VA Advanced Fellowships in Health Services Research: A Program Evaluation

Final Report

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ACKNOWLEDGMENTS

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LIST OF ABBREVIATIONS

AHRQ = Agency for Healthcare Research & Quality
CDA = Career Development Award
CINCCH = Center of Innovation for Complex Chronic Care
Co-I = Co-Investigator
COIN = Centers of Innovation
CV = Curriculum Vitae
FL = Florida
GA = Georgia
HSR = Health Services Research
HSR&D = Health Services Research and Development Service
IIR = VA Investigator-Initiated Research
LIP = locally initiated projected
MD = Doctor of Medicine
Mdn = Median
MPH = Master of Public Health
MIRECC = Mental Illness Research, Education and Clinical Centers
NIH = National Institutes of Health
OAA = Office of Academic Affairs
PhD = Doctor of Philosophy
Philly = Philadelphia
PI = Principal Investigator
Pitts. = Pittsburgh
R01 = Research Project Grants
SD = Standard deviation
SE = Standard error
VA = Veterans Health Administration
VAMC = Veterans Affairs Medical Center
VAQS = Veterans Affairs Quality Scholars

EXECUTIVE SUMMARY

This evaluation of the HSR Advanced Fellowship Post-Doctoral Training Program had two broad objectives: (1) characterize the scope of the HSR Advanced Fellowship Post-Doctoral Training Program, and (2) report job placement post-fellowship and career progression for Office of Academic Affairs (OAA)-funded HSR postdoctoral fellowship alumni.

Objective 1: Characterize the scope of the HSR Advanced Fellowship Training Program

Considerable variability exists across sites in their definition of success for fellowship graduates, as well as in the program requirements expected of both fellows and mentors. Despite this variability, sites report common struggles, including recruitment challenges (particularly physicians) due to current stipend levels, inability to offer tuition support for degree programs, and fellow access to research services. Unprompted, multiple fellowship directors expressed interest in having a HSR fellowship program coordinating center that provides services such as: national recruitment efforts, networking opportunities for fellows, national-level tracking of alumni, and sharing of best practices and resources.

Objective 2: Report job placement post-fellowship and career progression for alumni

Over half of alumni remain at VA and have a largely research-based career; those who remained in VA were more likely to have obtained a CDA. Fellowship alumni are well-accomplished, many obtaining CDAs, top-tier grants, and tenure. Alumni are largely satisfied with their experiences during fellowship; there was a trend in the association of satisfaction with fellowship and measures of alumni productivity.

Recommendations

Clarify expected outcomes for fellowship program. Greater clarification by HSR&D central office and Office of Academic Affiliations (Advanced Fellowships Program) is needed regarding the expected outcomes of the HSR fellowship program at each site and of fellowship graduates. Specifically, we recommend a consensus panel consisting of fellowship directors and senior HSR&D investigators to craft potential expectations or success measures and expectations.

Clarify minimum expectations for fellowship program sites and descriptions of each site's area of specialization. Clarity should be provided nationally as to what OAA expects each site to provide for its fellows as what the minimum expectations are (e.g., mentoring, protected time). Creating both a minimal set of training program expectations that all sites must achieve as well as marketing of site-specific areas of specialization will strengthen the national HSR&D Advanced Fellowships program.

Encourage provision of site-specific information. Each site should share accurate and complete information to all fellows in regards to site-specific learning opportunities and resources.

Engage support for a VA Advanced Fellowships in HSR Coordinating Center. Support among fellowship directors for a coordinating center is sufficient to warrant one that functions to facilitate recruitment, networking, collaboration among fellows and centers, and sharing of best practices to promote more structure at the site-level, without completely standardizing the HSR fellowship nationally.

Consider creative solutions to financial challenges. The main barrier to recruitment is the opportunity cost of enrolling in the fellowship due to the low stipend level for advanced fellowships (both for physicians and non-physicians).

INTRODUCTION

The Veterans Health Administration (VA) Health Services Research and Development Service (HSR&D) Centers of Innovation (COINs) foster team science in part by enhancing collaboration and mentoring among healthcare providers, scientists, clinician-investigators and operational partners. This enhanced collaboration/mentoring seeks to produce and implement innovative knowledge, tools, and interventions that improve the quality, safety and effectiveness of health care. For over 20 years, the VA Advanced Fellowships Program in Health Services Research and Development (HSR fellowship) has provided critical infrastructure and human capital to facilitate this mission.

The structure of the VA HSR fellowship is such that fellows are housed within VA COINS that partner with academic affiliates to supplement the training opportunities and resources provided to fellows. Currently, VA HSR fellowships operate independently with few coordinating resources to support their objectives. As such, no mapping exists of the characteristics of each sites' offerings and resources, inhibiting both HSR&D's and OAA's ability to identify gaps and effectively allocate resources. Further, to our knowledge the current positions, career trajectories, and accomplishments of fellowship alumni have never been documented. This evaluation aims to accomplish two broad objectives:

1.   Characterize the scope of postdoctoral fellowship training occurring across all VA HSR&D COINs. This includes availability of coursework opportunities, curriculum offered, formal mentoring structures, and research practicum experiences.

2.   Report job-placement post-fellowship and career progression for Office of Academic Affairs (OAA)-funded HSR postdoctoral fellowship alumni from the perspectives of both the COINs and postdoctoral fellows.

This final report is comprised of two sections. First, we present the results of surveys with program directors at each of the HSR fellowship sites. The information gleaned in this section includes availability of program resources, requirements, and challenges. The second section discusses findings from a survey given to fellowship alumni, including career trajectories, satisfaction with fellowship, and alumni perceptions about the fellowship program. We close with a discussion of next steps and implications for the HSR fellowship program.

I.   OBJECTIVE 1: CHARACTERIZE POST-DOCTORAL FELLOWSHIP TRAINING PROGRAMS

Overview

We employed a survey of fellowship program directors for the first aim of the study. The focus of this aim is to understand differences and similarities across sites in terms of available resources, opportunities, curriculum, research practicum experiences, challenges, and needs of the fellowship sites.

Methods

Sites

HSR&D currently funds 19 COINs, located at 23 VAMCs nationwide: Ann Arbor, MI; Bedford, MA; Boston, MA; Charleston, SC; Denver, CO; Durham, NC; Hines, IL; Houston, TX; Indianapolis, IN; Iowa City, IA; Los Angeles, CA; Minneapolis, MN; North Florida/South Georgia/Tampa, FL; North Little Rock, AR; Palo Alto, CA; Pittsburg /Philadelphia, PA; Portland, OR; Providence, RI; Salt Lake City, UT; Seattle, WA; and West Haven, CT (see Figure 1 on page 11). Four of the 19 COINs currently have offices at two geographic locations. For the purposes of our analyses, special considerations were made for two of these joint sites, whose multi-location status has changed: Boston/Bedford and Seattle/Denver. Boston and Bedford were once separate COINs each with individual fellowship programs, but have since combined. Seattle/Denver was previously a joint COIN, but has separated into two independent COINs. For the purpose of this evaluation, these four geographic locations were interviewed, analyzed, and reported individually, resulting in a count of 21 HSR&D Advanced Fellowship programs.

Participants

We contacted the designated HSR Fellowship program directors at each of the 21 HSR Fellowship sites to complete a brief questionnaire about their program. All COIN directors were contacted whether they currently have, previously had, or were just awarded a HSR fellowship at their site.

Data Collection and Analysis

VA Office of Academic Affiliations (OAA) supplied a current and historical list of all HSR&D Advanced Fellowship Programs at each COIN nationwide including current fellowship director names and contact information. Each HSR Fellowship director received an email from Dr. David Atkins, HSR&D Director, encouraging their participation in the program evaluation. We then followed up with a formal invitation via email, which informed them of the evaluation goals and procedures. The project manager contacted each director via email or telephone. Fellowship directors were given the option to complete the survey over the telephone or in writing. If the site had more than one director, the option was given to conduct the survey as a group or individually. The project manager emailed the questionnaire to fellowship directors so they could prepare answers (if choosing to respond to the survey over the phone) and/or fill in information (if choosing to complete the survey in writing).

The questionnaire included both forced-choice response and open-ended questions (see Appendix A). Questions focused on the program (not individuals) and included topics such as learning opportunities the fellowship offers (e.g., journal club), mentoring plans, and support and resources fellowship directors would like from OAA.

A single evaluation team member collected all of the responses, and successfully obtained responses from directors at all but one site. For those fellowship directors who responded via telephone, they were asked to verbally consent to being recorded during the call to accurately capture responses. All responses were documented in Survey Monkey, to facilitate standardized data capture of both quantitative and open-ended responses. For the open-ended questions, a combination of verbatim transcribing and paraphrasing were employed. An independent evaluation team member listened to the recordings in their entirety to capture any responses that may have been missed during the live phone call.

To examine the open-ended responses, we used thematic content analysis. One team member developed an initial coding framework based on expected responses. Two members of the evaluation

team read and independently applied the coding scheme to the responses to the open-ended questions, adding codes as needed and noting emerging themes. The coders then met to discuss changes to the coding framework and themes that arose in analysis. All discrepancies in coding were resolved and the consensus is reported.

Results

Fellowship Site Characteristics

Figure 1 highlights basic characteristics of the interviewed sites. The first sites (n = 2) were established in 1988; 6 sites were added in the 1990s, 6 have been added since 2000, and an additional 4 sites recruited their first fellows in 2015 and 2016; 3 current COIN locations (Charleston, Iowa City, and Salt Lake City) have no HSR&D Fellowship Program. At the time of this study, 52 fellows nationally have active fellowship appointments (distributed 40%/60% between MDs and PhDs, respectively). Programs currently report a median of 2 MD and 2 PhD fellows per site, though current fellowship enrollment varies widely (PhD: 0-5; MD: 0-4). Four sites (19%) offer pre-doctoral training in research and 16 sites (76%) house a variety of non HSR fellows (*M* = 6, *SD* = 5.02), such as Patient Safety Fellows and Women's Health Fellows.

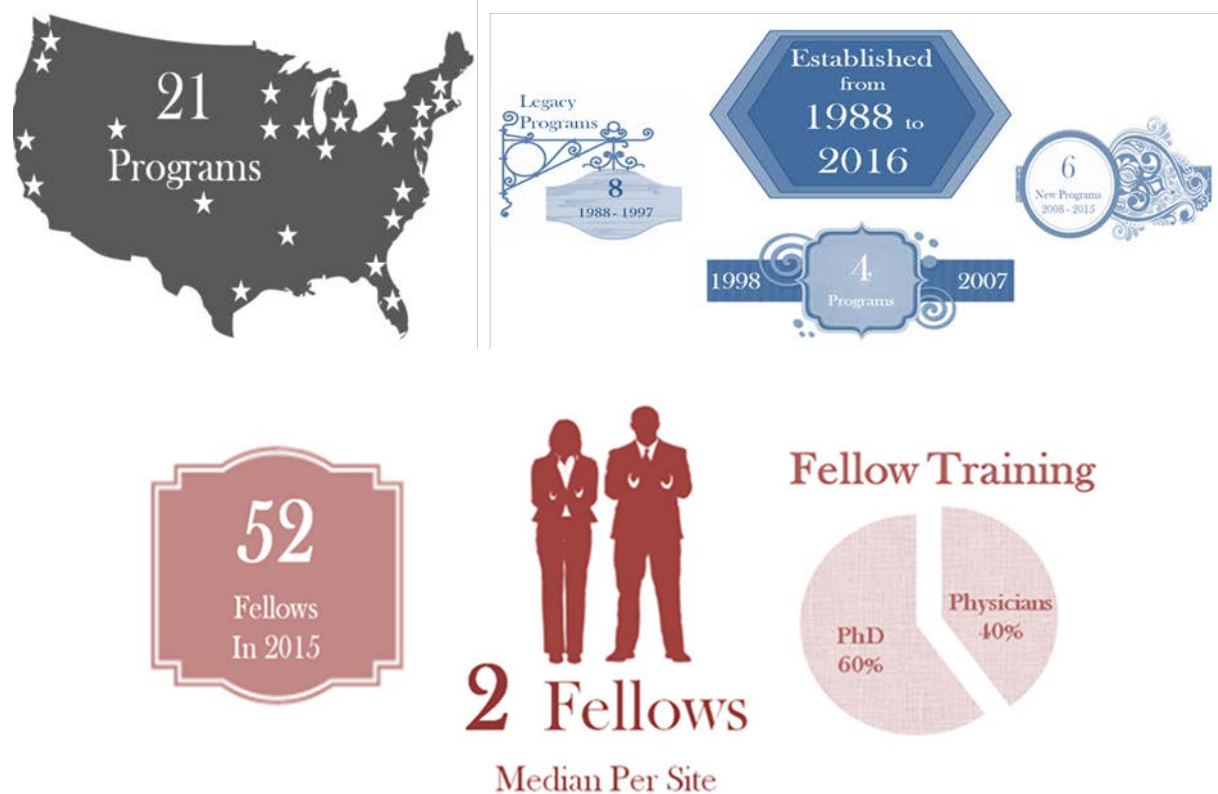**Figure 1.** Infographic Depicting Basic HSR&D Fellowship Site Characteristics

Fellowship Program Features

A number of learning opportunities (Table 1) and resources (Table 2) are available to fellows through both the COIN and the academic affiliate. Learning opportunities (seminars, journal clubs, mentoring, and research practicum) are typically available at both the academic affiliate and COIN. Formal degree

programs, credit earning courses, and audit courses are primarily offered at the academic affiliate. The same resources (e.g., offices, access to statisticians, books) are typically offered to all fellows located within a COIN, regardless of program. Funds to cover tuition fees are typically not available to any VA fellow.

Table 1. Source of learning opportunities available for fellows (n =21)

Learning Activities	COIN	Academic Affiliate	Not Available
Seminars	16	15	0
Journal clubs	13	12	2
Credit-earning courses	1	15	2
Audit courses	1	17	0
Formal degree programs	0	14	3
Receiving one-on-one mentoring	14	13	0
Providing mentorship to others	14	14	1
Research practicum	17	13	0

Table 2. Resources are available to fellows (n = 21)

Resource	Available to VA HSR Fellows	Available to Non-VA HSR Fellows	Not Available
Individual office or cubicle space	19	2	0
Group meeting space	19	2	0
IT (computer, printer, server access, telephone, teleconferencing, etc.)	19	2	0
Access to statisticians and programmers	19	2	0
Access to Research Assistants	18	2	1
Travel and conference fees	19	2	0
Books and other supplies	19	2	0
Course registration fees	15	1	5
Tuition for degree programs	5	3	13

Local Support for Fellowship Program

Based on responses to the open-ended questions, HSR Fellowship directors collectively reported that they believe the fellowship adds value to the COIN and the research conducted therein. Many fellowship directors expressed pride in the unique nature of their program and considered this part of its value. Several common themes emerged, further describing the perceived value of the HSR Fellowship.

Many sites reported receiving support from their COIN leadership, which demonstrated perceived value to the COIN. This support was demonstrated though both tangible and intangible means. Although appreciative of the intangible support received, some sites highlighted the need for tangible support, focusing on protected time for the fellowship director and mentors as well as salary support for a dedicated HSR fellowship coordinator.

> *"[Our] COIN leader is very invested. He provides support, space, encouragement; he's currently our biggest recruiter." -Site G*

Common Features across Sites

Academic Affiliation: All sites reported having an academic affiliate. Fellowships are highly intertwined with their academic affiliate and fellows benefit from a number of resources such as courses, topic seminars, mentorship, and research opportunities. However, two directors noted that some academic affiliates have stopped offering the option to audit courses due to budgetary constraints, and others noted that only paid options for coursework are available at their affiliate.

Training Occurs in Multidisciplinary Environments: Fellowship training does not occur in silos at the sites. Most HSR fellows are trained alongside fellows from other VA fellowships such as MIRECC (Mental Illness Research, Education and Clinical Centers), Women's Health, Patient Safety, and VAQS (VA Quality Scholars).

Faculty are Engaged: Fellowship directors reported that COIN faculty members are highly involved with their program through both mentoring and providing didactic sessions for fellows. Although sites reported sufficient faculty participation, they also noted that additional protected time for mentoring and training would be beneficial. The quote to the right demonstrates how faculty acknowledges that mentoring is fundamental in the success of the fellows and the program.

> *"All of our investigators understand the importance of the fellowship program and of assisting our fellows; so everyone is happy to set aside time to meet with any fellow who is interested in discussing possible collaborative opportunities"-Site F*

Structured Mentoring: Most sites report using a team approach to mentoring and the structure of the team is tailored for the fellows' particular needs. Given the importance of having a mentor or mentoring team that can help the fellow to thrive during the fellowship, the mentor(s) and the mentee are usually paired before the start of the fellowship or even before the on-site interview.

> *Mentoring teams may consist of primary, secondary, and content mentors and may change as fellowship progresses, depending on evolving interests and opportunities. Primary and secondary mentors address core research progress and development, while content mentors generally support a specific aspect of training or development (e.g., statistics, qualitative methods, etc.). Research mentors generally meet with fellows on a weekly or bi-weekly basis ... Mentoring teams usually meet on a quarterly basis, but the schedule is determined by the needs of each fellow and availability of the mentors. -Site H*

Program Requirements Are Intended to Facilitate Successful Research Careers: Fellows are required to work on projects, publish manuscripts, attend national conferences, and attend weekly educational meetings at their center, though the frequency and number of these activities varies across sites (see Figure 2) and even within programs.

Despite the similarity of the basic requirements, most fellowship directors strongly believe fellowship programs should be tailored to the individual needs of each fellow. For example, most MDs are not trained in research methodology and statistics as the PhD fellows are, thus the MD fellows may be in greater need of auditing classes or may even desire a master's degree in a research focused area.

"Program requirements vary depending upon the fellow's individualized needs. All fellows are encouraged to audit key courses in health services research, while others pursue a MS in Health Services Research. All fellows are expected to develop and complete one or more research projects that will lead to presentations at national meetings and publications."-Site Q
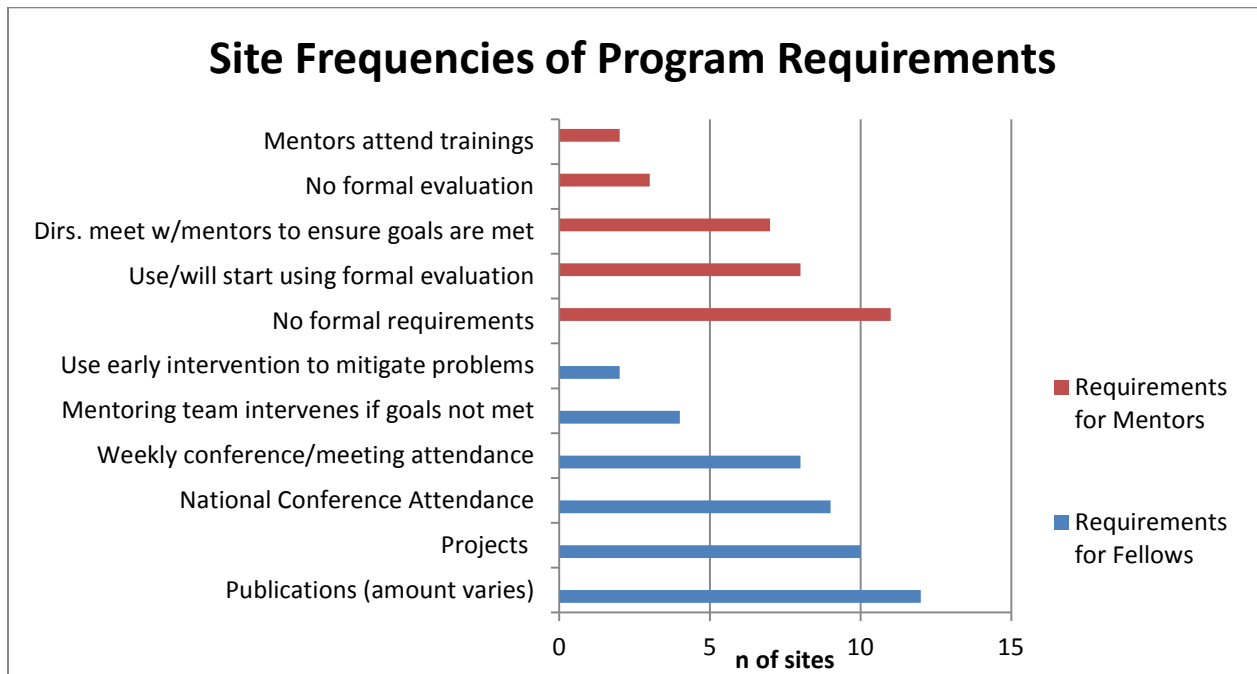
Figure 2. Program Requirement Frequencies for Fellows and Mentors by Site (n=21)

"Generally, [we] hope to train fellows to be academic researchers. [Whether] they move on to [the] VA or not, but [are] in an academic environment, this is a success."
-Site I

Evaluating Fellow Success

The definition of success for HSR&D fellowship graduates varied considerably, ranging from the highly abstract (e.g., fellows find a job at which they are happy) to the more concrete (e.g., the fellows are awarded a CDA and stay at the VA). The most

commonly reported measure of success was that fellows obtain a job in an area they desire. Nonetheless, there was great variability in response to this question, suggesting an established vision of success for fellows who complete the HSR Fellowship has not been clearly articulated or agreed upon. Although the definition of success varied across sites, nearly all sites considered the vast majority of their HSR&D fellowship graduates to be successful. Highlights of Fellows successes will be discussed in detail later in the report.

Common Challenges across Programs

Sites are keenly aware of the challenges they face. Most directors believe overcoming the challenges identified will enable the fellowship to maintain its competitive edge and continually attract high quality candidates.

Recruitment Challenges: Fellowship directors reported recruiting HSR fellows primarily through announcements at conferences and professional networks (n = 4), the site's academic affiliate (n = 5), word of mouth (n = 9), and on websites (n = 11). Although diligent recruiting efforts have produced desired results, some sites report that slots may go unfilled.

"While we have a great degree of success in recruiting fellows of the highest caliber, we failed to recruit a few outstanding candidates who opted for other opportunities with higher stipends. The provision of fellow health insurance benefits in recent years and the support provided by VA HSR&D ($7,000/year/fellow) to support training and research needs have helped us overcome this barrier to some extent, but higher stipends would enhance our ability to recruit the most highly sought fellows." -Site N

"PhD recruitment [is] straightforward: advertise, ask faculty to identify people...[we are] hugely successful. For MD fellows, we do all the same, but not as successfully. [We] rarely have unfilled MD slots, but [it is] a lot of hard work and [we] don't have choice[s] of highly qualified candidates. [We have] started discussing more aggressive advertising approaches."-Site C

To increase the appeal of the HSR fellowship for fellows, fellowship directors believe that a higher salary and/or loan forgiveness options should be available. Some candidates have opted to take faculty appointments over the fellowship with one stating "I can't afford to be a fellow" (Site H).

Inability to Offer Tuition Support for Degree Programs: Many sites report that they would like to provide tuition support so that fellows lacking formal research training can learn the basic information they need to become HSR researchers. While academic affiliates offer robust degree programs, fellows are not able to take advantage of them due to the inability to cover the costs. Although auditing courses has been a solution in the past (as reported by at least two sites), universities have now either placed tighter restrictions on free auditing or no longer allow this option.

> *"Credit-earning courses, audit courses, and formal degree programs are 'available' in that the university affiliate has courses and degree programs. However, they are 'not available' in that we have no funds from OAA to pay for such courses or degrees. Our university affiliate is under too much pressure to 'comp' any credits to us or anyone else."-Site D*

Access to Research Assistants: HSR fellows rarely have access to dedicated research assistants, with the availability of research assistants dependent primarily on the mentor's funding. Though fellows continue to produce high quality scholarly products, the lack of project support is a challenge across sites.

Shared Struggles Make a Coordinating Center Worthwhile

When asked about the possible role or benefits of a Coordinating Center, directors overwhelmingly expressed support for its usefulness and cited a number of VA Health Services Research Fellowship Coordinating Center responsibilities (see below). Sites want to maintain their distinctiveness, but see value in national collaboration and information sharing.

> *"[It would be] helpful to have a research assistant or coordinator to split time between work to help with IRB requirements, etc. This person could help with recruitment or data collection. When projects get busy, it's difficult to also provide resources to your fellows if they are currently being used."-Site C*

> *"[A coordinating center] can help bring HSR&D post-docs into the HSR&D fold better. Having a forum for fellows at the conferences would be positive thing that the coordinating center could help with."*
> *-Site M*

Advocacy for Fellows: Fellowship directors discussed opportunities for a coordinating center to serve as an advocate on behalf of individual sites. One example is the desire for greater networking opportunities among HSR fellows across sites and expressed that a coordinating center could help in creating opportunities to foster a national community for the fellows. Another common desire was to have a coordinating center advocate for the ability to offer some type of formal research education to fellows, particularly for physician fellows. As reported above, formal research training is available through academic affiliates; however, fellow stipends are insufficient to cover the cost of these programs.

Sharing Best Practices and Resources: Respondents perceived that a coordinating center could also be useful for fellowship directors in sharing of best practices among HSR fellowship sites. Best practices could encompass a broad range of topics including human resources processing, travel, recruitment, and local evaluation tools.

> *"[A coordinating center] can help with the things we are not good at, but another site has figured out a best practice. It would be nice to catalogue the information sites provide in these interviews and share best practices."-Site C*

Recruitment Efforts: A centralized recruitment effort from a coordinating center was desired by many sites. Sites want to continue attracting high quality candidates and believe the coordinating center could extend their national reach, as shown by this quotation, which cites another OAA program's coordinating center as an example:

> *"When they started doing centralized recruitment and advertisement, it made a huge difference. Across centers, we know who's applying where (across all 7). As places starting filling up slots, they will send candidates to other sites or other sites will ask if any others have interviewed any good candidates. Synergy among individual sites that works very well."*
> *-Site M*

Continued National Evaluation: Sites were overwhelmingly positive about the current evaluation initiative, stating they were anticipating the findings. Many sites already have evaluation tools for their specific program, but would benefit from a national evaluation, including maintaining alumni information.

II. OBJECTIVE 2: FELLOWSHIP EXPERIENCES AND CAREER TRAJECTORIES OF ALUMNI

Overview

This section reports on findings from a mixed methods evaluation of alumni perspectives and career trajectories. Quantitative data were drawn from a survey and extraction of data from curricula vitae and online resources. Responses to open-ended questions in the survey were also analyzed to provide additional context to the quantitative findings.

Methods

Participants

We invited 264 alumni from VA's OAA Advanced Post-Doctoral Fellowship in HSR&D to participate in our evaluation. To be eligible for our sample, alumni must have separated from the HSR&D fellowship between 2000 and 2015; completion of the program was not an eligibility requirement for participation. Of the 264 invited alumni, 222 met these criteria and 131 participated in the evaluation.

Procedure

Identifying eligible candidates. OAA supplied a current and historical list of all HSR&D Advanced Fellowship Alumni at each COIN nationwide including names, locations, fellow type (MD / PhD), start and end dates, and current fellowship director names. Each fellowship director verified the HSR&D Advanced Fellowship Alumni that were listed as fellowship alumni at their site and provided names and contact information for alumni who met eligibility criteria, but were not on the original list. To obtain remaining missing contact information, we searched the VA Global Address List, online search engines such as Google, social media platforms such as LinkedIn, Facebook, and Twitter, and academic media platforms such Research Gate and Academia.edu. Further, current publication searches (e.g., in PubMed or Web of Science) and contacts with other alumni also aided in identifying alumni's current contact information. All alumni with available contact information who appeared to be eligible were invited to participate.

Recruitment. Each HSR Fellowship alum for whom an email address could be obtained received a formal invitation via email, which described the evaluation goals and procedures. Participants were asked to complete a brief web-based survey and provide a current copy of their CV. The project manager contacted each fellowship alum via email up to three times or until the survey and CV submission were complete; participants were contacted up to 5 times via telephone if participants were non-responsive to emails.

Survey data collection. Survey questions focused on demographic information (e.g., gender, site, education), fellowship experiences, and selected career milestones (e.g., number of grants, tenured, etc.; see Measures section, below). Appendix B presents a copy of the survey.

CV abstraction. In addition to the web-based survey, participants were asked to provide a current copy of their CV. The submitted CVs were abstracted to obtain data on scientific productivity. A codebook was developed to train abstractors. Codes were developed for a number of research related productivity

outcomes (see *Research Productivity* sub-section in the *Measures* section below for details). The codebook was validated in a series of 3 iterations. In particular, two coders each coded 2 CVs. Coders compared results at the team meeting and the codebook language was clarified as necessary. This process was repeated until agreement was obtained. The codebook was then used by 3 abstractors who quantified the productivity outcomes.

Measures

Demographics. Participants reported their name (for purposes of merging their survey data with their CV abstraction), their type of VA fellowship (e.g., HSR, other), age, gender, ethnic and racial background, type of earned doctorate (i.e., MD, PhD), the field of their doctorate, location of their fellowship, and whether or not they were currently employed by VA.

Distribution of current work. Participants reported their current percentage of time spent on administration, clinical work, teaching, research, and other activities, as well as the domain they identify as their current place of employment (e.g., industry, academia).

Research productivity. Participants were asked whether they applied for a career development award (CDA) and the year in which it was awarded (if applicable). In addition, the following markers of productivity were abstracted from the alumni CVs: total number of publications, and number and role on research project grants (VA Investigator-Initiated Research [IIRs] and National Institutes of Health [NIH]/Agency for Healthcare Research & Quality [AHRQ] Research Project Grants [R01s]). Additionally, *h*-indexes were abstracted for each respondent from Web of Science. The *h*-index is a measure of an author's citation impact, defined as the number of publications *h* authored by an individual that have been cited at least *h* times. We opted for Web of Science as our source of the *h*-index in lieu of other indexing services, such as Google Scholar (the most popular, free source of this statistic), for two principal reasons: First, Google Scholar computes *h*-indexes only for individuals who hold a Google Scholar profile; only a small proportion of our respondents appeared to have a profile on Google Scholar; thus, using this service would have resulted in largely incomplete information. Furthermore, because Web of Science has stricter inclusion criteria and has better protocols for ensuring data quality (e.g., removal of duplicates), Web of Science yields cleaner and more conservative *h*-index calculations in comparison to Google Scholar.

Satisfaction with fellowship program. Participants answered questions about the extent to which the fellowship program helped them with job placement after the fellowship. Fellowship satisfaction was measured with a 13-item scale ($\propto$ = .96). Participants responded to items on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items asked about satisfaction and impact of different domains of the fellowship which included items such as "How satisfied were you with the content of your fellowship?" and "How much do you think your VA fellowship contributed to your current successes?".

Learning opportunities available during fellowship program. Additionally, participants were asked to rate the extent to which they found learning opportunities (e.g., journal club at center, opportunities to earn a degree) useful to them during their fellowship. Response options ranged from 1 (not useful at all) to 5 (very useful); alternatively, participants could indicate that the learning opportunity was not offered to them during their fellowship.

Open-response questions. Alumni were asked 3 opened ended questions to gain deeper insight into their experience during fellowship. The 3 opened ended questions were: "What resources/training could

have made your fellowship experience more useful?", "What were the most valuable resources/training/experiences in your fellowship?" and "Do you have any other comments?".

Data Analysis

Quantitative Analyses. We used multiple analytical techniques to answer the various questions of interest in this component of the evaluation. We utilized descriptive statistics from the survey to determine alumni demographic characteristics, response information, career trajectories, and perceptions of program resources. In addition, we used information coded from CVs to report on fellowship alumni productivity outcomes, and to conduct survival analyses to examine the number of years that elapsed between separation from fellowship and attainment of productivity milestones. Moreover, linear, multiple, and logistic regressions were conducted to ascertain the relationship between fellowship satisfaction and productivity outcomes, as well as between learning opportunities and productivity outcomes, at an individual level. Unless otherwise specified, statistical tests were two-tailed, utilizing a significance level of $p < .05$.

Analysis of Open-Ended Questions. The responses from the 3 open-ended questions in the survey were imported into ATLAS.ti (v. 6.2), a software program that allows for storing and managing qualitative data. Responses to the open-ended questions were analyzed using content analysis. After organizing the data and removing any duplicate responses, two coders independently reviewed every qualitative response to identify initial categories of themes within the given responses per question. These categories were then reviewed to check for agreement among the coders. If disagreements occurred, coders discussed until an agreement was reached as to the most appropriate category for that particular code. These disagreements led to refinement of the coding scheme, such that the categorizations were broadened or reduced as deemed appropriate. After this initial review, the coders continued to code independently and refine the categories developed, aggregating or splitting given categories as necessary to better represent the data.

Results

Participant Response Rate

Table 3 summarizes the number of eligible participant responses for each component of the study. The response rate for the survey was 59.0% (n = 131) of eligible participants (i.e., HSR fellows who graduated between 2000 and 2015). For CV provision, the response rate was 56.8% (n = 126) of eligible participants.

Table 3. Response Rates to Survey and CV Requests, for Eligible Participants

CV Obtained	Survey Completed		
	Yes	No	Total
Yes	115	11	126
No	16	80	96
Total	131	91	222

Note. Table 3 represents the total number of eligible alumni for whom a survey and/or CV was solicited; however, subsequent analyses may be based on subsets of these counts.

For those eligible alumni who did not respond, their reasons for non-response can be found in Figure 3 and Figure 4. As can be seen, most of the non-responses were due to participants failing to respond to our e-mails and phone calls. Only 4 target participants were unreachable due to insufficient or inaccurate contact information.
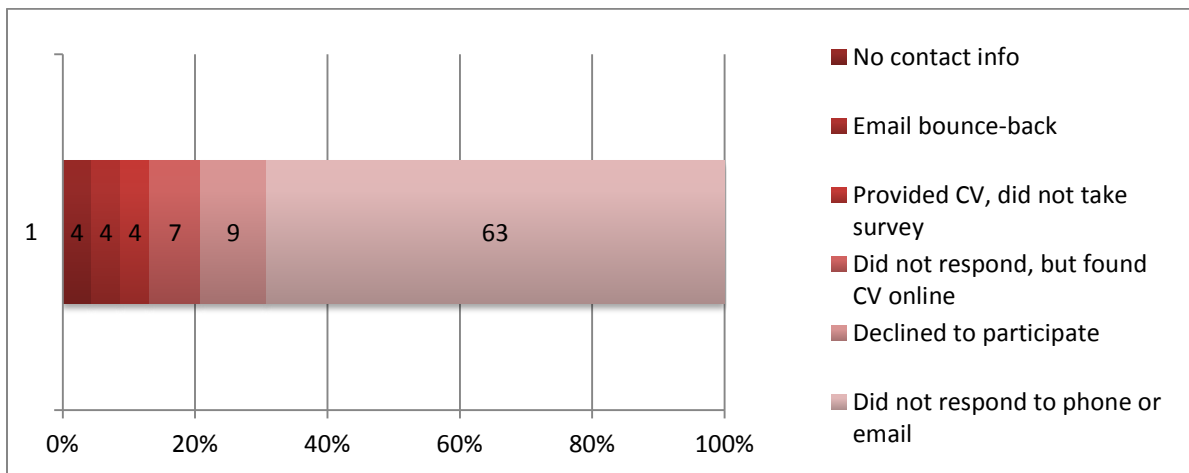
Figure 3. Distribution of Reasons for Participant Non-Response to Survey (n = 91)
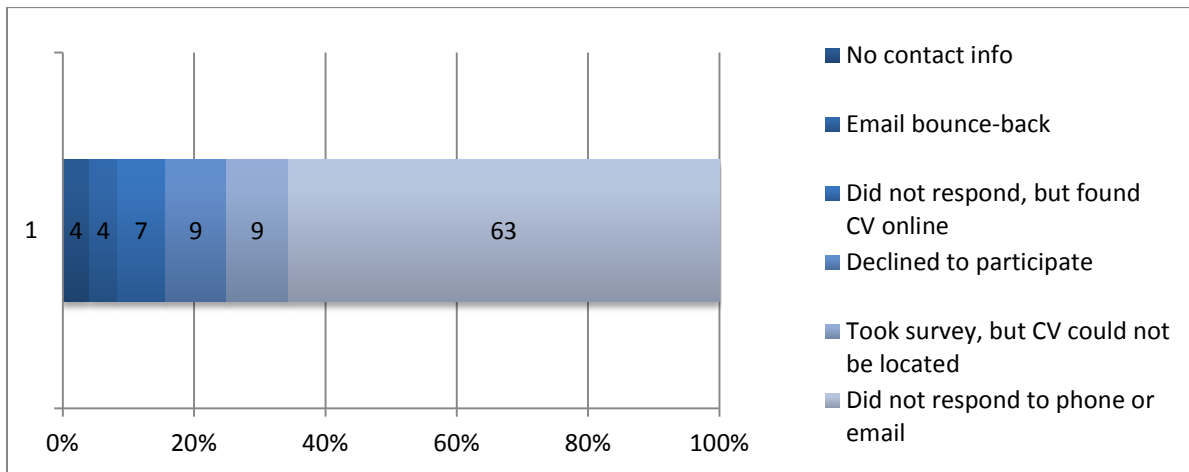
Figure 4. Distribution of Reasons for Participant Non-Response to CV Provision (n = 96)

We conducted analyses to determine whether there were systematic differences between responders and non-responders. We found no significant difference between the two groups based on program site (X^2 = 22.74, p = .20). However, there was a significant difference in regards to degree type (X^2 = 24.02, p < .01), with MDs being less likely to respond.

Who Are the HSR Fellowship Alumni?

In total, 173 alumni completed our survey; yet, 42 were deemed ineligible as only 131 confirmed that they were Health Services Research (HSR) fellowship alumni (as opposed to alumni of other types of VA fellowships)[1] and indicated that they separated from their fellowship between 2000 and 2015 (see

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[1] Although we targeted only HSR fellowship alumni, some participants were later determined to have been alumni of other types of fellowships. Similarly, some participants were later determined to have separated from the fellowship before 2000. These alumni are not counted as eligible participants and are excluded from the analyses in this report.

Figure C1 in Appendix C for more details on separation year). Unless otherwise indicated, the subsequent descriptive statistics and analyses are based on these 131 alumni.

These alumni come from various backgrounds. In particular, our survey sample was comprised of 35 MDs, 36 clinical PhDs (defined as fellows with doctorate degrees who provide clinical care; i.e., nurses and clinical psychologists) and 60 non-clinical PhDs (defined as fellows with doctorate degrees who do not provide clinical care; e.g., social psychologists) (see also Table C1 in Appendix C for breakdown of degree type by site).

Figure 5 presents a word cloud depicting the specific disciplines of our respondents (see Table C2 in Appendix C for a more detailed breakdown). On average, alumni who completed the survey were more likely to have separated from the fellowship recently; however, this may be due to having a larger number of fellowship alumni in recent years. Alumni, on average, completed the fellowship in 2 years; however, approximately one-quarter extended their fellowship for a third year, and one-quarter left the program early due to receiving an ideal job offer. Only a marginal number ($n = 4$; 3.1%) terminated their fellowship early due to the fellowship not meeting their needs.

Figure 5. Scientific Fields Represented in Fellowship Alumni Sample.

Note. Size of word indicates the frequency with which a degree type was in our sample. Color indicates similar professions, where dark blue = medicine, light blue = psychology, bright blue = nursing, light green = public health, blue-green = miscellaneous social sciences, dark green = other

Table 4. presents gender, ethnic, and racial backgrounds of alumni. As can be seen, fellowship alumni in our sample are largely female ($n = 92$; 70.2%), non-Hispanic ($n = 123$; 93.9%), and white ($n = 102$; 77.9%).

Table 4. Demographic Composition of HSR Fellowship Alumni (*n* = 131)

Characteristic	*n*	%
Gender		
Male	39	29.8
Female	92	70.2
Ethnic Background		
Hispanic	6	4.6
Not Hispanic	123	93.9
Declined to answer	2	1.5
Race		
White	102	77.9
Black	6	4.6
Asian	15	11.5
Native Hawaiian or Pacific Islander	1	0.8
Multiple Races	5	3.8
Declined to answer	2	1.5

What Learning Opportunities did Fellowship Alumni Have in their Respective Programs?

Variation in learning opportunities within and between sites. Table 5. A depicts learning opportunities reported as available at each site, and displays agreement in regards to the availability of learning opportunities *within* sites as well as differences in learning opportunities *between* sites. Cells shaded green indicate instances where at least 80% of respondents from a site reported that the given learning opportunity was available. Cells shaded red indicate instances where at least 80% of respondents within a site reported the learning opportunity was *not* available to them. Finally, cells shaded yellow indicate instances where there was less than 80% agreement in regards to the availability of this learning opportunity within a site.

As can be seen from Table 5, the HSR alumni reported a diverse range of learning opportunities both provided by the center and its academic affiliate. This was also supported from the open-ended question asking what the most valuable learning opportunities were. Mentoring, education, protected time, and connections, were the most frequently mentioned learning opportunities in the open-ended question. Below are excerpts from various fellows' responses (representing 5 sites) to the question of most valuable learning opportunities provided to them:

> *One on one mentoring was exceptional … The opportunity to obtain MPH during fellowship… Access to an MPH program… the ability to audit classes at our affiliated university… Online learning environment and opportunities are phenomenal (VA wide)… Having time to think was incredibly valuable… The most useful experiences were primarily opportunities to network and collaborate with investigators locally and at sites across the country.*

Table 5. Availability of Fellowship Program Learning Opportunities by Site, as Reported by Fellowship Alumni

Program Resource	Fellowship Site														
	1	2	3	6	7	8	9	10	11	12	13	14	15	16	20
Seminars at center	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes		yes
Seminars at university	yes	yes	yes	yes	yes		yes		yes	yes		yes	yes	yes	yes
Journal club at center	yes		yes												
Journal club at university	yes								yes		no				yes
Courses at center		no			yes	no	no	no		no	no	no		no	
Courses at university				yes			yes				no	yes			yes
Opportunities to earn degree		no									no	no		no	yes
Audit courses center					yes	no	yes	no		no	no	no		no	
Audit courses university							yes		yes			no	yes	no	yes
Mentoring	yes	yes	yes	yes	yes	yes	yes	yes	yes			yes	yes	yes	yes
Other types of mentoring	yes		no				yes			yes	yes				
Research practicum			yes			yes		yes	yes					no	
Books offered	yes		yes		yes	yes	yes		yes	yes	yes	yes	yes		yes
Protected time		yes	yes	yes	yes	yes	yes	yes	yes	yes		yes		yes	yes

Note. An 80% cutoff was used to operationalize agreement, with green cells indicating that at least 80% of fellowship alumni within a site reported having the learning opportunity, red cells indicating that at least 80% of fellowship alumni within a site reported not having the learning opportunity, and yellow cells indicating that there was less than 80% agreement among fellowship alumni in a site with regards to whether or not a learning opportunity was available.

Interestingly, there were many inconsistencies in reported learning opportunities within sites, and this discrepancy did not appear to be solely due to programs adding or removing learning opportunities over time. Rather, it appears that some HSR fellowship alumni from the same site may have had different perceived or actual learning opportunities available to them in comparison to learning opportunities available to their peers. Although we are unsure exactly why this occurred, it is possible that discrepancies were due to mentors' awareness of learning opportunities and their subsequent guidance to their fellows. For example, Mentor A may suggest his fellows enroll in a particular audit course at the university affiliate, whereas perhaps Mentor B and her fellows may be less engaged from the university affiliate and therefore not be aware that audit courses exist.

Variation in learning opportunities among fellows. Using logistic regression, we found that MDs reported having significantly more learning opportunities compared to PhDs. Table C3 in Appendix C summarizes the results of this regression analysis. In particular, we found that MDs were significantly more likely than PhDs to report having access to journal clubs at the university, formal courses (both at the HSR center of innovation and the university affiliate), audited courses (both at the HSR center of innovation and at the university affiliate), opportunities to earn a degree, and research practicum experiences.

Relationship between learning opportunities and productivity. Using linear regression, we determined that when controlling for year of graduation, the availability of credit-earning courses and/or audit courses has modest association with better productivity outcomes (see Table C4 in Appendix C for regression table), including a greater number of publications (β = 0.17; p = .03), a higher *h*-index (β = 0.12; p = .08), and attainment of more grants as a principal investigator (β = 0.29; p = .02). Open-ended survey responses also indicate that mentors were also a highly valuable resource, often leading fellows to productivity outcomes in such areas as grant writing and funding, and noted how mentors that were involved made the difference in their success. A sample of the fellows' replies from one site appears below:

> *Without a doubt my mentor (who was amazing) was the single most valuable (and basically only real) resource during my fellowship… Hands down, having a supportive, knowledgeable, and active mentor made all of the difference in my Fellowship.*

Differences in Alumni and Program Directors' Perceptions of Available Fellowship Learning Opportunities

We noticed differences in fellows' vs. directors' responses on available learning opportunities and thus sought to systematically compare the two (see **Table** 6). Fellows were asked what learning opportunities they were able to access and, specifically, where the learning opportunity was available (COIN or Academic Affiliate). Directors were asked if a given learning opportunity was available at all. Fellow's answers were collapsed to mirror the format of the directors' responses so that an accurate comparison could be displayed. This comparison overlays the perceptions of the program directors with those of the fellowship alumni from each site, with regards to the availability of learning opportunities for HSR fellows at their site.

Table 6 illustrates some disagreement between fellows and directors in a number of learning opportunities.

There are various reasons why discrepancies may have occurred. First, it is possible that fellows who were very interested in a learning opportunity sought out that experience (e.g., courses), while others who were not as interested did not pursue such learning opportunities and therefore may not be available. Moreover, it is possible that mentors may selectively provide information to fellows about particular learning opportunities that align with their specific interests or needs. It is also plausible that some mentors may simply be more aware of opportunities within their COIN, medical center, and academic affiliate. Another possibility is that opportunities at some sites are not adequately disseminated to fellows. It is important to echo that there were significant differences in opportunities reported as available by MD fellows and PhD fellows. One possible explanation is that MD mentors are more actively engaged in their academic affiliate and know of more opportunities that are available.

As stated above, the information in Table 6 does not account for whether a given learning opportunity was made available by the site or the academic affiliate. The availability of courses and opportunities to earn degrees is not due to the VA's capacity to reimburse for these activities. Rather, it seems that sites have found ways to make fellows aware of learning opportunity despite the policy of not using VA money for these activities.

Table 6. Comparison of Availability of Fellowship Program Learning Opportunities by Site, as Reported by Fellowship Alumni vs. Program Directors

Program Resource	Fellowship Site														
	1	2	3	6	7	8	9	10	11	12	13	14	15	16	20
Seminars	green	green	green	green	green	green	green	light blue	green	green	green	green	green	green	green
Journal club	green	green	orange	orange	orange	orange	orange	green	blue	orange	blue	orange	green	orange	light cyan
Courses	orange	orange	orange	green	blue	orange	orange	light blue	blue	orange	yellow	green	orange	orange	orange
Audit courses	orange	orange	orange	orange	orange	orange	green	blue	orange	orange	yellow	orange	orange	yellow	orange
Earn Degree	orange	yellow	orange	orange	blue	orange	orange	blue	blue	orange	red	yellow	orange	orange	orange
Mentoring	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
Research Practicum	orange	orange	green	orange	orange	orange	orange	green	orange	yellow	orange	orange	orange	yellow	orange

Note. An 80% cutoff was used to operationalize agreement between fellows. See color code key below

Table Key: Perception of availability of learning opportunities:

- **[green]** Fellows and directors agree the learning opportunity is available
- **[red]** Fellows and directors agree the learning opportunity is not available
- **[light blue]** Fellows state the learning opportunity is available; directors state it is not available
- **[blue]** Fellows within a site disagree regarding learning opportunity availability; directors state it is not available
- **[orange]** Fellows within in a site disagree regarding learning opportunity availability; directors state it is available
- **[yellow]** Fellows state the learning opportunity is not available; directors state it is available

How Much Time Do Fellowship Alumni Spend on Research?

On average, fellowship alumni spend at least 50 percent of their time in their current job on research activities, as shown in Figure 6. However, there are differences by doctorate type. Clinical PhDs and MDs spend, on average, about half of their time in research activities, while non-clinical PhDs report spending an average of three-fourths of their time engaging in research activities. However, the majority of all fellowship alumni are currently involved in research activities.
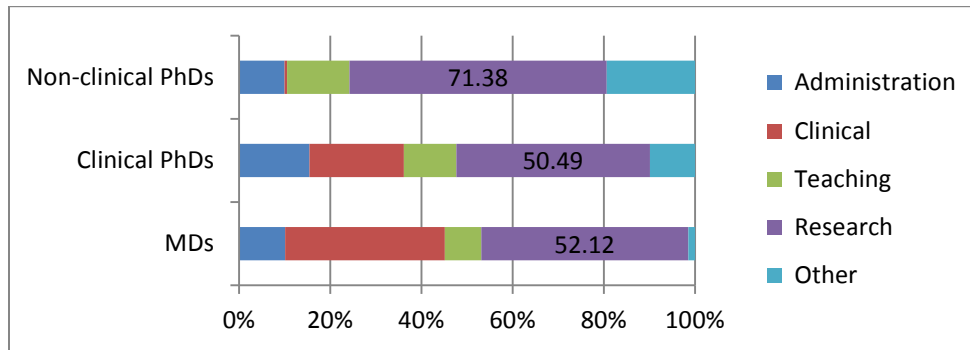
Figure 6. Average Percent of Standard Work Week Spent on Research and Related Activities in Respondents' Current Employment Positions (*n* = 131)

What Have Fellowship Alumni Accomplished?

Career development awards to fellowship alumni. The fellowship alumni have achieved major research milestones, as shown on Figure 7.

Specifically, we traced the career path trajectory of 119 HSR fellowship alumni who met the following criteria: (a) indicated that they separated from the fellowship between 2000 and 2015; (b) indicated that they were HSR fellows; and (c) indicated that their fellowship did not end early due to the fellowship no longer meeting their needs. As can be seen from the figure, approximately half (52.1%) of fellowship alumni indicated that they currently worked for VA. Alumni who presently worked for VA were more likely (*n* = 26; 41.9%) to have obtained a CDA (including a VA CDA, NIH K award, association award CDA, among others) in comparison to fellowship alumni who no longer worked for VA (*n* = 14; 24.6%). Of note, unless otherwise indicated, percentages in this section are conditional (**see** Figure 7 note for more detail).

Independent research funding for pre-2010 alumni. For alumni who separated from the fellowship before 2010 (*n* = 37; 31.1%), we identified the number of successful recipients of R01 or IIR grants. We expressly excluded recent fellows as they would not logically have had enough time to complete a career development award and apply for this type of funding. From this pre-2010 cohort, 62.5% (*n* = 5) of alumni who currently work for VA and who have been awarded CDAs have obtained this funding, whereas the percent of funding recipients is far lower in alumni from this cohort that are not currently at VA or did not receive a CDA.
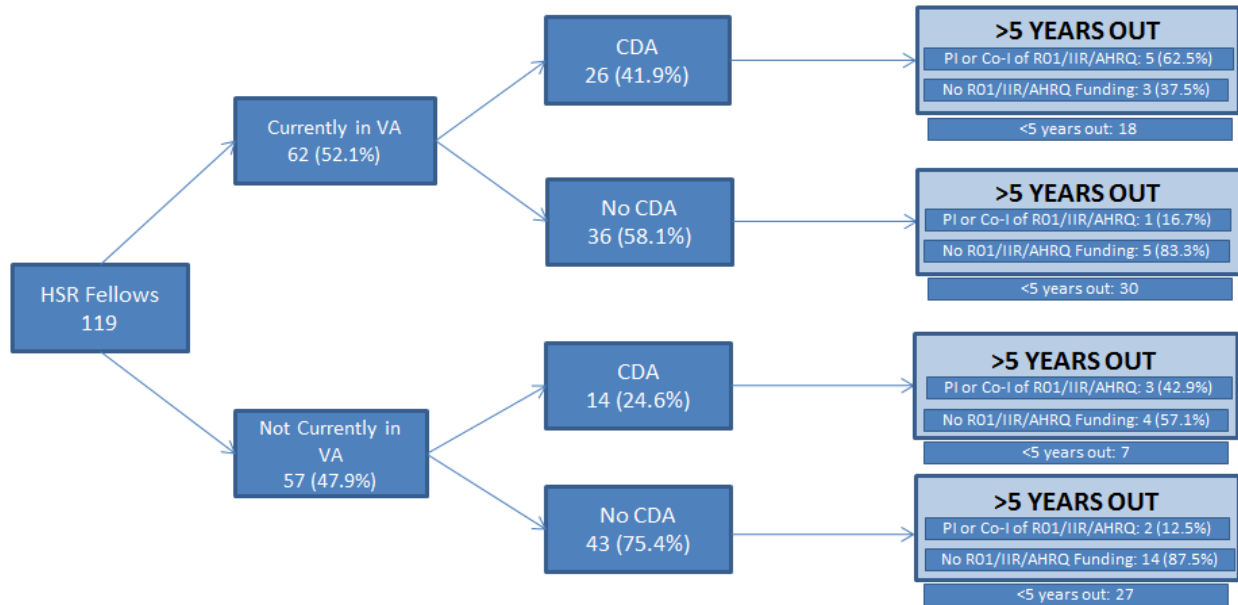
Figure 7. Flow Chart Depicting Trajectories of Fellowship Alumni Careers

Note. Flow chart is based upon 119 alumni who met the following criteria: (a) indicated that they separated from the fellowship between 2000 and 2015; (b) indicated that they were HSR fellows; and (c) indicated that their fellowship did not end early due to the fellowship no longer meeting their needs. For "currently in VA/not currently in VA" and "CDA/no CDA", percentages in figure report conditional percentages; i.e., the denominator for any given percentage is equal to the *n* for the previous milestone in the trajectory. For grant award information, the denominator for any given percentage is equal to the total *n* of the subset of alumni within that path who separated from the fellowship before 2010.

CDA attainment of all participants. The fellowship seems to have also benefited the broader group of alumni, including those who separated from the fellowship early. Specifically, 45 (34.3%) of the 131 HSR fellowship alumni surveyed have gone on to be career development award (CDA) recipients[2]. In HSR&D, the funding rate for CDAs was 30% at the time of this evaluation. Former HSR fellows (regardless of the separation date) had a 75.2% funding rate for CDAs (of any type), which is significantly higher. Additionally, on average, across the 35 CDA awardees who provided their year of fellowship separation and the year their CDA was awarded, alumni received their CDA 1.29 years (SD = 1.78) after exiting the fellowship (see Figure 8).

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[2] This number represents CDA recipients across our entire survey sample of HSR alumni, whereas the flow chart in Figure 7 displays CDA information only for the 119 alumni who met the inclusion criteria described in text and in the figure note.
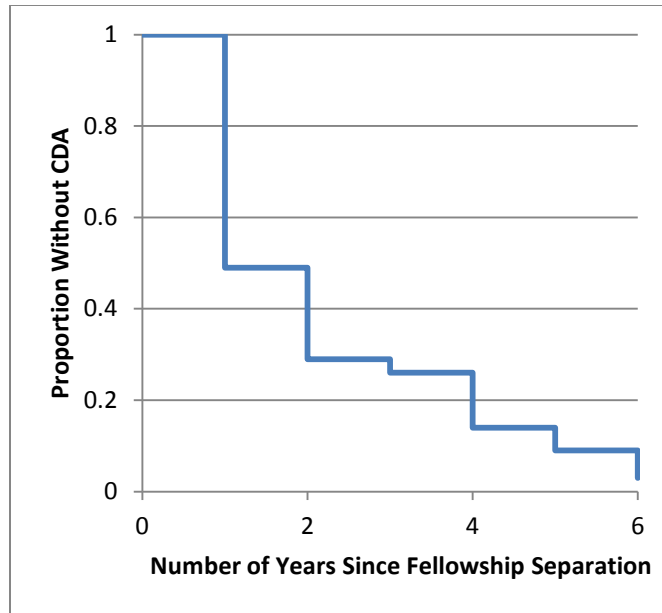
Figure 8. Survival Plot Depicting Number of Years from Fellowship Separation to CDA, for Alumni who Achieved this Milestone (*n* = 35)

CDA attainment by degree type. We found that the length of time from fellowship separation to CDA varies by a fellowship alumni's degree type. Non-clinical PhDs obtained a CDA on average within 0.62 (SD = 1.12) years after exiting the fellowship, whereas clinical PhDs obtained a CDA on average within 1.44 (SD = 1.88) years; MDs, on average, took 1.85 (SD = 2.12) years post-fellowship to obtain a CDA (see Figure 9).

Length of time to grant attainment. We also investigated length of time from fellowship separation to attainment of an R01, AHRQ, or IIR grant (whether as PI or Co-I). As can be seen in Figure 10, on average, it took alumni 3.86 years (SD = 2.32, Median = 4.38) to achieve this milestone. Figure 11 further breaks this down by degree type. As can be seen, fellows from different degree types take different amounts of time: MDs (M = 4.33, SD = 3.44, Median = 3.50 years), non-clinical PhDs (M = 3.55, SD = 2.11, Median = 4.53 years) and clinical PhDs (M = 4.00, SD = 1.22, Median = 4.75 years).
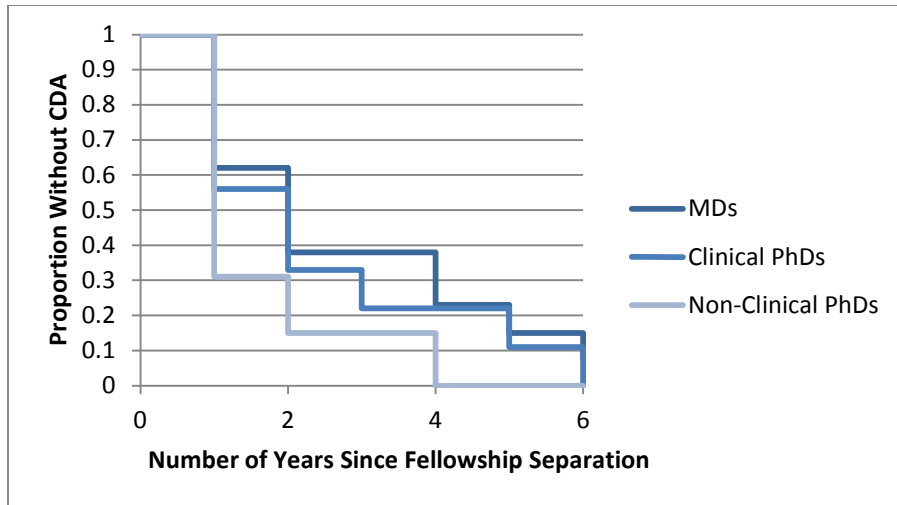
Figure 9. Survival Plot Depicting Number of Years from Fellowship Separation to CDA for Alumni Achieving this Milestone, by Doctorate Type (*n* = 35)
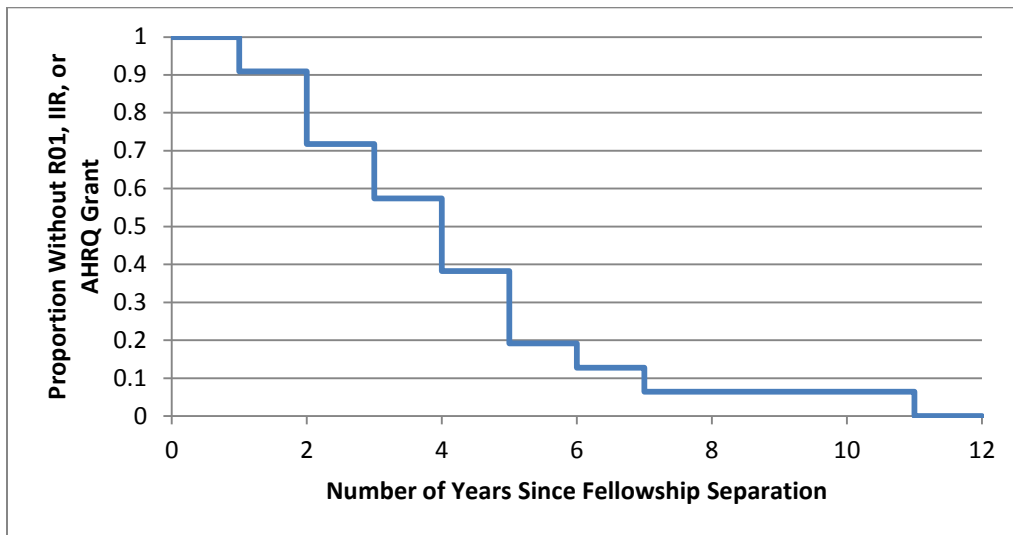
Figure 10. Survival Plot Depicting Number of Years from Fellowship Separation to R01, IIR, or AHRQ Grant, for Alumni Achieving this Milestone (*n* = 22)
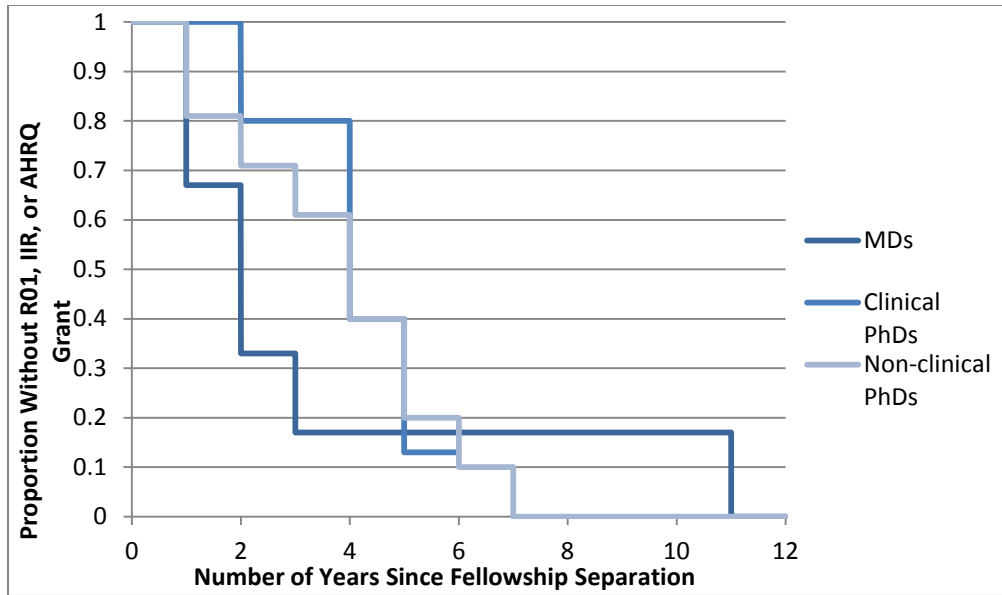
Figure 11. Survival Plot Depicting Number of Years from Fellowship Separation to R01, IIR, or AHRQ Grant, for Alumni who Achieved this Milestone, by Doctorate Type (*n* = 22)

Productivity of fellowship alumni. Additionally, as can be seen on Table 7, fellowship alumni have had prolific research careers. Specifically, across the sample of alumni who provided CVs, the average number of publications is 19.5, with an average *h*-index of 4.5. As would be expected, these statistics differ by alumni exit year; specifically, fellowship alumni who exited the fellowship before 2010 have a mean of 28.3 publications and an *h*-index of 7.6, whereas alumni who exited the fellowship between 2010 and 2015 have an average of 15.9 publications and an *h*-index of 3.2. We noted that alumni take varied paths after their fellowship as they progress in their research careers. As examples, we have featured profiles of four particularly notable alumni who have taken some of these different paths (see Figure 12).

Table 7. Research Productivity over Time by HSR Fellowship Alumni Cohort

	Total		<5 Years Out		>5 Years Out	
	Mean	*Median*	*Mean*	*Median*	*Mean*	*Median*
# of Publications	19.52	14.00	15.90	11.00	28.30	21.00
h-**index**	4.48	4.00	3.21	3.00	7.62	6.00
# of Grants, PI	3.86	3.00	3.25	2.00	5.93	5.00
# of Grants, Non-PI	4.09	3.00	3.45	2.00	5.75	5.00
Total # of Grants	6.93	5.00	5.65	5.00	11.31	7.50

Note. <5 years out indicates alumni who separated from fellowship between 2010 and 2015; >5 years out indicates alumni who separated from fellowship between 2000 and 2009.

Alumni Spotlight: Dr. Arlene Schmid

Dr. Arlene A. Schmid, is an occupational therapist with a doctorate in rehabilitation sciences. She was a post-doctoral fellow in HSR&D at the Roudebush VAMC from 2005 to 2007. Dr. Schmid is also a licensed occupational therapist and a trained yoga instructor. During her tenure in the fellowship and thereafter, she published and presented work centered around mindfulness, stroke rehabilitation, chronic pain management, exercise science and yoga. Dr. Schmid has also received media coverage of her research with one select story focusing on yoga for veterans. Some of the notable applications of her education and licensure have been through grant-funded research projects on the use of holistic yoga to relieve PSTD, manage chronic pain, and foster stroke rehabilitation. She served as a co-investigator on several grants in this area of work from her own career development award (CDA) to investigator initiated research (IIR) projects and several National Institute of Health (NIH) awards. In conjunction with her HSR&D tenure, she was the Director of the Indiana University Rehabilitation and Integrative Therapy lab and is now an Associate Professor in the Department of Occupational Therapy at Colorado State University. Dr. Arlene A. Schmid is one of our many HSR&D fellows who has successfully applied her unique education, interests, licensure and training to improve the life of veterans through VA funded research.

Alumni Spotlight: Dr. Karen Saban

Dr. Karen Saban, PhD, RN, APRN, CNRN, FAHA was a Health Services Research fellow from 2007 to 2010 at Edward Hines Jr.VA Hospital. During her tenure in the program, she received several grants, including a locally initiated project (LIP) that spanned her fellowship program. Aside from this LIP, Dr. Saban received at least ten other grants during her fellowship program through VA, Loyola University and other organizations. Dr. Saban also excelled in her fellowship by publishing journal articles, presenting research at conferences and completing a book chapter. In addition to her fellowship duties, Dr. Saban was a tenure track Assistant Professor at Loyola University Chicago, Marcella Niehoff School of Nursing. After completing her fellowship, Dr. Saban became a Health Research Scientist at Hines VA Hospital in the Center of Innovation for Complex Chronic Healthcare (CINCCH). In this role, she received a Research Scientist Award (K01) in nursing from the National Institute of Health (NIH) as well as a VA Nursing Research Initiative (NRI) Award. Currently, she is completing her NRI examining mindfulness based stress reduction for women Veterans at risk for cardiovascular disease. She also serves as the Co-Director for the Hines Women's Health Practice Based Research Network (PBRN). In addition to her VA role, she is currently a tenured Associate Professor of Nursing and the Associate Dean for Research at Loyola University Chicago, Marcella Niehoff School of Nursing. Dr. Karen Saban is one of many HSR&D fellows who have flourished as a VA HSR&D researcher, progressing from a career development award to an independently funded research investigator while also advancing to a leadership position at her academic affiliate.

Alumni Spotlight: Dr. Diana Burgess

Dr. Diana Burgess, social psychologist, was a health services research fellow from 2002 to 2003 at the Minneapolis VA Medical Center. During her one-year tenure in the program, she received several locally initiated projects (LIPs) which jump started her career in the VA. After completing her post-doctoral fellowship, she moved into an investigator role, where she continued on a traditional research path in the VA by obtaining more LIPs, a career development award (CDA), as well as several IIRs. Dr. Burgess has received outside grant funding from the National Institute of Health (NIH), National Cancer Institute (NCI) and local funding from various Minnesota institutions. Her research interest in health and healthcare disparities, pain, social cognitive psychology and cancer has afforded her many opportunities to disseminate her findings through journal publications and research presentations. Along with her VA career, Dr. Burgess progressed from an instructor to an Associate Professor of Medicine at the University of Minnesota School of Medicine. She is also a core member in the Health Disparities Research Program in the Department of Medicine at the University of Minnesota. She is currently the Co-Director of the VA Advanced Fellowship Program in Health Services Research at the Minneapolis VA. Dr. Diana Burgess is one of many HSR&D fellows who completed the HSR&D fellowship, continued her research career within the VA and is now contributes to and shapes the scientific careers of new VA HSR&D post-doctoral fellows through her role as co-director of the fellowship program.

Alumni Spotlight: Dr. Brent Taylor

Dr. Brent C. Taylor, epidemiologist, was a health services research fellow from 2004 to 2006 at the Minneapolis VA Medical Center. During his tenure in the program, he worked on several grants in a consulting role which allowed him to produce several publications, presentations, an editorial and a book chapter. After completing his post-doctoral program, Dr. Taylor continued in the VA and progressed from an Associate Investigator to Associate Director of the Center for Chronic Disease Outcomes Research (CCDOR). He also obtained two academic appointments progressing from an Adjunct Assistant Professor to Adjunct Associate Professor in the Division of Epidemiology and Community Health and an Assistant Professor to Associate Professor in the Department of Medicine. His research interests center around osteoporotic fractures, traumatic brain injury and other common chronic conditions. Dr. Brent is one of many HSR&D alumni who continue to advance the research mission of VA by serving as a statistician and co-investigator on numerous grant-funded projects and leading a research center as an associate director.

Figure 12. Notable Alumni.

How Satisfied are Alumni with their Fellowship Experience?

To address this question, we developed a 14-item satisfaction questionnaire ($\propto$ = .96) assessing alumni satisfaction with their fellowship experience. Overall, alumni were satisfied with their experience (M = 3.96, SD = 0.87; see Table C5 in Appendix C). As can be seen in Figure 13, average satisfaction differed across sites. It does not appear that satisfaction is due to the age of the program (p = .76; see Table C6 in Appendix C); thus, we believe that these differences can be explained by other characteristics of the programs (e.g., resources, quality of mentoring, etc.).

Satisfaction with the fellowship was also tested as a predictor of productivity, adjusting for years since fellowship separation. Using logistic regression, we found that satisfaction with the fellowship trended toward an association with more publications (β =.013, p < .08) and a higher h-index (β =.011, p < .10, see Table C7 in Appendix C for more details) and significantly and positively predicted attainment of a CDA (X^2 [1, n = 127] = 4.94, p = .01; See Table C8 in Appendix C for regression table).
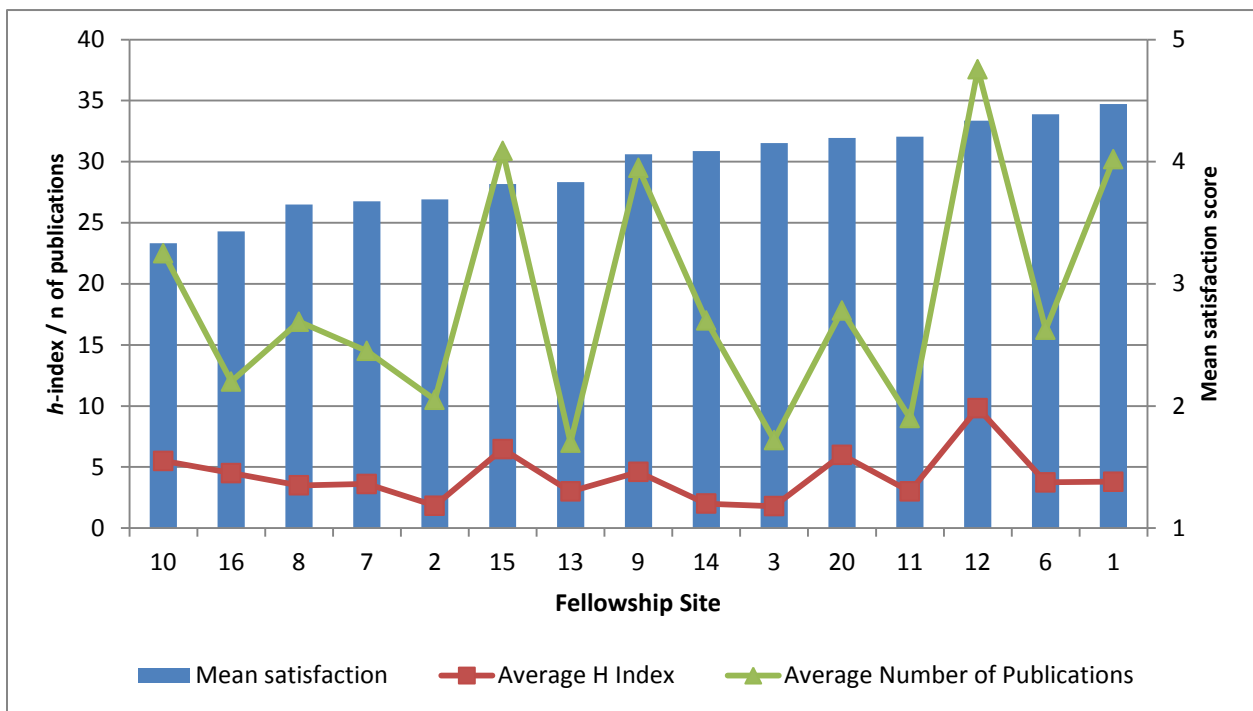

Figure 13. Alumni Satisfaction and Productivity Outcomes across Sites.

III.   GENERAL DISCUSSION

Overview and Summary of Findings

This evaluation of the HSR Advanced Fellowship Post-Doctoral Training Program had two broad objectives: (1) characterize the scope of the HSR Advanced Fellowship Post-Doctoral Training Program, and (2) report job placement post-fellowship and career progression for Office of Academic Affairs (OAA)-funded HSR postdoctoral fellowship alumni.

Objective 1: Characterize the scope of the HSR Advanced Fellowship Post-Doctoral Training Program

Although findings revealed strong support of the HSR fellowship from Fellowship directors, COIN leadership and COIN faculty, responses from program directors and alumni revealed high variability in perceptions of the fellowship program. Considerable variability exists across sites in their definition of success for fellowship graduates, as well as in the program requirements expected of both fellows and mentors. Resources reported by alumni as available during their fellowship (e.g., courses, mentoring structures, research practicums, etc.) differed among sites. Furthermore, within sites, there are differences among alumni perceptions of what resources were available during their fellowship. Although there is variability across programs, sites report common struggles, including recruitment challenges (particularly MDs) due to current stipend levels, inability to offer tuition support for degree programs, and fellow access to dedicated research assistants. Unprompted, multiple fellowship directors expressed interest in having a HSR fellowship program coordinating center. They described the following activities and roles that could be provided by a coordinating center: national recruitment efforts, networking opportunities for fellows, national-level tracking of alumni, and sharing of best practices and resources.

Objective 2: report job placement post-fellowship and career progression for alumni

After graduation, fellowship alumni are likely to remain at VA and continue on to have a career that is largely research-based. Over half of alumni in the sample indicated they currently worked for VA. Alumni who presently worked for VA were more likely to have obtained a CDA (either from VA or other agencies) compared to alumni not currently at VA. Moreover, fellowship alumni are well-accomplished, with numerous alumni obtaining CDAs, top-tier grants, and tenure. Finally, fellowship alumni are largely satisfied with the experiences they had during their fellowship and there was a trend in the association of satisfaction with fellowship and measures of alumni productivity.

Recommendations

Clarify expected outcomes for fellowship program. Our first recommendation is that greater clarification by HSR&D central office and Office of Academic Affiliations (Advanced Fellowships Program) is needed regarding the expected outcomes of the HSR fellowship program at each site and of fellowship graduates. Clarity could be provided with regards to definition of fellowship success, so that all sites are on the same common understanding of fellowship mission and what is expected of fellows. Our recommendation is that a consensus panel consisting of fellowship directors and senior HSR&D investigators craft potential expectations or success measures and expectations.

Clarify minimum expectations for fellowship program sites and descriptions of each site's area of specialization. A standardized set of minimum fellowship resources should be defined and required of all fellowship programs by OAA. Clarity should be provided nationally as to what OAA expects each site

to provide for its fellows as what the minimum expectations are (e.g., mentoring, protected time). Sites should be encouraged to provide additional resources beyond this standardized set of foundational resources to help meet individual fellow needs. Sites should also provide details on how their faculty and site's research programs are distinct. Sites are encouraged to develop and market their areas of specialization and expertise in specific health services research topics (e.g., informatics, qualitative methods, mental health in primary care, etc.). Creating both a minimal set of training program expectations that all sites must achieve as well as marketing of site-specific areas of specialization will strengthen the overall national HSR&D Advanced Fellowships program.

Encourage provision of site-specific information. Our third recommendation is that each site share accurate and complete information to all fellows in regards to site-specific learning opportunities and resources. One potential mode of operationalizing this suggestion is creating an individual HSR fellowship packet for each site. This will include national and local expectations of the fellow as well as give the fellow insight into resources available to them at both the local and national level. It is important to note that access to these resources should be consistent among all fellows, with specific mindfulness towards reducing differences among MD and PhD fellows.

Engage support for a VA Advanced Fellowships in HSR Coordinating Center. Our next recommendation is that there should be an entity to coordinate national efforts for each of the local sites. Support among fellowship directors for a coordinating center is sufficient to warrant one that functions to facilitate recruitment, networking, collaboration among fellows and centers, and sharing of best practices to promote more structure at the site-level.   However, the coordinating entity should not aim to completely standardize the HSR fellowship nationally. The differences in the areas of expertise of each site bring great value to the fellowship and allow the fellows to experience an individualized fellowship program that will best prepare them for their personal career goals.

Consider creative solutions to financial challenges. Finally, fellowship directors described a number of barriers to recruitment of fellows. The main barrier is the opportunity cost of enrolling in the fellowship due to the low stipend level for advanced fellowships (both for physicians and non-physicians). Some suggestions include providing information and support for student loan deferment options for the duration of the fellowship.   Further creative solutions to addressing this barrier are needed (e.g., allowing physicians to enroll during the protected-research years of their clinical fellowship training).

Conclusion

Overall, the OAA Advanced Fellowship in Health Services Research is well-regarded by COINs, faculty, and fellows alike. Over its 20-year history, the program has yielded numerous successful alumni that have made notable contributions to the field of health services research, both within and outside VA, as well as within and outside of academia. Despite the benefits yielded by each fellowship site's unique characteristics and expertise, the program as a whole could be strengthened by standardization across sites in specific areas. Our proposed recommendations are designed to address this concern, while still maintaining the uniqueness of each individual site that has been perceived by respondents as a strength of the program. We believe implementation of the aforementioned recommendations could make the fellowship program more competitive to attract the most promising fellows, bring greater positive visibility to VA as a whole, and help position the VA fellowship as the premier training program for health services research nationally.

Appendix A: Fellowship Director Questionnaire

About the Site

1. Site Name

2. Academic Affiliate (or other nearby academic institution involved with your COIN):

3. Is your site located on the same campus as the affiliated VA hospital?
   - ☐ Yes
   - ☐ No

   Comment:

4. Is your site located on the same campus as the academic affiliate?
   - ☐ Yes
   - ☐ No

   Comment:

About the HSR&D Fellows

5. In what year did your VA Advanced Fellowship Program in Health Services Research accept its first fellow?

   Comment:

6. Please indicate the current number of VA Advanced Fellowship in Health Services Research fellows at your site from each category:
   - ☐ Non-Clinical Ph.D.
   - ☐ Clinical Ph.D.
   - ☐ M.D.

   Comment:

7. Which of the following learning opportunities are available for VA Advanced Fellows in Health Services Research through your COIN and/or academic affiliate?

	COIN	Academic Affiliate	Not Available
Topical Seminars			
Journal Clubs			
Credit-earning courses			
Audit courses			
Formal degree programs			
Receiving one-on-one mentoring			
Providing mentorship to others			
Research practicum			

Comment:

About the Non-VA HSR&D Fellows

8. Does your COIN offer training programs or opportunities at the pre-doctoral level (e.g., graduate internships)?

    ☐ Yes
    ☐ No

    Comment:

9. Outside the VA Advanced Fellowship in Health Services Research, how many post-doctoral and/or post-residency research fellows do you currently house at your center?

    Comment:

About All Fellows

10. Which of the following most accurately describes the training of health services research fellows from the fellowship programs at your site, regardless of the funding mechanism?

- ☐ Separately (don't interact, fellows from each program have separate resources, mentoring structures, practicum experiences, and coursework)
- ☐ Mostly separately
- ☐ Hybrid (some resources are shared, while others are designated for a specific fellowship program, fellows interact occasionally)
- ☐ Mostly together
- ☐ Together (all fellows, regardless of fellowship program, interact frequently, are mentored in the same manner, share the same resources, and share the same structure for coursework and practicum experiences)

Comment:

11. Please indicate which of the following resources are available for fellows at your site:

	Available to VA HSR Fellows	Available to Non-VA HSR Fellows	Not Available
Individual office or cubicle space			
Group meeting space			
IT (computer, printer, server access, telephone, teleconferencing, etc.)			
Access to statisticians and programmers			
Access to research assistants			
Travel and conference fees			
Books and other supplies			
Course registration fees			
Tuition for degree programs			

Comment:

12. Approximately what percent of the faculty at your COIN are involved with each of the following activities?

	0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
Providing mentorship to fellows										
Providing lectures or other training opportunities to fellows										

Comment:

Open-Ended Questions

13. What are your challenges in recruiting faculty to participate in the fellowship program and your strategies for getting them involved?

14. Describe your current strategy for recruiting PhD and MD fellows.

15. Describe your current mentoring structure (i.e., How are mentor-mentee relationships established? How are mentoring plans documented and assessed?).

16. Describe your program requirements and measures of success for fellows. How do you ensure these goals are being met and what is the response if they are not?

17. How do you characterize "success" for a graduate of your fellowship program?

18. Based on this criteria, about what percentage of the graduates from your fellowship program have been "successful"?

19. Describe your program requirements and measures of success for mentors. How do you ensure these goals are being met and what is the response if they are not?

20. Describe the support the fellowship program receives from COIN leadership (e.g., protected time for directors, space, encouragement to mentor fellows, salary support for project coordinator, etc.).

21. What additional resources or training opportunities do you feel are missing or would help improve your fellowship program?

22. If a coordinating center existed for the VA HSR Advanced Fellowships program, as it does for several of OAA's other educational programs, what needs, if any, do you think such a coordinating center could help your program with?

Appendix B: Alumni Survey

1. Age? _____ years

2. What is your sex: ☐ Male ☐ Female

3. What is your ethnic background?
   ☐ Hispanic/Latino
   ☐ Non-Hispanic

4. What is your race?
   ☐ White/Caucasian
   ☐ Native American/American Indian
   ☐ Black/African American
   ☐ Asian
   ☐ Native Hawaiian/ Pacific Islander
   ☐ Multi-Ethnic
   ☐ Other

5. Education:
   ☐ Ph.D.
   ☐ M.D.
   ☐ M.D./Ph.D.
   ☐ Other

6. What field is your doctorate in?
   ☐ Medicine

   What is your medical specialty?

☐ Anesthesiology	☐ Internal Medicine	☐ Spinal Cord Injury	☐ Plastic Surgery
☐ Ambulatory Care	☐ Neurology	☐ Cardiovascular & Thoracic Surgery	☐ Physical Medicine & Rehabilitation
☐ Long Term Care	☐ Ophthalmology	☐ General Surgery	☐ Psychiatry
☐ Cardiology	☐ Otolaryngology	☐ Neurosurgery	☐ Radiology (Nuclear Medicine, Diagnostic, and Therapeutic)
☐ Geriatrics	☐ Pathology	☐ Orthopedic Surgery	☐ Urology

   ☐ Nursing
   ☐ Psychology

☐ Clinical ☐ I/O ☐ Neuro ☐ Social ☐ Cognitive ☐ Counseling

☐ Social Sciences

☐ Anthropology ☐ Sociology ☐ Education ☐ Social Work

☐ Public Health

☐ Other

7. What type of fellowship were you in?

☐ VA Health Science Research and Development (HSR&D)

☐ VA Quality Scholars (VAQS)

☐ VA Addiction Treatment

☐ VA Advanced Geriatrics

☐ VA Dental Research

☐ VA Geriatric Neurology

☐ Hartford/VA Social Work Scholars Program

☐ VA/ Health and Aging Policy Fellows Program

☐ VA Health Systems Engineering

☐ VA Advanced Fellowship Program in Medical Informatics

☐ VA Advanced Fellowship Program in Mental Illness Research & Treatment

☐ VA Advanced Fellowship Program in Multiple Sclerosis

☐ VA Post-residency Advanced Fellowship Program in Parkinson's Disease

☐ VA Interprofessional Fellowship Program in Patient Safety

☐ VA Advanced Fellowship Program: Interprofessional Polytrauma & Traumatic Brain
Injury Rehabilitation

☐ VA Advanced Fellowship Program in Psychiatric Research/Neurosciences

☐ VA Fellowship for Robert Wood Johnson Clinical Scholars

☐ VA Advanced Fellowship Program in Clinical Simulation

☐ VA Advanced Fellowship Program in Advanced Spinal Cord Injury Research

☐ War Related and Unexplained Illness

☐ VA Fellowship in Women's Health

☐ Non-VA fellowship

☐ Other

8. What year did you graduate from your VA HSR&D fellowship?

☐ 2000   ☐ 2006   ☐ 2012
☐ 2001   ☐ 2007   ☐ 2013
☐ 2002   ☐ 2008   ☐ 2014
☐ 2003   ☐ 2009   ☐ 2015
☐ 2004   ☐ 2010

☐ 2005 ☐ 2011

9. Are you currently employed at a VA Medical Center?

☐ Yes
☐ No

10. What percentage of your work week do you spend doing the following?
Administration _____%   Clinical work_____% Teaching_____% Research _____%

11. What domain are you currently working in?
☐ Research
☐ Academia
  ☐ Tenure track- applied for tenure
  ☐ Tenure track- received tenure
☐ Non-tenure track
☐ Industry
☐ Clinical
☐ Teaching

12. Did you apply for a Career Development Award (CDA) or non-VA CDA?

Award Type	Applied	Awarded Funding	Year Awarded
Biomedical Laboratory R&D CDA			
Clinical Science R&D CDA			
Health Services R&D CDA			
Rehabilitation R&D CDA			
NIH-K			
Association Award			
Other_____			

13. To what extent did the fellowship help you with job placement post-fellowship?

☐ 1-Not at all
☐ 2
☐ 3- Somewhat
☐ 4
☐ 5- Very much

14. Which of the following funding opportunities have you applied for?

Award Type	Applied	Awarded Funding	Year Awarded
R01			
IIR			
AHRQ			
Other			

15. How useful were the following opportunities to you during your fellowship?

Opportunity	Not offered	Not at all useful		Somewhat		Very useful
Topical seminars at the center	⓪	①	②	③	④	⑤
Topical seminars at university affiliate or nearby institution	⓪	①	②	③	④	⑤
Journal clubs at the center	⓪	①	②	③	④	⑤
Journal clubs at university affiliate or nearby institution	⓪	①	②	③	④	⑤
Credit-earning courses at the center	⓪	①	②	③	④	⑤
Credit-earning courses at the university affiliate or nearby institution	⓪	①	②	③	④	⑤
Opportunities to earn a degree	⓪	①	②	③	④	⑤
Audit courses at the center	⓪	①	②	③	④	⑤
Audit courses at the university affiliate or nearby institution	⓪	①	②	③	④	⑤
One-on-one mentoring	⓪	①	②	③	④	⑤
Other mentoring structure (please describe)	⓪	①	②	③	④	⑤
Research practicum	⓪	①	②	③	④	⑤
Books	⓪	①	②	③	④	⑤
Protected time	⓪	①	②	③	④	⑤

Other (please specify): _____

16. Please read each of the following items carefully, and reflect upon your experience with your VA fellowship, and then indicate how true it is for you. Use the following scale to respond:

Item	Strongly disagree		Somewhat		Strongly agree
How satisfied were you with the content of your fellowship?	①	②	③	④	⑤
How satisfied were you in the delivery of the training program?	①	②	③	④	⑤
Do you feel as if you learned skills/ and or knowledge that the program said they would provide?	①	②	③	④	⑤
How often do you use what was learned in the program?	①	②	③	④	⑤
How much do you think the skills /and or knowledge you learned at the program aid you in publishing?	①	②	③	④	⑤
How much do you think the skills /and or knowledge you learned at the program aid you in promotion?	①	②	③	④	⑤
How much do you think the skills /and or knowledge you learned at the program aid you in research?	①	②	③	④	⑤
How satisfied were you with the mentoring you received during your fellowship?	①	②	③	④	⑤
How satisfied were you with the curriculum at your fellowship?	①	②	③	④	⑤
Overall, how satisfied were you with your research opportunities?	①	②	③	④	⑤
How satisfied were you with your available resources to conduct research?	①	②	③	④	⑤
How much do you think your VA fellowship contributed to your current successes?	①	②	③	④	⑤
I was able to tailor the fellowship program to help me achieve my career goals.	①	②	③	④	⑤

17. What resources/training could have made your fellowship experience more useful?

18. What were the most valuable resources/training/experiences in your fellowship?

19. Do you have any other comments?

Appendix C: Supplementary Tables and Figures

List of Supplementary Tables

List of Supplementary Figures

Table C1. Fellowship Alumni Subspecialty Frequencies across Sites

	MD		PhD		
	Internist	*Specialist*	*Clinical*	*Non-clinical*	*Total*
Ann Arbor, MI	1	0	0	4	5
Bedford, MA	1	0	3	5	9
Boston, MA	2	0	2	2	6
Durham, NC	5	0	1	3	9
Hines, IL	1	1	4	10	16
Houston, TX	3	0	0	8	11
Indianapolis, IN	0	0	2	4	6
Iowa City, IA	0	0	0	3	3
Los Angeles, CA	2	3	0	4	9
Minneapolis, MN	0	0	2	5	7
North Florida/South Georgia and Tampa	0	0	1	2	3
North Little Rock, AR	0	0	5	0	5
Palo Alto, CA	2	1	13	3	19
Pittsburgh and Philadelphia, PA	0	0	1	3	4
Seattle, WA	8	5	2	4	19
Total	25	10	36	60	131

Note. Data comprise fellowship alumni who provided this information in the survey.

Table C2. Frequencies of Specialties and Subspecialties in Survey Sample.

Field	n
Medicine	**31**
Ambulatory Care	1
Cardiology	2
Hospitalist	1
Internal Medicine	21
Long Term Care	1
Physical Medicine	1
Psychiatry	1
Radiology	1
Did not specify	2
Psychology	**45**
Clinical	29
Cognitive	1
Community	1
Counseling	1
Developmental	1
Health	1
Human-Computer Interaction	1
Industrial-Organizational	2
Personality and individual differences	1
Research	1
Social	6
Nursing	**7**
Public Health	**12**
Social Policy/Health Policy	4
General/Did not specify	8
Social Sciences, Misc.	**23**
Anthropology	6
Communication	4
Counselor education, mental health counseling	1
Economics	2
Gerontology	1
Health communication	2
Human development and family studies	2
Sociology	4
Telecommunication/mass media	1
Other	**13**
Biochemistry	1
Business Management	1
Epidemiology	3
Genetics	1
Health Education	1
Information Science	1
Neuroscience	2

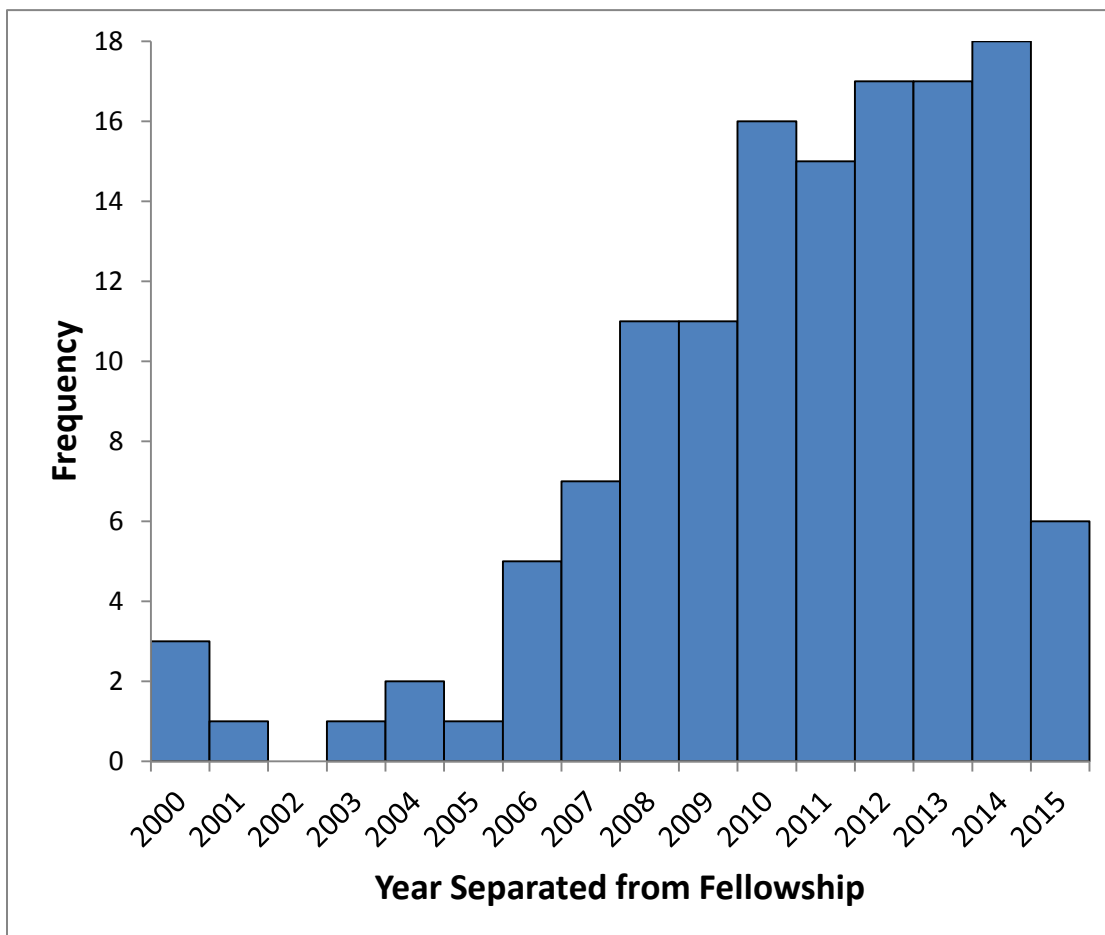|	
Public Policy	1
Rehabilitation Sciences	1
Social Welfare	1

Note. n = 131.

Figure C1. Histogram Displaying the Number of Participants in Survey Sample by the Year of Fellowship Separation (*n* = 131)

Table C3. Logistic Regression Analyses for Degree Type (MD, PhD) Predicting Availability of Resources

Resource	Predictor*	B	Wald Chi Square	p
Seminars at Center	Clinical PhD	-0.34	0.13	.72
	Non-Clinical PhD	0.59	0.33	.56
Seminars at University	Clinical PhD	-0.63	0.26	.61
	Non-Clinical PhD	-1.77	2.70	.10
Journal Club at Center	Clinical PhD	0.43	0.69	.41
	Non-Clinical PhD	-0.09	0.04	.84
Journal Club at University	Clinical PhD	-1.59	5.13	.02
	Non-Clinical PhD	-2.30	11.95	.001
Courses at Center	Clinical PhD	-0.05	0.01	.93
	Non-Clinical PhD	-1.19	4.96	.03
Courses at University	Clinical PhD	-0.73	1.42	.23
	Non-Clinical PhD	-1.93	12.12	<.001
Opportunities to Earn Degree	Clinical PhD	-3.16	15.36	<.001
	Non-Clinical PhD	-4.05	25.72	<.001
Audit Courses at Center	Clinical PhD	-0.85	2.61	.11
	Non-Clinical PhD	-1.54	8.70	<.01
Audit Courses at University	Clinical PhD	-1.34	4.39	.04
	Non-Clinical PhD	-1.55	6.58	.01
Mentoring	Clinical PhD	-0.60	0.23	.63
	Non-Clinical PhD	-0.53	0.20	.66
Other Types of Mentoring	Clinical PhD	-0.13	0.05	.82
	Non-Clinical PhD	0.39	0.59	.44
Research Practicum	Clinical PhD	-1.38	4.68	.03
	Non-Clinical PhD	-1.69	7.99	.01
Books	Clinical PhD	0.44	0.37	.54
	Non-Clinical PhD	-0.11	0.03	.86
Protected Time	Clinical PhD	-1.04	0.77	.38
	Non-Clinical PhD	-1.45	1.76	.19

Note. *Reference category for all analyses = MD.

Table C4. Regression Analyses for Learning Opportunities onto Productivity Outcomes

Outcome	Predictor	B	SE B	β	p
# Publications	Credit-earning courses	6.91	3.61	0.17	0.03
h-index	Credit-earning courses	1.05	0.74	0.12	0.08
# Grants, PI	Audit courses	2.14	0.87	0.29	0.02

Note. Tests are one-tailed and regressions controlled for year of fellowship separation.

Table C5. Scale Items and Descriptive Statistics for Satisfaction Measure (n = 127)

Item	Min	Max	Mean	SD
1. How satisfied were you with your fellowship?	1	5	4.13	1.02
2. How satisfied were you with the content of your fellowship?	1	5	3.99	1.02
3. How satisfied were you in the delivery of the training program?	1	5	3.72	1.13
4. Do you feel as if you learned skills and/or knowledge that the program said they would provide?	1	5	4.05	1.04
5. How often do you use what was learned in the program?	1	5	4.10	0.97
6. How much do you think the skills and/or knowledge you learned at the program aid you in publishing?	1	5	4.02	1.07
7. How much do you think the skills and/or knowledge you learned at the program aid you in promotion?	1	5	3.63	1.17
8. How much do you think the skills and/or knowledge you learned at the program aid you in research?	1	5	4.21	0.95
9. How satisfied were you with the mentoring you received during your fellowship?	1	5	4.06	1.22
10. How satisfied were you with the curriculum at your fellowship?	1	5	3.30	1.24
11. Overall, how satisfied were you with your research opportunities?	1	5	4.02	1.13
12. How satisfied were you with your available resources to conduct research?	1	5	3.99	1.16
13. How much do you think your VA fellowship contributed to your current successes?	1	5	4.18	0.99
14. I was able to tailor the fellowship program to help me achieve my career goals.	1	5	4.09	1.12
Average Satisfaction	1.21	5.00	3.96	0.87

Note. n = 127. Four (n = 4) respondents did not complete the satisfaction measure.

Table C6. Linear Regression Analysis for Program Age Predicting Fellowship Satisfaction

Outcome	Predictor	B	SE B	β	p
Satisfaction	Year Program Established	0.00	0.01	0.03	0.76

Table C7. Multiple Regression Analyses for Fellowship Satisfaction Predicting Productivity Outcomes

Outcome	Predictor	B	SE B	β	p
# Publications	Satisfaction	3.13	2.16	0.13	0.08
	Fellowship separation year	-2.75	0.65	-0.38	< .001
h-index	Satisfaction	0.57	0.45	0.11	0.10
	Fellowship separation year	-0.77	0.13	-0.51	< .001
# Peer-Reviewed Publications	Satisfaction	2.7	1.79	0.14	0.06
	Fellowship separation year	-2.54	0.54	-0.41	< .001

Note. Tests are one-tailed.

Table C8. Logistic Regression Analysis for Fellowship Satisfaction Predicting CDA Attainment

Outcome	Predictor	B	Wald Chi Square	p
CDA Attainment	Satisfaction	0.57	4.94	.01
	Fellowship separation year	-0.17	7.17	<.01

Note. Tests are one-tailed.