

Volume 6: Validating the DAF18 Against Other Sources

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Social Security Administration
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Washington, DC 20024-2796
Project Officers: Paul O’Leary and Debra Tidwell-Peters
Contract Number: SS00-16-60003

Submitted by:

Mathematica
1100 1st Street, NE
12th Floor
Washington, DC 20002-4221
Telephone: (202) 484-9220
Facsimile: (202) 863-1763
Project Director: Jody Schimmel Hyde
Reference Number: 50214.Y3.T05.530.360

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GLOSSARY

AB	Accelerated Benefits Demonstration
ADM	Awardee Data Mart
AIME	Average Indexed Monthly Earnings
B.E.S.T.	Benefits Entitlement Services Team
BFW	Benefits forgone due to work
BIC	Beneficiary Identification Code
BMF	Budget Month Factor
BOAN	Beneficiary's Own Account Number
BOND	Benefit Offset National Demonstration
BOPD	Benefit Offset Pilot Demonstration
CAN	Claim Account Number
CDR	Continuing Disability Review
CDRCF	CDR Control File
CER	Characteristics Extract Record 100% Field File
COLA	Cost-of-Living Adjustment
DAC	Disabled Adult Child
DAF	Disability Analysis File (previously known as TRF)
DBAD	Disabled Beneficiary and Dependents Extract
DCF	Disability Control File
DDS	Disability Determination Services
DER	Detailed Earnings Record
DI	Disability Insurance, also referred to as SSDI
DMG	Demographic component of the DAF
DSN	Dataset names

DWB	Disabled Widow Beneficiaries
EN	Employment Network (also called a TTW provider)
EPE	Extended Period of Eligibility
EVS	Enumeration Verification System
EXR	Expedited Reinstatement
FBR	Federal Benefit Rate
FCI	Federal Countable Income
FIPS	Federal Information Processing Standards (in reference to U.S. Census standardized codes for uniform identification of geographic entities)
FRA	Full Retirement Age
HI	Hospital Insurance (Medicare Part A)
HOPE	Homeless Outreach Projects and Evaluation Demonstration
HUN	Housed Under Number
ICD-9	International Classification of Diseases Coding Scheme
IPE	Individualized Plan for Employment, developed by SVR Agency
IRS	Internal Revenue Service
IRWE	Impairment-Related Work Expense
LAF	Ledger Account File
LAUS	Local Area Unemployment Statistics
LRF	Longitudinal Record Format
MBR	Master Beneficiary Record
MBR810	MBR extract, version number 810
MBR814	MBR extract, version number 814
MEF	Master Earnings File
MHTS	Mental Health Treatment Study
MIE	Medical Improvement Expected

MO	Milestone + Outcomes payment system
MPR-EVS	Mathematica's EVS
NBS	National Beneficiary Survey
NSCF	National Survey of SSI Children and Families
NUMIDENT	Numerical Identification File
OIM	Office of Information Management
OO	Outcomes-Only payment system
PAN	Person's Account Number
PASS	Program to Achieve Self-Support
PHUS	Payment History Update System
PIA	Primary Insurance Amount
PIN	Personal Identification Number
POD	Promoting Opportunity Demonstration
POMS	SSA's Program Operations Manual System
PROMISE	Promoting Readiness of Minors in SSI
Provider	Service provider under TTW (also called an EN)
PUF	Public Use File
REMICS	Revised Management Information Counts System
RIB	Retirement Insurance Benefits
RMA	Retrospective Monthly Accounting
RSA	Rehabilitation Services Administration
RSA-911	RSA Case Service Report
SAIPE	Small Area Income and Poverty Estimates
SAS	Statistical Analysis Software, used to produce the DAF
SCWF	Standalone Companion Work File

SED	Supported Employment Demonstration
SER	Summary Earnings Record
SGA	Substantial Gainful Activity
SMI	Supplemental Medical Insurance (Medicare Part B)
SNAP	Supplemental Nutrition Assistance Program
SSN	Social Security Number
SSA	Social Security Administration
SSDI	Social Security Disability Insurance (also referred to as DI)
SSI	Supplemental Security Income
SSI-LF	SSI - Longitudinal File
SSR	Supplemental Security Record
STW	Suspension or termination of cash benefits for work
SVR Agency	State Vocational Rehabilitation Agency
T2	Title II, the SSDI Program
T16	Title XVI, the SSI Program
TANF	Temporary Assistance for Needy Families
TCNEI	Total countable non-earned income
TKT	DAF component containing data related to TTW participation
TRF	Ticket Research File, now called the DAF
TTW	Ticket to Work
TWP	Trial Work Period
VR	Federal/State Vocational Rehabilitation program
VRRMS	Vocational Rehabilitation Reimbursement Management System; data from this system is contained in the Payments component
YTD	Youth Transition Demonstration

OVERVIEW OF DAF DOCUMENTATION

The documentation for the DAF consists of the eleven volumes described below. Questions about these documents should be directed to ORDES.DAF@ssa.gov. All of these documents are available at <https://www.ssa.gov/disabilityresearch/daf.html>.

- **Volume 1: Getting Started with the DAF18.** Provides an overview of the structure and contents of the DAF and related linkable files.
- **Volume 2: Working with the DAF18.** Contains practical suggestions such as how to extract data and interpret blank or missing variables as well as more detailed information on DAF data marts and linkable files.
- **Volume 3: Tips for Conducting Analysis with the DAF18.** Contains suggestions for working with common research concepts in the DAF such as program participation, benefits paid versus benefits due, and constructed measures related to beneficiary work activity resulting in the loss of cash benefits.
- **Volume 4: Lists of DAF18 Variables.** Contains lists of new, changed, and deleted variables, as well as lists of variables by DAF component and analytic category.
- **Volume 5: DAF Variable Detail Pages.** Contains specifications for each DAF variable, including name, definition, data format, identification of the DAF component to which it belongs, data source, availability, and (where applicable) SAS code used to construct the variable.
- **Volume 6: Validating the DAF18 Against Other Sources.** Provides an explanation of validation methods and summary of validation results.
- **Volume 7: DAF18 Development History and Construction Methods.** Describes key changes in DAF construction methodology over time as well as a description of each step in the current year DAF construction process.
- **Volume 8: DAF18 Construction Workflow Charts and Task Tables.** Provides detailed information in both chart and table format on each step in the current year DAF construction process.
- **Volume 9: DAF18 Source File Descriptions.** Describes the administrative source files used to construct the DAF.
- **Volume 10: DAF18 Administrative Source File Documentation.** Contains documentation from SSA or other agencies on the administrative source files described in Volume 9.
- **Volume 11: DAF18 Construction Code.** Contains all SAS code used to construct the DAF.
- **Volume 12: DAF18 RSA Administrative Source File Documentation.** Contains a description of the processing of Rehabilitation Services Administration (RSA) data for linkage to the DAF, along with documentation from RSA on the RSA-911 files.

The following table provides specific locations for common research-related questions and issues.

In order to ...	Refer to ...
Get started with a research task	Volume 2, "Working with the DAF18," for information about selecting beneficiaries using finder files versus selection criteria
Identify what's changed in the latest version of the DAF	Volume 1, "Getting Started with the DAF18"
View lists of DAF variables	Volume 4, "Lists of DAF18 Variables"
Understand individual variable definitions, specifications, and value ranges	Volume 5, "DAF Variable Detail Pages"
Understand the structure of the DAF data files at a high level	Volume 1, "Getting Started with the DAF18"
Identify variables for a specific research task	Volume 4, "Lists of DAF18 Variables," for a list of variables contained within each DAF file and by analytic category
Understand the beneficiaries for which the DAF does and does not contain data	Volume 1, "Getting Started with the DAF18"
Identify administrative data sources for the DAF	Volume 9, "DAF18 Source File Descriptions"
Understand the linkage of the DAF to RSA-911 data and contents of the RSA files	Volume 12, "DAF18 RSA Administrative Source File Documentation"
Generate ideas for using the DAF more efficiently	Volume 1, "Getting Started with the DAF18" and Volume 2, "Working with the DAF18"
Find suggested ways to identify common research concepts in the DAF, such as calculating age of retirement, or disability title	Volume 3, "Tips for Conducting Analysis with the DAF18"
Understand what variables have changed in the most recent DAF	Volume 4, "Lists of DAF18 Variables"
Read about how information in the DAF is validated against other sources	Volume 6, "Validating the DAF18 Against Other Sources"

I. OVERVIEW OF DISABILITY ANALYSIS FILE (DAF) VALIDATION METHODS

The objective in testing and validating the DAF is to identify and address any data anomalies or processing errors that may arise during the construction process. During and after construction of each version of the DAF, Mathematica programmers conduct a series of tests to verify that the data extracted from Social Security Administration (SSA) administrative files closely matches the source data, and that no processing errors occurred during program execution. Comparisons between the DAF data and published SSA statistics will not produce identical results, because each version of the DAF uses SSA administrative data sources at specific points in time that may differ from the timing of the published SSA statistics. Since the DAF cannot be directly compared to SSA administrative data, programmers rely on methods that have been developed over time, using checks against published SSA statistics and reviews of interim processing files. For purposes of assessment, each of the methods described below is designed to identify significant discrepancies rather than small variations.

Methods for validating the DAF have evolved over time. During construction, programmers conduct routine reviews to monitor data processing at each step. These include reviewing program output logs, checking that programs ran without interruption, and confirming that all output files are properly created, saved, and cataloged. Similarly, results from the submission of finder files must be tracked and reviewed to ensure that all submitted finder records matched to a corresponding returned record and that there were no duplicate returned records. Separately from these routine steps, there are three primary methods used to test and validate the DAF:

1. **Internal verification checks during construction:** At critical points during construction, programmers examine record counts, frequencies, and summary statistics drawn from interim files and compare them against the previous DAF construction effort. A significant discrepancy between the version under development and the prior version would prompt programmers to first examine the program code, output listings, and record dumps for a possible explanation, such as a code error, and if none is found, contact SSA staff for additional help in determining the reason for the discrepancy. Additional checks include

reviewing preliminary frequencies and summary statistics, and examining printouts of a small number of records to verify that the file layout is as expected. This step is the primary way programmers are able to identify changes in source file layouts from year to year and ensure that the completion of processing steps were without error.

2. **Reviews of frequencies and summary statistics after construction:** Once construction is complete, programmers run frequencies and summary statistics for key demographic and program participation variables from the completed database. Programmers generate frequencies for discrete variables and summary statistics for the continuous variables. These are reviewed to identify any unusual patterns or values that differ significantly from what would be expected, based on detailed knowledge of prior versions of the DAF and SSA administrative data sources.
3. **Comparison of tables produced using the DAF to similar tables published by SSA and Maximus:** Mathematica selects tables produced by SSA and its Ticket to Work (TTW) contractor, Maximus, on measures such as the characteristics and number of Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) beneficiaries. Programmers reproduce the tables using DAF data, and compare the results to the SSA tables. If any significant discrepancy is found, it is investigated, as it may indicate anomalies in the DAF.

Below is an example of the testing and validation process that demonstrates how programmers use the methods listed above to validate DAF construction. In the course of building DAF15, programmers reviewing the frequencies from the Awardee Data Mart (ADM) noticed that the frequencies of beneficiaries across years did not align with our expectations based on past years of construction. After digging into the issue, we identified that in building the main Demographic (DMG) file, the Full Retirement Age (FRA) variable was inadvertently omitted for beneficiaries new to the DAF in 2015. The FRA variable is used to build the ADM, meaning that its absence led to the differences we were observing. The solution was simple enough: to include FRA in the ADM. Additionally, we realized that the FRA variable needed to be carried on several other files based off of the DMG component (DMG 10%, Rehabilitation Services Administration (RSA) Social Security Number (SSN) Mini-DAF DMG, RSA Personal Identification Number (PIN), Mini-DAF DMG, ADM, National Beneficiary Survey (NBS) Extract, TTW Extract, and the Survey & Demonstration Extract). As such, we had to update those other files to include FRA. Fortunately, other downstream core DAF creation programs did

not use this variable and the companion variable FRADATE was properly calculated for all beneficiaries.

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II. DAF18 VALIDATION

Our findings indicate that the DAF18 is comparable to the raw SSA administrative data and published statistics over similar timeframes. An exact comparison of the DAF to published SSA statistics is not possible, as the SSA tables are created at a different point in time than the DAF and therefore slight differences are expected. Selected validation results also indicate that DAF data may vary more from SSA published statistics in certain areas. These variations are described briefly below, and may be of particular interest when planning research on related subgroups, such as older beneficiaries, using the DAF.

The sections below present results from each of the three testing and validation methods described above.

A. Internal verification checks during DAF construction

The table below summarizes results of the first set of internal verification checks conducted by Mathematica during DAF18 construction. For each construction task, as noted in the table, a programmer reviewed the associated record counts. The primary check during initial phases of construction was a comparison of current record counts in either source files, finder files, or interim processing files constructed by Mathematica for previous DAFs.

As new beneficiaries participate in the SSDI or SSI programs, their records are added to SSA administrative data and, when they meet selection criteria for the DAF, are incorporated into the new version of the DAF. The record counts in various tasks from DAF17 to DAF18, checked at various stages of file construction (shown in Table II.1), reflecting additional participants in SSI and SSDI (though new awards have been slowing in recent years). We benchmark the changes across versions of the DAF against changes we made since the last version of the DAF selection criteria, in the underlying SSA administrative data sources, in

documented trends in SSA disability program participation, and other outside factors such as the economy.¹

Table II.1. Population counts during DAF18 construction tasks relative to source file and DAF17 counts

Task	DAF18	DAF17	Change from DAF17 to DAF18	% Change from DAF17 to DAF18
Task 1				
Monthly Disabled Beneficiary and Dependents Extract (DBAD) records (millions) ¹	10.00 – 10.13	10.14 – 10.22	-0.14 – (-0.09)	-1.4%
Total SSDI records (de-duplicated) ²	10,871,024	10,992,163	-121,139	-1.1%
Task 2				
Monthly Characteristics Extract Record 100% Field File (CER) records (millions) ¹	7.21 – 7.34	7.31 – 7.39	-0.10 – (-0.05)	-1.4%
Total SSI records (de-duplicated) ²	7,934,636	8,025,639	-91,003	-1.1%
Task 3				
Master Beneficiary Record (MBR) Finder	22,572,227	21,876,268	695,959	3.2%
Supplemental Security Record (SSR) Finder	20,144,937	19,590,238	554,699	2.8%
Master Finder	34,879,605	33,881,133	998,472	2.9%
Linking file	35,827,907	34,793,066	1,034,841	3.0%
Task 5				
831 & 832/833 records extracted	100,331,844	96,385,815	3,946,029	4.1%

¹ Counts vary by month, so we present the upper and lower bound of values during the months. The percentage change is calculated by comparing the upper bound in both cases.

² The number of de-duplicated records is more than the number in each month because of beneficiaries coming in and out of the program throughout the year.

As we pull information from source files, we examine frequencies for key variables in each source file for unexpected values. We also review printouts of small numbers of records to verify that variables are formatted as expected. This check is especially valuable in determining whether record layouts for the input files were modified from the prior year. Programmers also print summary statistics to verify that variable contents were as expected.

¹ Please refer to Volume 8 for more information on the DAF task structure.

In addition, as programmers process finder files in Task 4, they track data from each file to verify that its contents matched back to the records submitted, and that each record was returned only once.

B. Frequencies and summary statistics

During construction of the DMG and Annual components, Mathematica programmers generate frequencies and summary statistics for selected variables that describe key demographic characteristics and program participation. These files are stored on the SSA mainframe and examined onsite by Mathematica staff. For reasons of data security and privacy, the results of those checks are not included in this volume. Instead, we provide a general description of the reviews that we conducted for DAF18.

Our programmers looked for unusual patterns or values in the frequencies and statistics. For date variables, programmers grouped the data by years and examined large changes from one year to another or from DAF17 to DAF18. For categorical variables such as gender, we looked for unexpectedly disproportionate numbers in each category. We also compared the actual variable values in our constructed dataset to values listed in SSA data documentation. When DAF values differed from values in the documentation, we assessed the cause of discrepancies before cleaning the variable to contain logical values for the variable of interest. In addition, we added a note to the variable detail page in Volume 5 alerting users that variable values in the final version of the DAF do not necessarily include every variable value in the underlying data.

For continuous variables, we looked for unexpectedly high or low values for the mean, median, and mode, rather than the minimum or maximum values. In cases where we found anomalous results at the high or low end for some of the benefit amount variables, we determined that they were due to data noise in the original SSA administrative data because the means, quartiles, and modes were reasonable. It is important to note that we do not modify any

extreme values, even when they are obvious errors, as the intent of the DAF is (with limited exceptions) to present the administrative data rather than to interpret it.

C. Comparison of DAF with tables produced by SSA

After completing construction, Mathematica programmers performed the third validation method— a comparison to SSA published statistics. More specifically, we created replicas of tables published by SSA to conduct an overall check on the accuracy and contents of the DAF.

For several reasons, we do not expect tables generated from DAF data to exactly match similar tables published by SSA. First, SSA data change in real time, and the timing of the data pull can change findings. We access source files at different times in our construction process, and those times may not align to the time that SSA staff do so to produce their publications. As such, even tables published by SSA and drawn from the same data sources as the DAF may not precisely mirror DAF data. Second, the selection criteria for the DAF may differ from those used by SSA for developing its publications. When replicating tables published by SSA using DAF data, Mathematica duplicates as closely as possible the criteria used to select records included in the SSA tables but may not perfectly align with those criteria. Third, in preparing tables for publication, SSA may draw on variables or administrative data files not available to contractor staff, and therefore not included in the DAF. There are a limited number of published SSA tables that can reasonably be replicated using DAF data, in part for this reason. In selecting tables to replicate, Mathematica prioritizes those which focus on key demographic or program participation characteristics that should generally be consistent between DAF data and source administrative data. These characteristics include age, gender, diagnostic groups, state, and number of payments.

DAF beneficiary characteristics

With these caveats in mind, we selected SSA tables from two sources: the Annual Statistical Report on the SSDI Program, 2018² (specifically Tables 19, 21, and 27) and the SSI Annual Statistical Report, 2018³ (specifically Tables 5, 10, and 36). A summary of our findings is below.

Overall, estimates from the full DAF18 data are generally consistent with SSA's published estimates and our conclusions are the same as they have been in recent years of the DAF.⁴ We compare DAF beneficiaries to published statistics on age, gender, diagnosis group, state of residence, and payments. These comparisons are contained in Tables II.2-II.7. In general, if we do not report on a difference related to the distribution of beneficiaries on, it is safe to conclude that the statistics in the DAF are quite similar to those in SSA published statistics (generally within 1 percentage point). Beginning in DAF17, the inclusion of data from the SSR in diagnosis codes in cases where the data was not otherwise available from other sources led to the diagnosis groups aligning much more closely to SSA published statistics than in recent years, particularly for SSI recipients.

There is one deviation between the DAF and SSA published statistics that may be relevant to particular research uses: the distribution of beneficiaries by age is slightly different in the DAF than published statistics. SSDI beneficiaries in DAF18 are slightly less likely to be concentrated in the oldest age group (age 60-FRA) than beneficiaries in the published SSA statistics (Table II.2). For example, among all SSDI beneficiaries, 35.6 percent of those in DAF18 are age 60 and

² The Social Security Administration. "Annual Statistical Report on the Social Security Disability Insurance Program, 2018." Washington, D.C.: The Social Security Administration, October 2019. https://www.ssa.gov/policy/docs/statcomps/di_ast/

³ The Social Security Administration. "SSI Annual Statistical Report 2018." Washington, D.C.: The Social Security Administration, September 2019. https://www.ssa.gov/policy/docs/statcomps/ssi_ast/

⁴ These findings are contained in the files named DAF18_SSI_Validation and DAF18_SSDI_Validation, which can be obtained from SSA at the address listed above.

older, compared with 37.8 percent in SSA published statistics. As a result, there are slightly fewer beneficiaries in the DAF in younger age groups, though the differences in each particular age bracket is relatively small. We have observed a similar pattern in recent versions of the DAF, and the difference between the DAF and SSA appears to be getting smaller over time.

Table II.2. Age distribution of SSDI beneficiaries in SSA compared with results from DAF18

	All disabled workers		Male disabled workers		Female disabled workers	
	DAF18	SSA	DAF18	SSA	DAF18	SSA
Under 30	1.61%	1.60%	1.84%	1.80%	1.36%	1.30%
30–34	2.59%	2.60%	2.77%	2.80%	2.40%	2.40%
35–39	4.41%	4.40%	4.43%	4.50%	4.39%	4.30%
40–44	6.03%	5.90%	5.76%	5.70%	6.31%	6.10%
45–49	9.30%	8.90%	8.86%	8.60%	9.75%	9.30%
50–54	14.99%	14.40%	14.64%	14.10%	15.35%	14.70%
55–59	25.49%	24.50%	25.39%	24.30%	25.59%	24.80%
60–FRA	35.59%	37.80%	36.31%	38.30%	34.83%	37.30%

Source: SSA Statistics based on published information from SSA SSDI Table 19 in the SSA Annual Statistical Report on the Social Security Disability Insurance Program (2018). The DAF data are based on DAF18. The DAF data includes beneficiaries with valid data for sex, beneficiary eligibility code, date of entitlement and a report of current pay status as of December 2018.

FRA = full retirement age.

Table II.3. Comparison of the payments to SSI beneficiaries in SSA published tables and DAF18, by sex (December 2017)

	DAF18	SSA
Number of payments	4,695,920	4,714,234
Male	2,287,140	2,298,522
Female	2,408,780	2,415,712
Total payments (thousands of dollars)	2,856,688	2,959,724
Male	1,413,705	1,465,041
Female	1,442,983	1,494,683

Source: SSA statistics based on published information from SSA SSI Table 5 in the SSI Annual Statistical Report (2018). The DAF data are based on DAF18. The DAF data includes beneficiaries with valid fields of sex, beneficiary eligibility code, date of entitlement and a report of current pay status as of December 2017.

Table II.4. Distribution of diagnostic groups in SSA published tables compared with DAF18, SSDI beneficiaries

Diagnostic Groups	DAF18	SSA
Congenital anomalies	0.17%	0.20%
Endocrine, nutritional, and metabolic diseases	2.84%	2.90%
Infectious and parasitic diseases	1.29%	1.30%
Injuries	3.76%	3.80%
Intellectual disability	3.47%	3.90%
Other mental disorders	26.53%	25.80%
Neoplasms	3.10%	3.20%
Blood and blood-forming organs diseases	0.27%	0.30%
Circulatory system diseases	7.89%	7.90%
Digestive system diseases	1.65%	1.60%
Genitourinary system diseases	1.91%	1.90%
Musculoskeletal system and connective tissue diseases	33.48%	33.20%
Nervous system and sense organs diseases	9.71%	9.60%
Respiratory system diseases	2.78%	2.80%
Skin and subcutaneous tissue diseases	0.26%	0.30%
Other diseases	0.22%	0.20%
Unknown diseases	0.67%	1.30%

Source: SSA statistics based on published information from SSA SSDI Table 21 in the SSA Annual Statistical Report on the Social Security Disability Insurance Program (2018). The DAF data are based on DAF18. The DAF data includes beneficiaries with valid data for sex, beneficiary eligibility code, date of entitlement and a report of current pay status as of December 2017.

Table II.5. Comparison of all SSI beneficiaries between 18 and 64 in SSA published tables and DAF18, by diagnostic group

Diagnostic Groups	DAF18	SSA
Congenital anomalies	1.10%	1.11%
Endocrine, nutritional, and metabolic diseases	2.12%	2.13%
Infectious and parasitic diseases	1.13%	1.18%
Injuries	2.42%	2.40%
Mental disorders		
Autistic disorders	3.34%	3.32%
Developmental disorders	0.80%	0.81%
Childhood and adolescent disorders not elsewhere classified	0.98%	1.00%
Intellectual disability	19.30%	18.89%
Mood disorders	15.41%	15.23%
Organic mental disorders	3.52%	3.47%
Schizophrenic and other psychotic disorders	8.84%	8.72%

Table II.5. Comparison of all SSI beneficiaries between 18 and 64 in SSA published tables and DAF18, by diagnostic group

Diagnostic Groups	DAF18	SSA
Other mental disorders	6.12%	5.97%
Neoplasms	1.22%	1.24%
Diseases of the—		
Blood and blood-forming organs	0.39%	0.39%
Circulatory system	4.21%	4.23%
Digestive system	0.94%	0.95%
Genitourinary system	1.09%	1.09%
Musculoskeletal system and connective tissue	14.99%	15.07%
Nervous system and sense organs	8.14%	8.06%
Respiratory system	2.11%	2.12%
Skin and subcutaneous tissue	0.18%	0.18%
Other	0.25%	0.27%
Unknown	1.38%	2.16%

Source: SSA statistics based on published information from SSA SSI Table 36 in the SSI Annual Statistical Report (2018). The DAF data are based on DAF18. The DAF data includes beneficiaries with valid fields for sex, beneficiary eligibility code, date of entitlement and a report of current pay status as of December 2017.

Table II.6. Percentage distribution of SSDI disabled workers in SSA published tables compared with DAF18, by state/territory

State/territory	All disabled workers		Male disabled workers		Female disabled workers	
	DAF18	SSA	DAF18	SSA	DAF18	SSA
Alabama	2.61%	2.61%	2.53%	2.51%	2.69%	2.71%
Alaska	0.14%	0.14%	0.15%	0.15%	0.13%	0.13%
Arizona	1.76%	1.77%	1.76%	1.78%	1.75%	1.76%
Arkansas	1.58%	1.58%	1.58%	1.57%	1.58%	1.59%
California	7.50%	7.52%	7.79%	7.84%	7.20%	7.19%
Colorado	1.17%	1.17%	1.18%	1.18%	1.16%	1.16%
Connecticut	0.93%	0.94%	0.91%	0.92%	0.96%	0.96%
Delaware	0.32%	0.32%	0.30%	0.30%	0.33%	0.33%
District of Columbia	0.16%	0.16%	0.16%	0.16%	0.17%	0.17%
Florida	6.45%	6.46%	6.44%	6.45%	6.45%	6.47%
Georgia	3.27%	3.29%	3.16%	3.16%	3.39%	3.41%
Hawaii	0.26%	0.25%	0.29%	0.27%	0.23%	0.22%
Idaho	0.51%	0.52%	0.52%	0.52%	0.51%	0.51%
Illinois	3.21%	3.24%	3.18%	3.22%	3.25%	3.26%
Indiana	2.34%	2.36%	2.30%	2.32%	2.38%	2.41%
Iowa	0.88%	0.90%	0.88%	0.91%	0.88%	0.90%
Kansas	0.84%	0.85%	0.81%	0.82%	0.87%	0.87%

Table II.6. Percentage distribution of SSDI disabled workers in SSA published tables compared with DAF18, by state/territory

State/territory	All disabled workers		Male disabled workers		Female disabled workers	
	DAF18	SSA	DAF18	SSA	DAF18	SSA
Kentucky	2.29%	2.28%	2.42%	2.41%	2.14%	2.16%
Louisiana	1.82%	1.81%	1.94%	1.93%	1.69%	1.68%
Maine	0.65%	0.65%	0.68%	0.68%	0.63%	0.63%
Maryland	1.49%	1.49%	1.42%	1.42%	1.56%	1.55%
Massachusetts	2.28%	2.28%	2.23%	2.23%	2.34%	2.32%
Michigan	3.90%	3.92%	3.80%	3.83%	4.00%	4.01%
Minnesota	1.38%	1.41%	1.36%	1.40%	1.40%	1.42%
Mississippi	1.46%	1.46%	1.44%	1.44%	1.48%	1.49%
Missouri	2.44%	2.46%	2.43%	2.44%	2.45%	2.47%
Montana	0.31%	0.31%	0.32%	0.32%	0.30%	0.30%
Nebraska	0.47%	0.48%	0.45%	0.46%	0.49%	0.50%
Nevada	0.75%	0.76%	0.76%	0.76%	0.75%	0.75%
New Hampshire	0.55%	0.55%	0.51%	0.51%	0.59%	0.59%
New Jersey	2.23%	2.24%	2.17%	2.19%	2.30%	2.29%
New Mexico	0.75%	0.75%	0.78%	0.77%	0.73%	0.72%
New York	5.71%	5.70%	5.66%	5.66%	5.76%	5.73%
North Carolina	3.66%	3.68%	3.51%	3.52%	3.81%	3.84%
North Dakota	0.16%	0.17%	0.16%	0.17%	0.16%	0.16%
Ohio	4.02%	4.03%	4.06%	4.07%	3.98%	3.99%
Oklahoma	1.46%	1.46%	1.45%	1.45%	1.46%	1.47%
Oregon	1.22%	1.23%	1.24%	1.27%	1.19%	1.20%
Pennsylvania	4.63%	4.63%	4.60%	4.62%	4.65%	4.65%
Rhode Island	0.43%	0.43%	0.41%	0.41%	0.44%	0.44%
South Carolina	2.01%	2.02%	1.94%	1.94%	2.09%	2.11%
South Dakota	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%
Tennessee	2.82%	2.83%	2.75%	2.74%	2.89%	2.91%
Texas	6.49%	6.48%	6.57%	6.56%	6.40%	6.40%
Utah	0.53%	0.54%	0.53%	0.54%	0.53%	0.54%
Vermont	0.25%	0.26%	0.26%	0.26%	0.25%	0.25%
Virginia	2.42%	2.44%	2.36%	2.37%	2.50%	2.50%
Washington	2.00%	2.01%	2.01%	2.03%	1.98%	1.99%
West Virginia	1.01%	1.01%	1.15%	1.15%	0.85%	0.86%
Wisconsin	1.83%	1.86%	1.77%	1.81%	1.89%	1.91%
Wyoming	0.15%	0.16%	0.16%	0.16%	0.15%	0.15%
Outlying areas						
American Samoa	0.00%	0.02%	0.00%	0.02%	0.00%	0.01%

Table II.6. Percentage distribution of SSDI disabled workers in SSA published tables compared with DAF18, by state/territory

State/territory	All disabled workers		Male disabled workers		Female disabled workers	
	DAF18	SSA	DAF18	SSA	DAF18	SSA
Guam	0.02%	0.02%	0.03%	0.03%	0.01%	0.01%
Northern Mariana Islands	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Puerto Rico	1.80%	1.78%	1.97%	1.94%	1.63%	1.60%
Virgin Islands	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
Other (no state listed)	0.45%	0.00%	0.52%	0.00%	0.39%	0.00%

Source: SSA statistics based on published information from SSA SSDI Table 27 in the SSA Annual Statistical Report on the Social Security Disability Insurance Program (2018). The DAF data are based on DAF18. The DAF data includes beneficiaries with valid data for sex, beneficiary eligibility code, date of entitlement and a report of current pay status as of December 2017.

Table II.7. Percentage distribution of SSI beneficiaries between 18 and 64 in SSA published tables and DAF18, by state/territory

State/territory	DAF18	SSA
Alabama	2.36%	2.36%
Alaska	0.17%	0.17%
Arizona	1.47%	1.47%
Arkansas	1.39%	1.39%
California	11.79%	11.82%
Colorado	0.96%	0.96%
Connecticut	0.88%	0.88%
Delaware	0.23%	0.23%
District of Columbia	0.35%	0.35%
Florida	5.63%	5.65%
Georgia	3.37%	3.39%
Hawaii	0.27%	0.27%
Idaho	0.45%	0.45%
Illinois	3.47%	3.47%
Indiana	1.88%	1.89%
Iowa	0.75%	0.75%
Kansas	0.67%	0.67%
Kentucky	2.47%	2.48%
Louisiana	2.32%	2.32%
Maine	0.57%	0.58%
Maryland	1.57%	1.57%
Massachusetts	2.31%	2.31%
Michigan	3.92%	3.93%
Minnesota	1.22%	1.22%
Mississippi	1.58%	1.58%
Missouri	2.03%	2.03%
Montana	0.26%	0.26%
Nebraska	0.41%	0.41%

Table II.7. Percentage distribution of SSI beneficiaries between 18 and 64 in SSA published tables and DAF18, by state/territory

State/territory	DAF18	SSA
Nevada	0.66%	0.66%
New Hampshire	0.30%	0.30%
New Jersey	2.00%	2.01%
New Mexico	0.79%	0.79%
New York	6.68%	6.68%
North Carolina	3.13%	3.13%
North Dakota	0.12%	0.12%
Ohio	4.52%	4.53%
Oklahoma	1.38%	1.38%
Oregon	1.22%	1.22%
Pennsylvania	4.72%	4.73%
Rhode Island	0.45%	0.45%
South Carolina	1.58%	1.58%
South Dakota	0.19%	0.19%
Tennessee	2.57%	2.57%
Texas	7.11%	7.12%
Utah	0.44%	0.44%
Vermont	0.24%	0.24%
Virginia	2.08%	2.10%
Washington	2.01%	2.01%
West Virginia	1.11%	1.11%
Wisconsin	1.64%	1.64%
Wyoming	0.10%	0.10%
Outlying areas		
American Samoa	0.00%	No value
Guam	0.01%	No value
Northern Mariana Islands	0.00%	0.01%
Puerto Rico	0.00%	No value
Virgin Islands	0.00%	No value
Total of other territories	0.00%	No value
Other (no state listed)	0.18%	No value

Source: SSA statistics based on published information from SSA SSDI Table 27 in the SSA Annual Statistical Report on the Social Security Disability Insurance Program (2018). The DAF data are based on DAF18. The DAF data includes beneficiaries with valid data for sex, beneficiary eligibility code, date of entitlement and a report of current pay status as of December 2017.

Ticket to Work (TTW) program participation

We drew upon TTW tables produced by SSA’s contractor, Maximus, to validate the Ticket component. We used the Maximus report from May 2019 to align as closely as possible to the date that we extracted DCF data. As shown in Table II.8, the Maximus report and DAF18 show

ticket assignments overall and by payment system that are quite close. A graphical representation of these estimates is available upon request (contact ORDES.DAF@ssa.gov).

Table II.8. Ticket assignments in December 2018 by provider type and payment system, SSA (Maximus) vs. DAF18 (PST1812)

	MAXIMUS	DAF18
Total Tickets	334,849	335,090
Total EN	67,681	67,169
ENs Milestone-Outcome	66,565	66,067
ENs Outcome-Only	1,116	1,102
SVR Agency: Cost Reimbursement	231,517	232,471
SVR Agencies: TTW	35,651	35,450
SVR Agencies Milestone-Outcome	35,083	34,881
SVR Agencies Outcome-Only	568	569

Note: The Maximus numbers are drawn from the DCF and are reported in their May 2019 report to SSA. The DAF values are also derived from the DCF using the extraction date reported in Volume 7. While we select a Maximus date that is as close as possible to the date we pulled records from the DCF, the dates do not align perfectly and lead to discrepancies in the totals.

Payments to state Vocational Rehabilitation Agencies (SVRAs) under traditional cost reimbursement

Comparing payments to SVRAs recorded in the Vocational Rehabilitation Reimbursement Management System (VRRMS) in the DAF to those in SSA published statistics shows a general alignment between the two (Table II.9). While the number of payments recorded in the DAF varies slightly from published statistics, the total amount of payments per year and the average value of payments tend to be closer. From 1998 to 2010, the difference between DAF and published statistics was usually 3 percent or less. In more recent years, the differences were larger and as high as 8 percent different. In 2011 through 2015, DAF data show a lower number of payments and total payment value relative to published statistics, but in 2016, the DAF values are higher than published statistics. Since the new VRRMS layout in 2017, the DAF and published statistics again look quite close, with differences of less than 2 percent.

Table II.9. Payments to SVRAs under traditional cost reimbursement, DAF18 VRRMS versus SSA published statistics

Fiscal Year	DAF18			SSA Published Statistics*		
	Number of Claims Allowed	Amount of Dollars Allowed	Average Cost Per Claim	Number of Claims Allowed	Amount of Dollars Allowed	Average Cost Per Claim
1998	9,788	101,575,943	10,378	9,950	103,037,128	10,355
1999	10,886	118,295,448	10,867	11,126	119,934,831	10,780
2000	10,209	116,968,031	11,457	10,220	117,024,222	11,451
2001	8,091	102,785,703	12,704	8,208	103,892,718	12,657
2002	10,226	128,067,066	12,524	10,527	131,062,205	12,450
2003	6,618	82,765,988	12,506	6,760	84,599,190	12,514
2004	6,717	84,468,115	12,575	6,811	85,172,425	12,505
2005	6,013	74,786,542	12,437	6,095	75,635,94	12,410
2006	8,200	102,446,786	12,494	8,387	105,049,203	12,525
2007	6,720	88,841,050	13,220	6,871	90,263,130	13,137
2008	8,817	119,749,695	13,582	9,325	124,238,549	13,323
2009	8,507	121,076,521	14,233	8,712	122,268,833	14,035
2010	7,602	104,060,811	13,689	7,768	105,964,399	13,641
2011	4,432	70,528,353	15,913	4,679	72,991,906	15,600
2012	4,971	75,051,121	15,098	5,343	78,768,058	14,742
2013	9,010	131,484,531	14,593	9,645	138,260,580	14,335
2014	8,752	132,941,421	15,190	9,451	141,449,760	14,967
2015	11,909	185,185,265	15,550	12,291	187,835,165	15,282
2016	12,696	186,152,834	14,662	11,932	181,403,973	15,203
2017	9,796	131,268,379	13,400	9,924	129,576,303	13,057
2018	16,374	216,949,773	13,250	16,237	215,417,317	13,267

*SSA data available at <https://www.ssa.gov/work/claimsprocessing.html>.

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III. DAF18 10% DATA MART VALIDATION

During and after the construction of the DAF18 10% data mart, the details of which can be found in Volume 2, programmers conducted a series of tests to verify that a sample of data extracted from the complete DAF18 files closely matched the original. Tables and charts displaying these comparisons are available upon request (contact ORDES.DAF@ssa.gov). These comparisons closely follow the full DAF18 validation comparisons to SSA published statistics but include additional checks to ensure that the randomly selected sample is representative of the full population. Other checks include reviewing program output logs, checking that programs executed without interruption, and confirming that all output files were properly created, saved, and cataloged. No significant differences are apparent between the DAF18 and the 10% data mart with respect to age, diagnostic categories for SSI and SSDI beneficiaries, U.S. State and Territory distribution, and the number of payments and total amount of payments when adjusted for sample size.

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IV. DAF18 ADM VALIDATION

During and after the construction of the DAF18 ADM, described in Volume 2, Mathematica programmers held extensive code reviews and also conducted a series of tests to verify that data extracted from the complete DAF18 files closely matched the source data.

To validate the ADM, we benchmarked our results against SSA published statistics (Table IV.1 and IV.2). While direct comparisons between the ADM and SSA published statistics can be difficult to make due to differences in record selection, data sources, and other criteria, we used the published statistics to verify that the ADM numbers are similar and display similar trends as SSA's published statistics. As with the full DAF18, this validation effort is designed to identify significant discrepancies rather than small variations.

Table IV.1. Comparison of the number of SSDI beneficiaries in SSA published tables and the DAF18 ADM, by year

	SSA*	ADM11	ADM12	ADM13	ADM14	ADM15	ADM16	ADM17	ADM18
1996	624,335	525,077	524,946	525,055	525,124	525,230	522,563	526,130	526,154
1997	587,417	536,957	536,821	536,559	536,612	536,733	533,617	537,545	537,646
1998	608,131	561,099	560,962	560,701	560,429	560,482	556,923	561,340	561,435
1999	620,488	575,911	575,683	575,471	575,184	574,804	570,237	575,407	575,487
2000	610,700	587,231	586,765	586,361	585,944	585,471	579,966	586,005	586,052
2001	661,900	652,663	652,040	651,376	650,855	650,407	643,531	650,162	650,157
2002	730,383	709,183	708,415	707,675	706,948	706,342	698,661	706,771	706,211
2003	755,706	739,388	738,384	737,554	736,837	736,174	726,865	736,211	735,700
2004	775,244	756,310	755,171	754,205	753,342	752,573	742,309	752,612	752,238
2005	821,207	786,522	785,022	784,060	783,025	782,093	769,790	781,516	781,026
2006	798,675	772,037	770,555	769,361	768,087	766,933	752,007	765,421	764,858
2007	804,787	786,530	785,721	784,501	782,948	781,503	762,269	779,567	778,784
2008	877,226	874,047	873,649	872,522	870,695	868,560	828,895	865,647	864,499
2009	970,696	972,461	977,318	976,751	975,565	973,566	941,058	970,031	968,713
2010	1,026,988	1,006,925	1,019,024	1,022,721	1,022,286	1,021,094	991,554	1,017,260	1,015,638
2011	998,979	954,650	994,345	1,003,940	1,007,483	1,007,042	977,727	1,004,186	1,002,242
2012	960,206		913,992	944,214	953,410	956,594	928,195	955,484	953,738
2013	868,965			838,023	866,462	875,798	851,642	879,399	878,473
2014	778,796				753,361	781,455	764,861	795,009	795,123
2015	741,478					720,590	723,491	758,636	762,526
2016	706,448						667,757	715,134	725,820
2017	715,921							690,193	718,249
2018	686,723								668,659

*Values from Table 35 of the Annual Statistical Report on the Social Security Disability Insurance Program, 2018 (Workers, Column C), https://www.ssa.gov/policy/docs/statcomps/di_asr/.

Table IV.2. Comparison of the number of SSI beneficiaries in SSA published tables and the DAF18 ADM, by year

	SSA*	ADM11	ADM12	ADM13	ADM14	ADM15	ADM16	ADM17	ADM18
1996	476,698	339,376	339,648	339,887	340,068	341,373	341,342	341,522	341,615
1997	411,199	294,135	294,358	294,556	294,718	295,569	295,612	295,879	295,955
1998	431,784	319,962	320,205	320,403	320,542	321,259	321,176	321,435	321,520
1999	430,624	325,674	325,930	326,140	326,309	326,904	326,889	327,167	327,270
2000	417,225	314,942	315,204	315,366	315,548	316,049	316,107	316,370	316,456
2001	430,838	322,498	322,756	322,976	323,151	323,565	323,605	323,831	323,908
2002	456,779	380,419	380,581	380,733	380,853	381,180	381,017	381,127	381,196
2003	457,638	423,012	423,078	423,124	423,170	423,379	423,914	423,949	423,975
2004	476,287	445,676	445,770	445,839	445,879	446,007	446,610	446,653	446,681
2005	475,538	445,156	445,241	445,341	445,406	445,491	445,761	445,794	445,827
2006	471,305	438,641	438,757	438,957	439,025	439,125	438,639	438,694	438,723
2007	477,889	454,215	454,296	454,611	454,740	454,619	453,947	454,013	454,067
2008	537,061	511,804	511,894	512,238	512,382	512,391	512,037	512,088	512,136
2009	593,849	570,820	570,882	571,379	571,514	571,423	570,763	570,817	570,884
2010	628,093	603,246	603,047	603,625	603,820	603,742	603,659	603,769	603,826
2011	619,562	602,804	606,040	606,383	606,618	606,518	606,389	606,524	606,616
2012	570,427		572,241	575,974	575,834	575,700	575,777	575,887	575,984
2013	538,132			546,581	549,065	548,472	548,475	548,591	548,682
2014	462,801				488,561	489,770	489,480	489,693	489,770
2015	441,997					466,789	473,351	473,267	473,445
2016	419,623						454,882	454,029	453,773
2017	419,992							449,481	448,283
2018	393,128								426,115

*Values from Table 68 of SSI Annual Statistical Report, 2018 (Those aged 18 - 64), https://www.ssa.gov/policy/docs/statcomps/ssi_asr/.

The DAF18 ADM identifies the number of SSDI awardees within a given year that is within 3 percent of SSA's published statistics since 2008 (and is generally within one percent). Prior to 2008, the DAF identifies about 95 percent of the number of SSDI awardees as SSA published statistics. To make this comparison, the counts of SSDI disabled worker awardees in each year were compared to the counts reported in the 2018 edition of the Annual Statistical Report on the Social Security Disability Insurance Program (Table 35 Awards to Disabled Beneficiaries and Nondisabled Dependents, 1960-2018). A table and chart displaying this comparison is available upon request (contact ORDES.DAF@ssa.gov). Since 2013, the counts of SSDI disabled worker awardees in the DAF ADM have been at or above those reported in the SSA published tables in

most years, though the differences have been small.⁵ For example, the DAF18 identified 725,820 new SSDI beneficiaries in 2016, compared with 706,448 in SSA’s published statistics for that year. We attribute these observed differences to the age selection criteria as well as the data sources used in the creation of the DAF from which the DAF ADM is drawn. In the case of beneficiaries in the oldest age group (60-FRA), Mathematica calculates age using the DOBBEST variable, which is constructed from multiple data sources, while SSA’s published tables use the date of birth from the MBR. In addition, the timing of SSA data extracts often differs from that of SSA.

The size of SSI awardee cohorts in the ADM relative to SSA published statistics has changed over time, with recent years of the ADM showing higher numbers of SSI beneficiaries than published statistics, similar to the pattern we observed for SSDI. To validate the SSI beneficiaries included in the DAF18 ADM, the counts of SSI beneficiaries for each constructed SSI Award Year were compared with counts published in SSA’s 2018 SSI Annual Statistical Report (Table 68 “All persons awarded SSI, by year of first award and age, 1974–2018”). A table and chart displaying this comparison is available upon request (contact ORDES.DAF@ssa.gov) In the earliest awardee cohorts in the ADM, the SSI award cohorts were smaller than those in SSA published statistics, averaging about 75 percent of awardees from 1996 through 2001. For example, in 2002 the number of SSI awardees was 381,196 in DAF18 ADM compared with 456,779 SSI awardees in SSA published statistics. From 2003 through 2011, the SSI awardee cohorts in the ADM captured about 95 percent of the awardees in SSA published statistics. For example, in 2011 the number of SSI awardees totaled 606,616 in the

⁵ One exception is in the most recent year, where the DAF has typically shown awardee counts that are slightly below SSA published statistics. This difference tends to resolve when the data is updated in the next version of DAF, again leading to DAF having a slightly higher count than the published statistics.

DAF18 ADM and 619,562 in SSA published statistics. In 2012 and onward, the ADM awardee counts have been 5 percent higher on average than the SSA published statistics. For example, in 2016, the number of SSI awardees was 453,773 in DAF18 ADM compared with 419,623 SSI awardees in SSA published statistics. The difference in the pre- and post-2003 rate of increase is attributed to the transition from using quarterly snapshot files Revised Management Information Counts System (REMICS) to subsequent monthly versions of the snapshot files (now called SORD) in the building of the DAF. More specifically, when using the older quarterly REMICS data, programmers would not include any beneficiaries who were on the rolls for only a short period of time (i.e., beneficiaries who were awarded benefits and ceased benefits in the same three-month window). The newer monthly SORD data allows for the inclusion of the short-term beneficiaries and therefore results in a larger number of included beneficiaries.

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