

Technical Report - Vocational Rehabilitation Database Analysis: RSA-911 Case Service Report and Database Linking (Version 1.0)

Todd Schwanke, MSE, ATP & Roger O. Smith, PhD, OT

Introduction

This segment of database analysis emerged from the needs assessment phase of the ATOMS Project as a result of the analysis of the assistive technology (AT) service providers' clinical databases. That analysis looked at records from five service programs across the USA and revealed that AT service programs currently do not collect consistent or sufficient data for outcomes analysis. But, it revealed to the project that state vocational rehabilitation (VR) systems/agencies collect and report summary data in a federally mandated format called the Rehabilitation Services Administration (RSA) Case Service Report, also known as the RSA-911. This article provides some background on the contents of the RSA-911 data and then describes plans for analysis of RSA-911 and related vocational rehabilitation agency data.

The RSA-911 data is of interest to the ATOMS Project because it presents at least two opportunities for additional in-depth analysis. First, at a state level, this additional data could be linked to existing and future AT service clinical records to provide a more complete picture of the “ingos” and the “outcomes” (Smith, 2002). Second, at a national level, the RSA-911 data (which has already had identifying information removed) could be analyzed without linkages to other data sources to determine what AT outcomes questions can be answered.

The RSA-911 report is submitted annually for the preceding fiscal year (US Dept of Education, 2000, April 17) by each state's vocational rehabilitation agency. If the state has a separate agency to specifically serve individuals who are blind, that agency submits a report with a separate agency code. The report contains a record for each case closure that occurred in an agency, regardless of the reason for closure. Therefore, because case closure is the trigger event, it is feasible that a consumer: 1) may not appear in the report in a given year, even though they received VR services during that year or 2) an individual may appear more than once in one year, if their case was closed on two or more separate occasions.

The Federal Rehabilitation Services Administration 911 Report aggregates many variables of outcomes related information, including demographics, disability, interventions, and reason for closure, employment status, sources of financial support, and more. The values of certain fields (e.g. income, hours worked per week, etc.) are reported both status at application and status at closure. Of obvious interest to this project is that “Rehabilitation Technology” is one of the interventions tracked. This category includes, “Rehabilitation Technology Service”, “Assistive Technology Devices”, and “Assistive Technology Services”.

Fields in the RSA-911 that record performance at two points in time also make the report of particular interest because it mirrors the ATOMS Projects keys concepts

related to AT outcome measurement (Smith, 2002). That is, it is at a minimum essential to consider and collect both “ingos” and “outcomes” data and that these types of data are related in a theoretical framework. In this framework, assistive technology interventions are one type of ingo variable, and the impacts of the intervention are determined through changes in performance measured before and after the intervention, and through techniques to isolate the variable from other ingo variables.

This technical report reviews the status, experiences, findings, and conclusions of the ATOMS Project analysis that has been completed to-date on the RSA-911 reports and related data. Future updates will detail any findings that result from linking data sets or analysis of actual data sets.

Methods and Findings

In meeting with ATOMS Project partners and Wisconsin Division of Vocational Rehabilitation (DVR) staff while analyzing the AT service provider databases, the ATOMS Project staff became aware of the RSA-911 report. Furthermore, project staff learned more about the Wisconsin DVR method of collecting data and producing this report. The Wisconsin DVR system uses a client services tracking system called IRIS that is almost exclusively electronic, including case notes. While this live system is useful for documentation, it is not practical for data analysis. Therefore, data is extracted from the IRIS system into a Microsoft Access database file. The data is then analyzed in Microsoft Access and exported to the standard RSA-911 format for submission.

The following sections provide an overview of RSA-911 Case Service Report and its contents. These sections are followed by the Findings and Sample Questions sections, which begin to detail plans for linking and analyzing data.

Brief overview of the RSA-911 format. The RSA-911 report format is specified in a very basic, but rigid flat file database format in the ASCII (American Standard Code for Information Interchange) code. This might have occurred for several reasons including: the state of technology when the report was first devised, selecting a lowest common denominator that all states could achieve, and maximizing the compatibility of data sets from all the different states when merging them together at the national level. Reports can now be submitted on CD-ROM, floppy disk, electronically or on magnetic tape (US Dept of Education, 2000, March 16).

The format specifies that a database record be listed for each closure that occurred during the fiscal year (US Dept of Education, 2000, March 16). Each record consists of exactly 213 characters (US Dept of Education, 2000, March 16). Each record is almost exclusively represented with numeric digits, because any field that would have non-numeric values (such as disability type) has been coded with a discrete number of categories with associated numeric values.

The “Reporting Manual for the Case Service Report (RSA-911)” specifies the number of characters, the position, and, where appropriate, the possible values for each field within the record. The format divides each record into “elements”, of which there are 43 in the current format (US Dept of Education, 2000, March 16). Some of these elements are then subdivided into smaller elements. For example, the element, “19.

Monthly Public Support Amount at Application” is divided into 1) SSDI, 2) SSI, 3) TANF, and 4) All Other Public Support.

The Policy Directive RSA-PD-95-04 of 1995 (US Dept of Education) specified a format to be used for the Case Service Report that was used through fiscal year (FY) 2001. In 2000, policy directives RSA-PD-00-06 and RSA-PD-00-07 (US Dept of Education) were issued that announced the release of a new format that was mandated starting with reporting for FY 2002. Examples of some of the changes contained in the RSA-PD-00-06 (US Dept of Education, 2000, March 16):

- Change from a two digit alpha-numeric agency code to a three digit numeric agency code
- Addition of a new data element called “Date of Individualized Plan for Employment (IPE)”
- Replacement of “Major Disabling Condition” with “Primary Disability” and using a new coding structure.
- Adding a new service categories under the element ‘Services Provided’, including ‘Job Readiness Training’ and ‘On-the-job-supports’.
- Consolidating the three separate types of services under the ‘Rehabilitation Technology Services’ element into a category called ‘Rehabilitation Technology’ under the element ‘Services Provided’. In addition, as with all ‘Services Provided’ in this new format, the use or disuse of the service is indicated by a vendor code and source of funding code (US Dept of Education, 2000, March 16), rather than just indicating specifically whether that service was provided and then separately and generically specifying the facilities that provided those services.

‘Rehabilitation Technology Services’ were first mandated as a data element by RSA-PD-95-04 (US Dept of Education, 1995). This reporting format would have gone into effect for reports either for FY 1995 or FY 1996. At that time, the ‘Rehabilitation Technology Services’ data element was divided into ‘Rehabilitation Engineering’, ‘Assistive Technology Devices’ and ‘Assistive Technology Services’, so data through FY 2001 could reveal something related to how these individual pieces interact and impact outcomes. Correspondingly, with the addition of the “Rehabilitation Technology Services” data element: 1) ‘Restoration’ which fell under the element ‘Services Provided’ was defined to no longer included devices and 2) ‘Adjustment training’ which fell under the element ‘Services Provided’ no longer was defined to included training in the use of devices (US Dept of Education, 1995). It is curious why ‘Rehabilitation Technology Services’ was set up as a new element, rather than grouping it under ‘Services Provided’. As indicated above, it was later grouped under ‘Services Provided’ as mandated in RSA-PD-00-06 (US Dept of Education, 2000, March 16).

Sample Fields and their Values from RSA-911. It is highly recommended that the reader of this document obtain a print or electronic copy of the current “Reporting Manual for the Case Service Report (RSA-911)” (US Dept of Education, 2000, March 16) to gain a more detailed understanding of the range and types of elements and their possible values. The document is on the order of 50 pages, making

it impractical to reprint here. For convenience and discussion, a few examples of the fields are shown below to exemplify the types of elements, fields, and allowed values.

The “Date of Birth ” element (page 7 of the manual) is an eight-digit field with common numeric values for year, month, and day, in that order. In terms of AT outcomes measurement, this describes the person and represents an ‘ingo’ variable.

6. Date of Birth

Record date (year, month, and day) of birth using the eight-digit protocol:

6(a) Year of Birth

Record Positions: 23-26

6(b) Month of Birth

Record Positions: 27-28

6(c) Day of Birth

Record Positions: 29-30

Use Code ***** if this information is not available for Closure Code 1.

The “Level of Education Attained at Application” (pages 8-9 of the manual) is a single digit field with a numeric code representing ten possible values. It has a corresponding element “26. Level of Education Attained at Closure”. In terms of AT outcomes measurement, this represents both an “ingo” and an “outcome” variable.

10. Level of Education Attained at Application

Record Position: 39

Record the level of education the individual has attained at the time of application. If an actual educational level is not documented, record an estimated level.

Use the following codes:

0 No formal schooling

1 Elementary education (grades 1-8)

2 Secondary education, no high school diploma (grades 9-12)

3 Special education certificate of completion/attendance

4 High school graduate or equivalency certificate (regular education students)

5 Post-secondary education, no degree

6 Associate degree or Vocational/Technical Certificate

7 Bachelor's degree

8 Master's degree or higher

* Information is not available for Closure Code 1

The elements “17. Hours Worked in a Week at Application” (page 15 of the manual) and “31. Hours Worked in a Week at Closure” (page 32 of the manual) are both two digit fields with a numeric value of the number of hours. This pair of fields is an example of data collected at two points in time (before and after interventions) that we

consider to be “outcome” variable because it has the potential to convey something about change in performance.

17. Hours Worked in a Week at Application

Record Positions: 57-58

Enter the number of hours an individual worked for earnings in a typical week at the time of application. Earnings may have been in the form of wages, salaries, tips, commissions, profits from self-employment, adjusted gross income for salespersons, etc. If the individual generated no earnings, enter 00. If the person worked 99 or more hours in one week, enter 99. Fill in leading zero when it applies. For example, enter 06 for an individual who worked six (6) hours. Use Code ** if the information is not available for Closure Code 1.

31. Hours Worked in a Week at Closure

Record Positions: 167-168

For an individual who achieved an employment outcome, enter the number of hours the individual worked for earnings in a typical week when the service record was closed. Earnings may have been in the form of wages, salaries, tips, commissions, profits from self-employment, adjusted gross income for salespersons, etc. If the individual generated no earnings, enter 00. If the person worked 99 or more hours in one week, enter 99. Fill in leading zero when it applies. Use Code ** for all other closure codes.

“Services Provided” (pages 20-28 of the manual) is an element with 22 separate two digit fields with the first numeric code representing the Vendors/Providers (if the service was provided) and the second numeric code representing the source of funding for the service (if provided). In terms of AT outcomes measurement, this represents both an “ingo” and an “outcome” variable. It is important to note that this field example reflects the RSA-PD-00-06 version of the Reporting Manual for the Case Service Report, which combines the three previous types of Rehabilitation Technology Services into a single field. This removes the ability to isolate their individual effects without using another source of data.

25. Services Provided (*NOTE: This is a partial listing of this element. There are 21 other “services” fields in this element that are not listed here for brevity*)

Rehabilitation Technology

Record Positions: 140-141

Rehabilitation technology means the systematic application of technologies, engineering methodologies, or scientific principles to meet the needs of, and address the barriers confronted by, individuals with disabilities in areas that include education, rehabilitation, employment, transportation, independent living, and recreation. The term includes the following:

Rehabilitation Technology Service

Rehabilitation technology is the systematic application of engineering sciences to design, develop, test, evaluate, apply, and distribute technological solutions to problems confronted by individuals with disabilities in functional areas such as mobility, communications, hearing, vision, and cognition, and in activities associated with employment, independent living,

education, and integration into the community.

Assistive Technology Devices

Assistive technology device means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain, or improve the functional capabilities of an individual with a disability.

Assistive Technology Services

Assistive technology service is any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device. Services may include:

- a) evaluating the needs of an individual with a disability, including a functional evaluation of the individual in his/her customary environment;
- b) purchasing, leasing, or otherwise providing for the acquisition by an individual with a disability of an assistive technology device;
- c) selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing assistive technology devices;
- d) coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs;
- e) training or providing technical assistance for an individual with a disability or, if appropriate, the family members, guardians, advocates, or authorized representatives of the individual; and
- f) training or providing technical assistance for professionals (including individuals providing education and rehabilitation services), employers, or others who provide services to, employ, or are otherwise substantially involved in the major life functions of individuals with disabilities to the extent that training or technical assistance is necessary for an individual with a disability to achieve an employment outcome.

NOTE: It is possible for these services to be classifiable under any of the other service categories.

These examples show the different types of fields contained in the database that is assembled from the RSA-911 reports. Recall from these examples that the data values can be divided into two types. The first is formatted numeric values, such as social security number, dates, wages, and hours worked. The second is type is encoded where a numeric value represents a category or classification. Examples of this second type include primary disability, vendor type, race and ethnicity, and reason for closure.

Currently Available RSA-911 Data. As of August 2003, the most recent RSA-911 data available through RSA is for FY 2001. This represents the last set of data that followed that the 1995 version of the case service report (US Dept of

Education, 2000, March 16). The data is available with the social security numbers removed so that the data would be difficult to link to a particular individual.

Findings

The following excerpt was pulled from Schwanke & Smith, (submitted):

“Some of the ATOMS Project partners used in the AT service provider record analysis (UW-Stout, PROVAIL/Warren & Associates, University at Buffalo, Helen Hayes Hospital) are associated with state vocational rehabilitation agencies on a fee-for-service basis. In this relationship, the vocational rehabilitation system refers to the service program as a vendor. This may be an assistive technology service to evaluate possible AT interventions or to actually implement AT interventions. Usually, vendors or manufacturers supply the technology, whereas the service programs are providing the professional expertise. The service program may or may not obtain background information from the vocational rehabilitation agency. In this arrangement, the vocational rehabilitation agency maintains contact with the client before, during, and after the client receives services from the AT services program.

“The previously discussed analyses of service program data revealed that useful outcomes information was unlikely to be extracted from the programs records alone. We began wondering if other sources of existing data might be able to help fill the void to reduce the mandate to invent a complete data system. Among several discussions with our partners and prompting by some of the service records we evaluated, it appeared that State vocational rehabilitation service programs may provide a complementary source of data that may be fruitful if they could link to service programs data. This sensible relationship has grounding since State vocational rehabilitation departments:

- serve as a referral source for many assistive technology service programs,
- track clients based on a standardized status code system,
- track data about devices and services purchased for clients,
- track and have knowledge of concurrent interventions that clients receive,
- have implemented (in some states) electronic client record keeping, and
- report summarized data, including data related to assistive technology, in a standard way to the Federal government on a regular basis.”

“Meetings with staff at the Wisconsin Division of Vocational Rehabilitation (DVR) revealed three sources of electronic data. Briefly, these include and are related to each other in the following ways:

1. The IRIS Database: The Wisconsin DVR's active client record system that is used for recording all aspects of their services from the application process, to third party services and devices provided, to case notes. This system was specifically designed for the State of Wisconsin, was implemented in 1999, and represented a move towards predominantly electronic client records compared to the prior system that relied on many paper records.
2. The IRIS Access Database: A portion of the IRIS Database is periodically extracted for use in a Microsoft Access database for analysis purposes, as it is not feasible to do this directly within the active IRIS system.
3. The RSA-911 Case Service Report: This report is also a database and is generated from the IRIS Access Database. The RSA-911 is submitted annually. Its format is mandated by the Federal Government so that it is the same for all states (U.S. Department of Education, 2000a)."

The third data source will in theory be the same for all states. However, the first two represent Wisconsin specific procedures that are not standardized across the U.S.A., so databases in other states may make different forms (such as paper file based client records) or use different methodology. The following excerpt, again, is from Schwanke & Smith (submitted):

“Analysis reveals that as data are collected by AT service programs or vocational rehabilitation, neither system by itself allows us to specifically look at the outcomes of AT. While the vocational rehabilitation system is designed to determine if the overall system works it does not provide the needed focus on AT specific interventions. While AT service programs collect intervention specific data, they fail to collect outcomes data such as success in employment or documentation of the provision of concurrent interventions. On the other hand, the potential of these two data systems comes from the prospect of being able to link the two together. If these service and outcomes data were linked, cross-examination could potentially extract some types of assistive technology outcomes information. This linkage could be made possible through the use of unique client data fields, such as Social Security Number (SSN), client ID numbers, or purchase order numbers. However, use of these identifiers creates other types hurdles.

“An obvious benefit of investigating the use of the RSA-911 reports is that it contains summary information rather than the client's complete record. Therefore, it does not contain data and information such as case notes, contact information, and detailed medical record that might offend privacy and confidentiality. The corresponding disadvantage of using these data for outcomes analysis is that these databases currently fail to include essential detail that might exist in active client files such as the make, model, and price of specific AT devices or services funded, purchased and provided.”

Sample Questions. Continuing from Schwanke & Smith (submitted), “The potential linkage of these data in the State of Wisconsin suggested that a number of outcomes research and administrative program evaluation questions might be answerable. The ATOMS Project team formulated a set of such questions, specifically grounding them on AT service program records and RSA-911 data sources. If both were loaded into a common database, we may be able to examine these questions:

1. Does AT influence a better vocational outcome as indicated by:
 - a. Earnings?
 - b. Percentage of successful placements?
 - c. Reduced time in the system?
2. How does the use of AT compare to other interventions? Is AT cost effective?
 - a. Does it result in more or less time in system?
 - b. What is the cost to the system?
 - c. What are the benefits (taxes, reduction of other benefits, etc.) to the system?
3. How do AT devices and services compare to each other? Do some AT devices or services work better than others? Are there differences in and what is the meaning of indicators, including:
 - a. Time in the system?
 - b. Income at closure?
 - c. Frequency of reopened cases?
4. Are AT services and devices provided in an equitable way across the state?
 - a. By office
 - b. By counselor
 - c. By geography
 - d. By vendor
5. Are there differences in outcomes based on disability types?
 - a. Does AT work better for different disability types?
 - b. Does AT work better for people with different priority of DVR services based on disability severity?”

Discussion

The earlier analysis of AT service provider databases identified that AT programs that service vocational rehabilitation clientele interact with a larger data collection and management system, which includes the vocational rehabilitation agency’s service records and their subsequent RSA-911 report. Combining those two sources creates the potential for additional outcomes investigation possibilities. Of course, this would mean that two diverse systems would need to communicate and link data. The ATOMS Project continues to investigate the possibility that this can be done, along with the possibility of analyzing the national aggregate RSA-911 by itself to determine what AT outcomes questions might be answered.

This analysis is currently in the protocol design phase, which includes submission for Institutional Review Board (IRB) approval. In order for any linking of databases to be accomplished, at least one identifier (social security number, client ID, etc.) that both database owners recognize must be used. While challenging, this will provide practical experience in addressing legal issues related to privacy, consent, and application of results. This experience is critical as the ATOMS Projects continues to target recommending the next generation system for collecting data and analyzing it for AT outcomes information.

“The design of an AT outcomes measurement system must acknowledge and respect legal and ethical issues. The ATOMS Project has taken the approach that data collection and analysis should consider such issues as paramount in its design process. Inherent to this are the implications of technology and the inherent capability of data abuse among large-scale data systems. To respond to this potential and avoid a data system design that ignores legal and ethical reality, the ATOMS Project team explicitly examines legal and ethical aspects in parallel with the analysis of using existing databases. It is essential that the results and plans for a next generation system be proactive in its design relative to the legal rights of individuals and ethical responsibility.” (Schwanke & Smith, submitted)

It is unfortunate that the most recent version of the RSA-911 report specifications merged rehabilitation technology (engineering), assistive technology devices and assistive technology services into one field (US Dept of Education, 2000, March 16). Doing so makes it impossible to know solely based on the RSA-911 report whether an individual received any setup, training, or configuration along with the device. Likewise, it makes it impossible to identify those situations where an individual receives only AT services, without getting any new devices. While we cannot assure the reliability and validity of the data in the fields when they were three separate fields during the previous version of the RSA-911 report, it at least provided the potential to isolate a critical component in AT service delivery. The ATOMS project will likely attempt some analysis that compares the AT outcomes information that results from FY 2000 & FY 2001 data when there were three separate fields, compared to results from FY 2002 & FY 2003 data when the fields are combined. This is of course dependent on the release of the FY 2002 and FY 2003 data, which has not yet occurred.

Though the RSA-911 report lacks specificity in terms of interventions, it appears that it is a valuable source of data for AT outcomes studies. It is unique in that it has a large number of records (order of 600,000) and that the data format is standardized nationwide. The database alone could answer some questions about AT. Combining RSA-911 data with service delivery data is a much more complicated task, but could answer a range of assistive technology outcomes related questions of interest to service providers, people with disabilities and vocational rehabilitation state agencies.

References

- Schwanke, T.D. & Smith, R.O. (2004). *Assistive technology outcomes in work settings*. Manuscript submitted for publication.
- Smith, R. O. (2002). Assistive technology outcome assessment prototype measuring "ingo" variables of "outcomes". *RESNA 25th International Conference on Technology and Disability: Research, Design, Practice and Policy*, 239-241.
- United States Department of Education (1995, May 1). Policy directive: RSA-PD-95-04. Retrieved May 10, 2004, from <http://www.ed.gov/offices/OSERS/RSA/guidance/PD-95-04.pdf>.
- United States Department of Education (2000, March 16). *Policy directive: RSA-PD-00-06*. Retrieved May 10, 2004, from <http://www.ed.gov/policy/speced/guid/rsa/pd-00-06.pdf>.
- United States Department of Education (2000, April 17). *Policy directive: RSA-PD-00-07*. Retrieved May 10, 2004, from <http://www.ed.gov/policy/speced/guid/rsa/pd-00-07.pdf>

Acknowledgment

The ATOMS Project and this work are supported in part by the National Institute on Disability and Rehabilitation Research (NIDRR), grant number H133A010403. The opinions contained in this publication are those of the grantee and do not necessarily reflect those of the NIDRR and the U.S. Department of Education.