YES")	35/51	68.6
Outcome of educational curriculum <sup>†</sup>		
Formal graduate degree (eg, PhD, MS, other)	24/34	70.6
Certificate of training	19/34	55.9
External funding agencies that support educational program <sup>†,§</sup>		
NIH T32	18/25	72.0
NIH K12	17/25	38.0
Affiliated health system engaged in alternative payment models that reward delivery of high-quality/cost-efficient care ("YES")	38/51	67.9
Strongly agrees or agrees: "Internal medicine faculty participate in leadership of new care delivery model"	27/38	71.1
Actively participates in health services/population health research	Mean (SD)	Median (IQR)
Faculty (n = 50)	25.6 (24.4)	16 (20)
Trainees (n = 48)	17.1 (15.6)	10 (22)
Staff (n = 46)	26.5 (40.5)	10 (28)

AHRQ = Agency for Healthcare Research and Quality; COIN = Center of Innovation; IQR = Interquartile range; NIH = National Institutes of Health; PCORI = Patient-Centered Outcomes Research Institute; SD = standard deviation; VA = Veteran's Affairs. Due to item non-response or survey conditional logic (noted below), denominators will not necessarily sum to the full 55 respondents who reported that faculty members participate in health services/population health research.

\*Five respondents also reported "Other."

†Multiple responses were allowed; total responses will exceed number of respondents and total percentage will exceed 100.

‡For 35 of 36 respondents who reported "Independent, multi-departmental academic center" or "Other" to the question of where health services / population health research is conducted. Reports four-highest-reported options among a total of 16.

§10 additional respondents reported "No external funding agencies support the educational program."

had been in existence the longest (detailed data not shown). Departments of medicine most commonly collaborated in health service/population health researchers in pediatrics (80.0%), biostatistics/medical informatics (77.1%), epidemiology (65.7%), and nursing (57.1%).

Most respondents reported that 1 or more of their faculty served in an administrative leadership role in this area (41 of 50 total respondents to this question; 82.0%). The type and title of leadership roles varied widely from Associate Dean to Chief Value Officer.

There were a wide variety of sources of support noted for their department and for their institution. For their department, the top 4 sources of support were National Institutes of Health (NIH) (87.5%) and Patient-Centered Outcomes Research Institute (PCORI) (75.0%). For their academic institutions, the top sources of support were NIH (76.6%) and Agency on Healthcare Research and Quality (AHRQ) (70.2%). Of 51 total respondents, 35 (68.6%) reported that they have a formal educational program in health service/population health research, where the training program is most commonly targeting junior faculty, MD fellows, and residents. Most educational programs lead to either a formal graduate degree (70.6%) or a certificate of training (55.9%). A total of 35 of 51 respondents (68.6%) to the educational questions received NIH support for their programs in the form of either a T32 (n = 18) or K12 (n = 17) training grant. Key fields of inquiry for health services/population health research were broad-ranging, where the most common (reported by >70% of respondents) were implementation science, quality of health care, patient-centered care, health care equity/disparities, telehealth, and access to care (detailed data not shown).

Respondents were asked 2 additional questions related to delivery of high-quality and cost-efficient care. The vast majority were currently engaged in delivery of new models to promote high-quality and cost-efficient care (67.9% answered yes). A total of 71.1% agreed or strongly agreed with the statement "Internal medicine faculty participate in the leadership of this new care delivery model."

## DISCUSSION

Health services research, encompassing population health research, is a growing field of investigation, which has been stimulated by recent federal policies and initiatives (eg, the Affordable Care Act of 2010 and the Federal Access and CHIP Reauthorization Act of 2015) that focus on access, quality, and affordability of health care in the United States.<sup>6</sup> In a recent analysis of the stock and supply of health services researchers in the United States, Frogner estimated a total pool of 16,743 health services investigators in 2015, up from 11,596 in 2007 and 5,000 in 2007,<sup>7,8</sup> who were responsible for >12,000 published articles between 2010 and 2015.<sup>7</sup> At least half of health services/population health researchers work in a university setting with nearly 11% employed by a nonuniversity research policy organization.<sup>7</sup>

Within universities, academic health centers (AHCs) are the natural home for health services/population health research.<sup>2,3</sup> In a recently published analysis of the ways in which US AHCs support multidisciplinary health services research activities, Gourevitch et al<sup>2</sup> identified 15 AHC departments (with

"population" as part of the department name) across all US accredited medical schools, each with unique structural characteristics. However, as the results of this survey illustrate, well-defined academic departments are not the only homes for health services/population health investigators. Other venues include schools of public health, Veterans Affairs (VA) Health Services Research and Development (HSR&D)'s Centers of Innovation (VA HSR&D COIN), other independent multidepartment centers, and divisions within departments of medicine.

AAIM has had a longstanding interest in promoting the research interests of its member departments of internal medicine, including its support of three Consensus Conferences resulting in recommendations for fostering the training and career development of physician scientists.<sup>9-11</sup> Whereas much of the focus of these efforts have been targeted to nurturing the careers of physicians engaged in basic, translational, and clinical research, the emergence of health service research as an important field of investigation has broadened AAIM's "scope of research" portfolio. Based on the personal experience of the authors working at 5 AHCs, we have "selective knowledge" that department of medicine faculty are actively engaged as participants and leaders in health services/population health research. However, we did not know the full scope of this engagement across AAIM's 137 member departments. Accordingly, this gave rise to the formation of the Population Health Subcommittee and the creation of a survey of member department chairs and research vice chairs to determine the full extent of department participation in health services/population health research, including the scope of participation (numbers of faculty, staff, and trainees), organizational structure, funding sources, training activities, extent of multidisciplinary involvement by other department faculty, leadership activities, and scope of research foci.

With a response rate of 44.5% among survey participants, the survey results provide an informative overview of national department of medicine participation in health services/population health research. As detailed in the Results section of this report, the key findings include the fact that 90% of responding departments have significant numbers of faculty engaged in health services/population health research, who work in a variety of organizational structures (which have been in existence for 10-20+ years) many with coinvestigators from other departments. Faculty participation includes providing research leadership (>80%). Research funding comes from a variety of sources including relevant external funding agencies (eg, Agency on Healthcare Research and Quality, Patient-Centered Outcomes Research Institute, NIH, Veteran's Affairs, etc.). Most (68%) of the reported health services/population health programs include efforts at

research education targeted to junior faculty, fellows, and residents, many with external support. The scope of reported research is broad and encompasses most of the recognized fields of effort.

As a survey data collection effort, this study is not without limitations. Although there were almost no statistically significant differences between the respondents (or their institutions) and the survey population, the final response rate was 44.5%, there was a noticeable amount of item nonresponse from 3 to 4 of the 55 respondents who reported that their faculty participate in health services/population health research. Because this was an initial data collection in terms of seeking baseline information on the subject, it is possible that certain question items or constructs introduced some degree of measurement error, although the instrument was tested by multiple experts. Although we cannot confirm that department of medicine faculty at the non-responding medical schools do not participate in health services/population health research, it is likely that for a preponderance of those schools, faculty do not engage in such research. Thus, the 55 departments of medicine that responded affirmatively about faculty engaging in such research likely represents a close estimation of the extent to which health services/population health research is active in US departments of medicine.

We believe that the results of this survey provide a convincing overview confirming our premise that health services/population health research is an active focus of research for department of medicine faculty and trainees. This will form the basis for a follow-up survey of medicine departments, which reported major health services/population health research engagement, to determine the strategies and environment that have supported their research success. The results of this subsequent analysis will hopefully reveal a set of “best practices” by which other departments and their AHCs can achieve similar degrees of success.

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