

**National Institute on Disability, Independent Living, and
Rehabilitation Research (NIDILRR)**

2017 Report to Congress

Acronyms

ACL	Administration for Community Living
ADA	Americans with Disabilities Act
ADA-PARC	ADA Participatory Action Research Consortium
APR	Annual Performance Reporting
ARRT	Advanced Rehabilitation Research Training Project
BBI	Burton Blatt Institute
BHBIMS	Boston-Harvard Burn Injury Model System
BMS	Burn Injury Model Systems
CARF	Commission on Accreditation of Rehabilitation Facilities International
CL&P	Community Living and Participation
DHCS	California Department of Health Care Services
DPI	Diversity Partners Intervention
DREAM	Disability, Rehabilitation, Engineering Access for Minorities
DRRP	Disability and Rehabilitation Research Project
ED	U.S. Department of Education
FIP	Field-Initiated Project
FY	Fiscal Year
H&F	Health and Function
HHS	U.S. Department of Health and Human Services
ICDR	Interagency Committee on Disability Research
IDEA	the Individuals with Disabilities Education Act
LTSS	Long-Term Services and Supports
MSI	Minority-Serving Institution
MSKTC	Model Systems Knowledge Translation Center
NARIC	National Rehabilitation Information Center
NIDILRR	National Institute on Disability, Independent Living, and Rehabilitation Research
NIDRR	National Institute on Disability and Rehabilitation Research
PPMRTM	Peer-to-Peer Mentor Research Team Model
RERC	Rehabilitation Engineering Research Center
RRTC	Rehabilitation Research and Training Center
SBIR	Small Business Innovation Research
SCI	Spinal Cord Injury
SCIMS	Spinal Cord Injury Model Systems
SEADA	Southeast ADA
SMHC	Serious Mental Health Conditions
TBI	Traumatic Brain Injury
TBIMS	Traumatic Brain Injury Model Systems
TEAMM-RERC	Technologies to Evaluate and Advance Manipulation and Mobility Rehabilitation Engineering Research Center
UTEP	University of Texas - El Paso
VHA	U.S. Department of Veteran Affairs
WIOA	Workforce Innovation and Opportunity Act

Executive Summary

The mission of the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) is to generate new knowledge and to promote its effective use to improve the abilities of individuals with disabilities to perform activities of their choice in the community as well as to expand society's capacity to provide full opportunities and accommodations for individuals with disabilities.

NIDILRR programs address a wide range of disabilities and impairments across all age groups and promote health and function, community living and participation, and employment. To accomplish these goals, NIDILRR invests in research, knowledge translation, and capacity-building activities through its discretionary grant-funding mechanisms.

Funding and Grants Management

The allocation of NIDILRR grant funds for FY 2017 totaled \$98,512,195. In addition, NIDILRR awarded \$6,807,805 in contracts and other support activities in FY 2017. These funds supported 221 grant awards in 2017.

NIDILRR's peer review process for grant competitions is highly rigorous, with 16.2 percent of applicants receiving new grant funding during FY 2017.

Productivity and Accomplishments

NIDILRR funds research toward the development of new knowledge and innovative new technological devices, prototypes, measurement tools, intervention materials, and other informational products to enhance community living, health and function, and employment among people with disabilities. Grantees employ advanced methodologies to conduct research, including randomized controlled trials, longitudinal studies, and qualitative studies. These investments produced peer-reviewed publications, intervention protocols, software, databases, and a wide range of other outputs and outcomes. Selected examples of NIDILRR grantee accomplishments in FY 2017 include:

- Publication of an issue brief, which provides information about the Workforce Innovation and Opportunity Act (WIOA) and its application to youth and young adults with serious mental health conditions.
- Research and development to improve pattern recognition systems for control of myoelectric hand prostheses.
- Development and evaluation of the Diversity Partners Intervention (DPI), a collection of toolkits and resources to augment the knowledge, skills, and behaviors of placement professionals to improve employment outcomes for people with disabilities.

- Production of a Telly award-winning video, *Exercise After Burn Injury*, that features three burn survivors who share their experiences beginning and maintaining an exercise routine after experiencing a burn injury.
- Studies to improve outcomes for persons from traditionally underserved racial and ethnic populations and communities and enhance research capacity and infrastructure at minority-serving institutions (MSIs).

Research Capacity Building

Research capacity-building efforts under the Advanced Rehabilitation Research Training Projects (ARRT), Switzer Fellowship Program, and NIDILRR's Center grant programs develop a diverse cadre of emerging disability and rehabilitation researchers. In addition, NIDILRR directs targeted resources to MSIs, such as Historically Black Colleges and Universities and Tribal Colleges and Universities, to develop and implement programs to build disability and rehabilitation research capacity among minority-serving institutions.

Training and Technical Assistance on the Americans with Disabilities Act (ADA)

NIDILRR sponsors the ADA National Network, which delivers training, technical assistance, and dissemination of materials for stakeholders with rights and responsibilities under the ADA through its network of 10 regional centers. The ADA Participatory Action Research Consortium (ADA-PARC) complements the Network's activities through research on factors influencing the community living of individuals with disabilities at state, regional, and community levels.

Knowledge Translation

NIDILRR is committed to ensuring that the products of its sponsored research and development are used to promote the independent living, health and function, employment, and community living outcomes of individuals with disabilities. Through its Knowledge Translation Centers, NIDILRR ensures that new knowledge and products gained through research and development are effectively communicated to stakeholders and used to improve the lives of individuals with disabilities.

Ongoing NIDILRR Activities

NIDILRR will focus on implementing and integrating the visions of the newly appointed NIDILRR Director and Administration for Community Living (ACL) Administrator. Publication of NIDILRR's FY 2018–2022 Long-Range Plan is imminent. This document defines the organizational and programmatic vision, and it will frame NIDILRR's research agenda for the coming years. The new Administrator has identified five Pillars: Connecting People to Resources, Supporting Families and Caregivers, Strengthening the Networks, Protecting Rights and Preventing Abuse, and Expanding Employment Opportunities. These Pillars encompass both aging and disability,

and NIDILRR will contribute research and subject matter expertise throughout the planning and implementation of the work in each of the Pillar areas.

Strategic partnerships with other agencies in the U.S. Department of Health and Human Services (HHS) and across the federal government have been instrumental in advancing NIDILRR's mission. As such, NIDILRR will continue to enhance its existing partnerships and seek out new collaborative opportunities within HHS and more broadly across the federal disability and rehabilitation research communities.

NIDILRR's Director serves as the Chair of the Interagency Committee on Disability Research (ICDR). Under the ICDR Director's leadership, efforts will focus on building on the ongoing work of the ICDR, contributing to the achievement of goals set forth in the recently drafted government-wide disability and rehabilitation research strategic plan.

National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)

2017 Report to Congress

Introduction

The National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) is committed to improving independent living and community participation among people with disabilities by funding research and development in the areas of community living and participation, health and function, and employment. This *Report to Congress* will describe NIDILRR's actions on this commitment during the 2017 fiscal year (FY). It begins with a summary of the organization's historical foundation, provides a description of its funding process and fiscal allocations, and follows with descriptions of programmatic outcomes impacting the community. This report concludes by describing ongoing initiatives and directions within the organization.

NIDILRR was established by Congress to conduct research that would lead to improved rehabilitation methods resulting in enhanced community living outcomes for individuals with disabilities. First constituted as the National Institute on Handicapped Research by the Rehabilitation, Comprehensive Services, and Developmental Disabilities Amendments of 1978 (P.L. 95–602), amending the Rehabilitation Act of 1973, the organization was originally housed in the Department of Health, Education, and Welfare, and later the U.S. Department of Education (ED). The 1986 amendments to the Rehabilitation Act changed the agency's name to the National Institute on Disability and Rehabilitation Research (NIDRR). On July 22, 2014, the agency was renamed the National Institute on Disability, Independent Living, and Rehabilitation Research and transferred from ED to the Administration for Community Living (ACL) within the U.S. Department of Health and Human Services (HHS). This change occurred with the passage of P.L. 113–128, the Workforce Innovation and Opportunity Act (WIOA). NIDILRR personnel officially became HHS/ACL employees on February 8, 2015.

NIDILRR'S mission is to generate new knowledge and promote its effective use to improve the abilities of individuals with disabilities to perform activities of their choice in the community as well as to expand society's capacity to provide full opportunities and accommodations for individuals with disabilities. To accomplish this mission, NIDILRR:

- Supports research, development, training, technical assistance, and related activities to build new knowledge.
- Promotes the transfer, use, and adoption of technology for individuals with disabilities to improve health and function, employment, and independent community living and participation outcomes.

- Provides for research training to increase the number of qualified researchers, including researchers with disabilities and from minority backgrounds.
- Fosters widespread dissemination and use of scientific and technological information to advance policy, practice, and services that improve outcomes for people with disabilities.

NIDILRR programs address community living and participation, health and function, and employment outcomes of people with disabilities. NIDILRR's investments in research, development, knowledge translation, and capacity-building activities are carried out through the following discretionary grant-funding mechanisms:

- **Rehabilitation Research and Training Centers (RRTC)** conduct advanced research and training on a wide variety of health, rehabilitation, employment, and community living topics.
- **Rehabilitation Engineering Research Centers (RERC)** conduct rehabilitation engineering research and development toward technological solutions to rehabilitation problems or environmental barriers.
- **Disability and Rehabilitation Research Projects (DRRP)** conduct research, development, technical assistance, training, and utilization activities on health, rehabilitation, employment, and community living topics.
- **Americans with Disabilities Act (ADA) National Network** projects conduct research and provide information, training, and technical assistance to ADA stakeholders.
- **Small Business Innovation Research (SBIR)** projects support small businesses to explore feasibility and develop or evaluate the commercialization potential of new technology products for people with disabilities.
- **Knowledge Translation** projects promote the use of research-based knowledge in NIDILRR's community of stakeholders.
- **Field-Initiated Projects (FIP)** conduct three-year studies on topics proposed by applicants to address disability and rehabilitation issues in promising and innovative ways.
- **Model Systems** programs in spinal cord injury (SCI), traumatic brain injury (TBI), and burn injury conduct research on rehabilitation and long-term outcomes of individuals with these conditions. Research in these programs includes collaborative, multisite research and collection and analysis of longitudinal data.
- **Advanced Rehabilitation Research Training Projects (ARRT)** support institutions of higher education to provide advanced interdisciplinary research training to postdoctoral fellows.
- **Research Fellowship Programs, or *Mary E. Switzer Fellowships***, are awarded to qualified individuals to conduct one-year independent research projects.
- **Section 21** projects focus on research capacity building for minority-serving institutions, including Historically Black Colleges and Universities and other institutions with

significant racial/ethnic minority student populations. Section 21 of the Rehabilitation Act requires that one percent of NIDILRR appropriations be invested to address traditionally underserved populations.

Grant Mechanisms

Grant Competition and Peer Review Process

NIDILRR sponsors disability and rehabilitation research and development in the outcome domains of community living and participation, health and function, and employment. Funding is provided to the research community through its funding mechanisms, with priorities within these mechanisms determined by the agency. NIDILRR utilizes a rigorous peer review process, as required by federal regulation, and internal and external program evaluation to ensure the quality of its sponsored research and development activities. Subject matter experts with the appropriate credentials and content knowledge evaluate the scientific, technical, and management aspects of proposals submitted in response to NIDILRR funding opportunity announcements. This process generates an average score across reviewers, reducing bias and facilitating the ranking of projects by scientific merit. Only the highest-ranking proposals are recommended for funding by NIDILRR.

NIDILRR incentivizes private sector disability research and development through its participation in the SBIR program. NIDILRR SBIR grantees develop marketable products that promote the community living and participation, health and function, and employment outcomes of individuals with disabilities. Phase I SBIR grants support the initial feasibility testing and prototype development phase. NIDILRR funded 15.2 percent of the SBIR Phase I applications that it received in FY 2017. Phase II projects, which are selected from a pool of successfully funded Phase I grants for further development, were also highly competitive at a funding rate of 28.6 percent.

Grant Competitions

Table 1 describes NIDILRR's FY 2017 grant competitions. The number of eligible applicants, review panels, reviewers, awards made, and percentage of applicants receiving funding are shown. A large percentage of applications receive high peer review scores that indicate strong technical merit and significant need. NIDILRR's limited resources allow only a small percentage of these applicants to receive grants each year.

Table 1. NIDILRR Peer Review Process Overview, FY 2017

Grant Opportunity	# Eligible Applicants	# Panels	# Reviewers	# Awards Made	% of Applicants Receiving Funding
FIP	179	15	75	16	8.9%
FIP Section 21	10	1	5	1	10%
ARRT H&F	7	1	5	2	28.5%
ARRT CL&P	2			1	50%
ARRT Employment	1			0	0%
ARRT Policy	2	1	4	1	50%
SBIR Phase I	66	6	30	10	15.2%
SBIR Phase II	14	2	10	4	28.6%
Switzer Fellowship	42	4	16	6	14.3%
Field-Initiated DRRP in CL&P	19	2	10	1	5.3%
Field-Initiated DRRP in H&F	32	3	14	2	6.3%
TBI Model Systems	24	3	15	16	66.7%
Burn Model Systems	4	1	5	4	100%
ADA National Network Collab	2	1	5	1	50%
SCI Collaborative	5	1	5	1	20%
RERC-STI	7	1	5	1	14.3%
RERC Exercise Access	1	1	5	1	100%
DRRP Transportation	12	1	5	1	8.3%
DRRP KTDORR	2	1	5	1	50%
Total	431	45	219	70	16.2%

Source: U.S. Department of Health and Human Services, Administration for Community Living, National Institute on Disability, Independent Living, and Rehabilitation Research. *2017 Annual Performance Reports*.

Monitoring and Oversight

NIDILRR uses its Annual Performance Reporting (APR) System, formative review mechanisms, and close monitoring of grant activities by NIDILRR staff to provide rigorous oversight of its funded initiatives. NIDILRR's APR is a web-based grants performance system used by grantees to provide data about goals and objectives, staffing, budget, and research and development issues such as sample size and method, progress, outputs, and accomplishments. Data are used to determine whether continuation funding should be provided to a grantee. For a new grantee, the first reporting period begins on the start date of the award and extends until May 31 of the following year. Subsequent reporting periods begin June 1 and end May 31. Grantees submit their progress reports annually on July 1.

Formative evaluations of funded awards are used as supplemental oversight and technical assistance tools for grantees. Such reviews are conducted when NIDILRR program officers believe that a grantee could benefit from targeted technical assistance in addition to that available from the program officer. A panel of subject matter experts is chosen to provide the technical assistance and make recommendations for improvement if needed.

NIDILRR program officers maintain ongoing, routine communication and oversight with grantees to help inform their scientific programs and ensure that they are meeting goals and objectives. The HHS Grants Policy Administration Manual serves as guidance to ensure consistency in the provision of oversight across projects. Risk assessments are conducted to identify poor-performing grantees, with additional oversight and technical support provided as needed. Though rare, findings of ongoing poor performance can lead to a discontinuation of funding to a grantee.

Funding Overview

The allocation of NIDILRR grant funds for FY 2017 for the 11 funding mechanisms discussed in this section is shown in Table 2. For each funding mechanism, the table includes the number of new and continuation awards. NIDILRR's overall grant allocations across all 11 funding mechanisms totaled \$98,512,195 for FY 2017. NIDILRR awarded \$6,807,805 in contracts and other support activities for FY 2017.

Table 2. NIDILRR-Funded Centers and Projects: Funding and Awards, FY 2017

NIDILRR-Funded Centers and Projects		FY 2017		Grant Amount	
Funding Mechanism	Award Type	Number of Awards	Total	In Thousands of Dollars	Total
RRTC	Continuations	22	22	19,245	19,245
	New Awards	0		0	
RERC	Continuations	15	17	13,277	15,127
	New Awards	2		1,850	
DRRP	Continuations	26	31	11,730	14,627
	New Awards	5		2,897	
ADA Network	Continuations	11	12	11,924	12,424
	New Awards	1		500	
SBIR	Continuations	4	18	1,139	3,289
	New Awards	14		2,150	
Knowledge Translation	Continuations	8	9	2,966	3,716
	New Awards	1		750	
FIP	Continuations	31	47	6,183	9,383
	New Awards	16		3,200	
Model Systems					
SCI	Continuations	14	14	6,500	6,500
	New Awards	0		0	
TBI	Continuations	2	18	1,263	8,463
	New Awards	16		7,200	
Burn	Continuations	1	5	350	1,850
	New Awards	4		1,500	
ARRT	Continuations	14	18	2,098	2,698
	New Awards	4		600	
Switzer Fellowships		6	6	440	440
Section 21		4	4	750	750
Total			221		98,512

Source: U.S. Department of Health and Human Services, Administration for Community Living, National Institute on Disability, Independent Living, and Rehabilitation Research. *2017 Annual Performance Reports*.

Exhibits 1 and 2 (see below) illustrate the distribution of funded research and development grant projects in FY 2017 across NIDILRR’s three domains: health and function, community living and participation, and employment. “Cross-cutting” is a composite category used in the Annual Performance Report to describe projects that reflect two or more domains. Forty-nine percent of development projects and about 33 percent of research projects were described as cross-cutting. NIDILRR defines a research project as “an intensive systematic study, based on a clear hypothesis or research question that is directed toward producing new scientific knowledge about the subject or problem being studied.” Development projects are defined as

“the use of knowledge and understanding gained from research to create materials, devices, systems, or methods beneficial to the target population, including design and development of prototypes and processes.”

Exhibit 1. Research Grant Projects by Domain, FY 2017

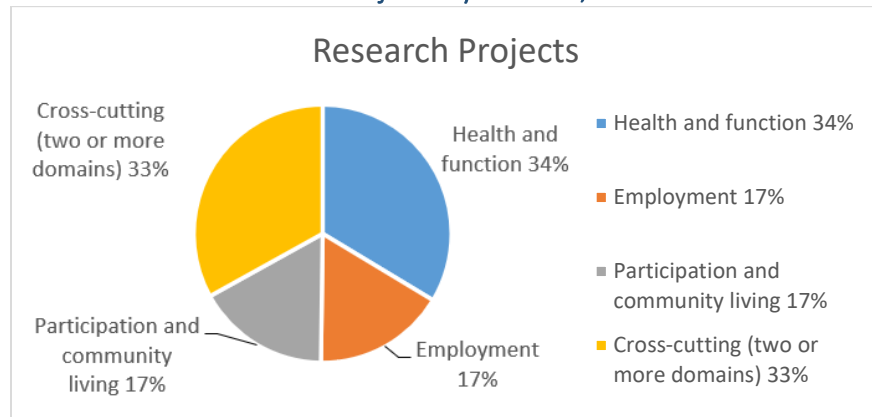
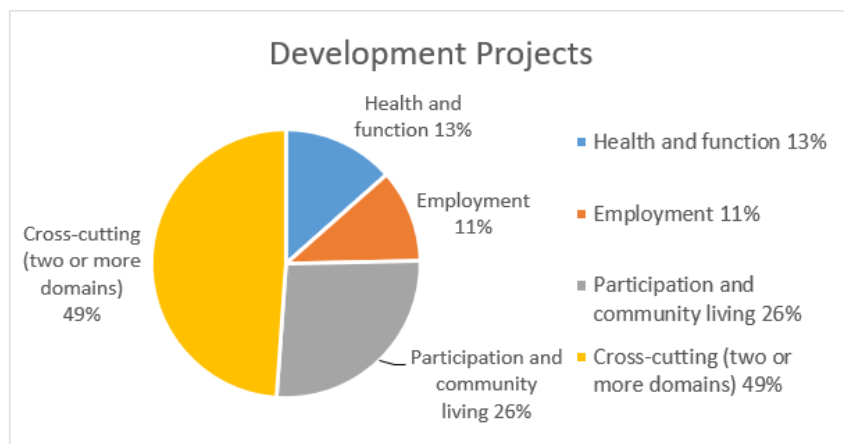


Exhibit 2. Development Grant Projects by Domain, FY 2017



Source: U.S. Department of Health and Human Services, Administration for Community Living, National Institute on Disability, Independent Living, and Rehabilitation Research. *2017 Annual Performance Reports*. “Program Performance Report Table 11.”

Grantee Activities and Progress

NIDILRR collects output data through the APR. Grantees are required to report each output from their funded activities in one of four categories: publications; tools, measures, and intervention protocols; technology products and devices; and informational products. A brief description of each category of output type follows:

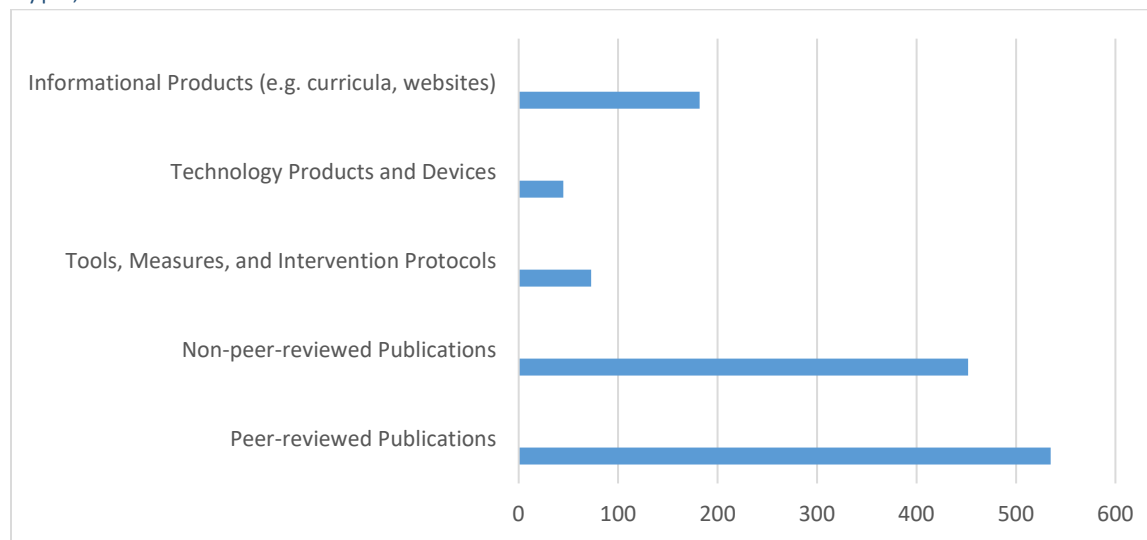
- **Publications** are documents directly funded by a grantee’s current NIDILRR award. Publications include journal articles, periodicals, web journals, proceedings from

meetings and symposia, books or book chapters, monographs, abstracts, technical or research reports, and reviews. Within this output category are peer-reviewed and non-peer-reviewed publications. Peer review is a process to evaluate the accuracy of a manuscript and the validity of the research methodology and procedures described. Manuscripts are typically reviewed by a panel from the same scientific or academic discipline as the authors. This process is conducted prior to publication, and the review panel can recommend revisions to the work or reject its submission for publication. Non-peer-reviewed publications do not receive this level of review and feedback. Documents that are currently in review, accepted for publication, in press, or self-published are not reported in the APR (source: APR-PPR, Tables 18 and 19).

- **Tools, measures, and intervention protocols** include instruments or processes created to acquire quantitative or qualitative information, knowledge, or data on a specific disability or rehabilitation issue as well as research-based protocols for delivering interventions to specific target populations of people with disabilities. Examples include checklists, survey questionnaires or interview schedules, interventions, statistical or methodological techniques, databases, and diagnosis or assessment instruments, including physiologic measures and outcome measures (source: APR-PPR, Table 20).
- **Technology products and devices** are developed, modified, tested, or evaluated by the grantee. This category refers to any technology product or device developed under the award that the grantee disseminated or delivered to external audiences during the current reporting period. These include the development of industry standards/guidelines; software or netware; inventions, patents, licenses, and patent disclosures; working prototypes; product(s) evaluated, or field tested; product(s) transferred to industry for potential commercialization; and product(s) in the marketplace (source: APR-PPR, Table 21).
- **Informational products** refer to items such as training manuals/curricula, fact sheets, newsletters, audiovisual materials, marketing tools, educational aids, websites, presentations, and other forms of disseminated information (source: APR-PPR, Table 22).

Exhibit 3 (see below) compares the number of output products produced by grantees within each category type in FY 2017. Additional detail has been provided for the category of publications, with peer-reviewed and non-peer-reviewed publications being reported separately.

Exhibit 3. Total Outputs Produced by all Grantees across all Program Mechanisms, by Product Type, FY 2017



Source: U.S. Department of Health and Human Services, Administration for Community Living, National Institute on Disability, Independent Living, and Rehabilitation Research. *2017 Annual Performance Reports*. "Program Performance Report Tables 18-22."

Data obtained through the 2017 APR show that NIDILRR supported 221 grantees during FY 2017, totaling \$98,512,195 across all program mechanisms. These projects reflect the breadth of disability and rehabilitation research within the agency's outcome domains of community living and participation, health and function, and employment. The knowledge and products that are generated by NIDILRR-sponsored research and development grants have a wide variety of important impacts in the field. The summaries that follow, organized by funding mechanism, provide examples of the outcomes and impacts that resulted from NIDILRR's investments. Additional information concerning these projects is available through the National Rehabilitation Information Center (NARIC) website (<http://www.naric.com/>).

Rehabilitation Research and Training Centers (RRTCs)

RRTCs conduct coordinated, integrated, and advanced programs of research, training, and information dissemination in topical areas that are specified by NIDILRR. Areas of focus include the improvement of rehabilitation methodology and service delivery systems; the improvement of health and functioning; and the promotion of employment, independent living, family support, and economic and social self-sufficiency for individuals with disabilities. RRTCs provide training, including graduate, pre-service, and in-service training, to build capacity for disability and rehabilitation research. They also serve as centers of national excellence in rehabilitation research. Awards are normally made for a five-year period.

The following are examples of RRTC accomplishments reported to NIDILRR in FY 2017:

Workforce Innovation and Opportunity Act (WIOA) and its Application to Youth and Young Adults with Serious Mental Health Conditions (SMHC) Issue Brief

University of Massachusetts Medical School (Massachusetts): The Learning and Working During the Transition to Adulthood Center (Grant # 90RT5031). The center developed this issue brief, which provides information about WIOA and its application to youth and young adults with SMHC. This brief's purpose is to point out to youth and young adults with SMHC that under WIOA, the workforce system has to be accessible to those with mental health challenges and increase access and opportunities for the employment, education, training, and support services needed to succeed in the workforce. The brief describes: (1) requirements in the law; (2) key areas for youth and young adults to explore; (3) specific issues relevant to youth and young adults with SMHC; and (4) measures of accountability and success. The brief was disseminated to key stakeholders, including advocates, service providers, and individuals with disabilities and/or family members, to increase knowledge about how WIOA can be effectively accessed and used to improve outcomes. The brief was hosted on the grantee's website and sent out via electronic media to a listserv comprising 1,559 members. As of the end of May 2017, the brief had been downloaded 760 times, spanning 114 institutions and 23 countries. Documentation/link:

<http://escholarship.umassmed.edu/cgi/viewcontent.cgi?article=1105&context=pib>

RRTC Generates New Knowledge of the Characteristics and Experiences of Youth who are Deaf-Blind

Mississippi State University (Mississippi): National Research and Training Center on Blindness and Low Vision (NRTC) (Grant # 90RT5040). This report provides an examination of a nationally representative sample of deaf-blind youth during the 2000s (from 2001 to 2009) obtained from the National Longitudinal Transition Study-2. Prior to this report, the literature about transition-age youth with deaf-blindness was extremely limited. The report was generated to fill the gap in this literature. It describes the characteristics, secondary school experiences, academic achievements, postsecondary school attendance, and employment experiences of this population from the perspectives of parents/guardians, youth, and teachers. Documentation/link:

<http://blind.msstate.edu/our-products/youth-with-deaf-blindness>

Research Findings are Used to Improve Health and Long-Term Care Services for Program Beneficiaries in California

University of California, San Francisco (California): RRTC on Community Living Policy (Grant # 90RT5026). Researchers from the [RRTC on Community Living Policy](#) collaborated on an evaluation of Cal MediConnect, which is part of [California's Coordinated Care Initiative](#) and the Centers for Medicare & Medicaid Services' (CMS) Financial Alignment Initiative. The Financial Alignment Initiative is tested under the authority of CMS' Center for Medicare and Medicaid

Innovation (Innovation Center). Cal MediConnect, which operates across seven California counties, is a demonstration that coordinates all medical, behavioral health, and long-term services and supports (LTSS) through a single organized service delivery system for beneficiaries who are dually eligible for Medicare and Medicaid. The RRTC co-authored a number of reports to describe the findings of the evaluation, including a report entitled [Evaluation of Cal MediConnect: Key Findings from a Survey With Beneficiaries](#). One of the findings of the evaluation is that program beneficiaries wanted to keep the health care providers that they had before joining Cal MediConnect and were concerned that they may not be able to. Another key finding in this evaluation is that more than a third of program beneficiaries with functional limitations reported having unmet needs for personal assistance services. As required for all models tested under the authority of the Innovation Center, CMS is conducting a separate independent evaluation of Cal MediConnect, which will include an analysis of the quality of care furnished under the model and the changes in spending by reason of the model, and results from that evaluation are forthcoming.

The findings and recommendations in this RRTC output were a basis for important program adjustments that aim to address beneficiary concerns and improve access to needed LTSS. These included “continuity of care” policies that make it easier for beneficiaries to continue seeing out-of-network specialists and to have longer relationships with their doctors. Program administrators have expanded awareness of these revised continuity of care policies through development of a “[Beneficiary Toolkit](#),” with simple instructions on how to exercise continuity of care options (see page 8). DHCS also designed and implemented a new standardized [Health Risk Assessment](#) with specific questions that prompt referrals for non-medical LTSS. Program administrators also [strengthened their data collection efforts](#) related to LTSS referrals to better track how effectively Cal MediConnect is linking beneficiaries to needed services in the community.

[Rehabilitation Engineering Research Centers \(RERCs\)](#)

The RERC program is designed to improve the effectiveness of services authorized under the Rehabilitation Act by conducting advanced rehabilitation engineering research and developing innovative technologies designed to solve particular rehabilitation problems or remove environmental barriers. RERCs demonstrate and evaluate such technologies, facilitate service delivery systems changes, stimulate the production and distribution of equipment in the private sector, and provide training opportunities to enable individuals, including individuals with disabilities, to become researchers and rehabilitation engineers. Awards are normally made for a five-year period.

Examples of RERC accomplishments reported to NIDILRR in FY 2017 follow:

Enhanced Accessibility for Visitors to the Shedd Aquarium

State University of New York at Buffalo (New York): RERC on Universal Design and the Built Environment (Grant # 90RE5022). Researchers at the RERC formed a partnership with Touch Graphics in which Touch Graphics applied technology developed at the RERC at the [Shedd Aquarium in Chicago](#) Touch Graphics applied and commercialized 3-D Talking Tactile Maps that vocalize building information and directions when touched; these Talking Tactile Maps help visitors understand and navigate Shedd’s many levels and exhibit spaces. By placing the map on a floor stand, users in wheelchairs can easily pull up on three sides to access it. The map’s horizontal orientation reduces cognitive load for blind users, who may find it difficult to interpret vertical, wall-mounted maps. The Talking Tactile Maps show the locations of every exhibit that includes tactile materials, such as a talking seahorse and talking penguin model, various skeletons and fossils, and a stingray touch tank. Additionally, Touch Graphics applied RERC’s technology to select exhibits, transforming them into interactive “touchable models” that provide users both audio and tactile feedback. With the application of these innovative technologies, the aquarium is ensuring its cultural and scientific resources are welcoming and accessible to everyone, including visitors with disabilities. Documentation/link: <http://touchgraphics.com/portfolio/shedd-aquarium-talking-tactile-maps/>

Improved Pattern Recognition Systems for Control of Myoelectric Partial Hand Prostheses Technologies to Evaluate and Advance Manipulation and Mobility Rehabilitation Engineering Research Center (TEAMM-RERC) (Grant # H133E130020). Previous pattern recognition control systems for partial hand devices rely on intrinsic muscles, which may be missing or damaged, or on extrinsic muscles, which compromise wrist movement and reduce overall function. The system created by NIDILRR’s TEAMM-RERC allows users to freely move their wrist while controlling the device using either intrinsic, extrinsic, or a combination of both types of muscles to control the prosthesis. The control system was developed and tested in several individuals with intact hands and in individuals with partial hand amputations. The product is an enhancement of a foundational NIDRR-funded project (H133G100107), which developed an embedded pattern recognition controller. Publication/citation: Adewuyi, A. A., Hargrove, L. J., & Kuiken, T. A. (2017). Resolving the effect of wrist position on myoelectric pattern recognition control. *Journal of Neuroengineering and Rehabilitation*, 14, 1–11. Documentation/link: <https://jneuroengrehab.biomedcentral.com/articles/10.1186/s12984-017-0246-x>

Disability and Rehabilitation Research Projects (DRRPs)

The DRRP funding program supports projects that carry out one or more of the following activities: research, development, training, dissemination, utilization, and technical assistance. The purpose of the DRRP program is to plan and conduct research, training, and related activities to develop methods, procedures, and rehabilitation technology that maximize the full inclusion and integration of individuals with disabilities into society, employment, and independent living and to promote economic and social self-sufficiency and improve the effectiveness of services authorized under the Rehabilitation Act.

NIDILRR funds several types of DRRPs, including: (1) Knowledge Translation projects; (2) Model Systems in traumatic brain injury (TBIMS) and burn injury (BMS); a separate statutory authority created the Model System Program in Spinal Cord Injury (SCIMS); (3) ADA National Network projects; (4) Section 21 Program; and (5) individual research projects. The SCIMS is typically not included with the other Model Systems as a DRRP because of its unique statutory authority but is included in this section of the report for conciseness and efficiency in reporting. The first four types of DRRPs are managed as separate programs and, therefore, only individual research DRRPs are described here under the general DRRP heading. DRRPs differ from RRTCs and RERCs in that they generally do not provide training and technical assistance. Awards range from three to five years.

Examples of DRRP accomplishments reported to NIDILRR in FY 2017 follow:

Resources Describing Changes in Laws to Protect the Rights of Parents with Disabilities

Brandeis University (Massachusetts). Parents Empowering Parents: National Research Center for Parents with Disabilities and their Families (Grant # 90DPGE0001). The center has created two resources that provide an overview of recent changes in state laws that protect the rights of parents with disabilities. These resources include a summary of state legislation and a table of legislation by state. The table provides a link to the legislation, status of the legislation, and disability types covered by legislation. The summary describes key trends in legislation regarding parents with disabilities. The information conveyed in the table and summary provide parents, advocates, policymakers, and researchers a greater understanding of the current state of legislation and recent successes. These materials have been shared extensively via social media, with documentation showing that more than 2,000 individuals receive current legislation information through Twitter and more than 670 receive it through the center's Facebook page. Documentation/link: <http://heller.brandeis.edu/parents-with-disabilities/professionals/legal/current-legislation.html>

The Diversity Partners Intervention: Adding Value to Talent Acquisition Providers and the Business Community

Cornell University (New York) (Grant # 90DP0065). This project developed and evaluated the Diversity Partners Intervention (DPI), a collection of toolkits and resources to augment the knowledge, skills, and behaviors of general placement professionals and disability placement professionals for the purpose of improving employment outcomes for people with disabilities. The DPI prepares organizations to develop practices and policies that support meaningful relationships with employers and aids in the development and testing of intervention tools designed to provide ongoing support to placement professionals in their daily practice. Placement professionals improve their knowledge of best practice around all aspects of employing people with disabilities, strengthening their ability to engage employers around hiring and retaining employees with disabilities and helping employers to build disability-

inclusive organizational cultures and practices that support their ongoing recruitment, hiring, retention, and career advancement of people with disabilities. Communications received by the grantee from officials from the Texas Workforce System describe interest in integrating the DPI into the practices of the newly merged Texas Workforce System and Department of Assistive and Rehabilitative Services. To enhance practice adoption, the project has also created systems and tools to support national dissemination and broad adoption of these tools in provider organizations within the context of their work and their local communities. Documentation/link: <http://www.buildingdiversitypartners.org/>

Knowledge Translation

Knowledge translation, when applied to disability and rehabilitation research, is a process of ensuring that new knowledge and products gained through the course of research and development can ultimately be used to improve the lives of individuals with disabilities and further their participation in society. Knowledge translation is built upon and sustained by ongoing interactions, partnerships, and collaborations among various stakeholders in the production and use of such knowledge and products, including individuals with disabilities, researchers, practitioners, policymakers, and others. NIDILRR has invested in knowledge translation by directly funding research and development projects in its Knowledge Translation portfolio and by integrating underlying knowledge translation principles into the content of all priorities.

Examples of Knowledge Translation accomplishments during FY 2017 include:

Materials Produced by the Model Systems Knowledge Translation Center (MSKTC) Used by the Commission on Accreditation of Rehabilitation Facilities (CARF) International to Train Health Care Providers

American Institutes for Research: The MSKTC (Grant #90DP0012). The MSKTC, which is operated by the American Institutes for Research, is a knowledge translation project funded, in part, to produce materials that are based on the best available research findings for people with disabilities and other key stakeholders. In collaboration with the SCIMS, TBIMS, and BMS centers, the MSKTC produced research-based consumer factsheets, educational videos, narrated slides, and other informational materials in various topics that are directly relevant to the lives of people with these traumatic injuries. These resources are presented in language that all users can read and understand. As an evidence of their high quality, the MSKTC resources were adopted and used by a wide variety of organizations for their staff and patient education activities. For example, CARF International, a nonprofit organization focused on advancing the quality of services through accreditation of health and human service providers, used the MSKTC factsheets in their training of health care providers as well as distributing them to individuals and organizations around the world.

American Institutes for Research: The Model Systems Knowledge Translation Center (MSKTC) Collaborates with Boston-Harvard Burn Injury Model Systems Producing Award-Winning Video American Institutes for Research: The MSKTC (Grant #90DP0012). The MSKTC, in collaboration with the Boston-Harvard Burn Injury Model System (BHBIMS), produced a video (*Exercise After Burn Injury*) that won a bronze Telly Award. The video highlights the benefits of exercise after experiencing a burn injury. The 18-minute video features three burn survivors who share their experiences beginning and maintaining an exercise routine after burn injury. The video also includes health care professionals at the BHBIMS center who explain the importance of exercising after experiencing a burn injury. In addition, survivors and health care professionals featured in the video offer strategies to encourage exercise after one experiences a burn injury. The Telly Awards were founded in 1978 to honor film and video productions, groundbreaking web commercials, videos and films, and outstanding local, regional, and cable TV commercials and programs. *Exercise After Burn Injury* is the third video produced by the MSKTC to be recognized with a Telly Award. The video *Relationships After Traumatic Brain Injury* received a Telly Award in 2013, and *Employment After Burn Injury* received a Telly Award in 2014. A link to the video series follows: <http://www.msktc.org/burn/Hot-Topics/Exercise/Exercise-After-Burn-Injury>

Knowledge Dissemination

The National Rehabilitation Information Center (NARIC) is an information resource center funded by NIDILRR to disseminate information about disability, independent living, and rehabilitation research to the public. NARIC serves as the public library of NIDILRR by collecting, cataloging, and disseminating the articles, reports, curricula, guides, and other publications and products of the research projects funded by NIDILRR. It provides information on current and completed NIDILRR projects.

The following is an accomplishment of NARIC during FY 2017:

NARIC Produces New Publication for Laypersons Titled *Research in Focus*, a Weekly Digest

During FY 2017, NARIC produced a new publication, *Research in Focus*, a weekly digest of new research from the NIDILRR community. The purpose of this new weekly digest is to make available in lay language information obtained from new research studies published in peer-reviewed articles. It is aimed to increase the availability and usability of research information for lay audiences by ensuring that they have access to new research information in a timely fashion and in ways that they can understand and use. NARIC services are available through their website, social media, and other outreach avenues. During this reporting period, NARIC received over 176,000 visitors on its website, had over 10,000 social media followers, and connected with users via presentations and exhibits at various conferences—with more than 25,000 attendees combined. A link to the resource follows: <http://www.naric.com/?q=en/rif>

Model Systems

NIDILRR's Model Systems programs in SCIMS, TBIMS, and BMS provide coordinated systems of rehabilitation care and conduct research on rehabilitation and long-term outcomes. These centers serve as platforms for collaborative, multisite research, including research on interventions using randomized controlled trials. Founded in 1973, the National SCI Database has collected injury follow-up data through a total of 29 funded centers. Fourteen funded centers, plus an additional five unfunded centers, actively collected SCI follow-up data in 2017. Their actions have contributed to the collection of SCI data from 46,599 individuals as of the end of May 2017. TBIMS and BMS centers have 16,261 and 6,057 persons, respectively, enrolled in their national databases. Nineteen centers contributed data to the TBIMS National Database in 2017. The BMS collected data from four centers in FY 2017. Studies using these databases have provided researchers opportunities to explore the social and environmental factors influencing the community living and participation of individuals affected by these injuries, best clinical practices for screening and treatment, physiological aspects of the conditions, and long-term outcomes. The SCIMS has its own statutory authority but is included in this section of the report for conciseness and efficiency in reporting.

The following are examples of Model Systems accomplishments reported to NIDILRR in FY 2017:

Return to Work After Burn Injury Website to Facilitate Return to Work for Burn-Insured Workers

University of Washington: Burn Injury Model System (BMS) Center (Grant # 90DP0029). This BMS center has a recent history of research focused on identifying barriers to returning to work. To advance their long-term efforts of facilitating return to work, grantees at the University of Washington have used internet technology to establish a web-based dissemination effort to provide education regarding challenges and processes encountered following a significant burn injury. The target audience for this collaborative dissemination project includes burn survivors, families, employers, medical professionals, case managers, third-party payers, workers' compensation, and vocational rehabilitation agencies. This informational site will benefit patients from rural catchment areas including Native American communities. Because this center's largest non-English-speaking patient cohort is Hispanic, the website will offer all web-based consumer information in both English and Spanish.

Documentation/link:

<http://burnrehab.washington.edu/work>; <http://www.msktc.org/burn/hot-topics/employment>

Trajectory of Headache over Five Years after Traumatic Brain Injury (TBI)

University of Washington (Washington): TBI Model System Center (Grant # 90DP0031). Headache is a substantial problem after TBI, with a large portion of individuals reporting frequent headaches with significant long-term impact. Research was conducted to: (1)

determine whether patterns or trajectories of headache occur over five years following moderate to severe TBI; (2) identify demographic and injury characteristics that may be related to these trajectories; and (3) examine the relationship to employment and satisfaction with life at five years post injury. Four trajectories were found for pain: chronic, improving, worsening, and minimal. Three trajectories were found for headache impact: chronic, worsening, and minimal. Being female, injured by violence, being unemployed prior to injury, and history of headache were related to both chronic pain and impact trajectories. Chronic pain trajectory was associated with lower satisfaction with life; chronic impact was associated with unemployment. Planned next steps focus on analysis of interventions/outcomes to ascertain which treatments are most effective for which trajectories. Publication/citation: Stacey, A., Lucas, S., Dikmen, S., Temkin, N., Bell, K. R., Brown, A., Brunner, R., Diaz-Arrastia, R., Watanabe, T. K., Weintraub, A., & Hoffman, J. M. (2017). Natural history of headache five years after traumatic brain injury. *Journal of Neurotrauma*, 34, 1–7.

ADA National Network

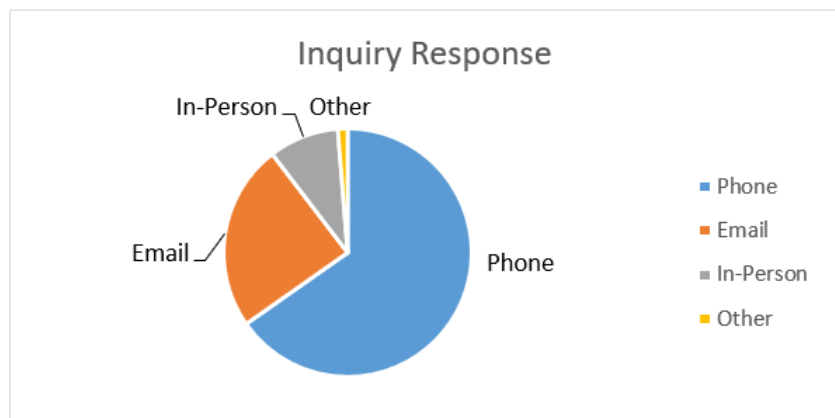
The ADA National Network consists of 10 regional centers that provide information, training, and technical assistance to individuals, businesses, and agencies with rights and responsibilities under the ADA. The network also includes research and knowledge translation components, which are carried out by two network grantees, the ADA National Network Collaborative Research Project and the ADA National Network Knowledge Translation Center, respectively.

Research funded under the first grantee is known as the ADA Participatory Action Research Consortium (ADA-PARC). ADA-PARC activities focus upon: (1) looking at participation disparities experienced by individuals with disabilities post ADA and Olmstead; (2) identifying and examining key environmental factors contributing to these disparities; (3) benchmarking participation disparities and highlighting promising practices at state and city levels; and (4) planning strategies for dissemination and utilization of findings to be used by ADA Centers and others in community capacity-building and systems change initiatives.

Knowledge Translation efforts in the ADA National Network are led by the ADA Knowledge Translation Center. The center has three primary goals: (1) increase efficiency and impact by serving as a central resource to support the development, coordination, and deployment of ADA information, training, technical assistance, and capacity-building activities across the ADA National Network; (2) increase awareness and use of ADA research findings to inform practice; and (3) improve understanding of stakeholders' need for and receipt of ADA services.

ADA National Network grantees are highly responsive to the community, providing advice, information, technical assistance, and training through multiple modalities. In FY 2017, the centers received 66,999 inquiries from the public. Exhibit 4 (see below) presents the modalities used to provide technical assistance in response to these questions.

Exhibit 4. Inquiry Response



The 10 ADA National Network Centers delivered 100 training activities/projects during the 2017 APR reporting year. Audiences included service providers, individuals with disabilities and their families, business groups, state and local government agencies, architects and design professionals, and other professional groups.

In addition to training and technical assistance, the ADA National Network and its regional centers produce numerous products to aid in disseminating information to the public, employers, and individuals with disabilities about their rights and responsibilities. Table 3 shows the types and number of times a product was disseminated.

Table 3. Product Dissemination

Type	Number Disseminated
Journal Articles	170
Project Publications	20,5426
Video and Audio Tapes	1,207
CDs and DVDs	636
Books or Book Chapters	4,833
Bulletins, Newsletters, or Factsheets	44,1688
Research Reports and Conference Proceedings	53

The following are examples of ADA National Network accomplishments reported to NIDILRR for FY 2017:

ADA and Self-Advocacy for Youth: Train-The-Trainer Curriculum Developed

Southeast ADA (SEADA) Center (Georgia) (Grant: 90DP0090). The ADA and Self-Advocacy for Youth: Train-the-Trainer Curriculum has been developed in collaboration with the Georgia Vocational Rehabilitation Agency as part of its Career Pathways to Work: Explore, Engage, and

Employ program designed to connect youth with disabilities to jobs. The Burton Blatt Institute (BBI) at Syracuse University was subcontracted to develop the curriculum. BBI leveraged funds and staff of the SEADA Center to ensure that the curriculum could be fully developed with accurate ADA information. The curriculum has eight modules that can be presented in stand-alone sessions and adapted to the student's skill set. The training addresses youth self-advocacy, which is part of the pre-employment transition services of WIOA. The eight modules include: (1) Module 1, *Pathways to Careers: An Americans with Disabilities Act (ADA) Roadmap*; (2) Module 2, *Disclosure Decisions and Talking About My Disability*; (3) Module 3, *The ADA in the Workplace*; (4) Module 4, *The ADA in Higher Education*; (5) Module 5, *Advocating for My Rights Under the ADA*; (6) Module 6, *Skills for Successful Employment*; (7) Module 7, *The ADA and Reasonable Accommodations on the Job*; and (8) Module 8, *The ADA in the Community*. Each module contains PowerPoint slides with presentation content and talking notes; a training facilitator guide with talking points and speaker notes; videos and other multimedia content (when appropriate); interactive exercises such as roleplaying, quizzes, and art activities; and relevant resources such as documents, organizations, and websites. The ADA and Self-Advocacy Curriculum is currently being tested for validity at the Atlanta Area School for the Deaf (Clarkston, GA), Decatur County Schools (Bainbridge, GA), Georgia Academy for the Blind (Macon, GA), Hall County Schools (Gainesville, GA), and Troup County Schools (LaGrange, GA). Publication/citation: Whaley, B. A., Cummins, R., Williamson, P., Killeen, M., Adya, M., & Morris, M. W. (2016). *Pathways to careers: An Americans with Disabilities Act (ADA) roadmap*.

Factsheet Developed: Making Web-Based Job Application Forms Accessible to All Users

Northwest ADA Center (Washington) (Grant: 90DP0095). The Northwest ADA Center developed a factsheet titled *Making Web-Based Job Application Forms Accessible to All Users*. Online applications have become the main platform for employment for both employers and jobseekers but are often not easily accessible to individuals with disabilities. This factsheet is designed to assist employers in making online job applications more user-friendly to persons with disabilities. To facilitate ease-of-use for individuals with disabilities and remove barriers previously faced in connecting applicants with disabilities with jobs, the factsheet aims to assist employers in understanding the importance of addressing accessibility and improving their online applications. The following topics are included on the factsheet: "Why Address Accessibility?"; "How Do you Know that your Online Recruitment Process is Accessible to All Qualified Applicants or Users?"; "Key Accessibility Best Practices for Design"; and "Key Considerations for Accessible Web Form Application Process." It also includes links to tools that enable employers to test and evaluate both their website and their job application forms for accessibility and usability. The information is made possible through consultation and collaboration with the University of Washington Center for Technology and Disability Studies as well as experts with in-depth knowledge of working with blind and low-vision clients, screen-reader users, and information technology specialists from blind organizations.

Documentation/link: <http://nwadacenter.org/factsheet/making-web-based-job-application-forms-accessible-all-users>

Section 21

NIDILRR's capacity-building research agenda includes developing the talent of future leaders in rehabilitation research and development. Statutory requirements within Section 21 of the Rehabilitation Act requires that, at a minimum, one percent of its annual appropriations be used to address traditionally underserved populations such as those from minority backgrounds. NIDILRR supports research capacity building for minority entities such as Historically Black Colleges and Universities and institutions serving primarily Hispanic, Asian, and American Indian students. Program activities include assisting minority entities with networking that supports enhanced research capacity at minority-serving institutions (MSIs).

The following highlights some of the accomplishments of the Section 21 program during FY 2017:

HBCU Publishes Journal Report on the Diagnosis, Treatment, Management, and Prevention of Sports-Related Concussion, Enhancing Research Capacity

Grantee: University of Texas - El Paso (UTEP) (Texas) (Grant #90AR5016). This ARRT grant was awarded to UTEP to support advanced disability research training at MSIs. This research highlights the work of a recent fellow of this program. Grantee researchers and a fellow associated with the ARRT at UTEP published a scientific journal article that is contributing to the diagnosis, treatment, management, and prevention of sports-related concussion. The study involved the participation of 60 student athletes at UTEP, and research assistance was provided from both undergraduate and graduate students in the speech-language pathology program. Investigators examined the nature of recovery of auditory comprehension behavior following a concussion over time. Researchers suggest the assessment of auditory comprehension behavior should play a more prominent role in the development of return-to-classroom and return-to-play decision-making. The report is an example of disability research training at a Historically Black College/University. Publication/citation: Salvatore, A. P., Cannito, J., Brassil, H., Bene, E. R., & Taylor, B. S. (2017). Auditory comprehension in college students with and without sports concussion: Computerized-Revised Token Test Subtest VIII. *Concussion*, 2(1), 1. Retrieved from <https://www.futuremedicine.com/doi/full/10.2217/cnc-2016-0024>

HBCU Conducts Research toward Developing the Research Capacity of Researchers at Minority-Serving Institutions

Langston University (Oklahoma): RRTC on Research and Capacity Building for Minority Entities (Grant # 90RT5024/H133B130023). The research group at Langston University is conducting research to improve outcomes for persons from traditionally underserved racial and ethnic populations and communities and enhance research capacity and infrastructure at MSIs. As part of their research activities, Langston is investigating innovative research mentorship approaches that build the research skills of investigators from MSIs and contribute to a more

diversified cadre of disability and rehabilitation researchers. Langston RRTC researchers evaluated the Peer-to-Peer Mentor Research Team Model (PPMRTM). The model represents a new approach that implements mentoring across groups (i.e., between fellow research team cohorts and mentor panels) and within fellow research teams. Study findings indicate mentor and fellow satisfaction with the mentorship relationship, the program design, and processes. As a core goal of the program, fellows submitted research proposals for the first time in their career to NIDILRR's MSI FIP competition. Fellows also reported improved confidence in conducting research. The overall study findings were published as a policy research brief and suggest the PPMRTM represents a promising conceptual framework for improving the research skills and self-efficacy levels of MSI-based investigators. Publication/citation: Moore, C., L., Manyibe, E. O., Aref, F., & Washington, A. L. (2017). A Historically Black College/University based evaluation of a disability and health peer-to-peer mentor research team model: Case study approach. *Policy Research Brief, 2*(1). Retrieved from <http://www.langston.edu/sites/default/files/basic-content-files/Research%20Brief%20Vol%202%20Issue1-3-23-17.pdf>

Researchers at Hispanic-Serving University Examine the Impact of Exercise on the Cardiovascular Health of Individuals with Spinal Cord Injury (SCI)

California State University, Los Angeles (California): The Disability, Rehabilitation, Engineering Access for Minorities (DREAM) project (Grant # 90IFST0001). California State University, Los Angeles, is credited as a "Hispanic-serving community." Researchers on the DREAM project have included undergraduate and graduate students as well as fellows in its SCI study. The researchers received funding to study the impact of increased physical fitness on improving health and lowering the rates of both chronic disease and metabolic syndrome for individuals with SCI. Specifically, the grantee is studying whether repeated, prolonged exposure to exercise leads to long-term improvement in cardiovascular health. In addition, researchers are determining whether a personal digital feedback system is effective in helping individuals with SCI achieve exercise goals. Documentation/link:

<http://www.calstatela.edu/univ/ppa/publicat/cal-state-la-receives-federal-grant-improve-fitness-wheelchair-users>

Small Business Innovation Research (SBIR)

The intent of NIDILRR's SBIR program is to help support the development of new ideas and products that are useful to persons with disabilities by inviting the participation of small business firms with strong research capabilities in science, engineering, or educational technology. Small businesses must meet eligibility criteria to participate: the company must be American-owned and independently operated, it must be for-profit, employ no more than 500 employees, and the principal researcher must be employed by the business. During Phase I, NIDILRR-funded firms conduct feasibility studies to evaluate the scientific and technical merit of

an idea. During Phase II, NIDILRR-funded firms expand on the results of Phase I to pursue further development and commercialization.

The following are examples of a SBIR accomplishments reported to NIDILRR during FY 2017:

Universally Accessible Technology Developed that Enables Listening to Digital Content in Audiovisual Form

Charmtech Labs, LLC (Grant #90BI0005 & #90BI0004). Charmtech Labs, LLC, developed the Capti Narrator, a universally accessible technology that helps people listen to digital print content in an audiovisual form. The content can be imported to a Capti Playlist in a variety of formats and from multiple sources, such as the web, OneDrive, and Dropbox, and can be narrated by high-quality synthetic voices speaking in different languages and accents. Capti Narrator can be used as an application in most web browsers and installed on personal computers or as an app on mobile devices. It has been downloaded hundreds of thousands of times. Capti Narrator was developed as assistive technology for people with vision impairments and proved to be useful for people with illiteracy as well as disabilities such as dyslexia. The technology is being adopted by public schools and universities, and this collaboration has helped to further develop additional functionalities needed in educational settings. The Capti Narrator received a Federal Communications Commission Chairman's Award for Advancing Accessibility. Its Principal Investigator, Dr. Yevgen Borodin, was recognized as a MIT Technology Review Innovator under 35 for his work on Capti Narrator and other accessibility research. Capti Narrator can be accessed via <http://www.captivoice.com/>.

Development of a Wearable Robot for Motor Rehabilitation in Acute Stroke

Rehabtek, LLC (Illinois) (Grant # 90BISB0001). The grantee is developing a wearable rehabilitation technology to help patients recover from stroke and regain mobility. During this project period, the grantee improved the mechanical structure of the ankle system and included an ergonomic design of replaceable foot restraint with an individual shoe attachment. The grantee also designed a compact circuit unit with function modules, the central control unit, motor control unit, wireless access module, a power management unit, and EMG module. They also included a new emergency switch designed for in-bed application and a 3-D printing solution to expedite their mechanical prototype design and testing. Through the development process, the grantee is building capacity related to medical design standards and procedures necessary to prepare medical device certification for the market.

Field-Initiated Projects (FIPs)

FIPs are investigator-initiated research projects drawn from a pool of applicants proposing a wide variety of target populations and a wide variety of research and development aims. These projects generate new knowledge through research or development on a smaller scale relative to DRRPs and center grants. All FIP grantees must carry out research or development projects

to improve outcomes of people with disabilities in the health and function, employment, or community living and participation domains. Typical FIP awards are three years in duration.

The following are examples of FIP accomplishments reported to NIDILRR in FY 2017:

Researchers Publish Report on Computer-Based Treatments for Aphasia: Advancing Clinical Practice and Research

Center for Aphasia Research and Treatment at the Rehabilitation Institute of Chicago (Illinois) (Grant # 90IF0034).

As part of a three-year grant titled *Improving Electronic Written Communication in Persons with Aphasia: A Trial*, investigators have been researching a variety of treatments targeting various language modalities and measuring different outcomes of computer interventions for aphasia, a language disorder that impacts communication. Key findings include: (1) the tendency for computer-based treatments to focus on impairment, with fewer targeting the activity and outcomes; (2) the many methodological weaknesses in the current literature, including small numbers of subjects and lack of assessor blinding; (3) computer-based treatment offers an array of benefits to people with aphasia; (4) computer treatments are advancing the field of aphasiology by offering high-intensity treatment, tracking patient performance, permitting treatment of high fidelity across participants, and providing a platform to study treatment variables of interest; and (5) in clinical practice, the clinician plays an important role in critically evaluating computerized treatments, identifying the active ingredients of the intervention, and ensuring that tasks are appropriate for their clients with aphasia. Principal investigators have published a journal report highlighting some of the methodological weaknesses of studies of computer-based treatments for aphasia cited in the literature, setting the stage for their comparison and evaluation of “T-WRITE” to “ORLA+WTG.” The report addresses efficacy of computer-based treatment, samples of computer-based treatments, benefits to people with aphasia, advances to the field, current limitations, and clinical considerations. This report is significant as it serves as a review of computer-based treatments for aphasia and demonstrates the need for treatments such as “ORLA+Writing.” Publication/citation: Lee, J. B., & Cherney, L. R. (2016). Computer-based treatments for aphasia: Advancing clinical practice and research. *Perspectives of the ASHA Special Interest Groups*, 1, 5–17. Retrieved from

<http://perspectives.pubs.asha.org/article.aspx?articleid=2512131>

Development of a Passive Ankle with Energy Return that Matches that of a Natural Ankle

Marquette University (Wisconsin) (Grant # 90IF0040). Researchers developed an ankle prosthesis designed to convert energy stored in leg deflection into energy used to propel the walker forward and tested it in three prototypes. The investigator developed and is now patenting a third intervention prototype that does not need sensors or actuators to achieve the active behavior associated with normal walking. It was designed to realize active behavior in the ankle using only passive components. This design allows deflection along the leg (and energy storage) to occur at heel strike (as the foot hits the ground). Energy is stored in a spring

and then later released after the ankle has achieved maximum dorsiflexion for well-timed push-off. The amount of energy provided during push-off is related to the speed of the walker. This relationship between walking speed and energy generated at the ankle has recently been documented in the analysis of normal healthy walkers. A series of progressively higher-performing prosthesis prototypes was then developed and is culminating in a patent showing promise for future commercialization. These should allow below-knee amputees to walk with near normal gait using a relatively low-cost ankle prosthesis. This third prototype was developed during a no-cost extension of the grant. Documentation/link:

http://search.naric.com/research/redesign_record.cfm?search=1&type=all&criteria=90IF0040%20&phrase=no&rec=3236

Advanced Rehabilitation Research Training Projects (ARRTs)

ARRTs seek to increase capacity for high-quality rehabilitation research by supporting grants to institutions to provide advanced research training and experience to individuals with doctorates or similar advanced degrees who have clinical or other relevant experience. Grants are made to institutions to recruit qualified persons, including individuals with disabilities, and prepare them to conduct independent research related to disability and rehabilitation, with particular attention to research areas that support the implementation and objectives of the Rehabilitation Act and improve the effectiveness of services authorized under the Act. Training projects must operate in interdisciplinary environments and provide training in rigorous scientific methods.

There were 73 fellows enrolled in the ARRT program in FY 2017. Fellows contribute to and lead multidisciplinary research projects with mentors and peers and are encouraged to publish their research. In FY 2017, fellows were the lead author on 50 publications and contributed to others. The program supports a diverse cadre of young research professionals. An estimated 47 percent of fellows in the ARRT funding program identify themselves as Latino, African American, American Indian, Asian, or Native Hawaiian. One of the 73 fellows reported having a disability.

The following are examples of ARRT accomplishments reported to NIDILRR in FY 2017:

Well-Being of Veterans with Disabilities during Transition from Military to Civilian Life Guide University of Florida (Florida) (Grant # 90AR5017). An exhaustive search of the literature on well-being of veterans with disabilities during the reintegration period was conducted with the help of research librarians from the U.S. Department of Veteran Affairs (VHA) and the University of Florida. This project is a partnership with VHA to train postdoctoral fellows in conducting high-quality, multidisciplinary disability policy research in the area of community living and participation for veterans with disabilities with the goal of improving the lives of veterans with disabilities. The findings of this literature search were disseminated to VHA's Office of Policy and Planning and to international allies of the United States with the purpose of

describing what well-being means to veterans with disabilities during the reintegration period. Topics discussed were: What is measured? How is it measured? What interventions are currently being used to help improve well-being of veterans with disabilities? The research was also presented to VHA researchers for feedback prior to presentation. Publication/citation: Henry, M. (2016). *Well-being of veterans with disabilities during transition from military to civilian life*. Washington, DC: Research Policy Directorate. VA Central Office.

Testing the Feasibility of a Parent Advocacy Training Curriculum

University of Illinois-Chicago (Illinois) (Grant # 90AR5007). Parents of children with disabilities are expected to be equal partners in the special education process in accordance with the Individuals with Disabilities Education Act (IDEA). However, many parents struggle to advocate for their children with disabilities. The training curriculum, developed by researchers at the University of Illinois-Chicago, was designed to help families advocate for better services for their school-age children with disabilities. Researchers compared attendance, attrition, and participant satisfaction before and after the intervention to examine changes in family empowerment, special education knowledge, and family-school partnerships. The curriculum was evaluated for feasibility by an ARRT fellow in this program. Publication/citation: Burke, M. M., Mello, M., & Goldman. (2016). Examining the feasibility of a special education advocacy training. *Journal of Developmental and Physical Disabilities, 28*, 539–556.

Research Fellowship Program (Mary E. Switzer Fellowship Program)

The Mary E. Switzer Fellowship Program seeks to increase capacity in rehabilitation research by giving qualified individual researchers, including individuals with disabilities, the opportunity to develop new ideas and further their research expertise. Awards go directly to individuals, not their institutions, allowing fellows to pursue independent research and training activities. Distinguished fellows are seasoned in their careers, must hold a doctorate or comparable academic status, and have had seven or more years of experience relevant to rehabilitation research. Merit Fellowships are given to persons with rehabilitation research experience who do not meet the qualifications for Distinguished Fellowships, usually because they are in earlier stages of their careers. Fellows work for one year on an independent research project of their design. Individuals with disabilities are encouraged to apply for each of these fellowships.

Six Switzer Fellowships were awarded in FY 2017, with a total of 14 fellows submitting annual or final performance reports in 2017. Table 4 displays the current Switzer Fellows.

Table 4. Current Switzer Fellows and Project Titles

Name	Project Title
Peter Meulenbroek	Workplace Communication Training Program for Persons with Traumatic Brain Injury

Wing Kai Wong	Improving Patient Outcomes through Engagement in Inpatient Spinal Cord Injury Rehabilitation: Perspectives of Patients, Clinicians, Administrators, and Policymakers
Milapjit Sandhu	Timing and Dosage of Intermittent Hypoxia Therapy for Persons with Spinal Cord Injury
Vanessa Klodnick	Creating a Multidimensional Model of Engagement for Young Adults with Psychiatric Disabilities in Adult System Team-Based Community Outreach and Support Services
Ekaterina Dobryakova	Motivational Influences on Cognitive Fatigue in Individuals with Traumatic Brain Injury
Carmen Capo-Lugo	Promoting Community-Based Physical Activity Early Post-Stroke: An Adaptation of the 14-Weeks to a Healthier You Program
Silvana L Costa	Processing Speed Deficits in Multiple Sclerosis: Exploring the Complex Sensorial Cognitive Motor Interaction
Kelli Gary	A Cultural Family Intervention after Brain Injury (CFIaBI) for African Americans
Erica Weber	Self-Generation of Prospective Memory in TBI
Marcus Poppen	Pre-Employment Transition Services (PETS) for Young Adults with Disabilities
Linda Long-Bellil	Barriers and Unmet Needs for Reproductive Health Care Experienced by Women with Early Onset Mobility Impairments
Hongwu Wang	Development of a Pneumatic Power Assist Wheelchair (PneuPAW)
Laysha Ostrow	Workers with Psychiatric Disabilities and Self-Employment Through Microenterprise
Vicki Gray	A Comparison of Reactive and Voluntary Lateral Step Training to Improve Balance and Reduce Falls in Person Post-Stroke

Ongoing NIDILRR Activities

The accomplishments presented are a small sample of the achievements realized as a result of the research and development sponsored by NIDILRR and their broad impact on individuals with disabilities, the families and care communities who support them, and society writ large. Moving forward, NIDILRR will continue its work to identify and address the day-to-day needs of individuals with sensory, mental, physical, and developmental/intellectual disabilities and align its goals and initiatives to those needs.

NIDILRR will also focus on implementing and integrating the visions of the appointed NIDILRR Director and the ACL Administrator. NIDILRR’s FY 2018–2022 Long-Range Plan publication is imminent, and it defines the organizational and programmatic framework and research agenda for the coming years. The ACL Administrator has identified five Pillars: Connecting People to Resources, Supporting Families and Caregivers, Strengthening the Networks, Protecting Rights and Preventing Abuse, and Expanding Employment Opportunities. These Pillars serve as focal points of priority for ACL and encompass both aging and disability. They are also

complementary to the themes defined in the NIDILRR Long-Range Plan. NIDILRR will contribute research and subject matter expertise throughout the planning and implementation of the work across all of the Pillars.

Strategic partnerships with other agencies in HHS and across the federal government have been instrumental in advancing NIDILRR's mission. As such, NIDILRR will build on its historical collaborations to identify best practices, conduct co-sponsored research, and address shared goals. NIDILRR's Director will continue to serve as the Chair of the Interagency Committee on Disability Research (ICDR), a federal partnership charged to promote a cohesive, strategic federal program of disability, rehabilitation, and independent living research; broker partnerships; and facilitate coordination and collaboration among federal departments and agencies conducting such research. NIDILRR also intends to continue to lead and contribute to the advancement of the goals and objectives set forth in the recently drafted government-wide disability and rehabilitation research strategic plan.