

Policy Research Brief



Langston University
 Rehabilitation Research and Training Center
 (RRTC) on Research and Capacity Building
 for Minority Entities

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Key Informant Characteristics

Race/Ethnicity	%
African-American/Black	40.00
Latino	33.34
Native-American	13.33
Asian	13.33
Disability Status	
Yes	13.33
No	86.67
Title	
Research Scientist/Professional	6.67
Teaching Faculty	53.33
Research & Teaching Faculty	40.00
Carnegie Classification of Institutions	
Baccalaureate University	
Level 1: Art and Science	13.33
Master's Degree Universities or Colleges	
Level 1: Larger programs that award at least 200 master's level degree	6.67
Doctorate-granting Universities	
Level 1: Very high research activity	60.00
Level 2: High research activity	13.33
Level 3: Doctoral research university	6.67

Federal Research Agency Policy and Systems and Disability and Health Scientific Workforce Diversity Development: A Key Informant Study

■ Purpose of Study

The United States (U.S.) National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), National Institutes of Health (NIH), Agency for Healthcare Quality and Research (AHQR), and Office of Disability, Aging, and Long-term Care Policy acknowledge the importance of minority research leaders (i.e., African Americans, Latinos, Native Americans, and Asians) in producing new knowledge and technological developments.^{1,2} These agencies agree that a critical mass of well-trained minority disability and health investigators with active, funded projects is needed to address contemporary racial and ethnic group disability and health disparities and

challenges.³ Although in general a fair amount is known about contributors to early career investigators' research skill development,^{4,5} relatively little information is available about agency policy and systems-induced research capacity building (RCB) facilitators that promote minority researchers' participation in the federal disability and health research and development (hereafter referred to as R&D) enterprise. The purpose of this study was to examine key informants' perspectives on ways in which these agencies can assist the field in increasing the pool of seasoned minority investigators available to answer important research questions, diversify the behavioral, social science, clinical, and biomedical scientific workforce, and mentor early career minority researchers.

■ Summary of Findings

The results track the study's objective, which was to document key informants' perspectives on policy and systems-induced strategies that NIDILRR, NIH, AHQR, and the Office of Disability Aging, and Long-Term Policy can consider in their efforts to increase the pool of seasoned minority disability and health researchers. An assortment of policy and systems-induced factors emerged as important for early career minority research scientists' career development.

Federal Research Agency Policy and Systems Facilitators

Code	Description
Diversity Development Factors	<ul style="list-style-type: none"> • Research career pathways and pipeline training programs • Social justice integration in organizational culture • New designated RCB and R&D funding streams • Inter-professional multidisciplinary collaboration • Mentorship programs
	<ul style="list-style-type: none"> • Postdoctoral training programs • Grant writing training • Expert panel reviewer participation • Agency advisory/scientific committee participation • Conference sponsorships

Additionally, key informant minority research leaders with disabilities identified collaboration opportunities and the need for new designated funding streams as key facilitators. Although not emerging as a theme in the analysis, the need to identify individual minority students with disabilities to benefit from monetary incentives and subsequent research training was also mentioned as another important factor for increasing the number of minority research leaders.

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■ Background

Current disability and health public policy such as Section 21 of the 1998 Rehabilitation Act Amendments (Public Law 93-112) and the Minority Health and Health Disparities Research and Education Act of 2000 (Public Law 106-525) represent the U.S. Congress' response to the national racial and ethnic disparity crisis. In an effort to eliminate such disparities, these legislative mandates call for federal research agencies (i.e., NIDILRR and NIH) to further diversify the behavioral, social science, clinical, and biomedical scientific workforce.⁶ For example, through the congressional authority of Section 21, NIDILRR empowers and partners with minority serving institutions (MSIs) to correct such disparities.⁷ The Minority Health and Health Disparities Research and Education Act created the National Center for Minority Health and Health Disparities at NIH. This legislation mandated the Agency for Healthcare Research and Quality (AHRQ) to conduct minority health and health disparities research. Additionally, the mandate directed the National Academy of Sciences (NAS) to examine and report on minority data collection practices of the Department of Health and Human Services (HHS).

In attempting to extensively address these legislative mandates and diversify the scientific workforce, research agencies have continuously solicited external key stakeholder input through strategic planning and other forums. For instance, on June 23, 2015, NIDILRR held a "Strategic Planning: Listening Session" as a part of its *Section 21 Capacity Building Meeting*. Research fellows, principal investigators and project directors, and other invited guests discussed the strengths and opportunities within the MSI network toward improving the agency's sponsored RCB outcomes.⁸ The disconnect between the need to diversify the scientific workforce and the few available federally-sponsored capacity building mechanisms (i.e., Advanced Rehabilitation Research Training Fellowship Program) is mentioned as an imminent challenge in the NIDILRR's 2011 report, *Research Capacity-Building Summit: Critical Conversations on Repositioning NIDILRR's Investment for the Future*.⁹ Similarly, the call to expand the numbers of scientific research leaders of color was mentioned as a challenge in the recent federal Interagency Committee on Disability Research (ICDR) report titled *Creating a Sustainable Interagency Coordination Network on Disability Research*.¹⁰

The scholarly literature reveal several other factors that support increasing the pool of seasoned minority researchers:

1. There is a lack of diversity in disability^{3,9} and health^{11,12} R&D across the federal research agency landscape (e.g., NIDILRR and NIH), and existing disability and health public policy initiatives call for the continued diversification of the scientific workforce.⁶
2. An Institute of Medicine (IOM) report indicates that the vast majority of published research shows that minorities are less likely to receive needed health care services compared to Whites¹³, and other studies report that minorities have differential rehabilitation¹⁴ and independent living service experiences.¹⁵

3. Significant demographic shifts in the U.S. due to the influx of new citizens and legal permanent residents from culturally different populations (Blacks [e.g., from Kenya, Nigeria, South Africa, Cameroon], Asians [e.g., from China, the Philippines, India, Vietnam, Korea, Japan], and Latinos/Hispanics [e.g., from El Salvador, Mexico, Guatemala, Dominican Republic]) warrant new and expanded disability and health R&D agendas.¹⁶
4. There is a need to develop an adequate pool of seasoned minority investigators who bring unique culturally nuanced perspectives and experiences that enhance the potential for understanding the factors that underlie racial/ethnic variations in disability and health service outcomes and experiences.¹⁷⁻¹⁹
5. Data document that minority investigators are more likely than their White counterparts to focus on health and disability/rehabilitation issues that have a disproportionate impact on minority group members and their communities.¹⁹⁻²¹

These data and policy initiatives underscore the field's need to remain vigilant in the generation of new evidence-based strategies aimed at increasing the pool of seasoned minority investigators. Using constructs from the Social Change Model of Leadership (SCML)^{23,24} as a theoretical lens, this qualitative solution-focused inquiry examined minority research leaders' perspectives about facilitators that can be considered by research agencies for strategic planning inclusion. From this vantage point, these experiences were factors that can inform the construction of new RCB paradigms and conceptual models. The following research question was addressed: In what ways can federal research agencies such as the NIDILRR, NIH, AHRQ, Office of Disability, Aging and Long-Term Care Policy, and others assist in building the pool of seasoned minority disability and health investigators?

■ Population

The purposeful sample contained 15 key informants, 11 employed at traditionally White universities (TWIs), 1 each at an historically Black college or university (HBCU) and Hispanic serving institution (HSI), and 2 at other institutions. Two of the 11 TWI-based key informants worked at separate Ivy League institutions. Twelve of the 15 key informants were males. Eleven were also between the ages of 40 to 49 while 4 key informants were 50 to 59 years of age. All 15 key informants possessed a terminal research degree (i.e., Ph.D., Ed.D), while 2 also had a medical doctor (M.D.) degree. Twelve reported their employment setting as an academic program while 3 worked primarily at a research hospital or allied health facility. Nine key informants reported scholarship areas consistent with disability research (i.e., occupational therapy, disability studies, rehabilitation counseling, psychology, social work), while 1, 4, and 1 of the informants indicated health research areas of medicine, public/community health, and nursing, respectively; some reported a combination of areas.

■ Procedure

This qualitative research utilized in-depth, semi-structured telephone interviews to document factors that may contribute to increasing the supply of seasoned minority investigators thereby diversifying the scientific workforce. Recruitment consisted of an online peer nomination process to create the purposeful sample of study key informants. Solicitation cover letters were emailed to 350 disability and health researchers, scholars, and academicians. This included principal investigators (PIs) of NIDILRR funded rehabilitation research and training centers (RRTC), rehabilitation engineering research centers (RERCs), disability rehabilitation research projects (DRRPs), and field initiated projects (FIPs). It also included PIs of the NIH's National Institute of Minority Health and Health Disparities (NIMHD) sponsored research projects; and project directors for Rehabilitation Services Administration (RSA) long-term training. Additionally, it included academicians at MSIs (i.e., HBCUs, American Indian tribal colleges or universities [AITCUs], and HSIs) and TWIs in the areas of nursing, public/community health, occupational therapy, rehabilitation counseling, physical therapy, special education, medicine, and social work. Although the Peer Nomination Form reflected a focus on disability or rehabilitation research, the multidisciplinary nature of several nominees' research agendas resulted in their self-identification as primarily health researchers while others noted that their research was a combination of disability, rehabilitation, and health foci.

Nominees were rank ordered from highest to lowest score for each racial/ethnic stratum based on the research productivity criterion as measured by h-index scores, research productivity, publication and citation information, obtained through *Thomson Reuters Web of Science and Journal Citation Reports*.²⁵ Next, based on the 2012 U.S. Census Bureau national demography of race/ethnicity,²⁶ we calculated the sample size for each stratum using the following equation:

$$n_i = N_i * p * w_i$$

where N_i is the population size of stratum i , p is the proportionate stratified sample, w_i is the sample weight which was determined by the research team, and n_i is the sample size of stratum i . The sample size ($n = 15$) was calculated to include 6 or 40% African-American, 5 or 34% Latino, 2 or 13% Native-American, and 2 or 13% Asian-American participants. The desktop version of the Statistical Analysis System (SAS) version 9.3, and its random selection procedures were used in this process.²⁷ Research team members and project external advisory panel (AP) members worked together to develop the interview protocol. The protocol was pilot-tested with three research leaders external to the current study, revised, and finalized for field administration. All interviews, with the exception of one (1), were digitally taped with the permission of the key informant and transcribed by a professional transcription service. One (1) key informant declined to be digitally recorded, and so copious written notes were taken for this interview.

Although the study's objective was to increase our understanding of strategies for increasing minority seasoned researcher numbers, we did not code the data with any presumptions about what we might find. Instead, we relied on an inductive logical (see Frankel & Devers, 2000²⁸) and iteration (see Srivastave & Hopwood, 2009²⁹) approach in examining the untreated data emerging as themes from our analyses. The analysis process included open coding, memo-writing, category development, and constant comparison of data, which are elements closely aligned with a grounded theory approach³⁰. We began the formal analysis by reading the verbatim transcripts of the digitally recorded interviews separately. In this process we highlighted and coded similar verbiage independently. We used a peer-check whereby three researchers cross-checked categorizations and statement codes. Multiple discussions eventually led to 100% agreement of the final set of codes. We entered the Microsoft Word text file into NVivo (v.10.0) for data organization, and content analysis using the codes that reflected the emerging patterns we had previously identified. In particular, we coded for scientific workforce diversity development facilitators. We identified ten factors which key informants described as important for increasing the pool of seasoned minority investigators.

■ Results

The following sections highlight our findings from our analyses of key informants' perspectives on ways that agencies can assist in increasing the pool of seasoned minority investigators. In particular, we use descriptive examples to identify how key informants' perceptions about different strategies can influence research capacity and skill building efforts. As reflected in Table 1, the analysis yielded an assortment of factors perceived by key informants as pivotal to increasing the quantity of seasoned minority disability and health investigators. The following sections highlight our findings from our analyses of key informants' perspectives.

Table 1. Federal research agency workforce diversity development facilitators

Code	Description
Diversity Development Factors	<ul style="list-style-type: none"> • Research career pathways and pipeline training programs • Social justice integration in organizational culture • New designated RCB and R&D funding streams • Inter-professional multidisciplinary collaborations • Mentorship programs • Postdoctoral training programs • Grant writing training • Expert panel reviewer participation • Agency advisory/scientific committee participation • Conference sponsorships

Research Career Pathways and Pipeline Training Programs

Key informants explained the importance of building new career development pipelines to address the inadequate supply of available seasoned minority investigators. While all espoused the value of research training concepts in general, some informants emphasized the need to create research career pathway and early intervention awareness programs to establish a viable and sustainable pipeline for the dynamic production of minority researchers. For example, one informant stated: “*That’s a case study too because the only way--for those agencies to really help minorities, they would have to set aside stuff... They would have to create a separate pathway*” (ID 06). As this example reveals, although key informants see themselves as federal research agency stakeholders in the same way as White investigators, they often perceive the need for separate research training tracks or pathways for minorities.

These separate pathways were described by some key informants in the context of “early intervention awareness programs” that can offer minority students the opportunity to learn about disability and health research careers. One illustrated example of a strategy presented by a key informant was for agencies that did not have a formal program to duplicate the National Science Foundation’s successful early intervention awareness program that is already in place:

But if you look at say National Science Foundation, they try to bring them [minority scholars] in very early...so National Science Foundation tend to have, say, early intervention programs at the high school level. Then we should enter the arena a little bit early if we want people to be able to handle statistics (ID 04).

In addition to focusing on high school students, key informants also identified the need to involve college level students (i.e., undergraduate and graduate) in student learning and awareness opportunities to inform them about research careers. One informant provided a relevant example in the following statement: “*I think those programs are really for increasing the pool, reaching out to undergrad minorities that have no idea they could go for a Ph.D.*” (ID 05).

Minority targeted career pathway and early intervention awareness programs may help to mitigate career information gaps and their implications for the available pipeline and pool of seasoned disability and health investigators. In particular, informing minority students, their parents, counselors, advisors, and others with a stake in their future about careers and support resources may facilitate the development of career objectives in disability and health research.

Social Justice Context

In addition to addressing career development pipeline infrastructure, or the lack thereof, embracing a social justice context that promotes the full inclusion and participation of minority investigators in the federal research enterprise

is crucial in addressing the shortage of seasoned minority investigators. Key informant perspectives on social justice centered on issues of “discrimination”, the “re-circling of grants to the same players” and a “culture of discouragement”. One key informant described how these agencies might do a much better job of eradicating “discrimination” and ensuring that more minorities were able to secure R&D funding. Biases must be addressed, as the key informant explained:

The first thing that those places [NIDILRR, NIH, AHQR, Office of Disability Aging, and Long-Term Care Policy] have to do is just stop the discrimination that is there. I mean why is there the minorities have very little funding from these places? Well, they have to begin to address that by doing a few things, right? By addressing their biases” (ID 02).

As the key informant suggests, an equity first perspective is needed to address discrimination and bias. This perspective grows out of institutional infrastructures that embrace and promote fairness as a key ethical principle. These agencies’ infrastructures are inclusive of prevailing organizational and leadership cultures, and personnel demographics and experiences that serve as lenses for synthesizing gate keepers’ perspectives (e.g. stereotyping and biases for or against personal and institutional characteristics) that ultimately influence their decisions regarding the disbursement of R&D resources, and who gets to participate. The sine-qua-non of an inclusive agency infrastructure is scientific workforce diversity across R&D investment portfolios, diversity within leadership and staff ranks, and assignment of stakeholders of color to advisory and oversight seats at the decision-making table. Another key informant explained: “*The infrastructure of NIH and these other agencies, their infrastructure is well established in time to protect the federal funding, federal money and ensure that there’s no discrimination or any kind of unfairness*” (ID 06).

Key informants identified two distinct “discrimination” implications. First, there is the issue of “re-circling of grants to the same players”. As one key informant explained: “*Big guys are getting all the funding all the time, the same people [non-minorities] over and over again, and they’re not really re-circling in and looking for new, creative and junior researchers*” (ID 09). Second, they noted a “culture of discouragement” within federal research agency context as an issue. In short, agencies’ culture may serve to discourage minority investigators from participation as highlighted by the following key informant statement:

But more than anything, they [NIDILRR, NIH, AHQR, Office of Disability Aging, and Long-Term Care Policy] need to change the culture in front of them.... Only three percent of grants submitted to NIMH are [from] Latinas. Why aren’t African Americans doing more? It’s because the culture is such that people are so—well sometimes afraid... they’re intimidated. It’s the same phenomenon we see in terms of voting and voting rights. People have the right to vote, but it

doesn't mean that they actually do. They don't because they are disenfranchised. Why should I apply for anything that I already know I am not going to attain? (ID 02).

New Designated RCB and R&D Funding Streams

Designated funding streams targeting minority investigators are important for increasing the pool of seasoned minority investigators. Key informants responded with several strategies aimed at sustaining or strengthening this concept that included “sustained funding for MSI-based projects”, “earmarked funding”, and “duplication of existing programs”. As one key informant explained with regard to sustainment: *“Major funding agencies should continue to fund individuals at HBCUs and other minority institutions to lead capacity building projects”* (ID15). The development of absolute priorities that have restricted applicants to MSIs has also been important and instrumental in addressing the research skill needs of early career minority investigators. As one key informant explained about the importance of “earmarked funding”:

I think some of the things that NIDRR's already done and some things that NIH does, which is to have certain streams of funding where they require HBCUs be the advocate for or have certain funding earmarks like the whole Section 21 program at NIDRRR. I think it's a fine thing now they they've begun to actually limit those minority field-initiated grants and DRRPS and RRTC's to minority-serving institutions as applicants (ID 08).

The “duplication of existing programs” that have been shown to be successful is important. One key informant suggested the following example for agencies' consideration: *“The creation of special funding mechanisms ... such as the minority supplement to existing grant that the NIH has”* (ID 10). NIH sponsored supplements represent a creative approach to providing early career investigators with mini-grant resources to help them jump-start their R&D agendas. As one key informant explained, establishing a track record is a benefit to acquiring small supplements for R&D: *“One of the things is by offering small pilot grants. I think this is very important because I feel that sometimes you need a track record to get grants. But if you don't get pilot or small grants to build that track record, it's almost impossible to do it”* (ID 13).

Inter-professional Multidisciplinary Collaborations

For a strategy to enhance and sustain an available pool of seasoned minority investigators over time requires early career minority researchers to be able to work with other colleagues from various other disciplines. Such collaboration calls for investigators to cross-fertilize their research throughout the scientific process. However, these collaborative opportunities oftentimes do not avail themselves to minority early career investigators as many seasoned investigators continue to work independently or solely with other experienced investigators.

As one key informant explained about the silo work phenomenon:

Another thing to think about is that for seasoned investigators, it's unfortunate that you gain all these skills and the wealth of information and the grant writing and the leadership skills. And then we get set aside in silos, and we're not brought together to serve the up and coming young investigators... as well as with the leadership at the federal level, agency level (ID 01).

Limited research infrastructure or “poor research machinery” among some institutions with predominantly minority faculty and student numbers is a challenge when attempting to build the numbers of seasoned minority researchers. These institutions sometimes lack the needed supply of available experienced researchers to serve as mentors to minority early career investigators on campus. As one key informant explained: *“The National Institutes of Health and all the other places need to be working very closely with institutions to help institutions that do not have the machinery to create them[multidisciplinary collaborations], so that minority people can actually apply and be successful”* (ID 02). Consequently, the situation of some MSIs call for enhanced network development to ensure that collaboration opportunities exist. Key stakeholders highlighted the following network building strategies: *“Create a network of minority scholars”* (ID 07); *“A sisterhood and brotherhood among all minority leaders”* (ID 12); and *“Working collaboratively with other agencies and other researchers”* (ID 14).

Mentorship Programs

Many key informants articulated how mentorship programs should work in advancing the number of available seasoned minority investigators. Mentorship programs require mentors to take a hands-on approach in guiding and supporting mentees in the development of R&D and products. As one key informant described a hands-on model for a national strategy: *“I think obviously mentoring is important and having people who will help read your papers, help give you advice on grant proposal writing and things like that. So there could be some kind of a national mentor program.”* Two important attributes that mentors should possess emerged as important to enhancing mentees research skills; “respecting traditions through cultural humility” and “generosity”. Cultural humility requires mentors to be respectful of mentees' customs and traditions and committed to self-critique to develop mutually beneficial and non-paternalistic peer-to-peer based relationships. The need for this concept among mentors is highlighted in the following key informant's statement:

So finding mentors, pairing them up, finding institutes [NIDILRR, NIH, AHQR, Office of Disability Aging, and Long-Term Care Policy] that are receptive to Native-American thinking and respecting traditions, instead of, again, trying to make the Native-American into academic person with a mainstream philosophy (ID 12).

Mentor qualities should also manifest “generosity” as an attribute representative of their giving of their talents and time in the development of early career researchers. As one key informant explained: *“I think the other big investment is in mentoring, really getting good people that are brought together under a generous mentor can help people sort of use a pool of data, do publications, and then mentor them into writing grants”* (ID 13).

Post-Doctoral Training

Increasing the supply of seasoned minority investigators not only depends on making students in the academic pipeline aware of related careers nor the creation of pathways, but is also impacted by post-doctoral training opportunities. These opportunities aim to increase participants’ research skills and self-efficacy for conducting high-quality R&D. Key informants identified several programmatic capacity building concepts for consideration. First, the idea of “establishing MSI-based research fellowships” was provided as a possibility; *“I know they [NIDILRR and NIH] do capacity building, but I think if they were to do something in terms of establishing research fellows for minority groups or minority-serving institutions... and have it take place at a minority-serving institution, that is a good way to really focus in on building minority investigators”* (ID 10). Second, examples of “NIH career award duplication were presented by another key informant: *“I think they [federal research agencies] should have more postdoctoral funded. I think they [NIDILRR] should have career awards, just like NIH... and more than having more, it’s just advertising them and coming after the minority faculty so that they can take advantage”* (ID 09). More specialized post-doctoral training in multicultural research venues might also be needed due to our understanding that cultural contexts are important to the development and translation of research findings. As stated by one key informant:

More trainings...there’s a need to have some specialized things in recognition of the fact that most research that is being done in rehabilitation and disability doesn’t focus on minority issues. Maybe have a Switzer Fellowship out of NIDRR... that focuses on minority topics or ARRT. Put those same kinds of designated foci across their entire portfolio of funding streams (ID 08).

Grant Writing Workshops

Even after implementing pre-doctoral and post-doctoral training interventions, the supply of seasoned minority researchers is likely to be inadequate without the provision of grant writing training, which is crucial to research skill development. However, many of the challenges relating to this type of training appear to stem from the relatively small number targeting minority investigators, and perhaps a situation where the seminar model represents the sole or predominant application. Key informants identified “more trainings targeting minorities” and “agency invitations for learning

grant-making process” as key to developing these skills. They felt that not only are more trainings needed, but they also need to target minority researchers: *“More trainings [are needed] from those federal agencies [NIDILRR, NIH, AHQR, Office of Disability Aging, and Long-Term Care Policy] that earmark minority researchers”* (ID 08).

Moreover, many key informants indicated the need for agency sponsorships that would allow minority early career investigators to develop a stronger network with their leadership and staff who coordinate the grant making process. The concept of agency sponsorships targeting minorities, as a type of grant writing training, may be seen as too radical by agencies given the political charge that oftentimes accompanies program development ideas aimed at addressing participation disparities. While the seminar approach represents a politically expedient way for agencies to indirectly build research capacity, individual investigator sponsorship may require agencies to self-evaluate themselves (e.g., values, mission, and vision). This assessment may raise the following question for agencies to answer: Are we objective grants-makers that sponsor projects to address minority investigators’ capacity building needs as one of our many functions, or should we serve as active and direct research capacity builders ourselves by interfacing directly and personally with minority investigators outside of project officer responsibilities, expert panel reviews, and their committee participation?

Key informants felt that the current situation calls for agencies to re-think their role and function as capacity builders. One key informant provided a grant writing training example that promotes the individual investigator sponsorship approach: *“Funding agencies should hold workshops and invite people/young researchers to Washington to teach them the inter-workings of grant procurement to include the day-to-day office activities as well as the grant writing processes”* (ID 15).

Expert Panel Reviewer Participation

Capacity building strategies that provide early career minority researchers with the opportunity to score proposals and participate in the evaluative discussions with leading research scientists and advocates in the field is crucial to building the number of seasoned minority researchers. As one key informant explained:

Having underrepresented minorities filling those review boards, the review panels, is also extremely important. So, that’s really like very specific ways that those institutions [NIDILRR, NIH, AHQR, Office of Disability Aging, and Long-Term Care Policy] can actually help” (ID 02).

Moreover, such participation represents an insider approach to learning how to develop a successful proposal, as highlighted by another key informant: *“Doing that kind of work, serving as a reviewer, it gives you kind of an inside look at what it is they’re looking for when you submit grants and how people write in response to an RFP”* (ID 10). One issue

that emerged as key to minority investigator participation is federal research agency outreach, and the need to recruit them: “I think federal government [NIDILRR, NIH, AHQR, Office of Disability Aging, and Long-Term Care Policy] can do... one thing is work very hard to recruit minority people to the study sections, the reviewers” (ID 07).

Agency Advisory/Scientific Committee Participation

Although rarely thought of in the family of capacity building strategies, minority investigator participation on agency advisory committees could represent another promising approach. When asked the question of how can federal research agencies increase the number of seasoned minority investigators, one key informant explained: “They [NIDILRR, NIH, AHQR, Office of Disability Aging, and Long-Term Care Policy] probably should build like a panel of experts from seasoned investigators, to offer some advice and oversight, and even provide a forum for junior investigators” (ID 01). As reflected in this key informant’s statement, not only is it important for minority investigators to serve in an advisory capacity, but they should be provided with agency oversight responsibility opportunities as well.

One issue that such opportunities may help to alleviate is the unavailability of role models, within or outside of cultural context. Minority investigators not only need role models in the development, conceptualization, implementation, and dissemination of R&D, they are also in dire need of research leadership role models. Leadership qualities such as speaking styles (i.e., organization of verbal responses), postures, etiquette, deference, and agenda advocacy and interest alignment strategies are on constant display in advisory and oversight activities at the federal agency level. Early career investigator participants recognize that there is indeed an unofficial culture regulating these deliberations, and the way that one acts or behaves is very important. Participation allows for these researchers to develop their leadership skills through unintentional role models without regard to race or ethnicity. As one key informant explained, however, it has been difficult to involve minority investigators due to limited backgrounds in some cases: “I think traditionally you want those minorities to work or to serve on task force groups... even though some of them may not have outstanding skills or backgrounds as some of the senior scientists. By working as a committee member, the minority people also learn from other successful people” (ID 07). As reflected in this statement, there is a great deal about research leadership that can be learned from participation on agency advisory committees.

Conference Sponsorships

Increasing the supply of seasoned minority researchers depends upon conference sponsorships targeting minorities. One key informant provided a global example of how federal research agencies could organize such training:

Federal [NIDILRR, NIH, AHQR, Office of Disability Aging, and Long-Term Care Policy] and other

institutions can organize training seminars, not only specifically with—stand-alone training seminars by their project staff-- but they can also organize these seminars around professional meetings that minorities attend, and these seminars can be focusing on the structure of grant review at the NIH, what types of mechanisms are available... like R1, R21, R03, and so on and so forth” (ID 11).

Not only should opportunities be available to minority faculty scholars, but minority students in the academic pipeline should also be supported to participate as explained by another key informant: “I think they [federal research agencies] should fund students to attend conference” (ID 09).

Race/Ethnicity by Factors

As shown in Figure 1, the results indicate that key informant racial/ethnic groups tended to differ on their views about facilitators they perceive could play a major role in increasing the numbers of seasoned minority investigators. African-American key informants felt that multidisciplinary collaborations, new and sustained designated funding streams, and grant writing training were key strategies. On the other hand, Latino and Asian key informants felt that social justice context and expert panel review opportunities were key. Still, Native-American informants perceived the need for mentorship programs and new and sustained designated funding streams. A somewhat consistent theme felt by African-American and Native-American key informants was the need for new and sustained designated funding streams.

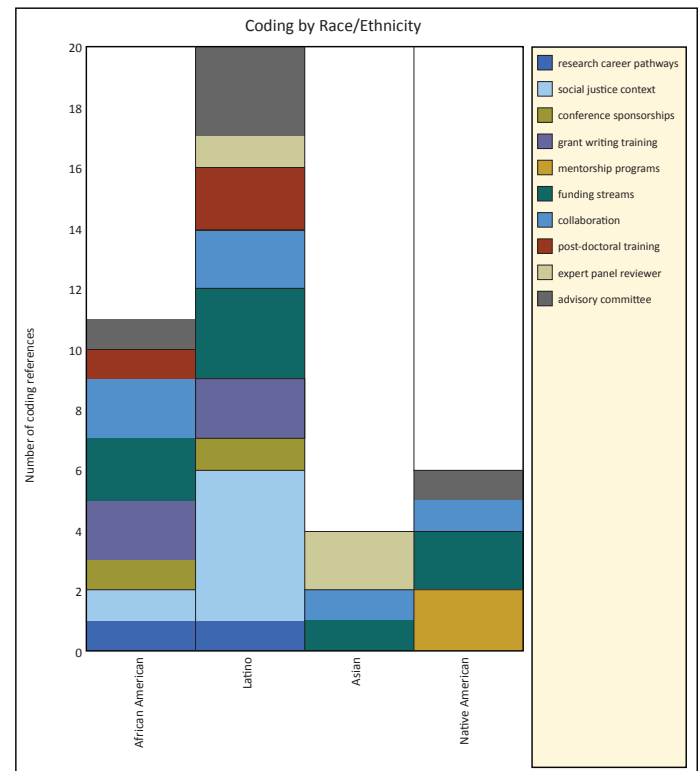


Figure 1: Coding by Race/Ethnicity

Disability by Factors

We analyzed the two key informants’ with disabilities sole perspectives to identify key themes specific to a minority researcher with a disability context. As presented in Figure 2, they felt that multidisciplinary collaboration opportunities and new designated funding streams were key strategies. One key informant provided the following sentiment as a suggestion for enhancing such collaboration opportunities: *“Thinking about the National Coalition of Disability, the NCD, that maybe we could go ahead and focus on doing some research collaboratively with them, the National Center for Disabilities, and what organizations and groups do they have programming with to see what they would like to prioritize”* (ID 14). Although not emerging as a theme in the analysis, a salient issue mentioned was the need to identify individual minority students with disabilities who could benefit from monetary incentives and subsequent research training. Here is that suggestion: *“Maybe like finding students of full-time staff or where we can find individuals [students with disabilities] that can make the money in order to get the job done. It’s not always looking at the place in response to what the federal government wants; it looking for individuals too”*. Interestingly, the importance of post-secondary school access supports and accommodations also surfaced as important facilitators for producing additional seasoned minority research leaders with disabilities.

Discussion and Recommendations

The results suggest comprehensive strategic planning factors that federal research agencies should consider for application. Given the interpretivist and qualitative nature of this inquiry and the use of purposeful sampling procedures, consumers of this research should keep in mind that the results are not generalizable, but rather illuminate the perspectives and experiences of key informants. Although the techniques employed were rigorous and grounded in qualitative tradition, the findings should be considered interpretive and descriptive, and one should consider this circumstance in drawing conclusions.

The findings indicate that key informants felt that research career pathways in the form of early intervention and awareness programs are imperative for addressing scientific workforce diversity development issues. In this regard, the results also highlight the value of identifying individual minority students with disabilities who could benefit from participating in such programs. This inclusionary agenda calls for greater access and accommodation supports through federal programming that provide minority students with disabilities, at the secondary and post-secondary levels, with needed resources. Workforce diversity development challenges facing these agencies are complicated by a lack of awareness about disability and health career pathways and opportunities among many minority high school (e.g., school-to-work transition), college and university undergraduate, master’s, and doctoral level students with and without disabilities, rehabilitation and

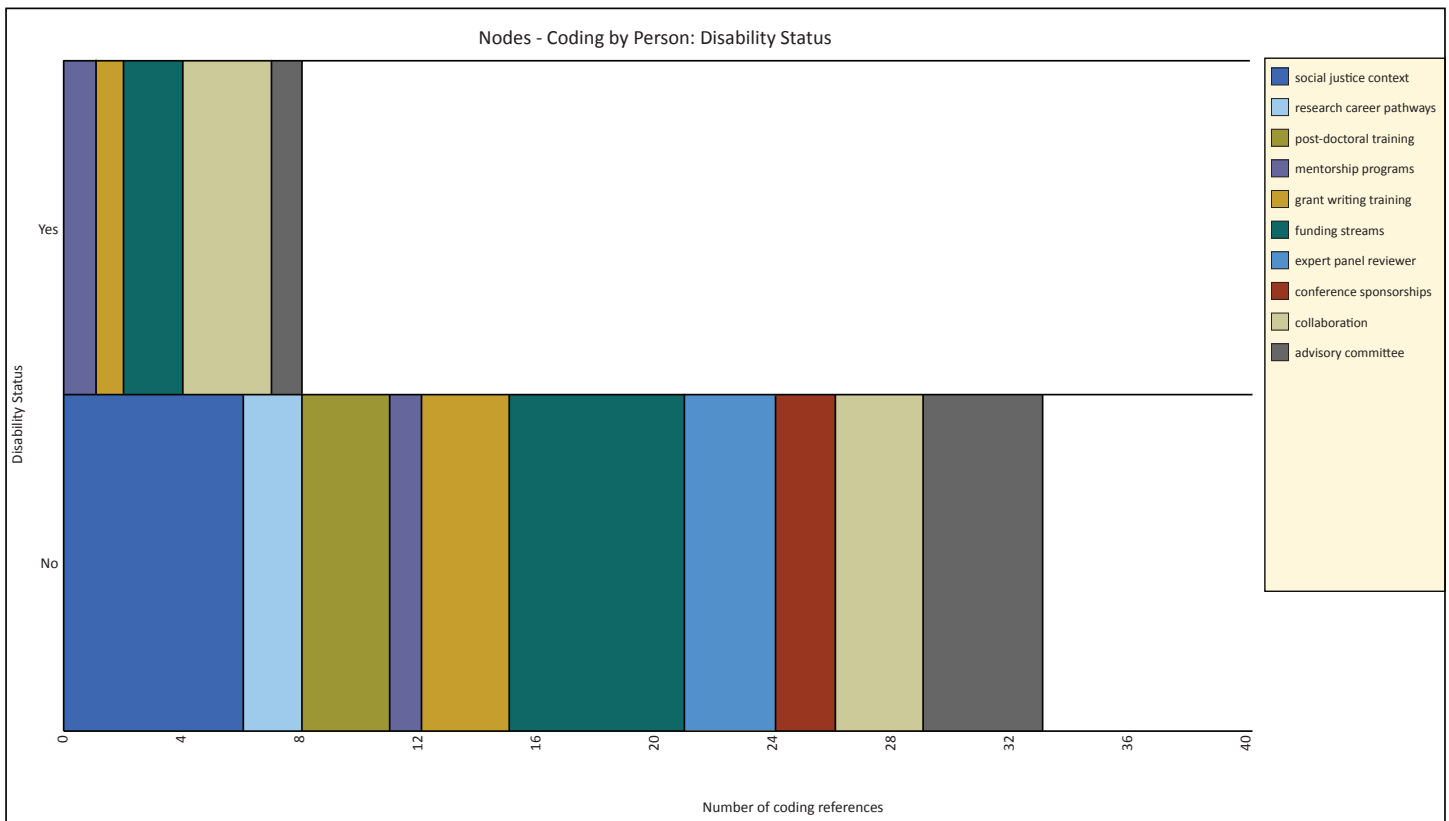


Figure 2: Coding by Disability Status

health care professionals, parents, community members, and university faculty members outside of health and allied health disciplines. These key stakeholders' lack of knowledge about such career pathways can make it difficult to attract minorities, especially those with disabilities, into the scientific workforce.

The need for federal research agencies to integrate a social justice context into their organizational culture and grant-making activities emerged as another key finding. Interestingly, Latino key informants felt that social justice context was a key facilitator. These agencies have as the core of their foundation the removal of discriminatory barriers and the full equality of minority investigators. Yet, in light of their nature and ethos, there may be a need to be reminded that there are qualified minority investigators, to include those with disabilities.

The finding regarding the concept of new designated streams of R&D and RCB funding that targets minority investigators is important as key informants across African-American and Native-American racial/ethnic cohorts identified this facilitator. Moreover, key informants with disabilities felt that these sorts of funding mechanisms represent key strategies. This finding is perhaps an outgrowth of the disparate rates at which investigators of color secure federal funding. For example, two NIH commissioned studies^{11,12} examined the association between RO1 applicants' self identified race or ethnicity and the probability of receiving an award using data from the NIH IMPAC II (Information for Management, Planning, Analysis, and Coordination) grant database. After controlling for educational background, country of origin, training, previous research awards, publication record, and employer characteristics, the first study reported that African American applicants were 10 percentage points less likely than equally qualified White applicants to be awarded RO1 research projects. Their findings also indicated that African American and Asian investigators were less likely to be awarded an RO1 on the first or second attempt, African American and Latino investigators were less likely to resubmit a revised application, and African American investigators who did resubmit had to do so more often to receive an award.

The second study corroborated previous results, and reported that overall applications from African Americans and Asians were less likely to awarded funding when compared to White investigators' applications. They concluded that applications from African Americans had a lower probability of being awarded RO1 Type I funding, regardless of investigator's degree (i.e., Ph.D. versus M.D.). Moreover, other analyses have found that MSIs seldom receive a fair share of federal R&D dollars.^{18,31} Although HBUCs and HSIs make up about 2% and 8% of all degree-granting undergraduate-serving colleges or universities in the U.S.³², in fiscal year (FY) 2012 the Department of Health and Human Services (HHS) obligated only about .5%, and 1.4%, of the total \$17 billion in R&D expenditures to these types of institutions, respectively, and only .005% to AITCUs.

Key informants also felt that the following inter-professional interactions were key strategies: formal mentorship programs, post-doctoral and grant writing trainings, expert panel reviewer participation, agency advisory/scientific committee participation, and conference sponsorships. Key informants with disabilities felt that collaboration opportunities was a key facilitator. Inter-professional interaction among investigators plays a critical role in advancing investigators' research skills and self-efficacy. Notwithstanding, minority scientific committee participation ensures that issues impacting people of color are brought to the table and to agency leadership as potential priorities.

We present the following recommendations for NIDILRR and other federal research agencies (i.e., NIH; Agency for Healthcare Quality and Research [AHQR]; Office of Disability, Aging, and Long-term Care Policy) to consider:

1. NIDILRR, NIH, AHQR, and the Office of Disability, Aging, and Long-Term Care Policy should collaboratively commission a national needs assessment to identify the current status of high school and MSI (i.e., undergraduate/baccalaureate, master's, and doctoral levels) early intervention and awareness pipeline programs that target minority students, especially those with disabilities, being exposed to disability and health research careers. This study would identify existing pipeline programs nationally, articulate a vision of what is possible for having in place secondary school and MSI-based early intervention and awareness pipeline programs, and identify the gaps between the current status of such programs and the future manifestation of the vision with strategies devised and targeted to close the gap (i.e., a gap analysis). Strategic plans for funding and initiatives to sustain current research skill and infrastructure building efforts at current levels, and scaled-up demonstrations and evaluations accompanied by increased funding levels to address pipeline issues should be developed.
2. NIDILRR, NIH, AHQR, and the Office of Disability, Aging, and Long-Term Care Policy should fund national initiatives and priorities aimed at developing, implementing, and assessing new pilot research career pathways and pipelines, and early intervention awareness programs to increase the supply of minority investigators. The studies would seek to identify promising and best practice paradigms for informing and educating minorities at the high school and post-secondary levels about research career opportunities in disability and health. Subsequent dissemination and technical assistance (TA) efforts would aim to expand these new strategies across institutions. These agencies should target available financial supplements across investment portfolios (i.e., funding excesses and unused dollars) toward establishing and piloting such pathway and pipeline programs, with related "turn-key" sponsored projects (e.g., RRTC on Research and Capacity Building for Minority Entities) leading the

- implementation and coordination of activities.
3. NIDILRR and the Rehabilitation Services Administration (RSA) should develop a joint priority aimed at building new career pathway associate's, baccalaureate, and master's degree rehabilitation training programs on AITCU campuses. Section 21 and supplemental funding resources could be devoted toward establishing this academic training pipeline to produce Native-American investigators and scholar practitioners. Such pipeline infrastructure is practically non-existent on the campus of many AITCUs, and so there is little opportunity to groom and grow early career researchers.
 4. Federal research agencies should periodically conduct social justice trainings for leadership and staff members that cover the comprehensive history and legacy of grant-making exclusionary practices whereby funding has been historically concentrated in a very small number of TWIs in the best position to take advantage of the funding explosion. Contemporary civil discourse (systemic unequal treatment of minorities) growing out of social justice concerns across society should also be highlighted and discussed as potential lessons that can be learned by agencies and may help to inform their agendas for addressing disability, health, rehabilitation, and independent living concerns within minority communities. Such trainings could point the way to creating a more culturally sensitive and inclusive climate where historical and contemporary sociopolitical contexts are considered in the development of funding initiatives and priorities across the federal research agency landscape. All NIDILRR, NIH, AHQR, and the Office of Disability, Aging, and Long-Term Care Policy funded projects should address social issues related to minorities who have a disability.
 5. NIDILRR, NIH, AHQR, and the Office of Disability, Aging, and Long-Term Care Policy should inventory all current streams of funding designated for sponsored capacity building projects to identify effective efforts and to recommend additional new streams of funding specifically dedicated to building minority research capacity like the NIDILRR Section 21 Program, but more programs are needed. This information should inform the development of a comprehensive interagency plan document that describes how designated funding streams and sponsored projects can be leveraged across agency lines to increase the supply of seasoned minority investigators and diversify the scientific workforce. Specific, measurable outcomes should connect to the plan, including implementation targets, as well as short-term, intermediate, and ultimate impacts.
 6. NIDILRR should develop new funding streams devoted to sponsoring Section 21 projects that provide individual minority students and early career investigators with disabilities mini-grants to carry out and cross-pollinate their research under the mentorship of an experienced seasoned investigator. Research collaborations with disability organizations such as the National Coalition of Disability, National Centers for Disabilities and others should be cultivated and established to address new and emerging issues worthy of scientific examination. Through cross-fertilization of skills and knowledge, advances in successful outcomes can be better assured.
 7. NIDILRR, NIH, AHQR and the Office of Disability, Aging, and Long-Term Care Policy should fund initiatives (e.g., specific grant funding streams) with the expressed goal of identifying and enhancing inter-professional multidisciplinary collaboration opportunities for early career minority disability and health investigators. The goal would be to cross-pollinate research agendas by fostering the collaborative exchange of expertise and information to facilitate early career minority investigators' advancement of state-of-the science knowledge of valid strategies and methodologies, and provide them with direct hands-on experience in the conduct of research and grant proposal development.
 8. NIDILRR and other federal research agencies should develop new research policies and initiatives that sponsor additional comprehensive peer-to-peer mentorship projects designed to address limited mentorship and inter-professional interaction opportunities. Mentorship should be included as a priority for funded projects. Federal agency sponsorship of an "Orientation to the Realities of Research and Grantsmanship" as a component of inter-professional interaction could also provide a rich learning environment. The contents covered might include the need for personal commitment beyond the usual work week and cultural sensitivity regarding use of resources (e.g., reluctance in asking for help, distrust of government agencies and outside academic institutions, link to communities in need and social justice).
 9. NIDILRR and other federal research entities should fund new initiatives that focus on developing the research career aspirations and research skills of minority students through student peer-to-peer mentorship approaches and student grant writing training. For example, undergraduate level students could be matched with master's level student mentors, and master's level students could be paired with doctoral level student mentors. This effort could help facilitate effective peer guidance aimed at encouraging students to pursue an advanced degree. Moreover, grant writing training courses should be made available to undergraduate and graduate students as part of this mentorship component. Minority scholars want to make a difference, yet many may not know how or may not be encouraged to affect change through educational advancement or grantsmanship. Educational advancement and enhanced

grantsmanship skills will empower them to be proactive and bring about change in their communities.

10. NIDILRR, NIH, AHQR and the Office of Disability, Aging, and Long-Term Care and other federal research agencies should offer meaningful and substantial incentives across all of their funding programs (e.g., points in the proposal peer review process) that include definitive minority research mentoring strategies inherent in the targeted research and/or that represent minority mentoring in the proposal research team composition (e.g., Co-PIs and Co-Is of minority status).
11. NIDILRR, NIH, AHQR and the Office of Disability, Aging, and Long-Term Care should consider developing additional post-doctoral training opportunities across their investment portfolios for minority early career disability and health investigators. This advanced research training mechanism would provide these individuals with capable generous mentorship, and the opportunity to learn how to develop independent research projects and research grant proposals under peer-to-peer guidance and support.
12. NIDILRR and other agencies should consider sponsoring additional doctoral and pre-doctoral fellowships to assist fellows and students of color in the pipeline to obtain a doctorate, master's, or undergraduate degree, respectively.
13. NIDILRR, NIH, AHQR and the Office of Disability, Aging, and Long-Term Care Policy should collaboratively fund disability and health grant-writing workshops and conferences in the Washington D.C. area. They should sponsor early career investigators to travel to D.C. to expose them to the inter-workings of the grant procurement process to include the day-to-day office activities as well as the grant writing process. There is also a need for national, regional, and international conferences representing larger research communities to facilitate minority researchers' dissemination efforts. The availability of stipends to support their travel to such conferences could be beneficial.
14. NIDILRR and other federal research agencies should review and tailor (where necessary) their comprehensive recruitment plans aimed at increasing minority investigator participation as expert panel reviewers. Key stakeholder (e.g., minority investigators) input should shape the plan, its goal, objectives, activities, outcomes, and assessment mechanisms. It would be useful for agencies to provide expert panel reviewer training that include hands on examples of successful R&D proposals and resulting impact. This training needs to include topics that support diversity awareness and cover the need to fund new minority researchers.
15. NIDILRR and other federal research agencies should inventory their current advisory and scientific committee

registries to identify their racial/ethnic and institutional type (i.e., MSI versus TWI) composition. A committee could be developed to guide this effort, study the findings, and make recommendations to agencies on best practice strategies for ensuring that marginalized communities of color, or their representatives, have a voice in informing agencies' overall strategic directions that respond to new and emerging disability and health problems impacting members of these underserved communities.

16. NIDILRR should develop additional funding mechanisms to supplement all currently funded Section 21 grantees. The purpose of this additional funding would be to afford grantees resources to devise training protocols that would allow them to teach MSI-based seasoned investigators and those at Research-I designated TWIs how to mentor minority researchers in disability and health disciplines. For example, the funding and establishment of a Visiting Scholar Program at a NIDILRR sponsored "turn-key" project (i.e., RRTC on Research and Capacity Building for Minority Entities) where scholars could spend 3-5 days on campus learning about peer-to-peer mentorship principles, challenges, and successes could prove beneficial to all.

■ Conclusion

The need for early intervention strategies, emphasis on social justice, new designated funding streams, inter-professional collaborations, and additional agency engagement mechanisms emerged as important facilitators. Limited federally sponsored R&D participation among minority investigators with and without disabilities calls for the development of an up and coming cadre of minority researchers available to compete for funding, answer the large questions, and mentor the next generation of minority research leaders. New RCB approaches, models, and paradigms need to be explored and assessed through rigorous multi-method and mixed-method designs (i.e., qualitative and quantitative) to inform future strategies. Overall, NIDILRR, NIH, AHQR and the Office of Disability, Aging, and Long-Term Care Policy are in an opportune position to shift the culture of their organizations and their sponsored research capacity building efforts. The recommended action steps provide a rich agenda for consideration, and lay the groundwork for transformative sustainable change in scientific workforce diversity development across the federal research agency landscape.

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■ Related RRTC Publications

The following other resources published by RRTC investigators may be of interest to readers of this Policy Research Brief.

Title: Immigration Trends' Impacts on State Vocational Rehabilitation Agency Minority Application Rates: A National Time Series Forecast Model Demonstration Study

Abstract: The purpose of this policy research brief was to demonstrate and assess the efficacy of the Vector Autoregressive [VAR] model's and Multivariable Grey Model's [MGM] ability to accurately predict immigration trends' impact on SVRA new application rates among minorities. The Multivariable Grey Model (MGM) was demonstrated to be superior to the Vector Autoregressive (VAR) model in predictive accuracy. As reflected in this figure the MGM generated three-year forecast projected an upward curve trend trajectory in the percentage of new Black or African American, American Indian or Alaskan Native, Asian, and Latino SVRA applicants for Fiscal Years (FYs) 2015 thru 2017. The model can be considered for use by SVRAs as a promising tool to help them develop new policy initiatives that respond rapidly to the needs of minority group members.

Source: Moore, C. L., Wang, N., Eugene-Cross, K., & Washington, A. L. (2016). Immigration trends' impacts on state vocational rehabilitation agency minority application rates: A national time series forecast model demonstration study. *Langston University Rehabilitation Research and Training Center (RRTC) on Research and Capacity Building for Minority Entities Policy Research Brief*. 1(1), 1-12.

Title: Return-to-Work Outcome Rates of African American Versus White Veterans Served by State Vocational Rehabilitation Agencies: A Randomized Split-Half Cross-Model Validation Research Design

Abstract: The purpose of this study was to identify disparities in successful return-to-work outcome rates based on race, gender, and level of educational attainment at closure among veterans with a signed Individualized Plan for Employment (IPE). A randomized split-half cross-model validation research design was used to develop and test a series of logistic regression models for goodness of fit across two samples (i.e., screening and calibration) of case records (N=11,337) obtained from the national Fiscal Year (FY) 2013 Rehabilitation Services Administration (RSA)-911 database. The final predictive multinomial logistic regression model indicated that (a) the odds of White veterans successfully returning to work were nearly 1½ times the odds of African American veterans returning to work and (b) African American female veterans had the lowest probability for successfully returning to work. Moreover, findings indicated that African American veterans' successful return-to-work rates in 5 of the 10 RSA regions were below the national benchmark. Recommendations for policy development and future research directions are presented.

Source: Moore, C. L., Wang, N., Johnson, J. E., Manyibe, E. O., Washington, A. L., & Muhammad, A. (2015). Return-to work outcomes rates of African American versus White veterans served by state vocational rehabilitation agencies: A randomized split-half cross-model validation research design. *Rehabilitation Counseling Bulletin*, 1-14. doi:10.1177/10034355215579917.

Title: An Emerging Conceptual Framework for Conducting Disability, Health, Independent Living, and Rehabilitation Research Mentorship and Training at Minority Serving Institutions

Abstract: Research mentorship has long been considered a preeminent research capacity building (RCB) approach. However, existing mentorship models designed to improve the research skills (i.e., research methods and grant writing) of faculty scholars at United States minority serving institutions (i.e., historically Black colleges and universities, Hispanic serving institutions, and American Indian tribal colleges and universities) may be insufficient for building such capacities. This paper proposes an emerging conceptual framework for a new Peer-to-Peer Mentor Research Team Model (PPMRTM) designed to enhance the research skills of faculty scholars (herein referred to as fellows) and help to build the needed critical mass of researchers of color in the field of disability, health, independent living, and rehabilitation. A combination of Lippett's planned change theory and critical mass theory provided a useful framework to contextualize and support the design of this model. A set of recommended approaches that can be considered by federal research organizations (i.e., National Institute on Disability, Independent Living, and Rehabilitation Research, and National Institutes of Health), minority serving institutions, and researchers for assessment of the model and advancing the current state of science on minority serving institution RCB are presented.

Source: Manyibe, E. O., Moore, C. L., Aref, F., Washington, A. L., & Hunter, T. (2015). An emerging conceptual framework for conducting disability, health, independent living, and rehabilitation research mentorship and training at minority serving institutions. *Journal of Rehabilitation*, 81(4), 25-37.

Title: Disability, Health, Independent Living, and Rehabilitation Research Leaders from Traditionally Underrepresented Racial and Ethnic Populations: Career Development and Success Factors

Abstract: This article provides a comprehensive overview of select research skill and leadership building opportunities and research infrastructure systems that contribute to research leaders' from traditionally underrepresented racial and ethnic populations and communities (i.e., African Americans, Native Americans, Latinos, and Asians) in the field of disability, health, independent living, and rehabilitation career development and success. After a short presentation of the Social Change Model of Leadership (SCML) and issues relative to the current insufficient supply of such research leaders, the article shifts focus to a detailed synthesis of the available peer review and grey literature and policy on research career development and success factors. Critical contemporary issues affecting these target groups are discussed. Recommendations for advancing the current state-of-the-science for improving the research and leadership skills and career development outcomes for investigators from these populations, especially those with disabilities, are presented.

Source: Moore C. L., Wang N., Davis D., Aref, F., Manyibe E.O., Washington A.L., Johnson J., Cross K. E., Muhammad, A., & Quinn, J. (2015). Disability, health, independent living, and rehabilitation research leaders from traditionally underrepresented racial and ethnic populations: Career development and success factors, *Journal of Rehabilitation*, 81(1), 19-33.

Title: Minority Entity Disability, Health, Independent Living, and Rehabilitation Productivity Facilitators: A Review and Synthesis of the Literature and Policy

Abstract: The United States (U.S.) federal research agency (i.e., National Institute on Disability and Rehabilitation Research [NIDRR], National Institutes of Health [NIH]) sponsored research capacity building (RCB) efforts in the field of disability, health and rehabilitation have historically focused on individual research skill building activities (e.g., postdoctoral fellowships, advanced research methods and statistics courses, grant-writing workshops) as a main intervention to facilitate increased research productivity among investigators. However, investigators' personal intrinsic attributes as well as federal research agency policy and systems context are rarely considered as research productivity facilitators. On trend, minority entity (ME) RCB efforts tend to focus on addressing a single challenge, research skill building, while oftentimes neglecting the importance of intrinsic factors and federal agency policy and systems context. The purpose of this review was to synthesize the available peer review and grey literature, and policy on factors that facilitate investigators' research productivity. Recommendations for advancing the current state-of-the-science on research productivity facilitators are presented.

Source: Moore C. L., Aref F., Manyibe E. O., & Davis, E. (2016). Minority entity disability, health, independent living, and rehabilitation research productivity facilitators: A review and synthesis of the literature and policy. *Rehabilitation Counseling Bulletin*, 1-14. doi: 10.1177/0034355214568527.

Title: New Immigrating Racial and Ethnic Populations and "Trends Impacts" on State Vocational Rehabilitation Agencies

Abstract: Current migration trends and projections indicate that the United States (U.S.) population continues to increase and diversify. Consequently, the numbers of new citizens and legalized permanent residents with disabilities from traditionally underserved racial and ethnic populations are expected to grow at an accelerated rate-roughly 1 million new citizens and legal permanent residents annually. These unceasing migration patterns raise concerns about the capacity of state vocational rehabilitation agencies (SVRAs) across the U.S. to effectively respond to this growing crisis. There exists a serious need to forecast these trends' impacts on SVRA systems capacity to serve persons with disabilities from these new and emerging racial and ethnic populations and communities. The purpose of this review was to synthesize available peer reviewed literature and policy on multicultural migration trends and select SVRA systems forecast implications. A set of recommended approaches are presented that can be used to inform, guide, and forge future research directions.

Source: Cross K. E., Moore C. L., Manyibe E. O., Aref, F., Washington A. L., Umadjela, A., Sanders P. R., Payma H. S., Pandey, J., & Cyprian, D. (2015). New immigrating racial and ethnic populations and" trends impacts" on state vocational rehabilitation agencies, *Journal of Applied Rehabilitation Counseling*, 46(2).

Title: Diffusion of Innovations Theory and Veterans of Color: A framework for Promoting the Adoption of Effective State Vocational Rehabilitation Agencies, American Indian Vocational Rehabilitation Programs, and Veterans Affairs-Vocational

Rehabilitation & Employment Co-Service Practices in Vocational Rehabilitation

Abstract: This article discusses the proposition of the adoption of co-service practices between state vocational rehabilitation agencies (SVRAs), American Indian vocational rehabilitation programs (AIVRPs), and Veterans Affairs-Vocational Rehabilitation and Employment (VA-VR&E) programs as a means to increase employment outcomes for veterans of color (i.e., African Americans, Latinos, Native Americans, and Asians) with disabilities. Collaborative agency practices have been shown to contribute to successful outcomes. However, there is less discussion on how to implement and promote the adoption of co-service practices between SVRA, AIVRP and VA-VR&E agencies. The purpose of this article is to discuss the need for interagency collaborations and Diffusion of Innovations Theory as an approach for promoting the adoption of co-service practices across these agency contexts to increase successful employment services and outcomes for these veterans. A set of recommended approaches that can be considered for advancing the current state-of-the-science on improving SVRAs and VA-VR&E, and AIVRPs and VA-VR&E program co-service strategies for placing these veterans into competitive integrated employment are presented.

Source: Johnson, J. E., Moore, C. L., Wang, N., Sanders, P., & Sassin, J. (2016). Diffusion of innovations theory and veterans of color: A framework for promoting the adoption of effective state vocational rehabilitation agencies, American Indian vocational rehabilitation programs, and veterans affairs-vocational rehabilitation & employment co-service practices in vocational rehabilitation. *Journal of Applied Rehabilitation Counseling*.

Title: A National Benchmark Investigation of Return-to-Work Outcome Rates Between African American, Native American or Alaskan Native, Latino, Asian American or Pacific Islander, and Non-Latino White Veterans Served by State Vocational Rehabilitation Agencies: Application of Bootstrap Data Expansion

Abstract: Research examining the provision of effective state vocational rehabilitation agency (SVRA) sponsored services is pertinent to improving successful return-to-work outcomes among veterans of color (i.e., African Americans, Native Americans or Alaska Natives, Latinos, and Asian Americans or Pacific Islanders versus non-Latino Whites). To date, however, scant attention has been paid to examining such target group's outcome patterns. This study employed a stratified bootstrap data expansion approach to assess the relationship between race/ethnicity, gender, level of educational attainment at closure and return-to-work among veterans with a signed individualized plan for employment (IPE). National fiscal year (FY) 2013 Rehabilitation Services Administration (RSA)-911 case records (N =11,603) were extracted and re-sampled across multiple trials using bootstrap procedures to increase logistic regression model accuracy. The findings indicated that African American and female veterans were statistically significantly less likely to return-to-work compared to non-Latino White and female veterans, respectively. Return-to-work probabilities were 'poorest' for African American veterans followed by Native Americans or Alaska Natives, Asian Americans or Pacific Islanders, Latinos, and then non-Latino Whites. These findings warrant new service (e.g., greater SVRA and U.S. Department of Veterans Affairs' (VA) co-service provision) and policy initiatives.

Source: Moore, C. L., & Wang, N. (2016). A national benchmark investigation of return-to-work outcome rates between African American, Native American or Alaskan Native, Latino, Asian American or Pacific Islander, and Non-Latino White veterans served by state vocational rehabilitation agencies: Application of bootstrap data expansion. *Journal of Vocational Rehabilitation*.

Title: Immigration Trends' Impacts on State Vocational Rehabilitation Agency Minority Application Rates: An Empirical Forecast Model Demonstration Study

Abstract: Incessant migration trends of persons of color to the United States warrant the identification of promising forecast models to help state vocational rehabilitation agencies (SVRAs), policy makers, researchers, and advocates inform strategic plans, policy formulation, and research agenda development. This study demonstrated and assessed the efficacy of two different multivariate empirical forecast models' (i.e., Vector Autoregressive [VAR] model and Multivariable Grey Model [MGM]) ability to accurately predict immigration (Blacks [e.g., Kenya, Nigeria, South Africa, Cameroon], American Indians or Alaskan Natives [e.g., Canada, Mexico], Asians [e.g., China, India, Vietnam, Korea, Japan], Native Hawaiian or other Pacific Islanders [e.g., the Philippines], and Latinos [e.g., Mexico, El Salvador, Guatemala, Cuba, Dominican Republic] trends' impact on new unduplicated application rates among minorities. Nine years of Rehabilitation Services Administration (RSA)-911 case record data (fiscal year [FY] 2006 thru 2014) on SVRA applications and U.S. Census Bureau American Community Survey 1-year estimates (calendar year 2006 thru 2014) on foreign born persons were entered into the VAR model and MGM to test their predictive performance. The MGM was demonstrated to be superior to the VAR model in predictive accuracy. The MGM three-year forecast projected an upward curve trend trajectory in the percentage of new Black or African American, American Indian or Alaskan Natives, Asians, and Latino SVRA applicants for FYs 2015 thru 2017. The MGM can be considered for use by SVRAs as a promising tool to help them respond appropriately to the needs of new immigrants and other minority group members.

Source: Moore, C. L., Wang, N., Cross, K. E., & Washington, A. L. (in press). Immigration trends' impacts on state vocational rehabilitation agency minority application rates: An empirical forecast model demonstration study. *Journal of Vocational Rehabilitation*.

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