Methodology for Identifying Medicaid Long-Term Services and Supports Expenditures and Users, 2022

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This document describes the methods to produce annual Medicaid long-term services and supports (LTSS) expenditures and user counts for a given state by category, setting (institutional services and home and community-based services [HCBS]), and delivery system (fee-for-service [FFS], managed care) for 2022.

Data tables for 2022, research briefs summarizing key findings, and a document describing state data notes and anomalies are available at https://www.medicaid.gov/medicaid/long-term-services-supports/reports-evaluations/index.html.

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I. Data Source and Resources

The calculations for the data tables and research briefs use interim Transformed Medicaid Statistical Information System (T-MSIS) Analytic Files (TAF) that are used to create the public release versions, known as the TAF Research Identifiable Files (RIF).[1,2]

Data source[a]	Includes T-MSIS data submitted, ingested, and processed by:
2022 TAF Release 1	March 2024

[a] States can make updates to their T-MSIS submissions in previous calendar years, which may be reflected in subsequent versions of the TAF. Therefore, results can differ for a given state and calendar year depending on whether and when a state resubmitted its T-MSIS files, whether and when the TAF for a given state and calendar year was reproduced, and which release of the TAF is used for the analysis.

TAF = T-MSIS Analytic Files; T-MSIS = Tranformed Medicaid Statistical Information System.

The variable names used in this document reflect the interim TAF source data. Because TAF is based on T-MSIS, variable names are often similar between the two sources; for example, the TYPE-OF-SERVICE variable in T-MSIS corresponds to the TOS_CD in TAF. The T-MSIS Data Guide[3] includes information on all data elements, including valid values and references to the Code of Federal Regulations (CFR). For example, states can review the CFR associated with each type-of-service value in the Data Guide's data dictionary appendices,[4] and this documentation would apply to the TAF type-of-service data element as well.

II. Definitions

- **Institutional LTSS expenditures** include nursing facilities, intermediate care facilities for individuals with intellectual disabilities (ICFs/IID), mental health (MH) facilities, and disproportionate share hospital (DSH) payments to MH facilities.[5]
- **HCBS**[6] **expenditures** include section 1915(c) waiver programs, section 1915(i) HCBS state plan option, section 1915(j) self-directed personal assistance services, section 1915(k) Community First Choice, MFP demonstration,[7] Program of All-Inclusive Care for the Elderly (PACE), personal care

[1] For more information regarding T-MSIS, TAF, and TAF RIF data, see "Production of the TAF Research Identifiable Files (RIF)" at https://www.medicaid.gov/dq-atlas/downloads/supplemental/9010-Production-of-TAF-RIF.pdf.

[2] TAF record layouts and codebooks are available at https://www2.ccwdata.org/web/guest/data-dictionaries.

[3] The T-MSIS Data Guide is available at https://www.medicaid.gov/tmsis/dataguide.

[4] T-MSIS Data Guide data dictionary appendices are available at https://www.medicaid.gov/tmsis/dataguide/appendices.

[5] For expenditures, we identify MH facility DSH payments. Because these payments cannot be linked to an individual, we do not identify them in the user count methodology.

[6] We excluded the Health Homes program category, which was historically reported in LTSS expenditures reports, because (1) it is not included in the definition of HCBS under section 9817 of the American Rescue Plan Act of 2021 (ARP) and (2) we could not identify a way to capture the program's expenditures in TAF.

[7] We excluded expenditures and users for the MFP demonstration in aggregate HCBS and LTSS calculations because it is not included in the definition of HCBS under ARP section 9817. However, we report MFP expenditures and users as an individual category as contextual information.

services, home health services, rehabilitative services, case management services, and private-duty nursing services.

III. Approach for LTSS Expenditures

A. Calculating LTSS expenditures using TAF

1. Methodology to identify FFS claims and managed care encounter records for LTSS

Calculating FFS and managed care expenditures requires identifying the initial pool of claims and encounter records from the Long-Term Care (LT) and Other Services (OT) claims files (see Table 1) and classifying those claims into each LTSS category (see Table 2). We also include supplemental payment records and analyze them in much the same way as FFS claims.[8] Before calculating expenditures, we join all of the LTSS claims to eligibility information from the Demographic and Eligibility (DE) file (as shown in Table 3) to ensure the claims link to a Medicaid—and not Children's Health Insurance Program (CHIP)—enrollee in the same month of service.

Instructions for identifying the initial pool of records and the calculation of PACE expenditures and MH facility DSH payments are found in the next subsection (B. Methodology to identify other financial transactions related to LTSS).

Table 1. Steps for identifying FFS and managed care records

Step	Description
1.1. Identify FFS claims and managed care encounter records.	Pull OT and LT claim header records where claim-type code (CLM_TYPE_CD) = 1 (fee-for-service claim), 3 (managed care encounter record), or 5 (supplemental payment records).
1.2. Remove claim headers that were at least partially paid by Medicare (crossover claims).	Remove claim header records where crossover claim indicator (XOVR_IND) = 1.
1.3. Join claim lines to claim headers.	Pull LT and OT claim line records and merge to header records using the file type's link keys (OT_LINK_KEY, LT_LINK_KEY).
1.4. Remove claim lines that are denied.	Remove claim lines with claim line status code (CLL_STUS_CD) = 542, 585, or 654.

[8] We define supplemental payments as add-on or supplemental wraparound payments associated with a specific beneficiary above the negotiated per-service rate, which is distinct from supplemental payments made under the Upper Payment Limit (UPL) demonstration. In 2019, five states reported supplemental payments for LTSS categories. Service categories with the highest level of supplemental payment expenditures were nursing facilities, section 1915(c) waiver programs, personal care services, and case management services.

Step	Description
1.5. Remove irrelevant supplemental payment records.	Among records with claim-type code = 5, remove those where any of the lines has type-of-service code (TOS_CD) = 123: DSH payments[a, b] 131: Drug rebates 132: Supplemental payment—inp 133: Supplemental payment—nursing 134: Supplemental payment—outpatient 135: EHR payments to provider 139: PMPM payments for Medicare Part A premiums 140: PMPM payments for Medicare Part B premiums 141: PMPM for other payments for Medicare Advantage D-SNP—Medicare Part C 142: PMPM payments for Medicare Part D premiums

[a] We exclude these payments from the analysis because we cannot confirm that they are related to LTSS delivered through FFS or managed care.

[b] DSH payment records are used in a separate step to identify mental health facility DSH expenditures.

FFS = fee-for-service; LT = long-term care; OT = other services.

Using the claims that meet the criteria in Table 1, classify each into an LTSS category (Table 2). Each record should be assigned to only one LTSS category. Refer to Appendix A or the T-MSIS Data Guide[9] for more details on each variable and valid values.

Table 2. Steps for identifying LTSS categories on FFS claims, managed care encounter records, and supplemental payment records

Category	Identification method
Institutional service	**Use LT claims**
Nursing facilities	Type-of-service code = 009, 047, or 059; or Missing type-of-service code and benefit-type code = 006 or 050
ICFs/IID	Type-of-service code = 046; or Missing type-of-service code and benefit-type code = 039
Mental health facilities[a]	Type-of-service code = 044, 045, 048, or 146; or Missing type-of-service code and benefit-type code = 037, 038, or 040
HCBS	**Use OT claims**
Section 1915(c) waiver programs	Program-type code = 07; or Missing program-type and waiver-type code = 06-20 or 33; or Missing program-type code, missing waiver-type code, and HCBS service code = 4
Section 1915(i) HCBS state plan option	Program-type code = 13; or Missing program-type code, missing waiver-type code, and HCBS service code = 1
Section 1915(j) self-directed personal assistance services	Program-type code = 16; or Missing program-type code, missing waiver-type code, and HCBS service code = 2; or Missing program-type code, missing waiver-type code, missing HCBS service code, and benefit-type code = 106

[9] The T-MSIS Data Guide is available at https://www.medicaid.gov/tmsis/dataguide.

Category	Identification method
Section 1915(k) Community First Choice	Program-type code = 11; or Missing program-type code, missing waiver-type code, and HCBS service code = 3; or Missing program-type code, missing waiver-type code, missing HCBS service code, and benefit-type code = 054
MFP	Program-type code = 08
Personal care services[b]	Claim is not identified as a program-based claim[c] and procedure code = T1019, T1020, 99509, S5125, or S5126
Home health services[d]	Claim is not identified as a program-based claim[c] and type-of-service code = 016, 017, 018, 019, 020, 021, 064, or 079; or Claim is not identified as a program-based claim,[c] type-of-service code is missing, and benefit-type code = 015, 016, 017, 022, 068, or 076
Rehabilitative services[e]	Claim is not identified as a program-based claim[c] and type-of-service code = 043[f]; or Claim is not identified as a program-based claim,[c] type-of-service code is missing, and benefit-type code = 036[f]
Case management services	Claim is not identified as a program-based claim[c] and type-of-service code = 053, 054, 062, or 077; or Claim is not identified as a program-based claim[c], type-of-service code is missing, and benefit-type code = 042
Private-duty nursing services[e]	Claim is not identified as a program-based claim[c] and type-of-service code = 022;[f] or Claim is not identified as a program-based claim,[c] type-of-service code is missing, and benefit-type code = 023 or 069[f]

[a] Mental health facilities include institutions for mental diseases for people ages 65 and older and inpatient psychiatric facilities for people younger than 21. TAF contains separate codes for these two settings.

[b] This category includes state plan personal care services and excludes personal care services covered through the section 1915(j) state plan option.

[c] Program-based claims, defined as those for which enrollment information exists, include section 1915(c) waiver programs, section 1915(i) HCBS state plan option, section 1915(j) self-directed personal assistance services, section 1915(k) Community First Choice, MFP demonstration, and PACE. MFP demonstration services are not included in the aggregate calculations of total HCBS or total LTSS expenditures or users because they are not part of section 9817 of the ARP. State plan benefits refer to section 1905(a) state plan services.

[d] This category includes state plan benefit services and excludes all relevant services provided through section 1915(c) waiver programs, section 1915(i) HCBS state plan option, section 1915(j) self-directed personal assistance services, and section 1915(k) Community First Choice HCBS authorities.

[e] Under section 9817 of the ARP, rehabilitative services rendered in any setting are considered HCBS, while only private-duty nursing services rendered in beneficiaries' homes are considered HCBS. To simplify the identification of these services in TAF data, we include rehabilitative and private duty nursing services delivered in non-institutional settings in the definition of HCBS.

[f] We excluded the following settings: prisons/correctional facilities, inpatient hospitals, skilled nursing facilities, nursing facilities, custodial care facilities, inpatient psychiatric facilities, ICFs/IID, residential substance abuse treatment facilities, psychiatric residential treatment centers, and comprehensive inpatient rehabilitation facilities.

ARP = The American Rescue Plan Act of 2021; FFS = fee-for-service; HCBS = home and community-based services; ICFs/IID = intermediate care facilities for individuals with intellectual disabilities; LT = long-term care; LTSS = long-term services and supports; MFP = Money Follows the Person; OT = other services; TAF = T-MSIS Analytic Files.

After categorizing each LTSS claim by a primary category, we link claims to states' eligibility files using MSIS ID, as described in Table 3. We only keep claims for which an individual was enrolled in Medicaid in the same month of service.[10] We do not include individuals enrolled in CHIP.

Table 3. Steps for identifying Medicaid eligibility in the month of service

Step	Description
3.1. Identify Medicaid eligibility in each month of the year.	An individual is eligible for Medicaid and not CHIP in a given month if: CHIP code (CHIP_CD) = 1 (non-CHIP Medicaid); or CHIP code = missing and eligibility group code (ELGBLTY_GRP_CD) = 1-60 or 69-75 (all eligibility group codes except for those that indicate CHIP enrollment and uninsured individuals eligible for COVID-19 testing).
3.2. Identify individuals with at least one month of Medicaid (not CHIP) eligibility in the year.	An individual with at least one month of Medicaid (not CHIP) eligibility has at least one month that meets the criteria in Step 3.1.

Finally, we identify the appropriate payment field to use for expenditure calculations.[11] On FFS claims, managed care encounter records, and supplemental payment records, we use the total Medicaid payment amount on the header record (TOT_MDCD_PD_AMT). On FFS claims, the payment amount represents billed services processed and paid by the state Medicaid or CHIP agency to providers. On the selected supplemental payment records, the payment amount represents add-on or supplemental wraparound payments associated with a specific beneficiary above the negotiated per-service rate, processed and paid by the state Medicaid or CHIP agency to providers. On managed care encounter records, the payment amount represents billed services processed and paid by a managed care plan to providers.[12]

B. Methodology to identify other financial transactions related to LTSS

For most institutional and HCBS categories, we compute expenditures based on claims, encounter records, and supplemental payment records (as described in the previous subsection). However, we must pull additional capitation payment records, service tracking claims, and supplemental payment records to identify and calculate expenditures for PACE and MH facility DSH payments.

a. PACE

We use eligibility records to identify PACE users, but we cannot use those same records to identify PACE expenditures. Therefore, we use capitation payments made by states to PACE plans to calculate PACE expenditures (Table 4). We classify PACE expenditures as HCBS and managed care expenditures only (not as FFS).

[10] Linking claims to enrollment information is necessary because we limit our sample to non-CHIP Medicaid beneficiaries and the TAF claim-type variable alone cannot distinguish payments made for them from Medicaid-expansion CHIP enrollees.

[11] We developed our approach based on expenditure benchmarking and payments topic areas in the DQ Atlas, available at: https://www.medicaid.gov/dq-atlas/

[12] TAF technical guide for using claims: https://resdac.org/sites/datadocumentation.resdac.org/files/2022-06/TAF-TechGuide-Claims-Files.pdf.

Table 4. Steps for identifying PACE expenditures

Step	Description
4.1. Identify capitation payment records and service tracking claims.	Pull OT claim header records where claim-type code (CLM_TYPE_CD) = 2 (capitation payment record) or 4 (service tracking claims).
4.2. Join claim lines to claim headers.	Pull OT claim line records and merge to header records using the OT link key (OT_LINK_KEY).
4.3. Keep only records that could be classified as a payment to a PACE plan.	Keep header records where type-of-service code = 119 (capitated payments to HMOs, HIOs, or PACE plans).
4.4. Identify PACE plans in the monthly managed care plan files.	Pull managed care plan records where managed care plan type (MC_PLAN_TYPE_CD) = 17 (PACE).
4.5. Merge capitation payment records and service tracking claims to PACE plan records from the managed care plan files.	Merge capitation payment records and service tracking claims from the OT file to managed care plan records in the managed care plan file by state, month, and managed care plan ID (MC_PLAN_ID). Keep only capitation payment records and service tracking claims for managed care plans identified as PACE plans in step 4.4.
4.6. Select enrollment records for PACE participants.	Pull records from the TAF DE managed care supplemental files where at least one of the individual's managed care plans has type code (MC_PLAN_TYPE_CD) = 17 (PACE).
4.7. Merge the PACE capitation payment records from step 4.5 with the DE records from step 4.6.	Only the capitation payment records with a plan ID that merges to the PACE plan records from the managed care plan files as well as a DE record for a beneficiary enrolled in PACE for at least 1 month remain. Skip this step for service tracking records, as they do not link to individuals. Continue with service tracking records at step 4.9.
4.8. Identify capitation payment records that were made in the month a beneficiary was enrolled in PACE.	Identify the month of OT claim using the file date (OT_FIL_DT). If the individual is enrolled in PACE in the same month (according to the managed care supplemental files), then keep the claim. Drop all other claims.
4.9. Sum expenditures across all remaining capitation payment records and service tracking claims.	On standard capitation payment records (claim type 2), use the total Medicaid payment amount on the header. On a service tracking claim (claim type 4), use the service tracking payment amount (SRVC_TRKNG_PYMT_AMT); if the service tracking payment amount is zero or missing, use the total Medicaid payment amount.

DE = Demographic and Eligibility; OT = other services; PACE = Program of All-Inclusive Care for the Elderly; TAF = T-MSIS Analytic Files.

b. Mental health facility DSH payments

Mental health facility DSH payments are most often found on service tracking claims in the LT file, though we also include supplemental payment records to account for the rare DSH payment that appears there (Table 5). We classify MH facility DSH expenditures as institutional LTSS and do not classify them as either managed care or FFS.

Table 5. Steps for identifying MH facility DSH expenditures

Step	Description
5.1. Identify service tracking claims and supplemental payment records.	Pull LT claim header records where claim-type code (CLM_TYPE_CD) = 4 (service tracking claims) or 5 (supplemental payment records).

Step	Description
5.2. Remove claim headers that were at least partially paid by Medicare (crossover claims).	Remove claim header records where crossover claim indicator (XOVR_IND) = 1.
5.3. Join claim lines to claim headers.	Pull LT claim line records and merge to header records using the file type's link key (LT_LINK_KEY).
5.4. Remove claim lines that are denied.	Remove claim lines with claim line status code (CLL_STUS_CD) = 542, 585, or 654.
5.5. Keep claim headers that indicate DSH payments.	Keep claim headers where any line has any of the following attributes: • Type-of-service code (TOS_CD) = 123 (DSH payments) • Service tracking type code (SRVC_TRKNG_TYPE_CD) = 2 (DSH) • Title 19 category code (XIX_SRVC_CTGRY_CD) = 002B (Mental Health Facility - DSH)
5.6. Sum payment amounts across all remaining service tracking claims and supplemental payment records.	On a service tracking claim (claim type 4), use the service tracking payment amount (SRVC_TRKNG_PYMT_AMT); if the service tracking payment amount is zero or missing, use the total Medicaid payment amount on the header. On supplemental payment records (claim type 5), use the total Medicaid payment amount on the header.

DSH = disproportionate share hospital; LT = long-term care.

C. Limitations of methodology used to identify LTSS expenditures

Although the methodology includes managed care encounter records, the LTSS expenditures reported as managed care in the output cannot be interpreted as managed LTSS (MLTSS) program expenditures. MLTSS expenditures are specific to the programs and populations that select states use to cover a range of institutional and HCBS under capitated arrangements. This methodology broadly captures managed care encounter records that have codes that align with the LTSS service categories described above, including MLTSS program encounters and encounters for LTSS provided through other managed care programs. For example, some states might not operate any MLTSS programs, but they might cover home health services through another managed care program. The users and expenditures for these state plan home health services would be reported in the output as managed care expenditures, but they cannot be interpreted as MLTSS expenditures since they were not covered under an MLTSS program. There is wide variation in how states report MLTSS and managed care encounters in the TAF, and more research is needed to determine the quality of these data. Managed care expenditures also differ from FFS expenditures in that FFS expenditures represent *state payments* to providers, whereas managed care expenditures represent *managed care plan payments* to providers (except for PACE expenditures, which represent capitation payments from states to PACE plans).

In addition, we cannot include all authorities through which states can deliver LTSS, owing to the limitations of the beneficiary identification methodology. For example, we cannot include adults ages 21 to 64 in institutions for mental diseases who are covered through the section 1115 demonstration authority because, when we developed the expenditure methodology, there was no reliable way to identify such services in the TAF.[13] It is possible that users and expenditures covered under authorities

[13] A valid value for inpatient psychiatric services for people ages 21 to 64 was added for the type-of-service field in 2021. It is not clear how long it will take for states to begin using the value consistently.

difficult to separately identify in TAF, such as other section 1115 demonstrations, are still included in the overall LTSS counts and expenditures, even though we cannot distinguish them in the reporting.

Finally, some states have issues with TAF data quality that could affect the accuracy of their LTSS expenditures. Users should therefore review state data quality for all relevant calendar years before drawing conclusions from the data. To assess data quality, please see the following DQ Atlas topics, which are relevant to the identification of LTSS expenditures:

- **Medicaid-only enrollment**—Whether all Medicaid enrollees (excluding CHIP enrollees) in the state were reported in the TAF
- **Availability of comprehensive managed care (CMC) plan encounter data**—Whether most or all Medicaid managed care plans in the state reported any encounter data
- **Linking expenditures to beneficiaries**—Whether the state's Medicaid and CHIP expenditures link to an eligibility record in the same month of service in the TAF
- **Claims volume—OT**—Whether the state reported an expected volume of claim header and line records in the OT TAF
- **Type of service—OT and LT**—Whether the state reported complete and valid type-of-service code information in medical claims in the OT and LT TAF
- **FFS long-term care expenditures**—Whether state-reported FFS expenditures for institutional long-term care services in the TAF align with the expenditures the state submitted via the CMS-64
- **Missing payment data—FFS claims and encounters**—Whether FFS claims or managed care encounter records have problematic payment amounts (zero, missing, or negative values)
- **Service tracking claims**—Whether the state's service tracking claims have unexpected coding patterns

If a state's data are deemed unusable or there is a high level of concern about the state's data quality for any of these topics, values should not be interpreted or should be interpreted with caution. For more information on the TAF DQ Atlas methods, including thresholds for determining data usability, please see the Background and Methods section for each topic, available at https://www.medicaid.gov/dq-atlas/.

IV. Approach for LTSS User Counts

A. Calculating LTSS user counts using TAF

1. Methodology to identify FFS claims and managed care encounter records for LTSS

Counting users of services provided under both FFS and managed care delivery systems requires identifying the initial pool of claims and encounter records from the LT and OT claims files (Table 6) and classifying those claims into each LTSS category (Table 7).[14] Before calculating user counts, we join all of the LTSS claims to eligibility information from the DE file (as shown in Table 8) to ensure the claims link to people with Medicaid—and not CHIP—enrollment for at least one month in the year.[15]

Table 6. Steps for identifying FFS and managed care records

Step	Description
6.1. Identify FFS claims and managed care encounter records.	Pull OT and LT claim header records where claim-type code (CLM_TYPE_CD) = 1 (fee-for-service claim) or 3 (managed care encounter record).
6.2. Remove claim headers that were at least partially paid by Medicare (crossover claims).	Remove claim header records where crossover claim indicator (XOVR_IND) = 1.
6.3. Join claim lines to claim headers.	Pull LT and OT claim line records and merge to header records using the file type's link keys (OT_LINK_KEY, LT_LINK_KEY).
6.4. Remove claim lines that are denied.	Remove claim lines with claim line status code (CLL_STUS_CD) = 542, 585, or 654.

FFS = fee-for-service; LT = long-term care; OT = other services.

Using the claims that meet the criteria in Table 6, classify each into an LTSS category (Table 7). Each record should be assigned to only one LTSS category (Table 7). Refer to Appendix A or the T-MSIS Data Guide[16] for more details on each variable and valid values.

[14] In the LTSS expenditures methodology, we also include supplemental payment records. These records are not needed in user counts because they represent payments associated with a specific beneficiary above the negotiated per service rate. Thus, we assume that the beneficiaries identified on supplemental payment records would already have been identified on FFS claims or managed care encounter records.

[15] In the LTSS expenditures methodology, we also ensure the claims link to a Medicaid—and not CHIP—enrollee in the same month of service. This step is not required for the LTSS user count methodology.

[16] The T-MSIS Data Guide is available at https://www.medicaid.gov/tmsis/dataguide.

Table 7. Steps for identifying LTSS categories on FFS claims and managed care encounter records

Category	Identification method
Institutional service	**Use LT claims**
Nursing facilities	Type-of-service code = 009, 047, or 059; or Missing type-of-service code and benefit-type code = 006 or 050
ICFs/IID	Type-of-service code = 046; or Missing type-of-service code and benefit-type code = 039
Mental health facilities[a]	Type-of-service code = 044, 045, 048, or 146; or Missing type-of-service code and benefit-type code = 037, 038, or 040
HCBS	**Use OT claims**
Section 1915(c) waiver programs	Program-type code = 07; or Missing program-type and waiver-type code = 06-20 or 33; or Missing program-type code, missing waiver-type code, and HCBS service code = 4
Section 1915(i) HCBS state plan option	Program-type code = 13; or Missing program-type code, missing waiver-type code, and HCBS service code = 1
Section 1915(j) self-directed personal assistance services	Program-type code = 16; or Missing program-type code, missing waiver-type code, and HCBS service code = 2; or Missing program-type code, missing waiver-type code, missing HCBS service code, and benefit-type code = 106
Section 1915(k) Community First Choice	Program-type code = 11; or Missing program-type code, missing waiver-type code, and HCBS service code = 3; or Missing program-type code, missing waiver-type code, missing HCBS service code, and benefit-type code = 054
MFP	Program-type code = 08
Personal care services[b]	Claim is not identified as a program-based claim[c] and procedure code = T1019, T1020, 99509, S5125, or S5126
Home health services[d]	Claim is not identified as a program-based claim[c] and type-of-service code = 016, 017, 018, 019, 020, 021, 064, or 079; or Claim is not identified as a program-based claim,[c] type-of-service code is missing, and benefit-type code = 015, 016, 017, 022, 068, or 076
Rehabilitative services[e]	Claim is not identified as a program-based claim[c] and type-of-service code = 043;[f] or Claim is not identified as a program-based claim,[c] type-of-service code is missing, and benefit-type code = 036[f]
Case management services	Claim is not identified as a program-based claim[c] and type-of-service code = 053, 054, 062, or 077; or Claim is not identified as a program-based claim,[c] type-of-service code is missing, and benefit-type code = 042

Category	Identification method
Private-duty nursing services[e]	Claim is not identified as a program-based claim[c] and type-of-service code = 022;[f] or Claim is not identified as a program-based claim,[c] type-of-service code is missing, and benefit-type code = 023 or 069[f]

[a] Mental health facilities include institutions for mental diseases for people 65 and older and inpatient psychiatric facilities for people younger than 21. TAF contains separate codes for these two settings.

[b] This category includes state plan personal care services and excludes personal care services covered through the section 1915(j) state plan option.

[c] Program-based claims, those for which enrollment information exists, include section 1915(c) waiver programs, section 1915(i) HCBS state plan option, section 1915(j) self-directed personal assistance services, section 1915(k) Community First Choice, MFP demonstration, and PACE. MFP demonstration services are not included in the aggregate calculations of total HCBS or total LTSS expenditures or users because they are not part of section 9817 of the ARP. State plan benefits refer to section 1905(a) state plan services.

[d] This category includes state plan benefit services and excludes all relevant services provided through section 1915(c) waiver programs, section 1915(i) HCBS state plan option, section 1915(j) self-directed personal assistance services, and section 1915(k) Community First Choice HCBS authorities.

[e] Under section 9817 of the ARP, rehabilitative services rendered in any setting are considered HCBS, while only private-duty nursing services rendered in beneficiaries' homes are considered HCBS. To simplify the identification of these services in TAF data, we include rehabilitative and private duty nursing services delivered in non-institutional settings in the definition of HCBS.

[f] We excluded the following settings: prisons/correctional facilities, inpatient hospitals, skilled nursing facilities, nursing facilities, custodial care facilities, inpatient psychiatric facilities, ICFs/IID, residential substance abuse treatment facilities, psychiatric residential treatment centers, and comprehensive inpatient rehabilitation facilities.

ARP = The American Rescue Plan Act of 2021; FFS = fee-for-service; HCBS = home and community-based services; ICFs/IID = intermediate care facilities for individuals with intellectual disabilities; LT = long-term care; LTSS = long-term services and supports; MFP = Money Follows the Person; OT = other services; TAF = T-MSIS Analytic Files.

After categorizing each LTSS claim by a primary category, we link claims to states' eligibility files using MSIS ID, as described in Table 8. We only keep claims for people who are enrolled in Medicaid for at least one month in the year.[17] We do not include people only enrolled in CHIP during the year. Among the remaining enrollees, we calculate the number of unique enrollees who have at least one service record for a given LTSS category (except for PACE). Instructions for identifying PACE enrollees are in the next subsection.

Table 8. Steps for identifying Medicaid eligibility in the month of service

Step	Description
8.1. Identify Medicaid eligibility in each month of the year.	An individual is eligible for Medicaid and not CHIP in a given month if: CHIP code (CHIP_CD) = 1 (non-CHIP Medicaid); or CHIP code = missing and eligibility group code (ELGBLTY_GRP_CD) = 1-60 or 69-75 (all eligibility group codes except for those that indicate CHIP enrollment and uninsured individuals eligible for COVID-19 testing)
8.2. Identify individuals with at least one month of Medicaid (not CHIP) eligibility in the year.	An individual with at least one month of Medicaid (not CHIP) eligibility has at least one month that meets the criteria in Step 3.1.

[17] Linking claims to enrollment information is necessary because we limit our sample to non-CHIP Medicaid beneficiaries, and the TAF claim-type variable alone cannot distinguish claims for them from Medicaid-expansion CHIP enrollees.

2. Methodology to identify PACE users on eligibility records

For most of the institutional and HCBS categories, we count users based on claims and encounter records (as described in the previous subsection). However, we must pull eligibility records to identify PACE enrollees (Table 9).[18] We classify PACE users as HCBS and managed care service users only (not FFS service users).

Table 9. Steps for identifying PACE enrollees

Step	Description
9.1. Identify enrollment records for PACE enrollees.	Pull records from the TAF DE managed care supplemental files where at least one of the enrollee's managed care plans has type code (MC_PLAN_TYPE_CD) = 17 (PACE).
9.2. Count unique PACE enrollees.	Count unique enrollees that are enrolled in a PACE plan for at least one month in the year.

DE = Demographic and Eligiblity; PACE = Program of All-Inclusive Care for the Elderly; TAF = T-MSIS Analytic Files.

B. Identifying HCBS users via TAF claims versus enrollment information

For program-based HCBS, such as section 1915(c) waiver programs, researchers can identify service users based on enrollment flags available in the DE file or program indicators on claim records in the OT file. Although there may be slight discrepancies between the two files (for example, if an enrollee in a program did not require a service and therefore did not generate any claims), we expect the roster of users in both files to align considerably with one another. However, in our analysis, we found notable differences in user counts between the DE and OT files. Based on these findings, we report the number of program-based HCBS users (section 1915(c) waiver programs, section 1915(i) HCBS state plan option, section 1915(j) self-directed personal assistance services, section 1915(k) Community First Choice, MFP demonstration) identified in the OT file for all programs except for PACE. For PACE, we report the user counts from the DE file because we did not identify any beneficiaries with relevant claims in the OT file. For the other HCBS state plan options (personal care services, home health services, rehabilitative services, case management services, and private-duty nursing services), we also use the OT file to identify these users because there are not identifiers in the DE file.

In our TAF data quality checks, we identify states with significant differences between the DE and OT files by program. Table 10 describes how to identify HCBS users in the DE file for comparison purposes.

[18] In the LTSS expenditures methodology, we use capitation payments made by states to PACE plans to calculate PACE expenditures.

Table 10. Steps for identifying HCBS program enrollment in the DE file

Step	Description
10.1. Identify section1915(c) waiver program enrollment in the year.	An individual is enrolled in the waiver if any of their waiver fields (WVR_TYPE_CD) in any month of the year = 06-20 or 33.
10.2. Identify section1915(i) HCBS state plan option enrollment in the year.	An individual is enrolled in the option if their 1915(i) state plan option indicator (_1915I_SPO_FLAG) = 1 in any month of the year.
10.3. Identify section1915(j) self-directed personal assistance services enrollment in the year.	An individual is enrolled in the option if their 1915(j) state plan option indicator (_1915J_SPO_FLAG) = 1 in any month of the year.
10.4. Identify section 1915(k) Community First Choice enrollment in the year.	An individual is enrolled in the option if their Community First Choice state plan option indicator (CMNTY_1ST_CHS_SPO_FLAG) = 1 in any month of the year.
10.5. Identify MFP demonstration enrollment in the year.	An individual is enrolled in the MFP demonstration if their MFP participant flag (MFP_PRTCPNT_FLAG) = 1 in any month of the year.
10.6. Identify PACE enrollment in the year.	An individual is enrolled in PACE if any of their managed care plans listed in the managed care supplemental files has type code (MC_PLAN_TYPE_CD) = 17 (PACE).

Note: Except for PACE, HCBS user counts for the categories in this table were reported based on identification in the OT file, and the counts from the DE file were used for comparison purposes only.

DE = Demographic and Eligibility; HCBS = home and community-based services; MFP = Money Follows the Person; OT = other services; PACE = Program of All-Inclusive Care for the Elderly.

C. Limitations of methodology used to identify LTSS users

LTSS user counts are calculated using distinct MSIS ID and state code combinations. Some states assign new MSIS IDs to people as they move through the Medicaid system, which can result in multiple MSIS IDs for one person. In these states, the methodology for counting LTSS users will overestimate the true number of users.

Although the methodology includes managed care encounter records, managed care LTSS users cannot be interpreted as managed LTSS (MLTSS) enrollees. There is wide variation in how states report MLTSS enrollees and managed care encounters in the TAF, and more research is needed to determine the quality of these data.

For program-based HCBS, such as section 1915(c) waiver programs, TAF users can identify service users based on enrollment flags available in the annual DE file or program indicators on claim records in the OT file. The dashboard methodology uses the number of program-based HCBS users identified in the OT file for all programs except for PACE.[19] Because there are notable differences in user counts between the DE and OT files, some states might have more accurate user counts in the DE file than in the OT file.

Like expenditures, we cannot include all authorities for user counts through which states can deliver LTSS, owing to the limitations of the beneficiary identification methodology. For example, we cannot include adults ages 21 to 64 in institutions for mental diseases who are covered through the section 1115

[19] We did not find any PACE encounter records in the TAF. We therefore used the DE file to obtain counts of PACE enrollees.

demonstration authority because, when we developed the methodology, there was no reliable way to identify such services in the TAF. This particular limitation could affect around two-thirds of states.[20]

Finally, some states have issues with TAF data quality that could affect the accuracy of their LTSS user counts. Users should therefore review state data quality for all relevant calendar years before drawing conclusions from the data. To assess data quality, please see the following DQ Atlas topics, which are relevant to identifying LTSS users:

- **Medicaid-only enrollment**—Whether all Medicaid enrollees (excluding CHIP enrollees) in the state were reported in the TAF
- **Availability of CMC plan encounter data**—Whether most or all Medicaid managed care plans in the state reported any encounter data
- **Linking claims to beneficiaries**—Whether the state reported service use records that link to an eligibility record in the same month of service in the TAF
- **Claims volume—OT**—Whether the state reported an expected volume of claim header and line records in the OT TAF
- **Type of service—OT and LT**—Whether the state reported complete and valid type-of-service code information on medical claims in the OT and LT TAF

If a state's data are deemed unusable or there is a high level of concern about the state's data quality for any of these topics, values should not be interpreted or should be interpreted with caution. For more information on the TAF DQ Atlas methods, including thresholds for determining data usability, please see the Background and Methods section for each topic, available at https://www.medicaid.gov/dq-atlas/.

[20] For more details on states with Section 1115 Medicaid institutions for mental diseases payment waivers, see https://www.macpac.gov/subtopic/section-1115-waivers-for-substance-use-disorder-treatment/.

V. Approach for LTSS User Characteristics

We determine enrollee characteristics using data from the DE file. Enrollee characteristics are based on the most recent valid values in the calendar year, unless otherwise specified.

Age group. We use enrollees' birth date to calculate their age as of January 1 of the calendar year and condense age into three age categories: 0–20, 21–64, and 65 or older.

Sex or gender. We identify enrollee sex using the same two categories that the DE file uses: female or male.

Primary language. We condense primary language into three categories: English, Spanish, or all other languages.

Dual-eligible status. We condense dual-eligible status into three categories: full-benefit dual eligibility, partial-benefit dual eligibility, and not dually eligible. Table 11 shows the dual-eligible status categories included in the measure and the dual-eligible codes used to assign enrollees to each category. Dually eligible enrollees are Medicaid or CHIP enrollees also enrolled in Medicare Part A or B or in a Medicare Savings Program. Medicare is the primary payer for services delivered to dually eligible enrollees who are jointly covered by both programs. Enrollees with full dual eligibility are entitled to full-scope Medicaid coverage, including for health services that Medicare does not cover, such as LTSS. Enrollees with partial dual eligibility are entitled to have Medicaid pay for only some of the expenses they incur under Medicare, such as premiums and cost-sharing.

We assign people to one of the three dual-eligible status categories based on the category that applies to most of their enrolled months during the year in the DE file. If an enrollee spends the same number of months enrolled in more than one dual-eligible status category, we prioritize full dual eligibility over partial dual eligibility, and partial dual eligibility over not dually eligible.

Table 11. Codes for assigning dual-eligible status

Dual-eligible status categories	Dual-eligible codes and descriptions
Full dual eligibility	02: Eligible is entitled to Medicare—Qualified Medicare Beneficiary (QMB) plus 04: Eligible is entitled to Medicare—Specified Low-Income Medicare Beneficiary (SLMB) plus 08: Eligible is entitled to Medicare—other full dual eligibles (not QMB, SLMB, Qualified Disabled and Working Individual (QDWI), or Qualified Individual (QI)) 10: Separate CHIP eligible entitled to Medicare
Partial dual eligibility	01: Eligible is entitled to Medicare—QMB only 03: Eligible is entitled to Medicare—SLMB only 05: Eligible is entitled to Medicare—QDWI 06: Eligible is entitled to Medicare—QI 09: Eligible is entitled to Medicare—other
Not dually eligible	00: Eligible is not a Medicare enrollee Missing dual-eligible code

Urban or rural area of residence. We identify enrollees' area type by comparing their ZIP code to the U.S. Department of Agriculture's Economic Research Service designation for rural-urban commuting area (RUCA) codes (Table 12). The most recent RUCA codes use 2010 census data; an updated RUCA file using 2020 census data is expected in 2024.

Table 12. Codes for assigning area type

Area types	Rural-urban commuting area (RUCA) codes and descriptions
Urban	1: Metropolitan area core: primary flow within an urbanized area (UA) 2: Metropolitan area high commuting: primary flow 30% or more to a UA 3: Metropolitan area low commuting: primary flow 10% to 30% to a UA
Rural	4: Micropolitan area core: primary flow within an urban cluster of 10,000 to 49,999 (large UC) 5: Micropolitan high commuting: primary flow 30% or more to a large UC 6: Micropolitan low commuting: primary flow 10% to 30% to a large UC 7: Small town core: primary flow within an urban cluster of 2,500 to 9,999 (small UC) 8: Small town high commuting: primary flow 30% or more to a small UC 9: Small town low commuting: primary flow 10% to 30% to a small UC 10: Rural areas: primary flow to a tract outside a UA or UC 99: Not coded: Census tract has zero population and no rural-urban identifier information

Race and ethnicity. Owing to concerns about the completeness of self-reported race and ethnicity information for some states and communities of color in the TAF DE file, we use hybrid race and ethnicity probability values from the Race and Ethnicity Imputation (REI) TAF companion file for years when the file is available. The REI file estimates race and ethnicity based on enrollee information in the TAF DE file (first name, surname, self-reported race and ethnicity, and American Indian or Alaska Native certification); data from the TAF geocoded address companion file for enrollees; and geographic, race/ethnicity, and surname data from the Census Bureau. If an enrollee's self-reported race/ethnicity information is missing, and for enrollees in states with known issues with data quality, we use an estimated probability (from 0 to 1) of the enrollee being a given race/ethnicity. If an enrollee self-reported a race/ethnicity value and the state does not have known issues with data quality, the enrollee has a probability of 1 for the self-reported race and a probability of 0 for all other races.

A. Limitations of methodology used to identify LTSS enrollee characteristics

Some states have quality issues with their TAF data that could affect the accuracy of their enrollee characteristics. Users should therefore review state data quality for all relevant calendar years before drawing conclusions from the data. To assess data quality, please see the following DQ Atlas topics, which are relevant to the calculation of enrollee characteristics:

- **Medicaid-only enrollment**—Whether all Medicaid enrollees (excluding CHIP enrollees) in the state were reported in the TAF
- **Age**—Whether the state reported complete and valid age data in the TAF DE file
- **Gender**—Whether the state reported complete and valid gender data in the TAF DE file

- **Dual eligibility code**—Whether the state reported complete and valid dual-eligibility data in the TAF DE file and reported enrollment in all expected categories
- **Primary language**—Whether the state reported complete and valid language data in the TAF DE file and whether distribution of languages (English, Spanish, or other) match the U.S. Census Bureau's American Community Survey data
- **ZIP code**—Whether the state reported complete and valid ZIP code data in the TAF DE file

If a state's data are deemed unusable or there is a high level of concern about the state's data quality for any of these topics, values should not be interpreted or should be interpreted with caution. For more information on the TAF DQ Atlas methods, including thresholds for determining data usability, please see the Background and Methods section for each topic, available at https://www.medicaid.gov/dq-atlas/.

VI. Approach for LTSS Subpopulations

Starting with the 2022 TAF data, we developed TAF-based definitions to approximate the LTSS subpopulations that appeared in historical LTSS expenditure reports: (1) older adults (ages 65 and older); (2) people under age 65 with potentially disabling conditions;[21] (3) people with autism spectrum disorder (ASD), intellectual disabilities (ID), or developmental disabilities (DD); (4) people with MH conditions or substance use disorder (SUD); and (5) other people who use LTSS. We use characteristics such as age, enrollment in section 1915(c) waiver programs, chronic condition flags, and service use to classify LTSS users in our sample (as defined in the Approach for LTSS User Counts section) into the first four subpopulations: older adults, people under age 65 with potentially disabling conditions, people with ASD/ID/DD, and people with MH conditions or SUD (Table 13). These four subpopulations are not mutually exclusive; we allow LTSS users to be classified in all the subpopulations for which they qualify. In contrast, for the fifth subpopulation (other people who use LTSS), we do not apply any specific parameters; instead, we classify sample members into the fifth LTSS subpopulation if they do not meet the criteria of the other four subpopulations.

Age group. We calculate age the same way as for the rest of the analyses, based on the LTSS user's birth date and the first day of the calendar year. We flag LTSS users ages 65 and older as being in the older adults subpopulation. People in the under age 65 with potentially disabling conditions subpopulation must be less than age 65. LTSS users sorted into the ASD/ID/DD and MH/SUD subpopulations can be any age. By definition, LTSS users categorized as other people who use LTSS are less than age 65 because those ages 65 and older meet the criteria for the older adults subgroup, and other people who use LTSS consists only of people who do not meet the criteria for any other subpopulation.

Waiver program enrollment from TAF eligibility file. We identify waiver program enrollment using the TAF DE file,[22] which includes detailed breakdowns of section 1915(c) waiver programs by subpopulation. For example, we use the waiver code specific to 1915(c)—autism/ASD to classify enrollees as part of the ASD/ID/DD subpopulation. Although we include the section 1115 demonstration indicator for SUD demonstrations as part of the logic for identifying the MH/SUD subpopulation, states do not yet use this code as of 2022.

Claims-based chronic conditions. Because enrollment indicators for section 1915(c) waiver programs might not fully capture a person's clinical characteristics—and many LTSS users are not enrolled in these programs—we use diagnostic information on claims to identify additional LTSS users for the older adults, people under age 65 with potentially disabling conditions, ASD/ID/DD, and MH/SUD subpopulations.

[21] Historical reports include a category that combines older adults and people with physical or other disabilities. Based on external feedback, we created one subpopulation for older adults (ages 65 and older) and one subpopulation for people under age 65 with potentially disabling conditions.

[22] Waiver-type code also appears on claims, and we use it in our main analyses to help identify the user counts and expenditures for section 1915(c), section 1915(i), section 1915(j), and section 1915(k) programs. Identifying users of these programs also involves other TAF variables—program-type code, HCBS service code, and benefit-type code—which do not provide enough information to categorize a person into one of the subpopulations.

To identify the chronic conditions of each LTSS user, we use the Chronic Conditions Data Warehouse (CCW) algorithms[23] to create flags for 26 conditions. Depending on the condition, these algorithms draw from either one or two years of claims from the inpatient (IP), LT, drug (RX), and OT files. Starting with 30 common chronic conditions (such as asthma, diabetes, and hypertension) and 40 other chronic or potentially disabling conditions (such as ID, DD, and MH or SUD conditions) in the CCW algorithms, we identified 26 conditions most likely to help characterize one of the subpopulations.[24] LTSS users with any of the developmental disabilities are flagged as part of the ASD/ID/DD subpopulation, LTSS users with any of the MH or SUD conditions are flagged as part of the MH/SUD subpopulation, and LTSS users (under age 65) with any of the potentially disabling chronic conditions listed in Table 14 are flagged as part of the under age 65 with potentially disabling conditions subpopulation.

Claims-based service use. We use institutional LTSS claims to identify people in certain subpopulations. Specifically, we flag anybody who had at least one ICF/IID claim during the report year as part of the ASD/ID/DD subpopulation and anybody who had at least one mental health facility (MHF) claim during the report year as part of the MH/SUD subpopulation.

Table 13. Definitions for LTSS subpopulations

Population	Criteria	Waiver program enrollment from TAF eligibility file	Claims-based chronic conditions	Claims-based service use
Older adults	Must be in the LTSS user sample and be age 65 or older	n.a.	n.a.	n.a.
People under age 65 with potentially disabling conditions	Must be in the LTSS user sample, be under age 65, and meet at least one criterion for waiver program enrollment or claims-based chronic conditions	**Enrolled in a waiver program for people with disabilities** • 1915(c)—Aged and Disabled • 1915(c)—Physical Disabilities • 1915(c)—Disabled (other)	**Dementia** • Alzheimer's disease • Non-Alzheimer's dementia **Injuries** • Spinal cord injury • Traumatic brain injury and nonpsychotic mental disorders due to brain damage **Musculoskeletal conditions** • Mobility impairments **Neurological conditions** • Multiple sclerosis and transverse myelitis • Parkinson's disease and secondary Parkinsonism	n.a.

[23] See https://www2.ccwdata.org/web/guest/condition-categories.

[24] Because we have access only to Medicaid claims data, we are likely undercounting chronic conditions for dually eligible individuals.

Population	Criteria	Waiver program enrollment from TAF eligibility file	Claims-based chronic conditions	Claims-based service use
People under age 65 with potentially disabling conditions (cont.)			**Other chronic and potentially disabling conditions** • Cerebral palsy • Chronic kidney disease • Muscular dystrophy • Spina bifida and other anomalies of the nervous system • Stroke/transient ischemic attack	
People with ASD/ID/DD	Must be in the LTSS user sample and meet at least one criterion for waiver program enrollment, claims-based chronic conditions, or service use	**Enrolled in a waiver program for people with ASD, ID, or DD** • 1915(c)—Intellectual Disabilities • 1915(c)—Intellectual and Developmental Disabilities • 1915(c)—Autism/Autism Spectrum Disorder • 1915(c)— Developmental Disabilities	**Developmental disabilities** • Autism spectrum disorders • Intellectual disabilities and related conditions • Learning disabilities • Other developmental delays	Has at least one ICF/IID claim
People with MH/SUD	Must be in the LTSS user sample and meet at least one criterion for waiver program enrollment, claims-based chronic conditions, or service use	**Enrolled in a waiver program for people with MH or SUD** • 1915(c)—Mental Illness—Age 18 or Older • 1915(c)—Mental Illness—Under Age 18 • 1115 substance use demonstration	**MH conditions** • Anxiety disorders • Bipolar disorder • Depression/bipolar/ other depressive mood disorders • Personality disorders • Post-traumatic stress disorder • Schizophrenia/other psychotic disorders **SUD conditions** • Alcohol use disorders • Drug use disorders • Opioid use disorders • Tobacco use disorders	Has at least one MH facility claim
Other people who use LTSS	Must be under age 65; be in the LTSS user sample; and meet all criteria for waiver	Not enrolled in any waiver programs listed for people under age 65 with potentially disabling	Does not have any conditions listed for people under age 65 with potentially disabling	Does not use any services listed for people under age 65

Population	Criteria	Waiver program enrollment from TAF eligibility file	Claims-based chronic conditions	Claims-based service use
Other people who use LTSS (cont.)	program enrollment, claims-based chronic conditions, and service use	conditions, people with ASD/ID/DD, or people with MH/SUD	conditions, people with ASD/ID/DD, or people with MH/SUD	with potentially disabling conditions, people with ASD/ID/DD, or people with MH/SUD

Note: The LTSS user sample is described in the Approach for LTSS User Counts section.

ASD = autism spectrum disorder; DD = developmental disabilities; ICF/IID = intermediate care facility for individuals with intellectual disabilities; ID = intellectual disabilities; LTSS = long-term services and supports; MH = mental health; n.a. = not applicable; SUD = substance use disorder; TAF = Transformed Medicaid Statistical Information System Analytic Files.

A. Limitations of methodology used to identify LTSS subpopulations

Use of waiver enrollment information. Because there are notable differences in user counts between the DE and OT files, some states might have less accurate user counts in the DE file than in the OT file. States with inaccurate identification of waiver program enrollment might under- or overcount enrollees, and thus might under- or overcount LTSS subpopulations for which waiver enrollment is a driving identification factor. In addition, the indicators of section 1915(c) waiver program enrollment might not fully capture a person's clinical characteristics, and many LTSS users are not enrolled in these programs.

Use of claims-based chronic condition algorithms as a proxy for functional status. Note that a chronic condition does not always result in a disability or need for LTSS. Because we could not determine the severity of a chronic condition for a given person, we selected chronic conditions most likely to be related to LTSS need.

Like all claims-based chronic condition groupers, the CCW chronic condition algorithms draw on the diagnosis, procedure, and drug codes from claims that providers submit to health plans or the state. Therefore, we can identify only chronic conditions with observable medical treatment. Chronic conditions with infrequent treatment—whether because they are already well-managed or because access to care is limited—might also be under-identified, and thus might lead to under-identification of LTSS subpopulations for which chronic conditions are a driving identification factor. For example, a person with a long-standing learning disability who is not treated by a Medicaid provider would not be identified as having the condition and might not be categorized in the ASD/ID/DD subpopulation if they do not meet any of its other criteria.

Use of CCW algorithms for Medicaid enrollees. Originally, the CCW was developed for use with adults in Medicare and was later adapted for use with Medicaid enrollees. The CCW could possibly under-identify chronic conditions in Medicaid enrollees who are children, or it might not capture certain conditions that are relevant for younger populations.

Dually eligible LTSS users. Medicare is the primary payer for inpatient services, pharmaceuticals, and most outpatient medical services for Medicaid enrollees who are dually eligible for Medicare. The lack of

Medicare data in this analysis might lead to an under-identification of chronic conditions for dually eligible individuals, which in turn might lead to an under-identification of LTSS subpopulations for which chronic conditions are a driving identification factor.

Alignment with state-specific definitions of LTSS subpopulations. We used standard criteria available in TAF to classify LTSS users into subpopulations because we do not know how each state defines its subpopulations. Therefore, states' internal data on LTSS users and expenditures for each subpopulation might differ from our TAF-based, standardized calculations, particularly if states have functional status or assessment data in their internal systems (and not in the TAF) that can be used to classify individuals.

Finally, some states have quality issues with their TAF data that could affect the accuracy of the LTSS subpopulation classification. Users should therefore review state data quality for the relevant calendar year before drawing conclusions from the data. To assess data quality, please see the following DQ Atlas topics, which are relevant to identifying LTSS subpopulations:

- **Age**—Whether the state reported complete and valid age data in the TAF DE file
- **1915(c) participation**—Whether the 1915(c) waiver participant counts identified in TAF aligned with the participant counts in the CMS 372
- **Availability of CMC plan encounter data**—Whether most or all Medicaid managed care plans in the state reported any encounter data
- **Claims volume—OT**—Whether the state reported an expected volume of claim header and line records in the OT TAF
- **Diagnosis code—IP, LT, and OT**—Whether the state reported complete and valid diagnosis codes
- **Procedure codes—IP, OT professional, OT institutional**—Whether the state reported complete and valid procedure codes

If a state's data are deemed unusable or there is a high level of concern about the state's data quality for any of these topics, values should not be interpreted or should be interpreted with caution. For more information on the TAF DQ Atlas methods, including thresholds for determining data usability, please see the Background and Methods section for each topic, available at https://www.medicaid.gov/dq-atlas/.

Appendix A

Value Sets Used to Identify LTSS Categories in Claims and Encounter Records

Table A.1. Values used to identify LTSS categories

Variable	Values
Nursing facilities	
Type-of-service code	009: Nursing facility services for individuals age 21 or older (other than services in an institution for mental diseases) 047: Nursing facility services, other than in institutions for mental diseases 059: Skilled nursing facility services for individuals under age 21
Benefit-type code	006: Nursing facility services for 21 and over 050: Any other medical care and any other type of remedial care recognized under state law, specified by the secretary—nursing facility services for patients under 21
Intermediate care facilities for individuals with intellectual disabilities	
Type-of-service code	046: Intermediate care facility (ICF)/intermediate care facility for individuals with intellectual disabilities (ICF/IID)/individuals with intellectual disabilities (IID) services
Benefit-type code	039: Intermediate care facility services for individuals with intellectual disabilities or persons with related conditions
Mental health facilities	
Type-of-service code	044: Inpatient hospital services for individuals age 65 or older in institutions for mental diseases 045: Nursing facility services for individuals age 65 or older in institutions for mental diseases 048: Inpatient psychiatric services for individuals under age 21 146: Inpatient psychiatric services for beneficiaries between the ages of 22 and 64 who receive services in an institution for mental diseases (IMD)
Benefit-type code	037: Services for individuals over age 65 in IMDs—Inpatient hospital services 038: Services for individuals over age 65 in IMDs—Nursing facility services 040: Inpatient psychiatric facility services for under 21
Section 1915(c) waiver programs	
Program-type code	07: Home and Community-Based Care Waiver Services
Waiver-type code	06: 1915(c)—Aged and Disabled 07: 1915(c)—Aged 08: 1915(c)—Physical Disabilities 09: 1915(c)—Intellectual Disabilities 10: 1915(c)—Intellectual and Developmental Disabilities 11: 1915(c)—Brain Injury 12: 1915(c)—HIV/AIDS 13: 1915(c)—Technology Dependent or Medically Fragile 14: 1915(c)—Disabled (other) 15: 1915(c)—Enrolled in 1915(c) waiver for unspecified or unknown populations 16: 1915(c)—Autism/Autism spectrum disorder 17: 1915(c)—Developmental Disabilities 18: 1915(c)—Mental Illness—Age 18 or Older 19: 1915(c)—Mental Illness—Under Age 18 20: 1915(c) waiver concurrent with an 1115 or 1915(b) managed care authority 33: 1915(c) waiver
HCBS service code	4: The HCBS service was provided under a 1915(c) HCBS Waiver

Variable	Values
Section 1915(i) HCBS state plan option	
Program-type code	13: Home and Community-Based Services (HCBS) state plan option (1915(i))
HCBS service code	1: The HCBS service was provided under 1915(i)
Section 1915(j) self-directed personal assistance services	
Program-type code	16: 1915(j) (Self-directed personal assistance services/personal care under state plan or 1915(c) waiver)
HCBS service code	2: The HCBS service was provided under 1915(j)
Benefit-type code	106: Self-directed personal assistance services under 1915(j)
Section 1915(k) Community First Choice	
Program-type code	11: Community First Choice (1915(k))
HCBS service code	3: The HCBS service was provided under 1915(k)
Benefit-type code	054: Community First Choice
Money Follows the Person demonstration	
Program-type code	08: Money Follows the Person (MFP)
Personal care services	
Procedure code	T1019: Personal care services, per 15 minutes, not for an inpatient or resident of a hospital, nursing facility, ICF/IID or IMD, part of the individualized plan of treatment (code may not be used to identify services provided by home health aide or certified nurse assistant) T1020: Personal care services, per diem, not for an inpatient or resident of a hospital, nursing facility, ICF/IID or IMD, part of the individualized plan of treatment (code may not be used to identify services provided by home health aide or certified nurse assistant) 99509: Home visit services S5125: Attendant care services; per 15 minutes S5126: Attendant care services; per diem
Home health services	
Type-of-service code	016: Home health services—Nursing services 017: Home health services—Home health aide services 018: Home health services—Medical supplies, equipment, and appliances suitable for use in the home 019: Home health services—Physical therapy provided by a home health agency or by a facility licensed by the state to provide medical rehabilitation services 020: Home health services—Occupational therapy provided by a home health agency or by a facility licensed by the state to provide medical rehabilitation services 021: Home health services—Speech pathology and audiology services provided by a home health agency or by a facility licensed by the state to provide medical rehabilitation services 064: HCBS—Home health aide services 079: HCBS-65-plus—Home health aide services

Variable	Values
Benefit-type code	015: Home health services—Intermittent or part-time nursing services provided by a home health agency 016: Home health services—Home health aide services provided by a home health agency 017: Home health services—Medical supplies, equipment, and appliances suitable for use in the home 022: Home health services—Physical therapy, occupational therapy, speech pathology, and audiology provided by a home health agency 068: Home health services—Home health aide services provided by a home health agency 076: Home health aide
Rehabilitative services	
Type-of-service code	043: Rehabilitative services
Benefit-type code	036: Other diagnostic, screening, preventive, and rehabilitative services—Rehabilitative services
Case management services	
Type-of-service code	053: Targeted case management services 054: Case management services other than those that meet the definition of primary care case management services or targeted case management services 062: HCBS—Case management services 077: HCBS—65-plus—Case management services
Benefit-type code	042: Case management services and TB-related services—Case management services as defined in the state plan in accordance with section 1905(a)(19) or 1915(g)
Private-duty nursing services	
Type-of-service code	022: Private-duty nursing services
Benefit-type code	023: Private-duty nursing 069: Private-duty nursing services

Note: The full list of values for each variable can be found in the data elements section of the T-MSIS Data Guide: https://www.medicaid.gov/tmsis/dataguide/data-elements.

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