



# **NIDILRR Survey Support for Evaluation Activities: Year 1 Report**

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## TABLE OF CONTENTS

<b>Executive Summary</b> .....	<b>iii</b>
<b>Introduction</b> .....	<b>1</b>
<b>Methods</b> .....	<b>3</b>
Data Sources .....	3
Study Participants .....	3
Data Collection Procedures.....	3
Data Analysis.....	5
<b>Findings</b> .....	<b>6</b>
Disability and Business Technical Assistance Centers.....	6
Findings from the PI Survey.....	6
Findings from User Interviews.....	9
Knowledge Translation Program.....	11
Findings from the PI Survey.....	11
Findings from User Interviews.....	15
Analysis of Grantee Publications.....	16
Small Business Innovation Research Program .....	17
Findings from the PI Survey.....	17
Products Mentioned by SBIR Grantees .....	22
Findings from User Interviews.....	25
NIDILRR Application Process.....	26
Summary of Scoring Data .....	26
Summary of Qualitative Comments .....	29
Recommendations for Improving the Application Process.....	33
Study Limitations .....	33
<b>Summary and Conclusions</b> .....	<b>34</b>
Disability and Business Technical Assistance Centers.....	34
Knowledge Translation Program.....	34
Small Business Innovation Research Program .....	35
Application Process.....	35
<b>Appendix A: Study Protocols</b> .....	<b>36</b>
Survey of Principal Investigators on Americans with Disabilities Act Grants .....	36
Survey of Principal Investigators on Knowledge Translation Grants.....	38
Survey of Principal Investigators on Small Business Innovation Research Grants .....	42
Survey of Applicants.....	45
Customer Interview Questions .....	46
<b>Appendix B: Interviewee Information</b> .....	<b>47</b>
<b>Appendix C: Implications for Furture Evaluation</b> .....	<b>48</b>

## FIGURES

FIGURE 1: A SCREEN FROM THE SBIR SURVEY.....	4
FIGURE 2: FINDINGS FROM PI DBTAC SURVEY ON ADVANCEMENTS DUE TO DBTAC FUNDING (N=10) .....	7
FIGURE 3: FINDINGS FROM THE PI DBTAC SURVEY ON BENEFIT AREAS (N=10) .....	7
FIGURE 4: ACTIVITIES SINCE THE END OF GRANT REPORTED BY KT PIS (N=6).....	12
FIGURE 5: OUTCOMES OF NIDILRR FUNDING REPORTED BY KT PIS (N=6).....	14
FIGURE 6: COLLABORATIONS RESULTING FROM NIDILRR FUNDING REPORTED BY KT PIS (N=6).....	15
FIGURE 7: BIBLIOMETRIC ANALYSIS OF PUBLICATIONS LINKED TO KT CENTERS FOR 2005-2011.....	17
FIGURE 8: PERCENT OF SBIR I/II GRANTEES RECEIVING ADDITIONAL DEVELOPMENT (N=26) COMPARED TO OTHER FEDERAL SBIR PROGRAMS.....	18
FIGURE 9: LIKELIHOOD OF UNDERTAKING THE PROJECT WITHOUT SBIR FUNDING REPORTED BY NIDILRR SBIR I/II PIS (N=26) COMPARED TO OTHER FEDERAL SBIR PROGRAMS .....	19
FIGURE 10: COMMERCIALIZATION OUTCOME OF SBIR II FUNDING REPORTED BY NIDILRR PIS (N=10) COMPARED TO OTHER FEDERAL SBIR PROGRAMS .....	19
FIGURE 11: CHALLENGES EXPERIENCED BY GRANTEES REPORTED IN THE SBIR PI SURVEY (N=24).....	21
FIGURE 12: EXAMPLES OF ABLELINK PRODUCTS.....	22
FIGURE 13: TOUCH GRAPHICS PRODUCT .....	23
FIGURE 14: PAGEFLIP PRODUCTS .....	23
FIGURE 15: KOESTER PERFORMANCE RESEARCH PRODUCTS .....	24
FIGURE 16: CHARMTECH PRODUCT .....	24
FIGURE 17: COGNITOPAIA PRODUCT .....	25
FIGURE 18: MEAN SATISFACTION SCORES WITH GRANT APPLICATION PROCESS, FUNDING LEVEL, AND FUNDING DURATION REPORTED IN THE APPLICANT SURVEY (N=153).....	27
FIGURE 19: APPLICANT SATISFACTION SCORES BY PROGRAM (N=153).....	28
FIGURE 20: GRANTEE PI SURVEY COMMENTS ABOUT APPLICATION PROCESS (N=210) .....	30

## TABLES

TABLE 1: LAWS AND POLICIES REVISED OR CREATED AS A RESULT OF DBTAC FUNDING MENTIONED BY SURVEY RESPONDENTS (N=10) .....	8
TABLE 2: RESPONSE RATES FOR SBIR SURVEY FOR GRANTEES BETWEEN 2007 AND 2014 (N=58) .....	17
TABLE 3: FOLLOW-UP FUNDING SOURCES FOR NIDILRR SBIR GRANTEES (N=26).....	18
TABLE 4: FINDINGS FROM SBIR SURVEY RE: MOST IMPORTANT COMMERCIALIZATION OUTCOMES REPORTED BY SBIR I/II PIS (N=26).....	20
TABLE 5: NUMBER AND PERCENT OF NIDILRR APPLICANTS DISSATISFIED OR SOMEWHAT DISSATISFIED GRANT APPLICATION PROCESS, FUNDING LEVEL, AND FUNDING DURATION (N=153).....	27

## Executive Summary

The National Institute for Disability, Independent living, and Rehabilitation Research (NIDILRR) supports a diverse portfolio of research, development, technical assistance, and training programs to improve the lives of people with disabilities. To assess the effectiveness of its grant-making processes and to document program outcomes, NIDILRR initiated a 5-year evaluation study in the spring of 2015. The first evaluation year included (1) a review of three programs—the Disability and Business Technical Assistance Centers, Knowledge Translation centers, and Small Business Innovation Research program—and (2) an assessment of applicant satisfaction with recent funding competitions.

The focus of the programmatic reviews was on the benefits of funding to individuals with disabilities. Because of the gap between the activities funded under the grants and the emergence of benefits resulting from these activities, only long-running projects (funded for 10 years or more) and completed projects were included in the study. Several data collection strategies were used to obtain outcome data. First, we conducted on-line surveys of Principal Investigators (PIs) for the three programs to document the funding status of the projects, use of resources of products generated with NIDILRR funding, and improvements in the lives of people with disabilities that could be attributed at least in part to these grants. Because these data were self-reported and may be positively biased, we also asked PIs to recommend a few individuals who could speak to us about the benefits of funding. Nearly 50 contacts were provided across the three programs and approximately half agreed to an interview.

All surveyed PIs indicated that their grants led to improvements in the lives of people with disabilities and to better understanding by society of their needs and challenges. Many examples of direct and indirect benefits were provided by PIs, including new laws and policies related to disability access, training of architecture students in accessibility design, assistive technologies, and others. We also found that commercialization outcomes at NIDILRR were similar or better than at other agencies with SBIR programs and that the papers citing KT grants were published in higher impact journals than average in the rehabilitation field.

We obtained many direct testimonials of benefits from the users of NIDILRR-sponsored products and services. DBTACs, in particular, were highly praised by representatives of state and local governments, non-profit organizations, and businesses that serve people with disabilities. Several of the users self-identified as having a disability. The findings indicate that NIDILRR funding is benefiting its ultimate customers—individuals with disabilities.

In addition to the programmatic reviews, we examined participant satisfaction with recent grant competitions in an on-line survey. Approximately 150 applicants in 2015 participated in the study. Content of funding announcements, assistance from NIDILRR, and time for submission emerged as relative strengths. In contrast, the applicants were less satisfied with the quality and usefulness of reviewer feedback and with the length of time from proposal submission to award notification. Based on the survey findings, we identify several changes to the application procedures which might enhance participant satisfaction.

## Introduction

The mission of the National Institute for Disability, Independent living, and Rehabilitation Research (NIDILRR) is to “generate new knowledge and promote its effective use to improve the abilities of people with disabilities to perform activities of their choice in the community, and also to expand society’s capacity to provide full opportunities and accommodations for its citizens with disabilities.”<sup>1</sup>

To fulfill this mission, NIDILRR funds a portfolio of research, development, technical assistance, and training programs, which include Rehabilitation Research and Training Centers (RRTC), Rehabilitation Engineering Research Centers (RERC), NIDILRR Scholars Program, Disability and Rehabilitation Research Projects (DRRT), Knowledge Translation (KT), Field Initiated Projects (FIP), Advanced Rehabilitation Research Training Projects (ARRT), Mary E. Switzer Fellowships (Switzer), Small Business Innovation Research (SBIR), and Model Systems of Care (MS). In addition, NIDILRR administers 10 regional Disability and Business Technical Assistance Centers (DBTAC).

In 2009 NIDILRR commissioned the National Academies of Sciences to conduct an evaluation of its funding programs and grant-related process. One of the recommendations made by the Academies to NIDILRR was to establish a longer-term, systematic evaluation program. NIDILRR responded to this suggestion by contracting with Abt Associates to develop a 5-year evaluation plan and a toolkit to implement this plan. The planning phase of the project has been successfully completed in 2014 and in February 2015 we began the evaluation of the NIDILRR program portfolio.

NIDILRR already collects extensive outcome data on the funded projects while they are active. Consequently, the evaluation is focused on longer-term outcomes of NIDILRR programs as well as on the effectiveness and efficiency of grant-making process. Specifically, the objective of the evaluation is to address the following questions:

- What are the longer-term benefits of NIDRR funding for individuals with disabilities and their caregivers, the research community, federal partners, and other stakeholders?
- How can NIDILRR administer its programs most efficiently?

Each year, the evaluation will focus on a portion of the NIDILRR program portfolio and on an assessment of some aspect of the grant-making process, such as strategic planning, internal management, or peer review. In year 1 of the 5-year evaluation we examined three programs: the Disability and Business Technical Assistance Centers, Knowledge Translation, and Small Business Innovation Research. In addition, we evaluated participant satisfaction with the entire application process and with the funding level and duration.

Our findings were based on several data collection activities. First, we conducted an on-line survey of all Principal Investigators (PIs) funded by three programs being reviewed—to determine whether they had been able to continue the work funded under the grant and to document the benefits of the grants. Second, we interviewed the users of NIDILRR funding, other than the grantees—to validate and supplement the information on the benefits provided by PIs. Third, we conducted bibliometric analysis

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<sup>1</sup> <http://www.acl.gov/Programs/NIDILRR/About/About.aspx#mission>

of publications citing KT grants—to characterize PI productivity and influence. Fourth, we performed web searches for the companies cited by SBIR grantees—to collect additional information on commercialization. Finally, we surveyed all recent NIDILRR applicants—to determine the strengths and weaknesses of the application process.

Our methodology, findings, and conclusions are presented in the rest of this report. The report also includes data collection instruments (Appendix A), the list of users interviewed (Appendix B), and lessons learned related to the evaluation design (Appendix C).

## Methods

Our procedures for data collection and analysis are described below. For additional details on the evaluation design, please refer to the *Evaluation Plan and Toolkit for the National Institute on Disability and Rehabilitation Research: Final Report* submitted by Abt Associates Inc. to NIDILRR on January 29, 2015.

### Data Sources

**Grant data.** Grant data were obtained from the National Rehabilitation Information Center (NARIC) and included: PI name, institution, and contact information; program name; and funding year. For the SBIR program, several grants had to be excluded because the same individual was a PI on multiple grants and we assumed that they will not be willing to complete more than one survey. In cases when choices had to be made, SBIR Phase II was selected over Phase I and older grants over newer ones. NIDILRR staff provided us with the names and contact information for all individuals who submitted an application in 2015.

**Publications.** Web of Science and PubMed databases were queried using NIDILRR grant numbers to obtain publication and citation information. SCI Journal Rank Indicator was used as a measure of journal impact.

**Surveys.** The surveys were a combination of multiple-choice and open-ended questions. In PI surveys, we explored funding status of the projects, their longer-term outcomes, and challenges experienced by PIs. In ADA and KT surveys we asked respondents to provide us with the names and contact information for individuals who could speak to us about the benefits of NIDILRR funding. In the SBIR survey, we asked respondents to refer these individuals to us, because OMB reviewers were concerned about providing contact information for someone without his/her knowledge. In the applicant survey, we examined satisfaction with various aspects of the process and willingness to apply to NIDILRR in the future. We closely collaborated with NIDILRR program managers in developing all instruments. The surveys were pilot tested by Abt researchers to ensure the clarity of the questions and the logic of flow.

**Interviews.** User interviews included questions about how NIDILRR funding had helped them, their organizations, and/or individuals with disabilities.

### Study Participants

The study included PIs on the DBTAC grants funded in 2001-2011 (N=10), KT grants funded in 2005-2011 (N=7), and SBIR I and II grants funded in 2007-2014 (N=58). DBTAC grants are still active; SBIR and KT grants have been completed.

PI surveys yielded contact information for 49 users (15 for KT, 2 for SBIR, and 32 for DBTAC), all of whom were contacted for an interview.

### Data Collection Procedures

All data collection protocols and procedures were approved by OMB and by Abt IRB.

**Surveys.** Because some NIDILRR grantees apply to multiple programs, respondents were asked to consider only the specific grant presented to them when answering the questions. For purposes of verification, respondents were also asked to confirm that they were the PI on the listed grant and those who said that they were not exited the survey. The applicant survey was conducted in two stages. In the first stage we surveyed half of the applicants before they had been notified on the status of their submission and in the second stage the other half after they had been notified. This approach was used out of concern that respondent satisfaction with the application process might be colored by the competition outcome. The applicants were randomly assigned to each group, and minor adjustments were made to ensure consistent programmatic distribution.

The surveys were programmed in *FluidSurveys* software and tested by several Abt staff. Any errors and glitches identified were corrected. A survey screenshot is shown in Figure 1.

**Figure 1: A Screen from the SBIR Survey**

28%

Which of the following products resulted from your NIDILRR SBIR Phase II funding? Select all that apply. Click button if "yes"

No product(s) resulted from NIDILRR funding	<input type="checkbox"/>
Industry standard/guideline	<input type="checkbox"/>
Software/netware	<input checked="" type="checkbox"/>
Hardware	<input type="checkbox"/>
Assistive technology	<input checked="" type="checkbox"/>
Durable medical equipment	<input type="checkbox"/>
Research tool	<input type="checkbox"/>
Educational material	<input type="checkbox"/>

An initial invitation explaining the survey goals and containing a link to the website was sent to all subjects using the emails on file at NIDILRR. Web searches were made in an attempt to find alternative addresses for the emails that could not be delivered. A specially created email ([NIDRR\\_Evaluation@abtassoc.com](mailto:NIDRR_Evaluation@abtassoc.com)) was provided to the survey subjects who wished to contact us, and



the account was monitored daily. We received several communications<sup>2</sup> about the survey, but no problems were reported. The surveys took about 10 minutes to complete.

Four to five reminders were necessary to increase response rate. The surveys were closed when it became apparent that additional reminders would produce zero or very few responses. Data collection dates were as follows:

- KT PIs: August 3 – September 18, 2015
- SBIR PIs: August 3 – September 17, 2015
- DBTAC PIs: August 3 – September 10, 2015
- Applicant Phase I: September 9 – September 30, 2015
- Applicant Phase II: October 7 – November 2, 2015

**Interviews.** We emailed all individuals who were suggested by PIs or who contacted us directly and interviewed everyone who responded to our request. All interviews were conducted by telephone and took approximately 15 minutes.

## Data Analysis

Survey data were cleaned, coded, and prepared for analysis. Descriptive statistics were used for numerical data. Published outcome data for SBIR programs across the federal government were used for comparison. Statistical tests (t-test and  $\chi^2$ ) were performed to examine the differences between groups. Qualitative survey and interview data were coded and analyzed using *NVivo 10.0*.

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<sup>2</sup> One PI said that it has been too long since the project was active; a few applicants asked whether the survey meant that they will/will not receive the grant; and a few respondents referred us to someone else.

## Findings

Findings for the evaluation Year 1 for the DBTAC, KT, and SBIR programs and the application process are presented in this chapter. It is important to note that the evaluation was not designed to be comparative across programs, because of the differences in goals, duration, size, and funding amounts. Consequently, all findings are presented by program, beginning with an overview of the PI survey findings, followed by results of the user interviews. For the SBIR program, we supplement these data with information on several products in the marketplace obtained from web searches. For the KT program, we include bibliometric analysis. We conclude the chapter with the findings from the applicant survey.

### Disability and Business Technical Assistance Centers

DBTACs provide information, training, and technical assistance to state and local governments and to private businesses to facilitate compliance with the Americans with Disabilities Act (ADA). All 10 regional DBTACs managed by NIDILRR were included in the study, and all responded to the survey (100% response rate).

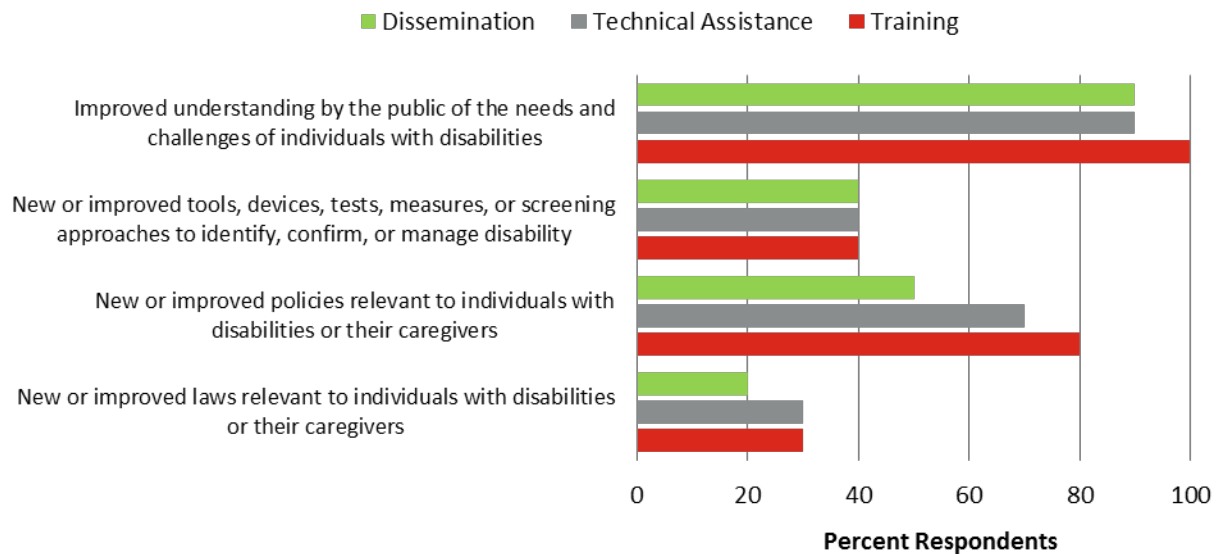
#### Findings from the PI Survey

When asked whether they were able to obtain additional funding to support their activities, half of DBTACs responded in the affirmative (data not shown). The funders included City of Houston, National Disability Institute, Rehabilitation Services Administration, ADA25 Chicago, US Access Board, and JFK Center for Performing Arts. These grants supported training and technical assistance services to respond to hurricanes, training mid-level managers, improving partnerships between employers and placement providers, and increasing knowledge of ADA at non-profit and arts/culture organizations. In most cases, respondents were not PIs on these grants, however (data not shown).

Survey participants were offered a choice of four types of advancements and asked to indicate whether any of these had occurred as a result of dissemination, technical assistance or training activities provided by DBTAC. Figure 2 shows that improved understanding by the public of the needs/challenges experienced by people with disabilities was the most frequent outcome, chosen by almost all PIs. This was followed by new/improved policies, reported by 50–80% depending on the type of activity, and by tools/devices/approaches to identify/confirm a disability, reported by 40%. Creation of new laws appeared to be the least common outcome, reported by 20–30% DBTACs. As can be seen from Figure 3, the benefits for individuals with disabilities were reported in all areas, but were especially common in communication and community/social/civic life.

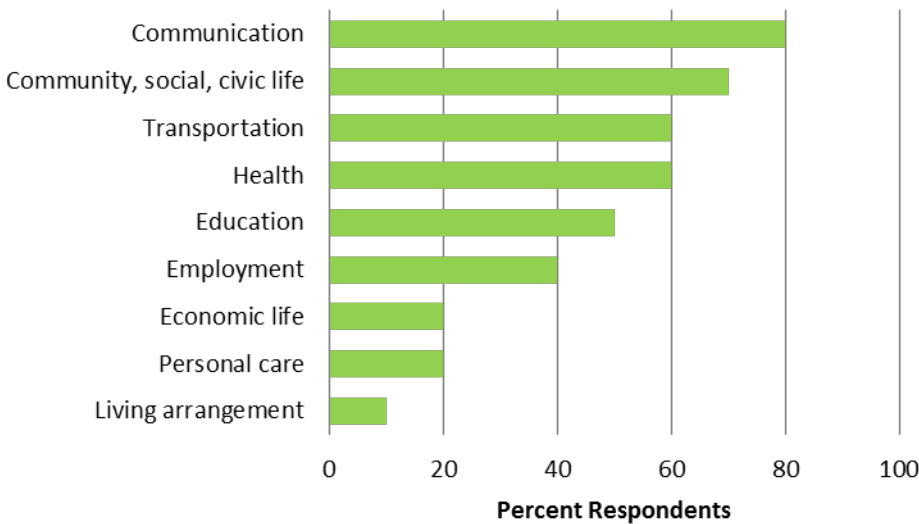
**Figure 2: Findings from PI DBTAC Survey on Advancements due to DBTAC Funding (N=10)**

*Have any of the following advancements occurred, at least in part, as a result of NIDILRR funding? If yes, please indicate which grant activity (training, TA, and/or dissemination) brought about this change. Select all that apply.*



**Figure 3: Findings from the PI DBTAC Survey on Benefit Areas (N=10)**

*In which of the following areas have the advancements occurred? Select all that apply.*



DBTAC PIs offered many examples to illustrate the value of the centers to people with disabilities. Table 1 lists laws and policies that were revised or created as a result of DBTAC activities. Other contributions included accessibility audit checklist for correction and detention facilities, community engagement initiative to improve access to healthcare services in rural areas, capacity building to enable people with disabilities to better advocate for what they need, training of architects and employers, and improved emergency preparedness. DBTAC PIs indicated that the work of DBTACs resulted in greater access to the

community, both physically and in terms of communication; full participation in civic responsibilities; enjoyment of entertainment and food; and neutral and safe access to information.

**Table 1: Laws and Policies Revised or Created as a Result of DBTAC Funding Mentioned by Survey Respondents (N=10)**

Law or Policy	Goal
Rehabilitation Act Section 503	Modification of state policy to support employment services
California Civil Codes	Implementation of ordinance to create on-street parking options
Arizona State Revised Statues	Modification of law that governs placing placards
Service Animal Policies	Employer policies on reasonable accommodation and access to technology in Sonoma and Yolo Counties

*Each item was mentioned by one respondent*

PIs reported several challenges in running DBTACs. One of these, mentioned by 3 of 10 respondents, was being able to reach a large geographic area under their jurisdiction and become known as a resource. In addition, DBTACs find it difficult to determine how the resources that they provide are used and to measure their impact:

*The greatest challenge to accomplishing the goals we established for the ADA Center has actually been around getting people to report on and quantify the impact that our work, specifically, has had on the changes that they make in policy, practice and behavior.*

Finally, three PIs experienced challenges in finding and recruiting qualified staff.

At the conclusion of the survey, we encouraged PIs to share with us any other comments about the importance of DBTACs. Two points were made. The first was that the Americans with Disabilities Act was enacted 25 years ago and yet the need remains for continued outreach, training, and technical assistance to individuals, businesses, and organizations about their roles and responsibilities in complying with this complex law. This is how one PI characterized the utility of his DBTAC:

*The design community relies on us for accurate information affecting the built environment, the government policy makers at the local, state, and national level require our assistance in creating inclusive programming, the business community demands our services for a myriad of issues from facility access to communication access to all the ramifications of employment.*

The second point was that DBTAC’s regional infrastructure enabled each Center to tailor their services:

*Because the ADA Centers are regionally based, we are able to develop partnerships with key stakeholders across our region to actually focus on the issues that are important to them. For example, right now in the Virgin Islands they are really struggling to ensure that transportation is accessible to everyone. We were able to put together fact sheets and training that focused on transportation, to equip the trainer network to provide training locally and offer the support of our affiliate to both parties to ensure that someone was there who understood the culture and climate*

*who could provide practical information. In NY and NJ, which is the hub for so many large businesses, we are able to tailor solutions and interventions that will meet their needs.*

## **Findings from the DBTAC User Interviews**

In response to our request, DBTAC PIs provided us with the names and contact information for 32 individuals who could speak with us about the benefits of DBTAC activities. Of these, 19 agreed to be interviewed.<sup>3</sup>

In terms of their professional roles, interviewees fell into three groups. One group was employed at the organizations exclusively serving the needs of people with disabilities, such as Bay Area Center for Independent Living or Office of Vocational Rehabilitation. The second group was independent consultants serving businesses or people with disabilities (architectural consultant and accommodation consultant). The third group included employees at non-dedicated organizations, but who were responsible for issues related to special accommodation (Regions Bank and Kennedy Center for Performing Arts). Finally, one respondent was an architecture professor, who teaches special accommodation design. Several individuals interviewed self-identified as having disabilities. Complete list of respondents and their roles can be found in Appendix B.

In the interviews, we asked in what way DBTACs had helped the subjects, their organizations, and/or individuals with disabilities. While each interviewee discussed specific assistance they had received, several themes emerged.

### **Information**

Almost all respondents use DBTACs as a source of information to help interpret the provisions and interpretation of the Americans with Disabilities Act, which was described as wide-ranging, complicated, and ambiguous in certain areas. DBTACs were viewed as a reliable and unbiased resource, which was necessary even for someone with many years of experience in the disability field. Information sought from DBTACs was related to employment, technologies, and accessibility/accommodation requirements.

When asked about alternative sources, all respondents said that DBTACs were the best, and perhaps the only place to obtain information. We were told that while the Department of Justice should, in theory, provide similar information and guidance, their opinions could be biased, answers inconsistent, and materials difficult to obtain. In contrast, interviewees praised the knowledge and experience of DBTAC staff, as well as their helpfulness and responsiveness. For example, staff would research the question for which they did not have an immediate answer and get back to the requester with information within a day. Respondents had also referred their colleagues to DBTACs, who had similarly positive experience. Interviewees offered several examples of the questions they posed to the Centers, which included responsibilities of libraries to provide headsets, requirements for routes and automatic doors, and medical documentation for service animals.

In addition, some respondents have encouraged people with disabilities/their families to contact DBTACs. In one case, a man with cognitive disabilities had been refused an oral exam to enter the Coast

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<sup>3</sup> Of these, 4 bounced back.

Guard. At the urging of our respondent (a disability advocate), the family contacted DBTAC, which advised them about their rights, and a reasonable accommodation was made by the Coast Guard for their son, who was able to join. This experience was described by the family as “life changing.”

### ***Education and Training***

The second most frequently mentioned service provided by DBTACs was education and training. Several interviewees praised the annual conference organized by the centers, which gave them the opportunity to learn about the latest developments related to the Act and to network with like-minded colleagues. One respondent said that this was the best conference she has ever attended among numerous others, that it inspired her work, and that she looked forward to it every year. Several respondents mentioned training to become a certified ADA Coordinator offered by the centers, which they had completed. This, in turn, helped them become knowledgeable about the disability issues and obtain employment in this field. One respondent (an individual with disability) completed a paid internship at DBTAC, which enabled her to get a job as a disability advocate. She also described her experience with the center as “life changing.”

Training materials received from DBTACs were characterized by respondents as high quality and useful. For example, we were told of the materials which not only included a PowerPoint presentation, but also a guide which described how it can be tailored to the needs of different audiences, what to focus on in each segment, and how much time to spend on each topic. An employment specialist from the Pennsylvania Office of Vocational Rehabilitation recounted presenting DBTAC materials about disability etiquette to a local business group. He said that it was clear that the listeners had never considered how to best assist someone with a disability and found the seminar very helpful. An Executive Director of Bay Area Center for Independent Living told us how he uses the modules created by DBTAC to train local businesses, government agencies, and educational institutions about accommodation needs of people with disabilities.

A design professor who uses DBTAC for experiential student training described how the center staff in wheelchairs came to talk to the students about special accommodation design and how important it was for the students to meet someone who had personal experience with disability. This respondent said that DBTAC was essential to her training program and that there was no other resource to teach accessibility design.

### ***Technical Assistance***

Finally, over half of the interviewees spoke of the technical assistance received from the centers, which was typically related to the issues of accessibility of facilities (for example, advice where to put a ramp or a sign) as well as websites and other online materials (for example, tests for 508 compliance). In addition, DBTACs helped respondents revise organizational policies and procedures to better meet the needs of people with disabilities. For example, the Kennedy Center for Performing Arts regularly offers free tickets to events, but to receive them requires waiting in line, which might be difficult for someone with a disability. The Kennedy Center consulted its local DBTAC, which advised them to give away two tickets instead of one, so that people with disabilities can send a proxy. The Center also began making it clear to the visitors that they do not need to stand in line, but can bring or borrow a chair. The DBTAC also helped the Kennedy Center revise a “stand only” policy for elderly volunteers working in a gift shop.

In conclusion, all of the 19 interviewees were grateful to DBTACs, saw them as partners and as an invaluable and unique resource. For example:

*I can't think of a better use of funding. There is a constant influx of new people with disabilities, and to have a knowledgeable and credible source of information is critical, and the impact is huge.*

*The Center has an outstanding reputation in the design community which is unequalled. Staff is timely, responsive and proactive. They consult with faculty and students on a regular basis as well as our design community. Staff regularly comes to classes and lead experiential training. In all cases they are professional, knowledgeable and a valuable resource to all people. They help all of us become more sensitive to needs for persons with disabilities.*

## **Knowledge Translation Program**

The Knowledge Translation (KT) Centers conduct research on strategies to successfully disseminate and commercialize disability and rehabilitation research. Between 2005 and 2011, NIDILRR funded seven centers. A survey was sent to all PIs on these grants; five completed and one partially completed the survey (response rate of 71%). Answers from all six were included in analysis.

### **Findings from the PI Survey**

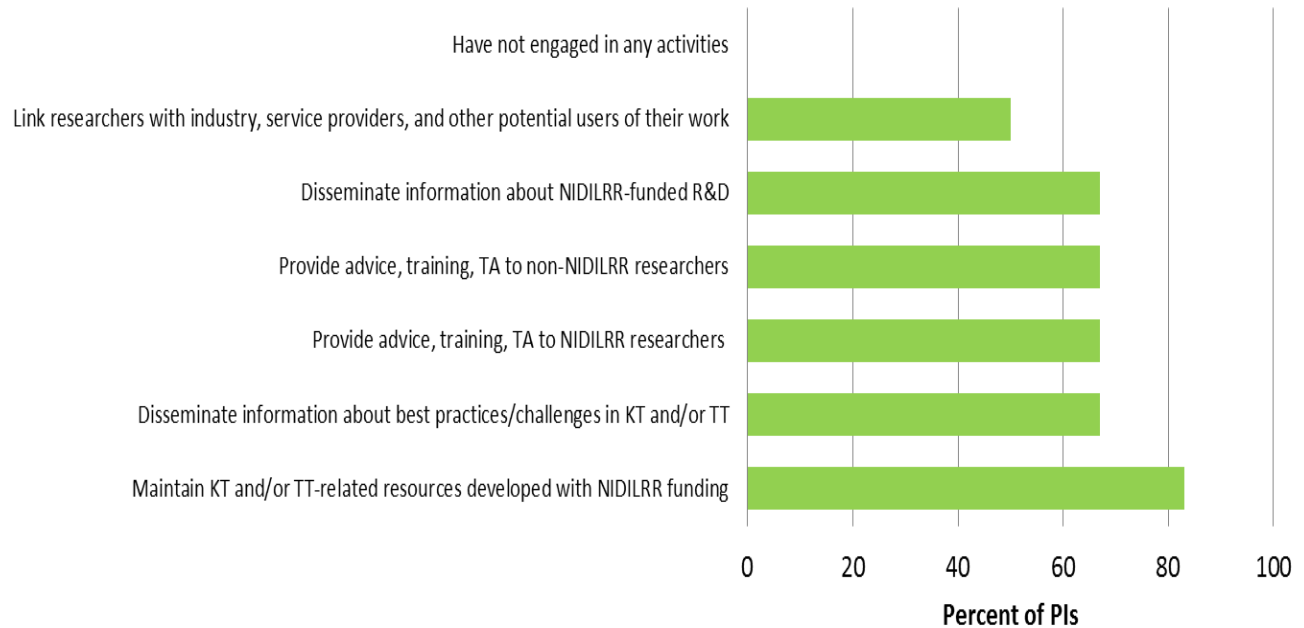
Four of six respondents (67%) received additional funding to support the activities that have begun under the KT grant (data not shown). Sources of support included NIDILRR (N=3) and MS Society (N=1).

We asked respondents whether they engaged in various knowledge translation and technology transfer (TT) activities related to their grant since the end of the grant. According to the PIs, they continue to maintain resources developed with NIDILRR funding (N=5); disseminate information about NIDILRR-funded research (N=4) and about challenges/best practices in KT/TT (N=4); and provide advice, training, and assistance related to KT/TT (N=4, Figure 4).

Responding PIs were asked to provide examples of these activities. One PI mentioned graduate course on ADA implementation. Another wrote that they took tailored knowledge packages generated within three RCT studies performed in collaboration with NIDILRR grantee and shared them with companies operating within the relevant fields. Four of the six PIs continue to provide advice and technical assistance to researchers. Examples included: suggestions and feedback to RERCs on their mandatory TT plans, service as an advisor to RRTC on KT issues; assistance to SBIR and RERC with intellectual property issues; and providing sample commercialization, value proposition, and contextualization knowledge packages to grantees. In addition, PIs have given KT and TT advice non-NIDILRR US researchers and to international researchers at King's College, UK; Ben Gurion University, Israel; Hanze University, Netherlands; and Malmo University, Sweden. One respondent mentioned assisting NIH and PCORI.

**Figure 4: Activities since the End of Grant Reported by KT PIs (N=6)**

*Since the end of your KT grant, have you engaged in any of the following activities related to that grant?  
Select all that apply.*



Five of the PIs said that they have maintained the resources developed with NIDILRR funding, which included:

- NEARP database,<sup>4</sup> which is being updated every four years and currently includes nearly 500,000 closed investigations of ADA discrimination
- Model Systems Knowledge Translation Center web page,<sup>5</sup> which is being updated as new products are developed
- Database that supports Need to Knowledge model,<sup>6</sup> a guide to innovation for technology-based commercial devices and services that connects the academic research process with industry standards
- Repository of Resources for the Center for Psychiatric Rehabilitation<sup>7</sup>
- CIRRIE Database of International Rehabilitation Research,<sup>8</sup> the CIRRIE International Encyclopedia of Rehabilitation,<sup>9</sup> and other resources on the CIRRIE web site.

<sup>4</sup> Web site was not found

<sup>5</sup> <http://www.msktc.org/>

<sup>6</sup> <http://kt4tt.buffalo.edu/knowledgebase/model.php>

<sup>7</sup> <http://cpr.bu.edu/resources/recovery-repository>

<sup>8</sup> <http://cirrie.buffalo.edu/database/>



The PIs continue to disseminate information about NIDILRR-funded research. Two examples provided in the survey were 400+ downloads of publications resulting from the KT project and a DVD entitled *Facts and Stubborn Things: ADA Amendments and the Employment of Americans with Disabilities*, of which several thousand copies had been distributed at no cost to employment organizations and rehabilitation providers. Other activities that have built on the NIDILRR funding were participation in a working group on reimbursement issues in assistive technologies and a workshop on strategies to link related initiatives across sectors and countries.

Finally, 4 (67%) respondents said that the resources developed with NIDILRR funding have been used in areas other than disability and rehabilitation. For example, research methods in rehabilitation developed for the Equal Employment Opportunity Commission have been applied to the study of race, gender, and age. Another respondent wrote that “the materials have been useful to policy makers and managers at the NSF’s Center for Science and Engineering Statistics, Department of Transportation, non-profit foundations (e.g. Center for American Progress & Information Technology Innovation Foundation), and private sector organizations (e.g. the Product Development Manager's Association and the Technology Transfer Society). The European Union, Brazil and Australia have also been applying the concepts within their own science, technology and innovation policies.”

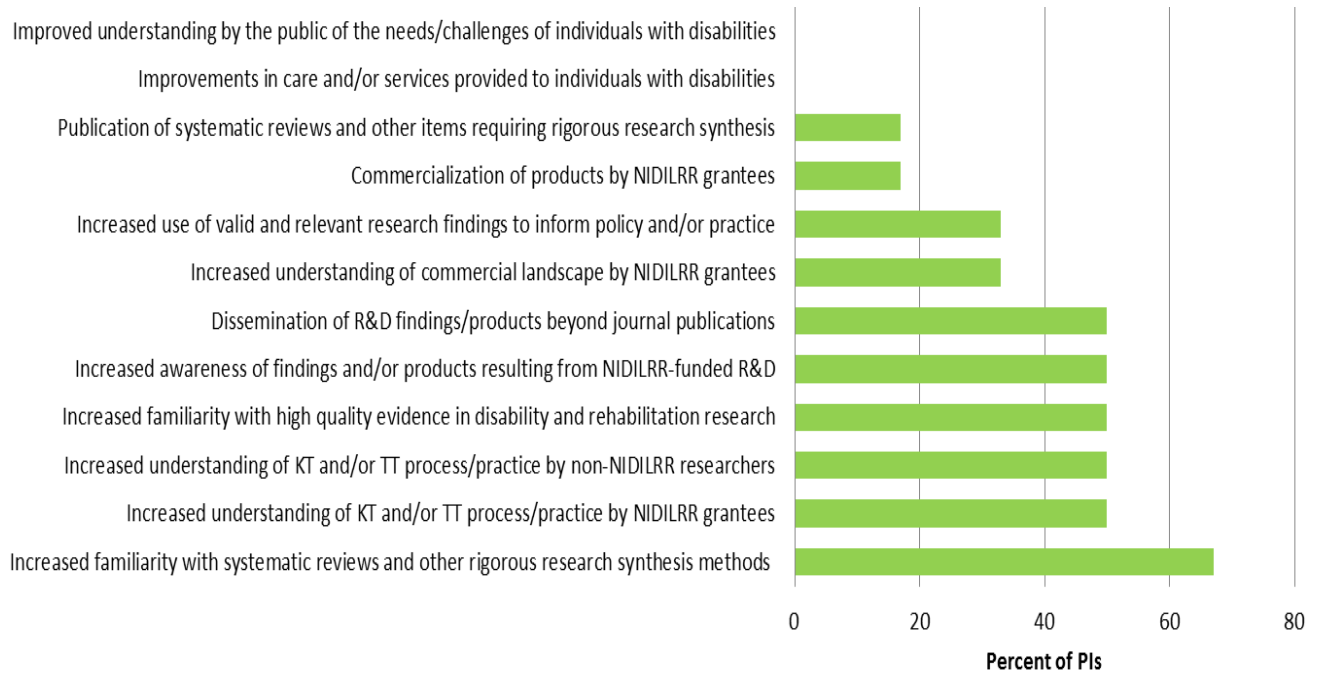
Respondents were given a choice of several outcomes that could have resulted from their projects and asked to indicate which, if any, had occurred at least in part due to the KT funding. Four of the six PIs reported increased familiarity with systematic reviews and other rigorous research methods and three selected increased understanding of KT/TT by NIDILRR grantees and other researchers (Figure 5). Other outcomes included increased awareness of NIDILRR-funded R&D (N=4); better understanding of the commercial landscape and commercialization process (N=2 and N=1, respectively); and increased use of valid and relevant findings to inform policy and practice (N=2). Respondents were asked to provide specific examples of these outcomes. These included application of KT and TT methods by other US agencies and international organizations, more persuasive discussion of the commercial landscape by NIDILRR grantees in applications, evidence that increasing percentage of NIDILRR products are reaching a marketplace, use of findings in the passage and regulatory development process around the ADA Amendments Act of 2008, full compliance in presenting a TT plan by 2015 RERCs, and a review of peer-led interventions adapted for SAMHSA.

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<sup>9</sup> <http://cirrie.buffalo.edu/encyclopedia/>

**Figure 5: Outcomes of NIDILRR Funding Reported by KT PIs (N=6)**

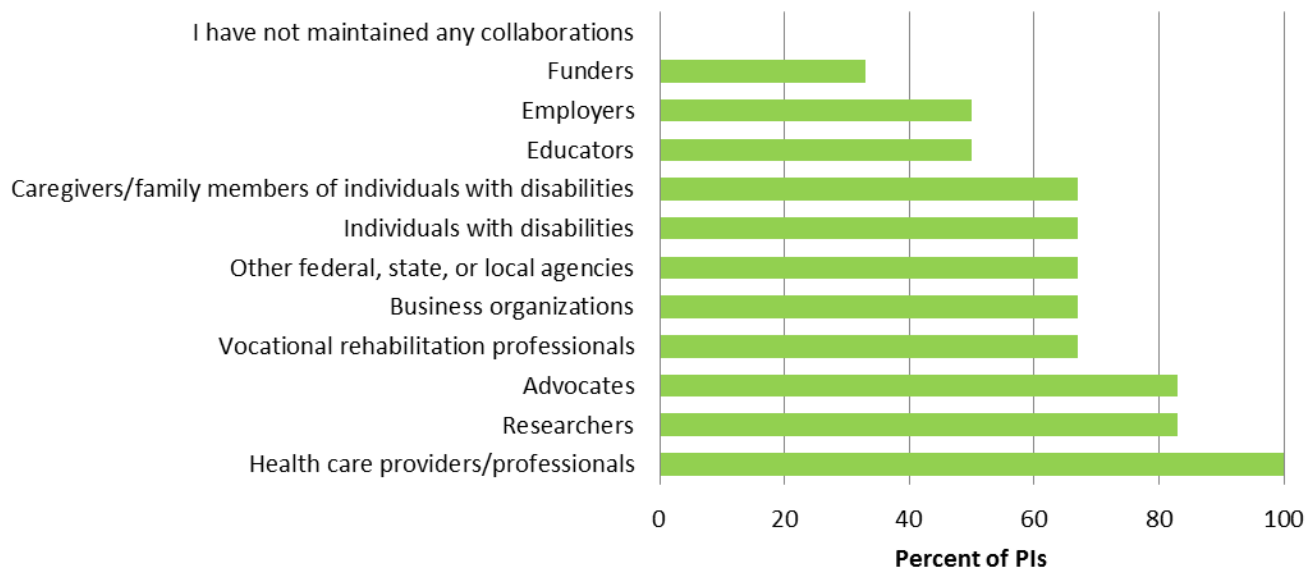
*Have any of the following outcomes occurred since the end of your KT grant and at least in part as the result of the work on this grant? Select all that apply.*



All KT PIs had maintained collaborations established during the funding period (Figure 6). The most common partners were health care providers (N=6), followed by researchers and advocates (N=5). PIs also continue to collaborate with vocational rehabilitation professionals, business organizations, federal/state/local agencies, and individuals with disabilities/their caregivers (N=4). The least frequent partners included employers (N=3), educators (N=3), and funders (N=2). As examples of the most important collaborations established during the grant period respondents included the Equal Employment Opportunity Commission, NIDILRR management and staff, and US Business Leaders Network.

### Figure 6: Collaborations Resulting from NIDILRR Funding Reported by KT PIs (N=6)

Please indicate with which of the following groups you have maintained collaborations established during the funding period. Select all that apply.



KT PIs were asked to share with us the challenges to accomplishing their grant goals and four responses were provided. Three individuals reported interacting with NIDILRR grantees as a challenge. It appears that the leadership of DBTACs and Model System centers showed little interest in the KT projects. PIs also felt that grantees, peer reviewers, and NIDILRR staff did not appreciate the time, money, and effort required for knowledge translation. One respondent noted that publications are the ultimate measure of success in academia, and thus commercialization was a low priority for grantees. Finally, a KT PI said that NIDILRR grantees were not aware of the services and assistance that can be provided by the KT centers.

### Findings from the KT User Interviews

In total, 15 contacts were provided<sup>10</sup> by the KT PIs and all were invited to participate in a short interview. Eleven individuals agreed and were interviewed. Below are examples of benefits reported by individuals who used the resources or expertise offered by the centers.

The Director of Research at the US Equal Employment Opportunity Commission that EEOC maintains a database of discrimination claims, which is being analyzed by one of the KT PIs. His analysis revealed several important trends, for example that people with cognitive disabilities are more likely to file harassment charges. This type of analysis had a big impact on the strategic planning process at EEOC, including what policy and practice issues to focus on in the future. Another investigator working on this grant believed that KT research informed the 2009 amendments to the ADA.

<sup>10</sup> Of these, one email bounced back

One of the KT grants sponsored a WHO summit in Washington, DC about the state of the art in rehabilitation. Based on the proceeding from the summit, the United Arab Emirates designed a new school for children with disabilities.

An SBIR grantee received significant commercialization assistance from a KT center, which included focus groups with potential users of technology organized by the center. The SBIR grantee said that without the KT center his company “would have made very expensive and perhaps disastrous mistakes.”

KT Center linked the Assistive Technology Industry Associates (ATTC) to SBIR grantees. The Association continues to work with grantees to disseminate information about technologies and puts them in touch with manufacturers to help bring technologies to market. These relationships are especially important in the disability areas whether the market is not well established. In addition, ATTC provides funding to NIDILRR grantees to independently determine the benefits of specific technologies.

A university professor collaborated with a KT grantee to survey HR managers to understand their attitudes to hiring individuals with epilepsy. These data were published and highly cited. The PI has received follow-up funding to develop a program to train employers.

Three researchers received a travel grant through the program called CIRRIE, run by the University of Buffalo received a Knowledge Translation Center. The grant covers airfare for US rehabilitation researchers to travel internationally and for foreign researchers to visit the United States to exchange information and expertise. All three participants interviewed said that the program broadened their experience, enabled them to make international connections, and led to papers or other published materials. For example, one respondent received a travel award to East Asia to conduct a needs assessment of programs and services available for individuals with spinal cord injuries. Based on this information, he developed training materials for patient councilors, which include information on councilor qualifications, skills, and advice for how to deal with clinically difficult situations.<sup>11</sup>

### **Analysis of Grantee Publications**

We used KT grant numbers to query PubMed and Web of Science for papers that cited these grants. In total, 23 papers were obtained; of these, 11 were published after the official end date of the grant, although some of the grants may be under a no-cost extension (Figure 7A). All but two papers were cited between 11 and 18 times per year (Figure 7B). A paper called *Treatment for Depression after Traumatic Brain Injury: A Systematic Review* published in 2009 received a total of 107 citations.<sup>12</sup> SCI Journal Rank Indicator (SJR) is a measure of journal impact, influence, and prestige. We obtained SJRs for the KT journals in our sample and compared them to all journals in the rehabilitation subject category.<sup>13</sup>

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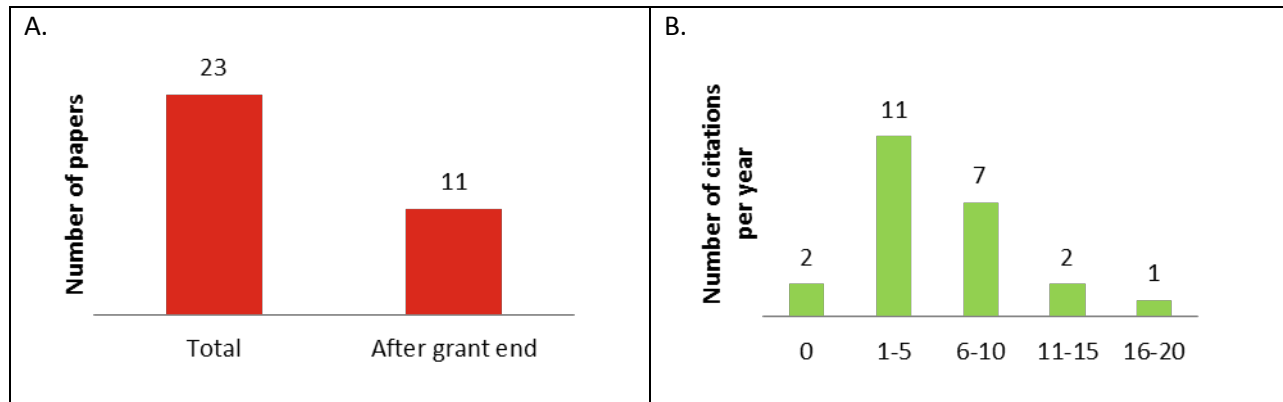
<sup>11</sup> In 2010, an external evaluation was conducted to determine the benefits of the grant to the participants and 12 of the 18 researchers funded were interviewed. All participants stated that the experience broadened their horizons and several had added international content to their lectures and seminars. Many of the students of these respondents subsequently also sought international experience. CIRRIE participants also reported that the trips led to collaborations, including with government agencies at foreign countries.

<sup>12</sup> Fann JR, Hart T, Schomer KG (2009). *J Neurotrauma*. 2009 Dec;26(12):2383-402.

<sup>13</sup> <http://www.scimagojr.com/journalrank.php>

We found that the KT grantees publish in significantly better journals than the comparisons: SJR of 1.4 versus 0.4 ( $p < .0001$ , data not shown).

**Figure 7: Bibliometric Analysis of Publications Linked to KT Centers for 2005-2011**



### Small Business Innovation Research Program

SBIR is a federally mandated program to assist researchers in commercializing their invention. The program has two tracks—Phase I and Phase II. The goal of Phase I (\$75,000 for six months at NIDILRR) is to develop and test prototype technologies and products. Grantees who meet the benchmarks of Phase I program are eligible to apply for Phase II (\$250,000 per year for two years) to bring their products to market.

### Findings from the PI Survey

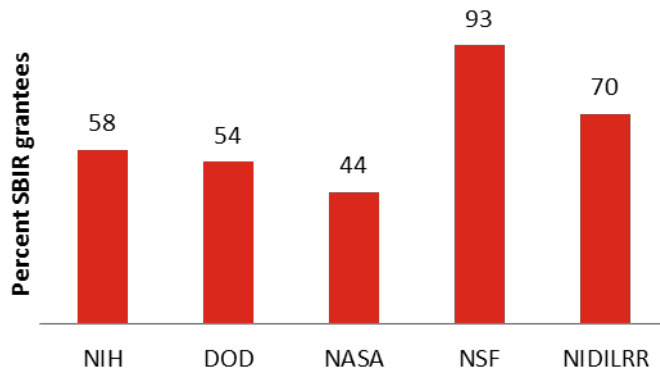
Surveys were sent to 58 SBIR Phase I and/or Phase II grantees who participated in the program between 2007 and 2014 and 26 responses were received. Response rates were highest among the grantees who received both Phase I and II awards (69%, Table 2).

**Table 2: Response Rates for SBIR Survey for Grantees between 2007 and 2014 (N=58)**

	Sent	Responded	Response Rate
SBIR I	39	16	41%
SBIR II	6	1	17%
SBIR I/II	13	9	69%
Total	58	26	46%

Of 26 SBIR PIs who responded to the survey, 18 (70%) had received additional development funding (Figure 8). Comparison to other SBIRs across the federal government revealed that NIDILRR grantees were more successful than those at NIH, DOD, and NASA. By far the most frequent funding source for NIDILRR grantees was NIDILRR SBIR Phase II, reported by 56% of PIs, with non-SBIR federal funding being a distant second at 17% (Table 3). At other agencies, approximately one-third of grantees reported receiving another SBIR award and between 7% and 50% a non-SBIR federal grant (data not shown). NIDILRR grantees may be more reliant on funding from NIDILRR because of the relatively small size of the disability/rehabilitation market and correspondingly limited interest from private investors.

**Figure 8: Percent of SBIR I/II Grantees Receiving Additional Development (N=26) Compared to other Federal SBIR Programs**



Source of comparison data: *An Assessment of the Small Business Innovation Research Program at the National Institutes of Health (NRC, 2009), the Department of Defense (NRC, 2009), the National Aeronautics and Space Administration (NRC, 2009), and the National Science Foundation (NRC, 2007). National Survey to Evaluate the NIH SBIR Program (NIH OER, 2009).*

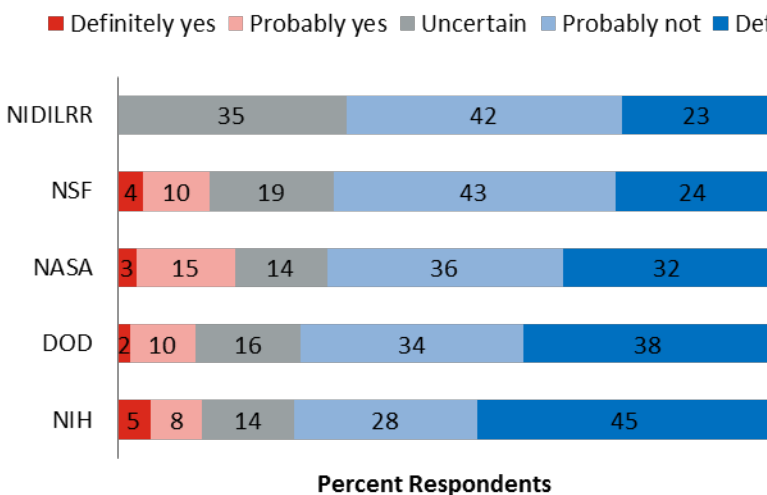
**Table 3: Follow-up Funding Sources for NIDILRR SBIR I/II Grantees (N=26)**

Source	Percent of PIs
State, local, or tribal government	0
Private investment	0
Contract	6
Device manufacturer	6
SBIR Phase II from another agency	11
Investment from the company selling the product	11
Personal funds	11
Non-SBIR federal funds	17
SBIR Phase II from NIDILRR	56

Survey respondents were asked whether they would have undertaken the project without NIDILRR funding. Twenty three percent reported that they definitely would not and an additional 42% that they probably would not; the rest were uncertain (Figure 9). The fraction of “definitely nots” at NIDILRR was the lowest across all federal agencies considered, although when combined with “probably not” these differences largely disappeared. Between 13 and 18% of grantees from other agencies said that would definitely or probably undertake the project, while none at NIDILRR selected these options. These data indicate that NIDILRR grantees were not confident that they could support commercialization of their products without NIDILRR funding.

**Figure 9: Likelihood of Undertaking the Project without SBIR Funding Reported by NIDILRR SBIR I/II PIs (N=26) Compared to other Federal SBIR Programs**

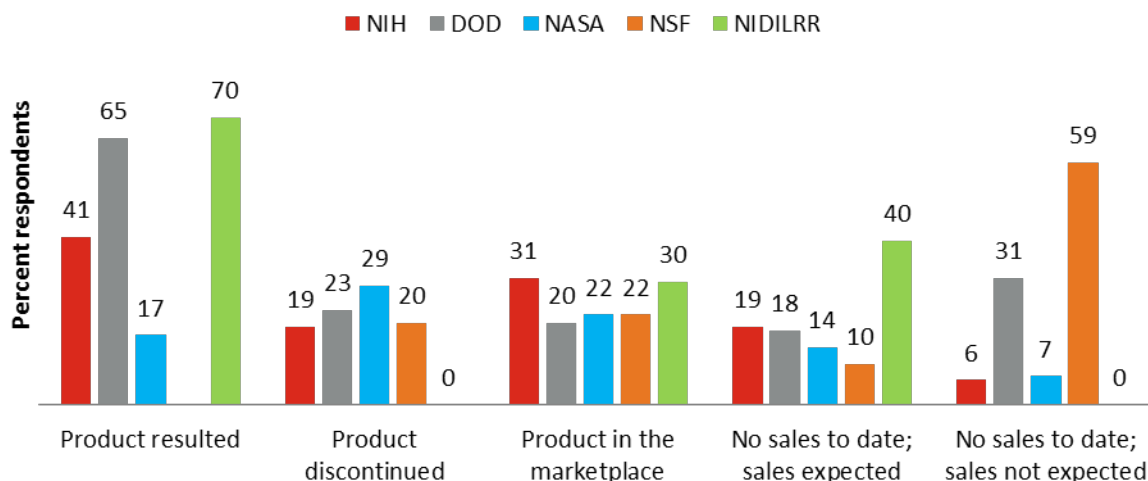
Would you have undertaken the project without NIDILRR funding? Select one.



NSF=National Science Foundation, NASA=National Aeronautics and Space Administration, DOD=Department of Defense  
NIH=National Institutes of Health

Seven of 10 SBIR II PIs reported developing a product as a result of NIDILRR funding, three of which were in the marketplace; none of the products had been discontinued at the time of the survey (Figure 10). These outcomes compared favorably to other agencies. Sales to date for three NIDILRR products were <\$100K (N=2) and \$100K-\$1M (N=1). Two of the companies had 1-5 employees and one 6-10 employees (data not shown).

**Figure 10: Commercialization Outcome of SBIR II Funding Reported by NIDILRR PIs (N=10) Compared to other Federal SBIR Programs**



Finally, SBIR I and II grantees were asked to list their most important commercialization outcomes. Of the 26 respondents, 8 (31%) described a product, 7 (27%) a concept, 6 (23%) a prototype, and 5 (19%) feasibility/usability testing (Table 4). Examples of commercialization outcomes are included in Table 4.

**Table 4: Findings from SBIR Survey re: Most Important Commercialization Outcomes Reported by SBIR I/II PIs (N=26)**

	Program
<b>Concept (N=7)</b>	
Gained expertise in wheelchairs	Phase I
Showed a correlation between simulated changes in residual limb volume and pressures measured at strategic locations	Phase I
Uniting GPS and text/audio content to enhance travel experience for blind people	Phase I
System of online supervision and training toward BCBA credential	Phase I
Technology to help scoliosis patients know that their wearing their brace properly	Phase II
Better understanding of what makes synthetic speech sound natural	Phase I
Proof-of-concept prosthetic hand	Phase II
<b>Prototype (N=6)</b>	
Software	Phase I
Behavior assessment tool	Phase I
System to protect wheelchair seated individuals in large transit vehicles	Phase I
Device for visually impaired people to operate office equipment	Phase I
Virtual, interactive, social interaction tool	Phase I
Development of watercraft transfer access prototypes	Phase I
Portable rehabilitation device with intelligent control to stretch spastic joints	Phase I
<b>Feasibility and usability testing (N=5)*</b>	
Feasibility testing of crowd-sourced database to aid blind individuals using manual wheelchairs in route determination	Phase I
Validated feasibility of using mobile device and remote computer to provide automated image recognition-base assistance to blind people	Phase I
Confirmed that telecoil hearing aid solution is better optimized for both telephone usage and public induction loops	Phase I
Feasibility and benefits of being able to change the drive wheel position to optimize power wheelchair	Phase I
<b>Product (N=8)**</b>	
Sensory feedback system for persons with lower-limb sensory deficits (FARUS LLC)	Phase II
Cognitive support technology (AbleLink Technologies)	Phase II
STEM Binder (Touch Graphics Inc)	Phase II
Dialysis regeneration system (Chemica Technologies)	Phase I
Automatic book scanner for universal access (PageFlip)	Phase I
Software tool for the automatic configuration of computer keyboard (Koester Performance Research)	Phase I
Web screen reader (Charmtech Labs LLC)	Phase I
Picture Planner (Cognitopia)	Phase II

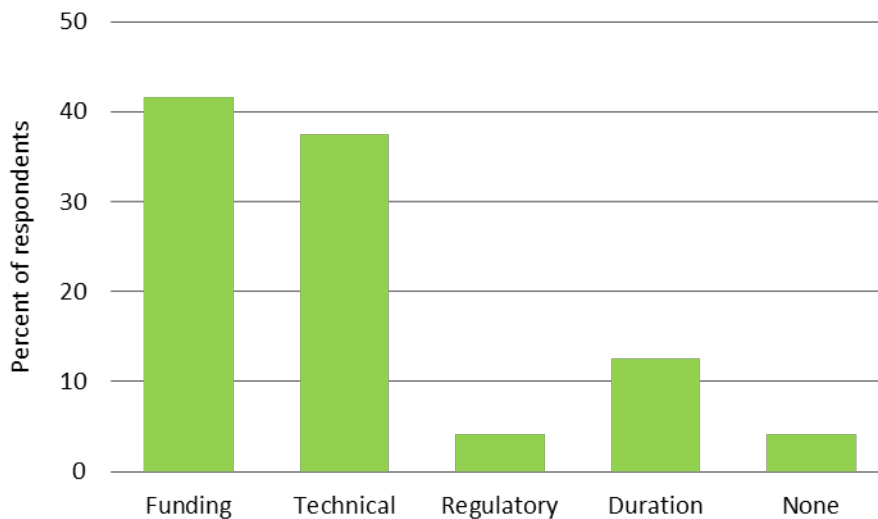
\*One respondent did not specify the nature of the testing

\*\*Business name shown in parenthesis



Respondents reported several challenges to accomplishing the goals of the SBIR grant. The most common (N=10 or 42%) was related to funding, including low amounts for Phase I and obtaining funding for Phase II (Figure 11). Funding concerns were closely followed by technical challenges (N=9 or 28%). Three respondents reported that duration for Phase I was too short to develop a prototype. Other challenges included developing a system that fully complies with ADA regulations, obtaining insurance code, limited support for setting up a business, and using the online system to get project funds released. One respondent reported no challenges.

**Figure 11: Challenges Experienced by Grantees Reported in the SBIR PI Survey (N=24)**



At the conclusion of the survey, we asked respondents to describe any other benefits of NIDILRR funding. We received 18 comments, of which 17 were positive (the remaining respondent wrote that 1-year funding duration would be helpful). Grantees said that the program enabled them to apply their experience in a different field, develop and test products, and ultimately serve people with disabilities. Below are examples of testimonies about the importance of NIDILRR funding:

*We have been able to change many lives for the better as a result of funding provided by NIDILRR. NIDILRR funding has been the difference between continuing on in business and going out of business altogether—more than once! Niche markets for disability populations take much longer to establish than mainstream markets. Therefore, NIDILRR plays an extremely critical part in helping small businesses survive.*

*The NIDILRR support really was a gating factor in starting the work on Handsight. We then went on to Phase II with the NEI, and created a number of apps for iPhone and Android, which had over 100,000 downloads.*

*The NIDILRR SBIR program has been crucial to helping us establish a company and go through the risky stage in which few investors would ever commit a sufficient amount of funding.*

*NIDILRR funding has been crucial to us and has produced real benefits for the individuals with disabilities whom we've reached directly through our products as well as those whom we believe we've influenced through our dissemination efforts.*



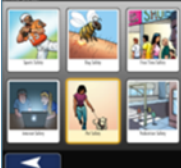
## Products Mentioned by SBIR Grantees

We examined the web sites for eight products mentioned by grantees (Table 4). Two—FARUS and Chemica Technologies—had websites, but no information was contained within these. The remaining six are presented below.

### ***AbleLink Technologies (www.ablelinktech.com)***

Established in 1997, the company develops cloud-based technologies to support individuals with cognitive disabilities. AbleLink received 24 SBIR I and II grants between 2007 and 2014 and NIDILRR funding is acknowledged on the company’s web site. AbleLink technologies help the users with navigation, scheduling, skill development, and other activities of daily living and functioning. For example, WayFinder helps people with intellectual disabilities travel safely and Everyday Skills and Living Safely has self-directed learning sessions to teach the users how to live independently (Figure 12). The company also receives development funding from DOD, NIH, NSF, universities, and foundations.

**Figure 12: Examples of AbleLink Products**

	<h3>WayFinder 3</h3> <p>WayFinder 3 is an accessible Garmin or TomTom, and it helps people with intellectual disabilities to travel safely, whether by bus or on foot. The traveler simply taps on the picture of their desired destination and WayFinder 3 takes over from there....</p> <p><a href="#">Read More &gt;&gt;</a></p>
	<h3>Everyday Skills</h3> <p>Everyday Skills provides self-directed learning sessions for 40 important skills necessary for living independently and accessing the community based on proven content developed by the Attainment Company. Everyday Skills provides an accessible learning tool that is specifically designed to be used directly by individuals with autism, learning or other developmental disabilities at their own pace on the coolest technology platform there is - the iPad! Ever...</p> <p><a href="#">Read More &gt;&gt;</a></p>
	<h3>Living Safely</h3> <p>Living Safely provides self-directed learning sessions for 27 important safety skills topics based on proven content developed by the Attainment Company. Living Safely provides an accessible learning tool that is specifically designed to be used directly by individuals with autism, learning or other developmental disabilities at their own pace on the coolest technology platform there is – the iPad! Living Safely is powered by Visual Impact, AbleLink’s...</p> <p><a href="#">Read More &gt;&gt;</a></p>

## Touch Graphics Inc. ([touchgraphics.com](http://touchgraphics.com))


Established in 1997, the company develops tactile products and exhibits for visually impaired people. Touch Graphics received an SBIR I grant in 2008 and SBIR II grant in 2009. While a number of products are available from the company, Stem Binder was attributed to NIDILRR in the survey and on the web site. Stem Binder enables people with limited vision to touch an object on a map, a diagram, or game with a stylus and to hear information about it.

**Figure 13: Touch Graphics Product**


The pen is a "description probe" for tactile graphics, affording people who can't see well with unprecedented access to images. Tap the stylus point on any object on a map or diagram to hear layered information about that thing. Or, play a 3D board board game, and run other apps that use per's the on board computer to run programs with rich interactivity, like, a periodic table, transit maps with embedded schedules, museum audio guides including tactile exhibit maps, children's picture book with animal noises, and many, many others.

The Talking Tactile Pen is a collaborative project of Touch Graphics, Inc. and Smith-Kettlewell Eye Research Center, under funding from NIDRR and NSF.

Share this

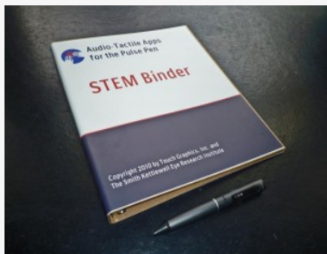


Audio-tactile Apps for the Livescribe Pulse Pen



**Purchase**

**TTP Stem Binder**  
\$ 300.00



Get all the a TTP, eleven of the apps, binder and accessories for one terrific price!

**Binders include:**

Talking Tactile Pen (TTP); Rigid 3 ring binder, capable of holding 100 apps; zippered pouch for storing the pen; pen holder; charging cradle or cord; pre-addressed mailer for returning the pen for adding apps.

**Apps Included:**

Bridges, Flowering Plant, Four Stroke Engine, Gulf of Mexico, Human Brain, Human Skeleton, Mitosis, Motor Neuron Diagram, Periodic Table, Shark Anatomy, Solar System.

Or contact us at 800-884-2440 or [info@touchgraphics.com](mailto:info@touchgraphics.com) to purchase.

## PageFlip ([www.pageflip.com](http://www.pageflip.com))

Established in 2002, the company develops, manufactures, and commercializes automatic page turning technology for people with disabilities. PageFlip received an SBIR I grant in 2007

**Figure 14: PageFlip Products**



**PageFlip offers a great mechanical page turner for standard books!**

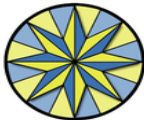


The PageFlip Lite is a mechanical page turner designed to turn pages of a bound book or magazine. Reliability in turning single pages is achieved by attaching up to ten sheets in advance into dedicated page-turning arms. A simple tap of a wireless pedal (included) advances pages in either direction.

Unlike other products on the market, our PageFlip Lite page turner and PageFlip Cicada Bluetooth pedal are designed to offer a bidirectional hands-free solution that is reliable, portable, silent, and low-cost.

## Koester Performance Research

Established in 1996, the company designs and sells software products for the automatic configuration of computer keyboards to assist people who cannot easily use computer keyboard and mouse. Koester received an SBIR I grant in 2013.

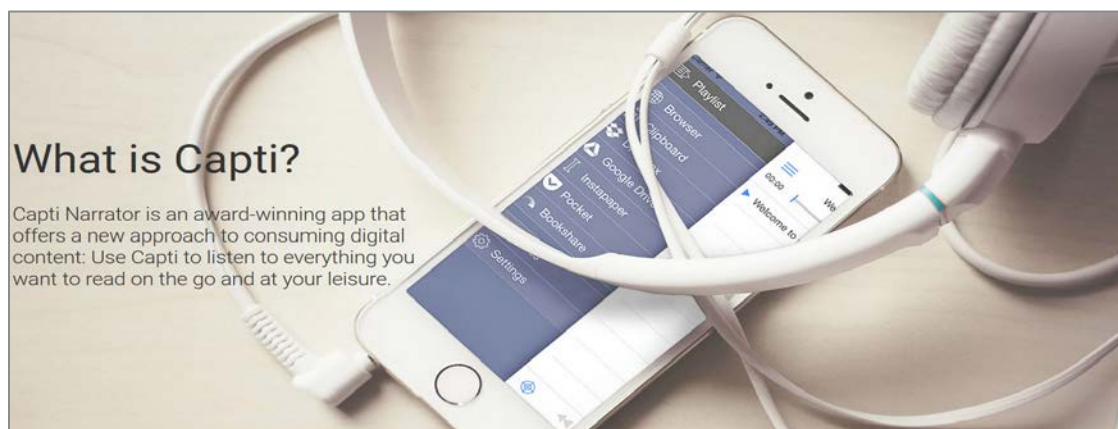
Figure 15: Koester Performance Research Products

<b>Compass · Computer Access Assessment</b> (Win, Mac)		
	<a href="#">Buy individual copies</a>	\$179 per copy
	<a href="#">Buy 5-user copy</a>	<del>\$895</del> \$720 Save 20%
	More details available at: <a href="#">Purchase Compass</a>	
<b>Keyboard Wizard · Optimize Keyboard Settings</b> (Win)		
	<a href="#">Buy individual copies</a>	\$16.95 per copy
	<a href="#">Buy 5-user copy</a>	<del>\$84.75</del> \$67.80 Save 20%
	More details available at: <a href="#">Purchase Keyboard Wizard</a>	
<b>Pointing Wizard · Optimize Mouse Settings</b> (Win - only Win 7 or below)		
	<a href="#">Buy individual copies</a>	\$16.95 per copy
	<a href="#">Buy 5-user copy</a>	<del>\$84.75</del> \$67.80 Save 20%
	More details available at: <a href="#">Purchase Pointing Wizard</a>	

## Charmtech Labs LLC ([www.captivoice.com/capti-site/public/entry/about\\_us](http://www.captivoice.com/capti-site/public/entry/about_us))

Established in 2010, the company sells software that allows people with vision impairments to use the web by listening to what they want to read. Initially focusing on individuals with disabilities, the company is bringing its screen-reading technology to the mainstream market. CharmTech received 3 SBIR I grants and 2 SBIR II grants between 2009 and 2013.

Figure 16: Charmtech Product



## ***Cognitopia (www.cognitopia.com)***

The company develops and markets computer-based task management application to help individuals

**Figure 17: Cognitopia Product**



with cognitive disabilities live more independent lives. A common database of information about an individual's life and needs is developed and accessible data delivered to either the consumer or family/support staff. Cognitopia received 4 SBIR I and 3 SBIR II grants between 2008 and 2014.

### **Findings from SBIR User Interviews**

Because of the privacy concerns expressed by OMB, we did not ask survey respondents to provide us with contact information for individuals who could speak about the benefits of NIDILRR funding. Instead, we asked the PIs to forward our request to the users of their products with a request to contact us. We do not know how many grantees

made this request; only one person emailed us and was interviewed. She referred us to another user of the technology, who was also interviewed.

The first respondent worked with the SBIR PI to develop the software tool, which aims to measure social information processing skills in children. Rather than relying on a traditional provider-administered assessment tool, a child interacts with a character that he or she had created. Originally, this tool was meant for diagnosis of autistic children, but the respondent hopes that it can also be used to help the children develop the skills that they need. The tool was completed in 2013 and the respondent is working with two community partners to use it: Playwork, a national organization that runs enrichment programs and a therapeutic group in NY called ASPIRE. Both partners are using the tool to monitor their intervention programs. The second respondent told us that the tool is currently used as part of a research study with a community partner, a non-profit clinical service. Lots of interest has been expressed by parents and schools in using this tool. It is becoming better known because of enrolling control subjects, who can be any child of the same age. Respondent is also working with a school in NYC that specializes in teaching children with social challenges. The tool has already had a real impact at that school as well.

This section concludes our findings related to NIDILRR programs. In the remainder of this chapter, we present our findings from the survey of applicants.

## NIDILRR Application Process

With continuing decline in federal funding,<sup>14</sup> an applicant's research program and possibly his/her entire career may depend on the outcome of grant competition. Therefore, we hypothesized that survey responses may be influenced by the review outcome, especially if an applicant was unsuccessful. If the survey were administered before the competition results are known, we would be unable to examine the applicants' views of the quality and usefulness of peer review, as this information is provided with the award status notification. Consequently, we randomly divided all applicants into two groups to control for potential bias connected to the review process; one group received the survey before and the other after the award announcement. Response rates for two groups were 78% (80 of 102) and 73% (73 of 100). Quantitative answers to the survey questions were compared for two groups using a t-test or a  $\chi^2$  test, depending on the question. Since no differences were found in responses of the two groups (data not shown), the data were combined and reported as one sample (N=153).

The survey included three questions (Appendix A). In Question 1 we asked the applicants to indicate their level of satisfaction with various aspects of the process. All respondents who indicated that they were dissatisfied or somewhat dissatisfied were offered an opportunity to explain their views using a text box. In Question 2 respondents could indicate whether they would apply for NIDILRR funding in the future and in Question 3 share any other comments about the application process.

We present the quantitative data on the applicant satisfaction followed by the synthesis of comments. Note that only the respondents expressing dissatisfaction could provide comments to Question 1. Consequently, these data are negatively biased by design.

### Summary of Satisfaction Scoring Data Reported by PIs

Figure 18 shows respondent satisfaction with different application steps, funding level, and duration. The length of time from application submission to award decision notification was the only variable that received a score below neutral (<3.0); quality and usefulness of proposal feedback were the second lowest, with 3.2. Most scores were in a 4.0–4.5 range (somewhat satisfied). Table 5 presents the same data by percent respondents who were dissatisfied or somewhat dissatisfied with each application step. While some applicants had clearly experienced challenges, the majority (74%) would apply for NIDILRR funding in the future (25% were unsure and 3% would not, data not shown).

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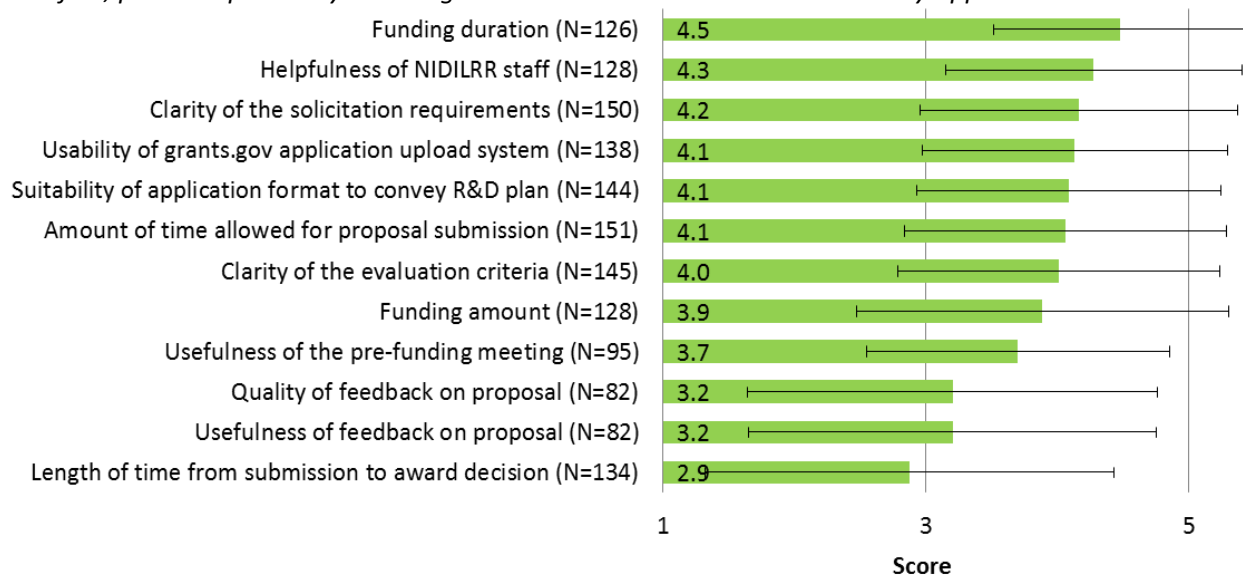
<sup>14</sup> <http://www.aaas.org>



**Figure 18: Mean Satisfaction Scores with Grant Application Process, Funding Level, and Funding Duration Reported in the Applicant Survey (N=153)**

1=Dissatisfied; 2=Somewhat Dissatisfied; 3=Neutral; 4=Somewhat Satisfied; 5=Satisfied

What is your level of satisfaction with the following aspects of the application process? If you are not satisfied, please explain why in the rightmost column which will automatically appear



Bars indicate standard deviation

**Table 5: Percent of NIDILRR Applicants Dissatisfied or Somewhat Dissatisfied with Grant Application Process, Funding Level, and Funding Duration (N=153)**

	Percent of respondents selecting dissatisfied or somewhat dissatisfied
Funding duration	5
Helpfulness of NIDILRR staff	9
Usability of grants.gov application upload system	11
Usefulness of the pre-funding meeting	11
Suitability of application format to convey R&D plan	11
Clarity of the solicitation requirements	14
Amount of time allowed for proposal submission	17
Clarity of the evaluation criteria	17
Funding amount	21
Quality of feedback on proposal	35
Usefulness of feedback on proposal	37
Length of time from submission to award decision	50

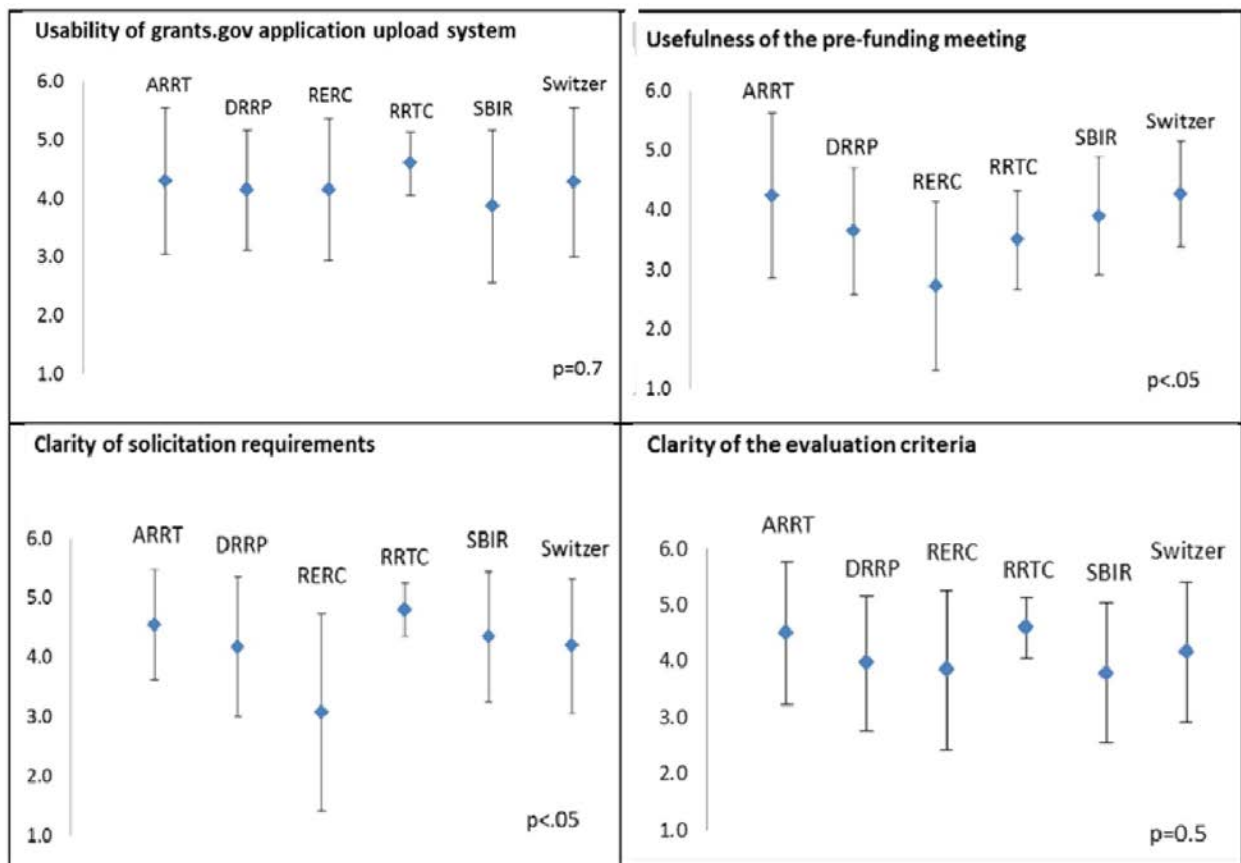
The sample contained the applicants to several NIDILRR programs, including ARRT (N=10), DRRP (N=63), RERC (N=13), RRTC (N=6), SBIR (N=32), and Switzer (N=26, data not shown). Variation in satisfaction scores by program was examined and several significant differences emerged (Figure 19). RERC applicants appeared to be less satisfied than all other applicants with pre-funding meeting and clarity of

solicitation requirements, and along with DRRP applicants, with the usefulness of reviewer feedback. The reasons for these differences are unclear. SBIR and Switzer program applicants gave lower scores for funding amount and duration, which was not surprising as these programs are the smallest. While some variation across programs was observed for other application steps, these differences were not statistically significant.

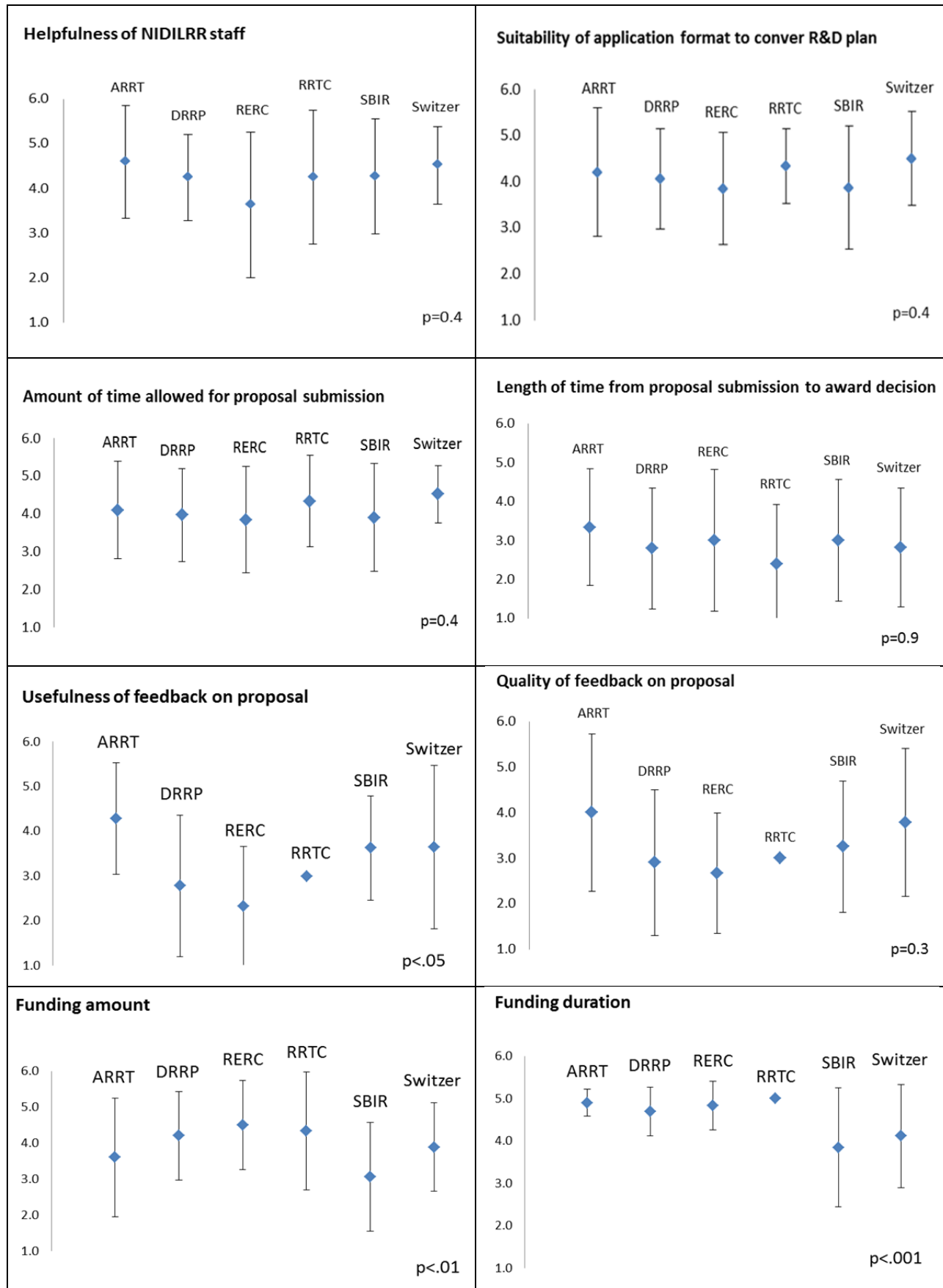
**Figure 19: Applicant Satisfaction Scores by Program (N=153)**

Bars indicate standard deviation. ANOVA tests were used to determine significance (*p* values are shown).

RRTC=Rehabilitation Research and Training Centers, RERC=Rehabilitation Engineering Research Centers, DRRP=Disability and Rehabilitation Research Projects, KT=Knowledge Translation, ARRP=Advanced Rehabilitation Research Training Projects, Switzer=Mary E. Switzer Fellowships, SBIR=Small Business Innovation Research.



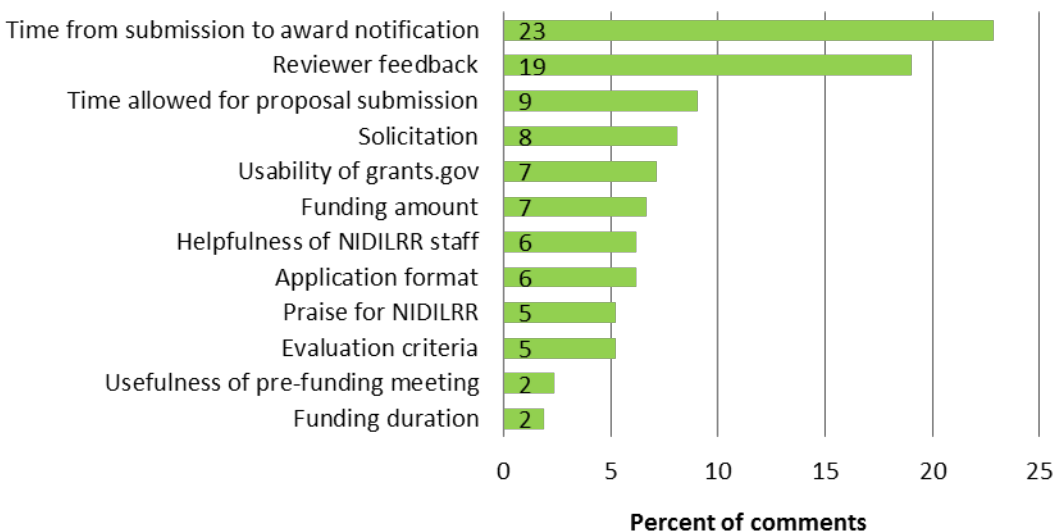




## Summary of Qualitative Comments in Applicant Survey

In total, 210 comments were received to Questions 1 and 3, which were coded and analyzed (Figure 20). The themes that emerged are presented below organized in descending order by the number of comments.

**Figure 20: Grantee PI Survey Comments about Application Process (N=210)**



### ***Time from Submission to Notification***

This step in the application process was the lowest rated (score of 2.9 out of 5.0) and received the most comments (48 or 23% of the total). Respondents appeared frustrated that they did not know when to expect the decision, and that the decision took a long time was announced shortly before the start date. They wrote that these delays made it difficult to plan projects, decide whether to apply for other grants, and arrange career moves. Several respondents pointed out that the reviews were dated in May, but were not shared until September or October.

### ***Reviewer Feedback***

Quality and usefulness of reviewer feedback received the second lowest scores and the second highest number of comments (40 or 19% of all comments). Several weaknesses were identified. Four out of 40 asserted that some of the scores were not accompanied by an explanation or that the explanation was perfunctory. An additional 12 indicated that scoring was arbitrary, that the comments did not match point deduction, and that opinions expressed by reviewers were inaccurate. Several applicants asserted that reviewers did not have the requisite or simply had not fully read the application. Two applicants thought that reviewers were biased. Seven respondents said that the low quality and inconsistency of the feedback left no path to resubmission. The applicants also said that proposal process has to be more transparent, that at a minimum a reviewer roster should be provided to enable the applicants exclude reviewers who might be in conflict. Another common view was that NIDILRR should have a mechanism in place to address reviewer critiques and that resubmitted applications should be reviewed by the same panel. Below are a few representative comments.

*The feedback is of limited usefulness since the review cycle is so long and the same reviewers may not be back. Many reviewers do not provide comments, so the fact that they gave you 40/50 on one criterion does not give information on how to improve or what the problem is.*

*There seems to be little accountability for reviewers that are not thorough in their work.*

*Peer review comments often indicate that the reviewers are not familiar with the state-of-the-science.*

*The range of scores is always so extreme that it is difficult to imagine that the reviewers are actually reading the same application... I frequently believe that my applications have not actually been read. I have no idea why this is not caught by NIDILRR staff. Such things never occur at other federal agencies.*

### **Time for Submission**

Nine percent of comments were received related to the time to submission. The applicants claimed that 60 days was insufficient to prepare good applications, especially for research centers that involve multiple partners. They also noted that competitions are held at random times and are sometimes close to each other forcing the applicants to choose among programs. Respondents suggested having a standing funding announcement with multiple application cycles (the system used by NIH) to help the applicants plan their submissions. One comment was made that the current system favors repeat applicants familiar with the process.

### **Solicitation**

Seventeen comments (8%) were related to program solicitations, of which four were about NIDILRR's funding priorities. These were seen as too broad by two respondents and too restrictive by the third. The last applicant said that it was unclear why some topics had dedicated competitions and others were investigator-initiated. An additional 13 comments was on the clarity of solicitations. The applicants wrote that they were long, vague, confusing, and difficult to read. The following specific problems were mentioned: combining two DRRP competitions for KT was confusing, it was unclear that ADA had to be addressed in the application, it was unclear whether fellowships were individual or institutional, and application requirements were mentioned in different places and were hard to find. An SBIR respondent recommended that NIDILRR follow a standard format used by NIH.

### **Grants.gov**

We received 15 comments (7% of all) recounting problems with grants.gov. The system was described as cumbersome and slow, and some applicants had to submit an application several days in advance "to be safe." It was compared unfavorably to what is used by NSF. Several respondents also pointed out that it was impossible to track review progress and one respondent found it challenging to use multiple passwords.

### **Funding Amount and Duration**

Five of 14 comments about funding amount were made by SBIR I grantees, all of whom said that \$75K was insufficient to produce significant results. These applicants pointed out that SBIR I funding levels at other agencies are typically \$150K, and in some cases include an additional \$5K for commercialization

assistance. The applicants wrote that funding amounts were not keeping pace with the economic environment and that they could not offer postdocs competitive salaries. The applicants said that NIDILRR should either decrease the scope of work or increase funding costs. Four comments were also made about funding duration, of which three came from SBIR I grantees.

### ***Assistance from NIDILRR Staff***

Applicants had varied experience obtaining assistance from NIDILRR staff. Of the 13 comments received, one was positive, four mixed, and the rest negative. The most common complaint, voiced by five respondents, was that NIDILRR staff could not or would not answer questions.

*I find NIDILRR to be like a black hole. No real information is ever provided no matter the request. Answers, if provided, are not answers but non-answers. It is very frustrating.*

*With NIH grant officers, you feel like the agency really wants you to submit the best possible grant. They give you constructive feedback and encouragement, but are also blunt about the likelihood of funding and whether the idea is worth pursuing. With NIDRR staff, I often feel like I am asking for state secrets when I ask for a timeline.*

Several other respondents said that their emails went unanswered or required several follow-ups.

### ***Application Format***

Twelve comments (6% of the total) indicated problems with application format. Of these, two said that double-spacing was not appropriate, especially for tables. Three others pointed out that SBIR I and II applications were the same length, even though SBIR II award was much larger and the applicants for this phase were required to include the results for SBIR I. The RRTC applicants said that the new limit of 100 pages was too short and that any limit should be a requirement, not a recommendation. Finally, one respondent wrote that page limits for different sections were not aligned with the priorities outlined in the RFP, and two others that it was a challenge to address all of the evaluation criteria within the relatively short page limit.

### ***Evaluation Criteria***

Eleven respondents pointed out problems with the evaluation criteria. One said that there were too many dimensions (research, development, utilization, collaboration, etc.) for a small project and that it was difficult to address each of these in a non-repetitive way. Another noted that the criteria as worded have poor inter-rater reliability. Six additional respondents thought the criteria inappropriate or confusing. For example, a DRRP applicant said that a research grant should not be scored for training and technical assistance. A RERC applicant pointed out that the criteria reflected only a small fraction of program requirements. Finally, a comment was made that the evaluation criteria were not well explained and that proposal outline, scoring criteria, and funding priorities were not aligned.

### ***Pre-Funding Meeting***

We received five comments suggesting that the meeting was not useful. Respondents said that they were simply read the solicitation, and that NIDILRR staff did not provide answers to specific questions.

### ***Positive Comments***

A number of applicants (N=11) provided positive comments about the application process. They said that RFPs were clearly written and that NIDILRR staff was helpful and had a good grasp of the field's needs. One respondent wrote that the review process was getting increasingly better and that in this person's experience as a reviewer, other panelists were sincere and competent.

### **Recommendations for Improving the Application Process**

Based on the results of the survey, we suggest the following changes to the application process:

- Revise program announcements to make them more succinct and better organized. Include the timeline for review and award notification.
- Have a standard application deadline well publicized to the community, ideally at a different time for each program.
- Share reviewer comments with the applicants as soon as they are available even if funding decisions had not yet been made.
- Notify the applicants of the award status a few weeks in advance of the project start date, in particular for shorter grants such as SBIR I.
- Provide clearer scoring guidance to reviewers and applicants and emphasize to reviewers that point reduction must be commensurate with the level of weakness.
- Make the reviewer roster public and allow the applicants to request that their application is not assigned to reviewers who they see as being in conflict.
- Consider collapsing similar evaluation criteria and make sure that the evaluation criteria are consistent with program goals.

### **Study Limitations**

The study had three limitations. First, response rate for SBIR grantees was low, and therefore, our findings may not be generalizable to the entire program. Second, since the contacts provided by PIs were the source of the customer interviews, the findings may be more positively biased since the individuals are likely to be satisfied, frequent users. Third, we could not properly implement the customer interview task for the SBIR program.

## Summary and Conclusions

This report presents findings from the assessment of three NIDILRR programs: KT, DBTAC, and SBIR. In addition, we examined the NIDILRR applicants' satisfaction with the proposal process. The strengths and weaknesses of the evaluation approach, with recommended changes for years 2–5, are presented in Appendix C.

### Disability and Business Technical Assistance Centers

According to the grantees, NIDILRR funding has enabled advancements in public understanding of needs and challenges of individuals with disabilities, resulted in new laws and policies, and led to new approaches to identify, confirm, and manage disability. These advancements occurred in all areas, including health, education, employment, communication, transportation, and social/community life. Many specific examples of benefits were provided in the survey. Challenges experienced by PIs included capturing the impact of the materials and services that they provide and becoming known as a resource.

The contribution of DBTACs conveyed in the survey was strongly reinforced in the conversations with the customers. All of the 19 individuals interviewed reported the importance of DBTACs to their professional responsibilities. The Centers were praised as a source of unbiased and reliable information about ADA as well as for customer orientation of the staff. All respondents who were asked said that there was no comparably good alternative. Finally, the customers spoke positively about training opportunities available at DBTACs.

### Knowledge Translation Program

In contrast to the DBTACs, KT grants included in this study are no longer active. However, at least half of the former grantees continue to provide advice, training, and technical assistance to other grantees and to non-NIDILRR researchers, and maintain and disseminate the resources developed under the KT grants. For example, one center distributed several thousand DVDs related to ADA to employer organizations at no cost. KT PIs continue to help grantees develop technology transfer plans and provide commercialization related materials. Grantees also reported that they maintain various collaborations established during the funding period. Challenges experienced by grantees included interaction with other NIDILRR PIs and lack of awareness that commercialization takes time and effort.

Several examples of KT Center benefits were provided by the users. For instance, the US Equal Employment Opportunity Commission relied on the analysis performed by the KT Center to develop its strategic plan. An SBIR grantee described guidance and help he received from the center as instrumental to the success of his business. Several researchers who received a travel award through a KT center described the experience as broadening their horizons and influencing career direction.

As KT program is expected to produce peer-reviewed articles, we conducted bibliometric analysis to characterize publication impact. We found 23 publications referencing KT grants. All but two of these received at least one citation and one (a systematic review) received 107 citations. The journals in which the papers were published had significantly higher prestige scores than average for all journals in the rehabilitation subject category.

## Small Business Innovation Research Program

SBIR is a mandatory program across the federal government. Consequently, we designed the survey to enable a comparison between SBIR at NIDILRR to other agencies. We found that NIDILRR performed equally well or better on all indicators for which data were available. For example, 70% of NIDILRR PIs had received additional funding, compared to 44–58% at NASA, DOD, and NIH. Only NSF did better, at 93%. Seven of 10 SBIR II grantees reported developing a product with NIDILRR funding, and three of these products were in a marketplace, also exceeding other agencies. Six of the products listed by grantees in the survey had websites advertising them for sale.

When offered an opportunity to comment about the benefits of NIDILRR funding, 57% of the PIs were very positive, saying that the program helped them gain experience, develop and test products, and ultimately serve people with disabilities. Challenges reported by grantees included low funding level/short project duration for Phase I obtaining funding for Phase II.

## Application Process

Participant satisfaction with the application process varied depending on the step in the process. The strongest negative feedback, given by half of the applicants, was about time to award notification, which was seen as unreasonably slow especially because the reviews were dated weeks before they were shared. One-third of respondents were also dissatisfied with proposal scoring and reviewer feedback. We were told that large point deductions were accompanied by disproportionately minor comments. Several applicants claimed that reviewers had not even fully or carefully read the proposal because they were asking for information already included. The feedback was also seen as unhelpful for resubmission. In contrast, the applicants were reasonably satisfied with the help from NIDILRR staff, clarity of program announcement, and the amount of time to submit an application.

Statistically significant differences in satisfaction were observed across six programs (ARRT, RERC, RRTC, SBIR, DRRP, and Switzer). For example, RERC applicants were less satisfied than others with usefulness of pre-funding meeting and clarity of solicitation requirements and DRRP and RERC were less satisfied with usefulness of proposal feedback. Despite the challenge conveyed in the survey, 74% of respondents would apply for NIDILRR funding again.

In conclusion, based on self-reporting by PIs and on the evidence by the users of NIDILRR products and services we identified many tangible benefits of NIDILRR funding. The DBTACs, in particular, are seen as an indispensable resource to many organizations that serve people with disabilities. Among the customers referred to us by PIs several self-identified as having disabilities. All of these individuals spoke of a positive impact of NIDILRR funding, and one described it as life-changing.

The application process can be enhanced. Based on the nature of the comments, we proposed several changes that should improve satisfaction, including sharing reviewer feedback as soon as it is available, establishing fixed application due dates, providing more scoring guidance to reviewers, and a few others.

## Appendix A: Study Protocols

### Survey of Principal Investigators on Americans with Disabilities Act Grants

1. Have you been able to obtain additional, non-NIDILRR funding to support the training, technical assistance (TA), dissemination, and other activities initiated with NIDILRR funding? Select all that apply.

- Yes → GO TO 1A
- No. → GO TO 2

1A. Which funding sources supported these activities? Please list all funding sources and goals of the project and indicate whether you are a Principal Investigator (PI) or a (Co-PI).

Funding agency/branch	Goals of the grant	As a PI or Co-PI? If yes, click button
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>

2. Have any of the following advancements occurred for the intended target audience(s) of your grant, at least in part, as a result of NIDILRR funding? If yes, please indicate which grant activity (training, TA, and/or dissemination) brought about this change. Select all that apply.

	Training	TA	Dissemination
New or improved laws relevant to individuals with disabilities or their caregivers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New or improved policies relevant to individuals with disabilities or their caregivers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New or improved tools, devices, tests, measures, or screening approaches to identify, confirm, or manage disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved understanding by the public of the needs and challenges of individuals with disabilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. In which of the following areas have the advancements occurred? Select all that apply.

- Personal care
- Health
- Transportation
- Communication



- Living arrangement
- Education
- Employment
- Economic life
- Community, social life, and civic life
- I do not know
- Other type of improvement. Please describe \_\_\_\_\_

3A. Please describe the most important benefit(s) for individuals with disabilities.

\_\_\_\_\_

3B. Can you suggest individuals who will be willing to further speak with us about the benefits of your work? These persons can be researchers, policymakers, care providers, disability advocates, educators, individuals with disabilities, or other appropriate persons.

	Name	Position and affiliation	Email and phone number	Nature of the benefit
1.				
2.				
3.				
4.				
5.				

[If any individuals are suggested] In order to speak about the benefits of your work, we will need to mention your name and your work to these individuals. Do we have your permission to do so?

- Yes. You can mention my name and my work
- No. You cannot mention my name and/or my work

4. What have been the greatest challenges to accomplishing your ADA grant goals?

\_\_\_\_\_

5. Please feel free to make any other comments about the importance of NIDILRR programs to your work and to individuals with disabilities.

\_\_\_\_\_

## Survey of Principal Investigators on Knowledge Translation Grants

1. Were you a Principal Investigator or Project Director on a Knowledge Translation (KT) grant Number [xxx] Title [yyy]<sup>15</sup>?
  - Yes → 2
  - No → Exit the survey
  
2. Since the end of your KT grant, have you engaged in any of the following activities related to that grant? Select all that apply.
  - Disseminate information acquired during the funding period about best practices and challenges in KT and/or technology transfer (TT)  
If selected → Please elaborate [text box]
  
  - Provide advice, training, and/or technical assistance to NIDILRR-funded researchers related to KT and/or TT  
If selected → Please elaborate [text box]
  
  - Provide advice, training, and/or technical assistance to non-NIDILRR-funded researchers related to KT and/or TT  
If selected → Please elaborate [text box]
  
  - Maintain KT and/or TT-related databases or other information systems and resources developed with NIDILRR funding.  
If selected → Please elaborate [text box]
  
  - Disseminate information about NIDILRR-funded research and development to researchers, individuals with disabilities, service providers, advocates, employers, and other stakeholders.  
If selected → Please elaborate [text box]
  
  - Link disability and rehabilitation researchers with industry, service providers, and other potential users of their work.  
If selected → Please elaborate [text box]
  
  - Other  
If selected → Please elaborate [text box]
  
  - I have not engaged in any of the activities related to the KT grant
  
3. Please indicate with which of the following groups you have maintained collaborations established during the funding period. Select all that apply.
  - Researchers
  - Health care providers/professionals
  - Educators
  - Vocational rehabilitation professionals

---

<sup>15</sup> Pre-loaded, so that respondent can see

- Employers
- Business organizations
- Advocates
- Funders
- Other federal, state, or local agencies
- Individual with disabilities
- Caregivers or family members of individuals with disabilities
- Other \_\_\_\_\_
- I have not maintained any collaborations

Please describe the most important collaboration from the items indicated above, including its nature and purpose.

\_\_\_\_\_

4. Have any of the following outcomes occurred since the end of your KT grant and at least in part as the result of the work on this grant? Select all that apply.

Knowledge

- Increased understanding of KT and/or TT process/practice by NIDILRR grantees  
If selected → Please elaborate [text box]
- Increased understanding of KT and/or TT process/practice by individuals other than NIDILRR grantees  
If selected → Please elaborate [text box]
- Increased understanding of commercial landscape by NIDILRR grantees  
If selected → Please elaborate [text box]
- Increased familiarity with systematic reviews and other rigorous research synthesis methods applied to disability and rehabilitation research  
If selected → Please elaborate [text box]
- Increased familiarity with high quality evidence in disability and rehabilitation research  
If selected → Please elaborate [text box]
- Increased awareness of findings and/or products resulting from NIDILRR-funded research and development among individuals with disabilities, services providers, advocates, and researchers  
If selected → Please elaborate [text box]
- Other contributions to knowledge  
If selected → Please elaborate [text box]

Practice/System Capacity

- Commercialization of products by NIDILRR grantees  
If selected → Please elaborate [text box]

- Dissemination of research and development findings/products by NIDILRR grantees beyond journal publications  
If selected → Please elaborate [text box]
  - Increased use of valid and relevant disability and rehabilitation research findings to inform policy and/or practice  
If selected → Please elaborate [text box]
  - Publication of systematic reviews and other items requiring rigorous research synthesis  
If selected → Please elaborate [text box]
  - Improvements in care and/or services provided to individuals with disabilities  
If selected → Please elaborate [text box]
  - Improved understanding by the public of the needs and challenges of individuals with disabilities  
If selected → Please elaborate [text box]
  - Other contributions to practice/system capacity  
If selected → Please elaborate [text box]
5. Since the end of your KT grant, have you been able to use knowledge, methods, training materials, tools, or other resources developed under the grant to advance KT and/or TT in areas other than disability and rehabilitation?
- No
  - Yes
- If yes is selected → Please elaborate [text box]
6. Since the end of your KT grant, have you obtained additional funding to support/continue the activities that have begun under the KT grant? Please select one.
- Yes → GO TO 6A
  - No

6A. Please list all funding sources and goals of the project and indicate whether you are a PI or a co-PI.

Funding agency/branch (e.g. Department of Education/NIDILRR)	Goals of the grant	As a PI or co-PI? If yes, click button
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>

7. To help us further document the impacts of your work, can you suggest an individual or individuals who can speak with us about the benefits of your work to other grantees, individuals with disabilities, or other disability stakeholders? This person can be another researcher, policymaker, care provider, disability advocate, educator, individual with disabilities or his/her caregiver, or any other appropriate person.

	Name	Position and affiliation	Email and phone number	Nature of the benefit
1.				
2.				
3.				

7A. [If any individuals are suggested] In order to speak about the benefits of your work, we will need to mention your name and your work to these individuals. Do we have your permission to do so?

- Yes. You can mention my name and my work
- No. You cannot mention my name and/or my work

8. In retrospect, what were the greatest challenges to accomplishing the goals of your NIDILRR-funded KT grant?

\_\_\_\_\_

9. Before you go, please feel free to share any other thought about the KT program.

\_\_\_\_\_

## Survey of Principal Investigators on Small Business Innovation Research Grants

1. Which of the following grants have you been awarded by the National Institute for Disability, Independent Living, and Rehabilitation Research (NIDILRR)? Select one.

- SBIR Phase I → GO TO 2
- SBIR Phase II → SKIP 2, GO TO
- SBIR Phase I and II → GO TO 2
- None of the above → Exit the survey

2. What were the most important results of your NIDILRR SBIR Phase I funding?

\_\_\_\_\_

3. Did you receive additional funding to commercialize your idea? Select one.

- No → GO TO 3A
- Yes → GO TO 3B

3A. Which of the following statements are correct? Select one.

- As a result of SBIR Phase I research, we decided that our idea did not have commercial potential
- We applied for a SBIR Phase II grant, but were not successful in receiving it
- We applied for non-SBIR funding, but were not successful in receiving it

3B. What was the source of the additional funding? Select all that apply.

- SBIR Phase II from NIDILRR
- SBIR Phase II from another agency
- Non-SBIR federal funds
- State, local, or tribal government
- Private investment
- Investment from the company selling the product
- Your personal funds
- Other funding sources. Please list \_\_\_\_\_

SKIP 4–9 for SBIR PHASE I

4. Which of the following products resulted from your NIDILRR SBIR Phase II funding? Select all that apply.

Type of products	Click button if “yes”
No product(s) resulted from NIDILRR funding	<input type="checkbox"/>
Industry standard/guideline	<input type="checkbox"/>
Software/netware	<input type="checkbox"/>
Hardware	<input type="checkbox"/>
Assistive technology	<input type="checkbox"/>
Durable medical equipment	<input type="checkbox"/>
Research tool	<input type="checkbox"/>
Educational material	<input type="checkbox"/>

5. Please describe the most important commercialization outcome and include a citation, if possible:

\_\_\_\_\_

6. What is the current sales status of your product? Select one.

- No product resulted from SBIR program → GO TO 10
- Product discontinued → GO TO 8
- No sales to date; sales are expected → GO TO 10
- No sales to date; sales are not expected → GO TO 10
- No sales, but outcome is used by intended target population → GO TO 10
- The product is being sold in a marketplace → GO TO 7

7. Please estimate the sales resulting from the product(s) to date. Select one.

- <\$100K
- \$100K to \$1M
- >\$1M to \$5M
- >\$5M to \$10M
- >\$10M to \$50M
- >\$50M

8. Approximately, how many units of the product have been sold since the company was established?  
Please enter number.

\_\_\_\_\_

9. How many persons are currently employed by the company that benefited from NIDILRR funding?  
Select one.

- There is no longer a company
- 1–5
- 6–10
- 11–20
- 21–50
- 51–100
- >100

10. Would you have undertaken the project without this NIDILRR funding? Select one.

- Definitely yes → GO TO 12
- Probably yes → GO TO 12
- Uncertain → GO TO 12
- Probably not → GO TO 10A
- Definitely not → GO TO 10A

10A. Why not? What has NIDILRR funding enabled you to do?

\_\_\_\_\_

11. If NIDRR could change the funding amount, which funding option do you prefer? Select one.

- Double the funding for SBIR Phase I from \$75,000 to \$150,000 and reduce the number of awards by half
- Keep the number of awards and the funding amount the same
- No opinion

12. We would like to further document the impact of your work by speaking with the individuals who have benefits from it. Appropriate persons might include researchers, policymakers, care providers, disability advocates, educators, individuals with disabilities, and their caregiver(s).

Because of privacy concerns, we cannot ask you to share these persons' email, so instead we would very much appreciate it if you would share our email, NIDRR\_Evaluation@abtassoc.com with any individual who you believe would be willing to speak with us regarding the benefits of your work. We will take no more than 15 minutes of their time.

13. In retrospect, what were the greatest challenges to accomplishing the goals of your SBIR grant?

---

14. Please use the space below to make any additional comments about the importance of NIDILRR programs to your work and to individuals with disabilities.

---



## Survey of Applicants

1. What is your level of satisfaction with the following aspects of the application process? If you are not satisfied, please explain why in the rightmost column which will automatically appear.

	Dissatisfied	Somewhat dissatisfied	Neutral	Somewhat satisfied	Satisfied	Too early to tell	NA
Clarity of the solicitation requirements							
Clarity of the evaluation criteria							
Usefulness of the pre-funding meeting							
Helpfulness of NIDILRR staff on logistical and other issues							
Suitability of required proposal format to convey research and development plans							
Amount of time allowed for proposal submission							
Usability of grants.gov application upload system							
Quality of feedback on proposal							
Usefulness of feedback on proposal							
Length of time from proposal submission to award decision notification							
Funding duration							
Funding amount							

1A. If dissatisfied or somewhat dissatisfied is selected for any category:

Why were you not satisfied with \_\_\_\_\_?

\_\_\_\_\_

2. Will you apply for NIDILRR funding in the future? Select one.

- No
- May be
- Yes

3. Please feel free to share any other thoughts related to the application process. NIDILRR values your input!

\_\_\_\_\_

## Customer Interview Questions

1. Please describe your role and the nature of your involvement with the ADA (or KT) grant.  
[Question added to the original protocol]
2. What were the benefits resulting from this involvement to you? Your organization? People with disabilities?
3. Would you like to add anything else about the value of NIRILRR programs?

## Appendix B: Interviewee Information

	Name	Referencing Program	Position
1	Paul Ackerman	KT	International consultant, parent advocacy coalition for educational rights
2	Meg Conger	ADA	ADA Compliance Manager, Kansas City
3	Brenda Dawes	ADA	Project Affiliate, Oklahoma ABLE Tech
4	Stanley Ducharme	KT	Professor, Boston University
5	Ron Edwards	KT	Director of Research, EEOC
6	Robert Fraser	KT	Professor, University of Washington
7	Michael Gibbens	ADA	Architect and Author, Private business
8	Rob Hodapp	ADA	Western PA Employment Specialist, PA Vocational Rehabilitation
9	Caroline Van Howe	KT	Chief Operating Officer, Assistive Technology Industry Association
10	Margot Imdieke	ADA	Accessibility Specialist, Minnesota Council on Disability
11	Dan Johnson	ADA	Director, State Council on Physical Disability
12	Maya Kalyanpur	KT	Associate Professor, University of San Diego
13	Gary Kidd	ADA	ADA Specialist, The Disability Network
14	Matthew Lerner	SBIR	Assistant Professor, Stony Brook University
15	Kathy Lovell	ADA	ADA Manager at Regions Bank
16	Janice Marrero	ADA	Disability Consultant, Private business
17	Kerri Morgan	KT	OT Program Instructor, Washington University
18	James Rimmer	KT	Professor, University of Alabama
19	Phillip Rumrill	KT	Professor, Kent State University
20	Nicole Russo	SBIR	Assistant Professor, Rush University
21	Robye Scott	ADA	Sr. Manager-Compliance, Kraft Foods
22	Betty Siegel	ADA	Director of Accessibility, The Kennedy Center for the Performing Arts
23	Vicki Simpson	ADA	Attorney General's Office, State of Illinois
24	Emmanuel Smith	ADA	Person with a disability, Disability Rights Iowa
25	Steve Sutter	KT	President, Creatability Concepts
26	Patty Tingle	ADA	Director Bay Area Center for Independent Living
27	Ruth Tofle	ADA	Chair of Environmental Sciences-University of Missouri
28	Wendy Wilkinson	ADA	Former director of the ADA Center
29	Victoria Willard	ADA	EEO Manager and ADA Coordinator, County of Sonoma

## Appendix C: Implications for Future Evaluation

This evaluation year was a testing ground for some of the approaches and instruments that will be used again for other programs. Therefore, it is helpful to reflect on what went well and what can be improved.

### ***What Went Well***

All survey instruments are working as intended; based on the data, respondents appeared to have understood the questions and could answer them. None of the emails that we received while the survey was in the field indicated any problems with the instruments. The only minor adjustment that we made during data collection was to the customer interview protocol. We found that it was helpful to first ask respondents about their roles and responsibilities, so that the benefits of the ADA and KT centers could be put in context. We recommend adding this question to the protocol.

The applicant survey was also successful. Since we found that respondents' satisfaction has not been influenced by the review outcome, we recommend conducting the survey once after the award is announced.

### ***Challenges and Proposed Changes***

We encountered two challenges. The first one was low response rate for SBIR program. Our attempts to recruit additional PIs by sending multiple reminders (including by NIDILRR staff) and by verifying email addresses were only partially successful. It appeared that most non-respondents did not open the survey. We are unsure how this type of problem can be addressed in the future, other than by limiting respondent pool to more recent grantees.

The second challenge was with obtaining contacts for customer interviews. While our proposed approach of asking for a contact in the survey worked very well (a total of 47 contacts were provided by 16 respondents), relying on the customers to reach out to us was ineffective (only one person did so). Therefore, we recommend asking for the contacts in future years.