



HEALTH CARE AND HUMAN SERVICES POLICY, RESEARCH, AND CONSULTING—WITH REAL-WORLD PERSPECTIVE.

## **Medicaid Enrollees' Utilization of Ambulatory Care Services**

**For Researchers using the Centers for Medicare & Medicaid Services' Chronic Condition Data Warehouse (CCW)**

September 2012

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## Abstract

**Purpose:** The purpose of this data brief is to illustrate how researchers and policymakers can use data from the Centers for Medicare & Medicaid Services' Chronic Condition Data Warehouse (CCW) to assess Medicaid enrollees' utilization of ambulatory services.

**Methods:** Using 2008 claims data from the CCW, we classify claims by their ambulatory care service type. Confining our analyses to Supplemental Security Income (SSI) and Temporary Assistance for Needy Families (TANF) adults and children, we compare utilization across age and eligibility groups. Using urbanization data for enrollees' county of residence, we assess whether utilization varies with population density.

**Results:** Ambulatory care utilization varies considerably across age and eligibility groups, and with population density. While the CCW data are very useful for analyses of utilization across different populations, caution should be taken to ensure that populations are comparable to one another, and that the data are complete.

**Keywords:** Medicaid, Service Utilization, Temporary Assistance for Needy Families (TANF), Supplemental Security Income (SSI), Utilization, Ambulatory Care

## Introduction

This data brief illustrates how researchers and policymakers can use the Centers for Medicare & Medicaid Services' (CMS) Chronic Condition Data Warehouse (CCW) to evaluate Medicaid enrollees' utilization of ambulatory care services. Policymakers and health care administrators may use utilization data to improve their understanding of what types of service drive Medicaid spending, and facilitate evaluations of the effectiveness of programs aimed at promoting health care service use (such as those aimed at increasing preventive care). Utilization data may also facilitate evaluations of access to care and the identification of potential provider shortages. This data brief explores the potential uses of the CCW data in analyzing Medicaid enrollees' utilization of ambulatory care, both illustrating the types of analyses the CCW can support and potential limitations of which CCW users should be aware.

For the purpose of this data brief, we refer to physician services and outpatient visits (clinic, behavioral health, therapy, and emergency department visits) as "ambulatory care visits." Throughout the brief, the term "physician visit" will refer to any visit with an Evaluation and Management (E & M) Code that identifies outpatient office or home care visits with a physician or other health care professional.

In this data brief, we begin by outlining the methodology we used to develop utilization measures, including specific data sources from the CCW and the enrollee identifiers that distinguish beneficiary groups. We next outline data considerations that researchers and policymakers should account for when using the CCW data for these purposes. Lastly, we demonstrate the types of analyses possible using the CCW data. These include:

1. How does utilization of ambulatory care services vary by eligibility category, age group, and delivery system?
2. How does utilization of ambulatory care services vary by State, controlling for eligibility and age group?
3. How does utilization of ambulatory care services vary by population density?

### 1. Data Source

The CCW is a CMS research database containing Medicare and Medicaid data unique to enrollees. We utilized the Medicaid Analytic eXtract (MAX), which is included in the CCW, for 2008. The CCW includes MAX data for the years 1999- 2008, as of the time of this publication.

The CCW MAX data support analyses of Medicaid eligibility, health care utilization, and spending.<sup>1</sup> All States process claims through their Medicaid Medical Information System (MMIS), though some may use other claims processing systems as well. After a series of edits, States submit claims data to CMS's Medicaid Statistical Information System (MSIS). MSIS data is then used to populate the CCW. Because of the breadth of information contained within the

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<sup>1</sup> For more information about the CCW and to access the data, visit the CCW website at: <http://www.ccwdata.org/index.htm>

CCW data, researchers can use the CCW to assess health care utilization and expenditures of Medicaid enrollees.

The 2008 CCW included MAX data for 43 states at the time of data extraction. Data for the District of Columbia, Hawaii, Maine, Missouri, North Dakota, Pennsylvania, Utah, and Wisconsin were not available at that time.

### CCW Data Files

We used the following CCW data files for this analysis:

- **Person Summary file** – The Person Summary (PS) file provides person-level information regarding Medicaid and CHIP enrollees, whether or not they used any services in the given year. We used the PS file to determine an enrollee's eligibility group, age category, county of residence, managed care enrollment (i.e., fee-for-service, managed care organization, primary care case management), and their number of months of Medicaid eligibility during 2008. Appendix B further explains our methodology and gives a more in-depth description of our enrollee classification.
- **Other Services file** – The Other Services file includes Medicaid records for outpatient services, physician and professional services, hospice, home health, lab/ X-ray, durable medical equipment, premium payments, and all other services not included in the Inpatient Hospital file, the Long-Term Care file, or the Rx file. We used procedure codes reported on the other services file to classify visits as: physician,<sup>2</sup> behavioral health and substance abuse, physical and other therapies, along with other outpatient services.
- **Inpatient Hospital file** – The Inpatient Hospital file contains claim records for enrollees that used inpatient hospital and other hospital based services. We used the Inpatient Hospital file to identify the amount of ambulatory care services enrollees received in a hospital setting.

## 2. Study Population

The person summary file was used to define three characteristics for each enrollee; basis of eligibility, age category and managed care enrollment. Using these characteristics, enrollees were then selected for inclusion in the study to ensure that valid comparisons could be made across states. After controlling for these enrollee characteristics additional data checks were performed to identify outlier states with suspect data. States that were determined to be outliers were excluded from the study population. Appendix A provides a summary of the included populations by State. The methodology that was used to determine an enrollee's eligibility group, age category and managed care enrollment is provided in Appendix B.

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<sup>2</sup> For the remainder of this paper we will use the term physician to refer to any visits with E&M codes that identify outpatient office or home care visits with a physician or other health care professional.

## A. Basis of Eligibility

Medicaid covers a diverse group of enrollees, such as pregnant women, low-income children, persons with disabilities, undocumented individuals, low-income people above age 65, and other State-defined optional eligibility groups. The optional eligibility groups are not mandated by CMS for inclusion in each State's Medicaid program and the types of optional populations that States have elected to cover varies significantly from state to state. For this reason, Medicaid-population statistics can be quite misleading when presented without accounting for basis of eligibility. To control for the basis of eligibility the MAX person summary file was used to assign enrollees to the following eligibility categories;

- Medicare-Medicaid eligibles with full Medicaid coverage
- Medicare-Medicaid eligibles with partial Medicaid coverage
- Supplemental Security Income (SSI)
- Temporary Assistance to Needy Families (TANF)
- Medical Assistance Only (MA-Only)
- Child Health Insurance Program (CHIP)
- Waiver Expansion Populations
- Other Eligibles

In this paper, we focus on 4 mandated Medicaid eligibility groups that all States cover. These include:

- SSI adults: non-elderly adults receiving Medicaid only, eligible on the basis on income and disability
- SSI children: children receiving Medicaid, eligible on the basis of income and disability
- TANF adults: non-elderly adults receiving Medicaid, eligible on the basis of income
- TANF children: children receiving Medicaid, eligible on the basis of income

While confining our analyses to these eligibility groups improves the interpretability of our results, it does mean that our findings do not apply to larger Medicaid populations. The groups included in these analyses comprise 22.2 percent of the Medicaid population from which they are drawn and 14.5 percent of the total U.S. Medicaid population for the 43 States included in the CCW at the time of this publication. (See Appendix A for a table summarizing included populations by State)

## B. Managed Care Enrollment

The CCW data include Fee-for-Service (FFS) claims and managed care encounter data. Claims data track the services provided to individuals; since provider reimbursement is conditional upon submission of accurate and complete claims, claims data for FFS enrollees tend to be quite comprehensive. Encounter data are submitted by Managed Care Organizations (MCO) to provide information about managed care member utilization and costs. Because reimbursement

is not conditional upon receipt of encounter data, these data may be less complete than FFS claims data. We found that in 2008, the quality and comprehensiveness of encounter data varied by State. It is important for researchers to identify whether these gaps are caused by issues with the encounter data process, or if there are gaps in the delivery of care to enrollees.<sup>3</sup>

Due to the data issues we identified in the encounter data for many States, the Person Summary file was used to identify members that received services through the FFS system, MCOs, and Primary Care Case Management Programs. Any individual that received services through an MCO at any point during the year was excluded from our analyses. To contrast utilization of ambulatory care services by enrollees in the FFS system and Primary Care Case Management (PCCM) program our first set of analyses compares members that were only in FFS or only in a PCCM program during their entire period of eligibility.

In States with minimal managed care penetration, this decision has a minimal impact on our findings, but in States with significant use of managed care, this decision is more significant. Some States (such as Arizona) cover most of their major eligibility groups with managed care; in States such as these, estimates based on only the FFS population are not representative of the State as a whole. In addition to aggregate managed care penetration, it is important to assess whether any of the populations included in specific analyses are covered by managed care. Appendix D shows the managed care penetration for the four populations we have used in the analyses presented in this data brief.

While we have confined our analyses to FFS and PCCM enrollees, some of these enrollees may receive particular services or benefits under partial managed care programs. States may contract with managed care organizations to provide services such as oral health, behavioral health, or pharmacy management. In these instances, encounters for capitated services may be missing from the MAX data. For the purposes of the present paper, the most likely result is that we have underestimated the utilization of behavioral health services in States using managed care to cover these services.

### A. Data Anomalies

Before beginning our analyses, we assessed the CCW data completeness. First, we calculated minimally acceptable sample sizes for all subpopulations of interest and only presented results for subpopulation groups with at least 12,000 enrollee months.<sup>4</sup> Several eligibility age groups had fewer than 12,000 enrollee months included: Connecticut SSI children, Delaware SSI children and adults, Idaho SSI and TANF children and adults, Montana SSI children, New Hampshire SSI children, Rhode Island TANF adults, and Vermont SSI children and adults. We next estimated the percentage of beneficiaries without an ambulatory care visit by State, subpopulation, and delivery system and dropped outlier subpopulations. The outlier populations we dropped include Arkansas SSI adults and children, Massachusetts TANF

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<sup>3</sup> For an in-depth discussion, see "*Evaluating Encounter Data Completeness.: For Researchers using the Centers for Medicare and Medicaid Services' Chronic Condition Data Warehouse (CCW).*"

<sup>4</sup> The Centers for Medicare and Medicaid Services (CMS) use the 12,000 enrollee month eligibility requirement for Medicare Part D, the Medicare prescription drug benefit. State-level summary records with fewer than 12,000 enrollee months were excluded from the analysis

adults, Mississippi TANF adults, and New Jersey SSI children. Appendix A shows included and omitted populations by State.

### 3. Data Procedures

To evaluate utilization of ambulatory care services by Medicaid members, we used the CCW Inpatient and Other claim files to identify the types of ambulatory care services accessed by each enrollee. We used procedure codes on the Other claim file to identify ambulatory care visits. Revenue codes on the CCW Inpatient and Other claim file were used to identify ambulatory care visits that occurred in a hospital setting. For claims with multiple procedure codes or revenue codes a hierarchy was used to assign the entire claim to the same service category. Claims were assigned to the following categories to identify the ambulatory care services that a member received;

- Physician and other Professional visits in an office or home setting
- Clinic visits in a community setting
- Hospital Based Outpatient Department visits
- Behavioral Health and Substance Abuse Visits
- Emergency Room Visits
- Physical and other types of Therapy visits

We used the National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme to assign each enrollee’s county of residence a population density between 1 and 6.<sup>5</sup> A population density of “1” indicates that the county is located in a large metropolitan area, whereas a “6” indicates a noncore county location (i.e., not in a metropolitan or micropolitan region).<sup>6</sup> Figure 1 provides a description of each of the six urbanization level classifications.

**Figure 1. Population Density Categories and Classifications**

| Urbanization Level  | Description*  |
|---------------------|---|
| Large Central Metro | Counties in Micropolitan Statistical Areas (MSA)** of 1 million or more population that: 1) contain the entire populations of the largest principal city of the MSA, or 2) are completely contained within the largest principal city of the MSA, or 3) contain at least 250,000 residents of any principal city in the MSA |
| Large Fringe Metro  | Counties in MSA of 1 million or more population that do not qualify as large central  |
| Medium Metro        | Counties in MSA of 250,000-999,999 population   |

<sup>5</sup> Centers for Disease Control and Prevention. NCHS Urban-Rural Classification Scheme for Counties.. 2006. Available at [https://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm](https://www.cdc.gov/nchs/data_access/urban_rural.htm)

<sup>6</sup> Large Central Metro is defined by NCHS as a “central” county of a Metropolitan Statistical Area (MSA) with a population of 1 million or more and noncore is defined as a county not within Micropolitan Statistical Areas. An MSA is defined as an area with high population density at its core and close ties throughout the region. Micropolitan Statistical Areas are urban areas with a population of 10,000 to 49,999. Noncore is an area with a population of less than 50,000 that does not have a central core.



| Urbanization Level | Description*                                  |
|--------------------|---|
| Small Metro        | Counties in MSA of 50,000-249,999 population  |
| Micropolitan       | Counties in micropolitan statistical area     |
| Noncore            | Counties not in micropolitan statistical area |

\* Centers for Disease Control and Prevention. NCHS Urban-Rural Classification Scheme for Counties. 2012. Available at: [http://www.cdc.gov/nchs/data/series/sr\\_02/sr02\\_154.pdf](http://www.cdc.gov/nchs/data/series/sr_02/sr02_154.pdf)

\*\* Status determined from December 2005 Office of Management and Budget delineation of metropolitan statistical area (MSA)

Using these data, we produced a series of summary statistics describing the percentage of the population that accessed various outpatient services. We produced these estimates by various sub-populations (e.g., TANF adults, SSI children) to illustrate how utilization varies across Medicaid populations and by population density.

#### 4. Results

To illustrate the types of analyses the CCW can support, we used CCW data to analyze ambulatory care utilization by Medicaid enrollees. We assess utilization by delivery system, age and eligibility categories, and population density.

##### A. How does utilization of ambulatory care services vary by eligibility category, age group, and delivery system?

To evaluate access to ambulatory care services we computed the percentage of members that did not utilize any ambulatory care service during 2008 controlling for their eligibility, age group, and delivery system.<sup>7</sup> Figure 2 shows the percentage of enrollees with no ambulatory care visit during 2008 by age, eligibility group, and delivery system.

We find that across all age and eligibility groups, the percentage of enrollees with no ambulatory care visits in 2008 varies by delivery system. In all four age and eligibility groups, enrollees in FFS are more likely to have gone without an ambulatory care visit than PCCM enrollees. While these numbers suggest that enrollees in PCCM programs are more likely to access ambulatory health care services than FFS enrollees, there are fewer States in the PCCM categories. Further, as the minimum and maximum columns indicate, there is considerable variation across the States. Thus, the findings about delivery system must be interpreted with caution.

<sup>7</sup> We only include enrollees served in one delivery system throughout 2008 and dropped enrollees served in multiple delivery systems. For example, FFS SSI Adults only include SSI adults that received FFS Medicaid for 12 months. Enrollees classified as MCO or PCCM were also enrolled in that respective delivery system for the entire year.

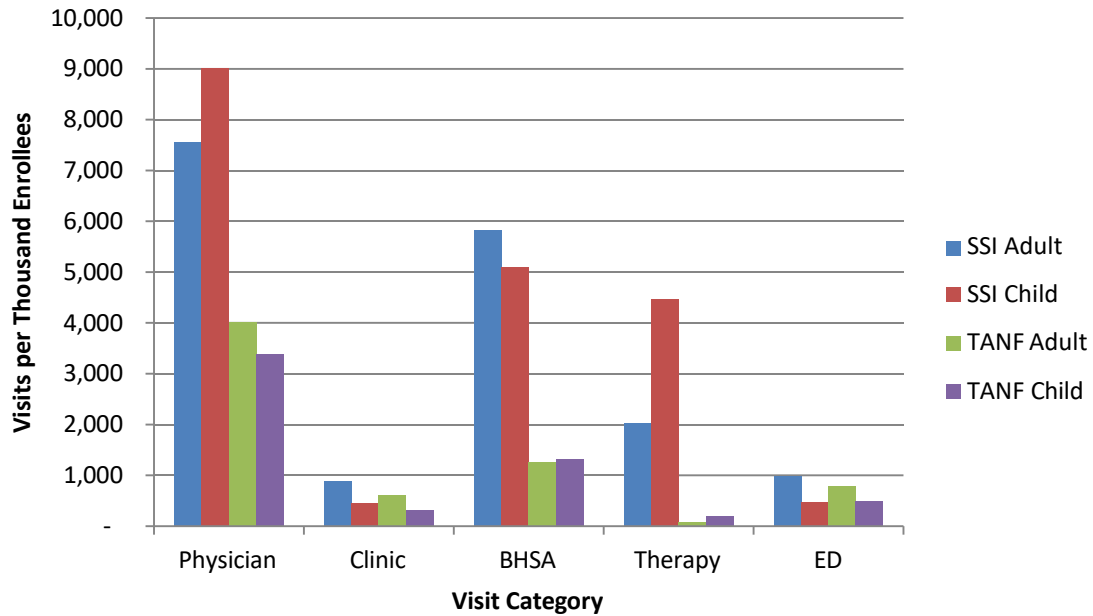
Figure 2. Percent of Enrollees without an Ambulatory Care Visit by State and Delivery System and Eligibility Categories, 2008

| Eligibility and Age Category | Delivery System | Number of States | Minimum Percent | Maximum Percent | Median Percent |
|------------------------------|-----------------|------------------|-----------------|-----------------|----------------|
| SSI Adult                    | FFS             | 31               | 10.3%           | 50.2%           | 26.3 %         |
|                              | PCCM            | 21               | 6.0%            | 23.5%           | 13.1%          |
| SSI Child                    | FFS             | 28               | 9.7%            | 37.0%           | 20.9%          |
|                              | PCCM            | 15               | 5.1%            | 24.5%           | 11.8%          |
| TANF Adult                   | FFS             | 27               | 23.7%           | 62.7%           | 41.4%          |
|                              | PCCM            | 15               | 8.7%            | 39.4%           | 21.6%          |
| TANF Child                   | FFS             | 30               | 21.7%           | 73.8%           | 39.8%          |
|                              | PCCM            | 21               | 11.1%           | 30.1%           | 18.4%          |

**B. How does utilization of ambulatory care services vary by State, controlling for eligibility and age group?**

As Figure 2 shows, there is considerable variation in utilization among age and eligibility groups. We investigate this variation in more detail, assessing differences in the utilization of five ambulatory care service categories. These services include physician services (defined as outpatient office or home care visits with a physician or other health care professional), clinic visits, behavioral health or substance abuse (BHSA) services, therapy, and emergency department (ED) visits. Figure 3 shows the number of ambulatory care visits per thousand enrollees by visit type and age and eligibility category. This analysis focused on members who only accessed care in the FFS system.

Figure 3. Ambulatory Care Visits per Thousand FFS Members by Visit Category and Eligibility Categories, 2008



For all service types, SSI enrollees in each age group have higher utilization rates than TANF enrollees of the same age group. The differences between SSI and TANF utilization rates within age groups are smallest for clinic and ED use; for adults, SSI and TANF utilization of the ED is virtually indistinguishable. Alternatively, SSI beneficiaries have significantly higher utilization of physician services, BHSA services, and therapy. Comparisons between adults and children are less clear. Among both SSI and TANF enrollees, adults are more likely to use a clinic or ED than children, while children are more likely to use therapy than adults. SSI children are more likely to have a physician visit than SSI adults, while TANF children are less likely to see a physician than TANF adults.

### C. How does utilization of ambulatory care services vary by population density?

In addition to analyses based on age and eligibility group, CCW data supports analyses of utilization based on population density. We estimated the percentage of enrollees with a physician visit, a clinic visit, and an ED visit in 2008, stratified by age and eligibility group and population density. Figure 4, 5, and 6 show the results for physician, clinic, and ED visits respectively. These analyses focused on members who only accessed care in the FFS system.

Medicaid Enrollees' Utilization of Ambulatory Care Services

Figure 4. Percent of FFS Enrollees with a Physician Visit by Eligibility and Age Category, 2008

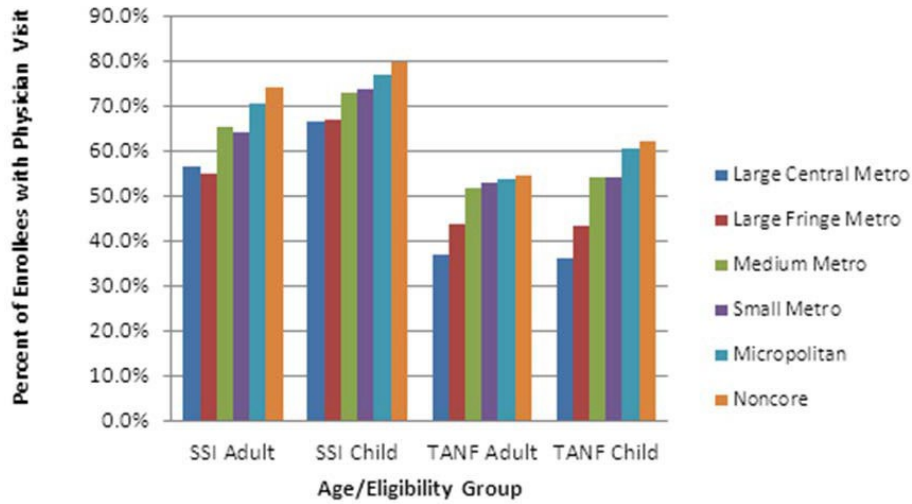


Figure 5. Percent of FFS Enrollees with a Clinic Visit by Eligibility and Age Category, 2008

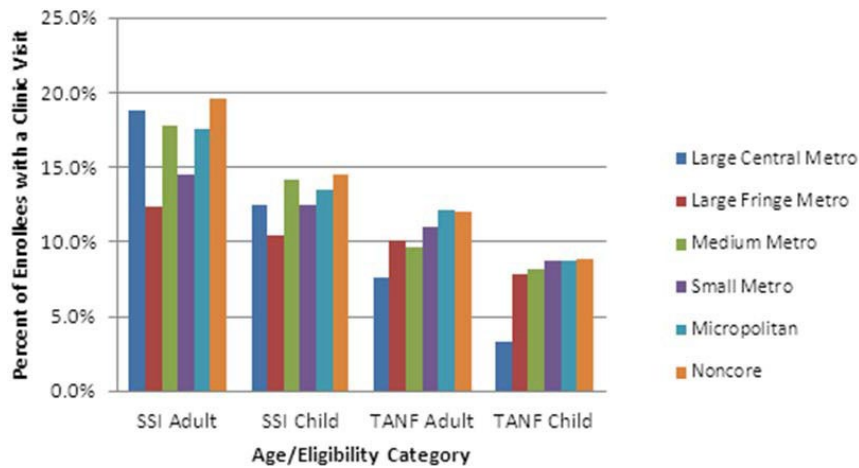
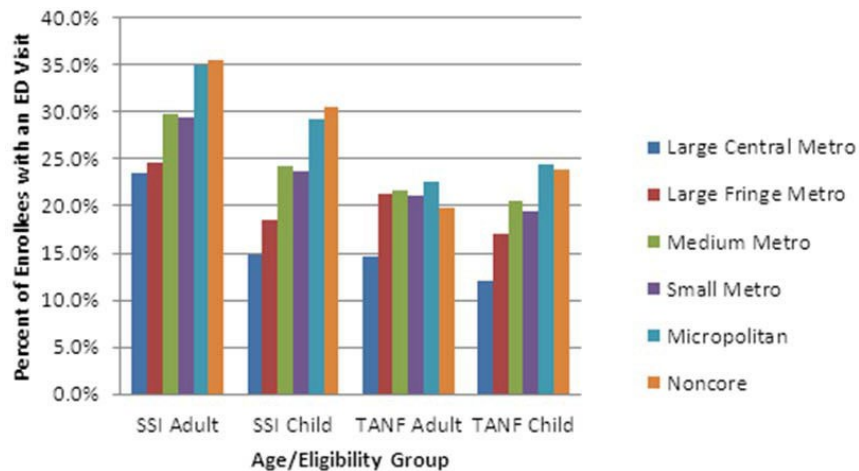


Figure 6. Percent of Enrollees with an ED Visit by Eligibility and Age Category, 2008



As shown in Figure 4, the percentage of enrollees with a physician visit is higher in counties with lower population density. For example, 36 percent of TANF children in a large central metro area see a physician compared to almost 62 percent of TANF children living in rural, noncore areas. While the overall trend suggests higher physician utilization in less dense areas, within age and eligibility groups, there are instances where the pattern does not hold. For TANF adults and children, the differences between physician utilization in micropolitan areas compared to noncore areas are negligible. For SSI adults and children, the differences between medium and small metros are also negligible. SSI adults in large central metros have physician utilization rates above those in large fringe metros, while physician utilization rates for SSI children are roughly the same between large central and fringe metros.

For clinic visit utilization (Figure 5), population density differences between SSI and TANF enrollees are more apparent. Among TANF adults and children, there is a pattern similar to that observed with physician services – clinic utilization rates tend to be higher in more rural areas. TANF adults and children in large central metros have the lowest clinic utilization rates while those in noncore areas have the highest rates. For SSI enrollees, however, the picture is quite different. While noncore areas still see the highest clinic utilization rates, large central metros have the second highest clinic utilization rates followed by medium metros. Large fringe metros have the lowest clinic utilization rates for SSI enrollees.

Turning to ED utilization rates (Figure 6), we see in all age and eligibility groups, large central metros have the lowest ED utilization rates followed by large fringe metros. For TANF enrollees, micropolitan areas had the highest ED utilization rates, while among SSI enrollees, micropolitan and noncore areas have equally high ED utilization rates. Across all age and eligibility groups, medium metros have higher ED utilization rates than small metros do.

## 5. Discussion

In this data brief, we have provided examples of the types of analyses the CCW can support related to ambulatory care utilization. Overall, the CCW is a valuable data source for analyses of Medicaid enrollee utilization. We observed expected differences between TANF and SSI utilization and plausible trends among other subpopulations. While this data brief focuses on utilization of physician services, behavioral health and substance abuse services, clinic use, therapy use, and ED visits, researchers could replicate these types of analyses for other services, such as inpatient hospital admissions.

Although the estimates of behavioral health and substance abuse utilization appear plausible, they may underestimate actual service use for this category since some States provide behavioral health and substance abuse services through capitated behavioral health organization (BHOs). Analyses focusing specifically on behavioral health and substance abuse services will be stronger if they account for behavioral health service delivery system among FFS enrollees.

## Medicaid Enrollees' Utilization of Ambulatory Care Services

One obvious shortcoming is the incomplete encounter data provided by some States.<sup>8</sup> Researchers interested in using the CCW to study managed care populations should assess the quality of encounter data in individual States before embarking upon analysis.

There are numerous additional resources available for CCW data users to better understand the data. The CCW has its own website which provides summary statistics, data dictionaries, analytic guidance, and instructions for accessing the data.<sup>9</sup> In addition, we have written an overview of considerations for researchers using MAX data that includes State profiles for the 43 States with data in the 2008 CCW.

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<sup>8</sup> For an in-depth discussion, see *"Evaluating Encounter Data Completeness: For Researchers using the Centers for Medicare & Medicaid Services' Chronic Condition Data Warehouse (CCW)."*

<sup>9</sup> CCW website available at: <http://www.ccwdata.org/index.htm> [cited August 27, 2012]

Appendix A: Populations Included in the Analyses

| State                                  | Total Medicaid Enrollees, 2008 CCW | Analysis Population as a Percent Medicaid Enrollees, 2008 CCW | Total Analysis Population | FFS & PCCM SSI Adults, 2008 CCW | FFS & PCCM SSI Children, 2008 CCW | FFS & PCCM TANF Adults, 2008 CCW | FFS & PCCM TANF Children, 2008 CCW |
|--|------------------------------------|---|---------------------------|---------------------------------|-----------------------------------|----------------------------------|------------------------------------|
| Sum of 43 States in the CCW            | 56,365,614                         | 14.47%  |                           | 1,365,017                       | 701,399                           | 1,422,924                        | 5,506,344                          |
| Sum of Analysis States                 | 36,752,377                         | 22.19%  | 8,155,750                 | 1,284,330                       | 655,959                           | 1,084,547                        | 5,130,914                          |
| <b>Subpopulations Used in Analyses</b> |                                    |   |                           |                                 |                                   |                                  |                                    |
| AK                                     | 127,790                            | 63.94%  | 81,712                    | 6,766                           | 2,378                             | 20,271                           | 52,297                             |
| AL                                     | 916,430                            | 33.00%  | 302,443                   | 47,547                          | 26,949                            | 30,238                           | 197,709                            |
| AR                                     | 766,658                            | 44.37%  | 340,168                   | 33,710                          | 25,108                            | 28,755                           | 252,595                            |
| CO                                     | 581,888                            | 52.09%  | 303,109                   | 29,207                          | 14,183                            | 66,509                           | 193,210                            |
| CT                                     | 562,169                            | 4.86%   | 27,334                    | 27,334                          | 0                                 | 0                                | 0                                  |
| DE                                     | 197,291                            | 1.52%   | 2,999                     | 0                               | 0                                 | 0                                | 2,999                              |
| FL                                     | 3,096,697                          | 15.70%  | 486,255                   | 54,280                          | 38,741                            | 111,771                          | 281,463                            |
| GA                                     | 1,732,419                          | 7.20%   | 124,726                   | 85,444                          | 39,282                            | 0                                | 0                                  |
| IA                                     | 496,433                            | 34.59%  | 171,702                   | 21,662                          | 12,607                            | 32,323                           | 105,110                            |
| ID                                     | 229,408                            | 36.69%  | 84,170                    | 8,151                           | 7,080                             | 5,916                            | 63,023                             |
| IL                                     | 2,650,265                          | 36.33%  | 962,844                   | 83,458                          | 20,741                            | 16,796                           | 841,849                            |
| IN                                     | 1,137,841                          | 1.72%   | 19,573                    | 18,414                          | 1,159                             | 0                                | 0                                  |
| KS                                     | 358,828                            | 16.39%  | 58,797                    | 17,104                          | 11,508                            | 7,350                            | 22,835                             |
| KY                                     | 897,940                            | 31.19%  | 280,048                   | 78,736                          | 25,478                            | 32,913                           | 142,921                            |
| LA                                     | 1,203,515                          | 48.39%  | 582,362                   | 68,742                          | 36,534                            | 69,589                           | 407,497                            |
| MA                                     | 1,570,304                          | 11.27%  | 176,991                   | 55,841                          | 16,299                            | 5,830                            | 99,021                             |
| MI                                     | 2,026,820                          | 10.86%  | 220,032                   | 13,882                          | 14,994                            | 48,977                           | 142,179                            |
| MN                                     | 825,263                            | 14.15%  | 116,741                   | 31,489                          | 19,601                            | 24,957                           | 40,694                             |
| MS                                     | 740,200                            | 57.52%  | 425,789                   | 58,037                          | 32,155                            | 0                                | 335,597                            |
| MT                                     | 110,489                            | 31.99%  | 35,349                    | 5,903                           | 1,737                             | 7,027                            | 20,682                             |
| NC                                     | 1,781,048                          | 34.82%  | 620,235                   | 67,170                          | 43,234                            | 124,075                          | 385,756                            |
| NE                                     | 264,933                            | 27.66%  | 73,283                    | 7,097                           | 2,288                             | 4,033                            | 59,865                             |
| NH                                     | 150,501                            | 53.91%  | 81,131                    | 8,972                           | 0                                 | 8,670                            | 63,489                             |
| NM                                     | 561,762                            | 11.74%  | 65,960                    | 4,947                           | 2,069                             | 13,379                           | 45,565                             |
| NV                                     | 277,596                            | 23.98%  | 66,578                    | 15,974                          | 7,718                             | 12,929                           | 29,957                             |
| OH                                     | 2,199,104                          | 5.22%   | 114,785                   | 43,979                          | 40,101                            | 12,562                           | 18,143                             |
| OK                                     | 809,349                            | 56.55%  | 457,680                   | 37,526                          | 15,697                            | 71,549                           | 332,908                            |
| OR                                     | 533,443                            | 8.01%   | 42,714                    | 9,892                           | 2,875                             | 7,720                            | 22,227                             |

**Medicaid Enrollees' Utilization of Ambulatory Care Services**

| State | Total Medicaid Enrollees, 2008 CCW | Analysis Population as a Percent Medicaid Enrollees, 2008 CCW | Total Analysis Population | FFS & PCCM SSI Adults, 2008 CCW | FFS & PCCM SSI Children, 2008 CCW | FFS & PCCM TANF Adults, 2008 CCW | FFS & PCCM TANF Children, 2008 CCW |
|-------|------------------------------------|---|---------------------------|---------------------------------|-----------------------------------|----------------------------------|------------------------------------|
| RI    | 213,478                            | 9.11%   | 19,439                    | 15,380                          | 2,651                             | 0                                | 1,408                              |
| SC    | 915,681                            | 22.78%  | 208,573                   | 24,267                          | 13,146                            | 39,328                           | 131,832                            |
| SD    | 134,253                            | 37.66%  | 50,558                    | 3,774                           | 0                                 | 7,777                            | 39,007                             |
| TN    | 1,512,449                          | 25.91%  | 391,844                   | 58,032                          | 41,724                            | 84,274                           | 207,814                            |
| TX    | 4,375,057                          | 18.89%  | 826,242                   | 115,049                         | 101,796                           | 158,218                          | 451,179                            |
| VA    | 947,906                            | 2.85%   | 27,029                    | 7,962                           | 1,684                             | 0                                | 17,383                             |
| VT    | 171,664                            | 18.74%  | 32,164                    | 4,530                           | 0                                 | 2,660                            | 24,974                             |
| WA    | 1,193,923                          | 13.12%  | 156,631                   | 63,128                          | 21,868                            | 14,268                           | 57,367                             |
| WV    | 403,443                            | 16.29%  | 65,726                    | 47,258                          | 10,859                            | 6,283                            | 1,326                              |
| WY    | 78,139                             | 66.59%  | 52,034                    | 3,686                           | 1,715                             | 7,600                            | 39,033                             |

**Subpopulations Omitted from Analyses**

|    |            |        |        |         |        |         |         |
|----|------------|--------|--------|---------|--------|---------|---------|
| AR | 766,658    | 1.10%  | 8,427  | 6,689   | 1,738  | -       | -       |
| AZ | 1,604,081  | 8.57%  |        | 11,342  | 14,603 | 68,686  | 42,796  |
| CA | 10,865,324 | 9.94%  |        | 323,177 | 73,647 | 280,419 | 403,086 |
| CT | 562,169    | 38.83% |        |         | 876    | 75,881  | 141,551 |
| DE | 197,291    | 3.28%  | 6,478  | 1,384   | 648    | 2,244   | 2,202   |
| GA | 1,732,419  | 5.11%  | 88,442 | -       | -      | 42,598  | 45,844  |
| ID | 229,408    | 7.97%  | 18,279 | 2,147   | 691    | 6,728   | 8,713   |
| IN | 1,137,841  | 8.43%  | 95,966 | 17,982  | 2,545  | 28,965  | 46,474  |
| KS | 358,828    | 0.10%  |        | -       | -      | 376     | -       |
| KY | 897,940    | 0.06%  |        | -       | 534    | -       | -       |
| MA | 1,570,304  | 0.34%  | 5,330  |         |        | 5,330   |         |
| MD | 898,938    | 3.34%  | 30,061 | 4,539   | 2,539  | 12,884  | 10,099  |
| MS | 740,200    | 8.50%  | 62,882 |         |        | 62,882  |         |
| MT | 110,489    | 0.37%  |        |         | 411    |         |         |
| NE | 264,933    | 0.47%  | 1,241  | -       | 714    | 527     | -       |
| NH | 150,501    | 0.50%  |        |         | 749    |         |         |
| NJ | 1,150,972  | 5.29%  | 60,846 | 21,361  | 6,676  | 9,880   | 22,929  |
| NY | 5,093,922  | 7.98%  |        | 114,913 | 39,942 | 67,791  | 183,855 |
| OK | 809,349    | 0.13%  | 1,043  | 448     | 222    | 373     | -       |
| OR | 533,443    | 0.36%  | 1,925  | 627     | 251    | 129     | 918     |
| RI | 213,478    | 0.07%  |        |         |        | 159     |         |
| SC | 915,681    | 0.10%  |        | -       | -      | 953     | -       |
| SD | 134,253    | 5.74%  | 7,712  | 1,401   | 2,990  | 1,389   | 1,932   |
| VA | 947,906    | 8.08%  | 76,558 | 11,369  | 5,890  | 16,142  | 43,157  |
| VT | 171,664    | 6.93%  | 11,904 | 849     | 2,788  | 1,208   | 7,059   |
| WA | 1,193,923  | 0.12%  | 1,375  | -       | 3      | 163     | 1,209   |
| WV | 403,443    | 0.63%  | 2,548  | 549     | 572    | 880     | 547     |



## Appendix B: Derivation of Enrollee Eligibility Category and Managed Care Status

We used the Chronic Condition Data Warehouse (CCW) Personal Summary (PS) file to determine an enrollee's eligibility group, age category, managed care enrollment, and months of Medicaid eligibility. The CCW variables and the value for each variable used to assign enrollees to categories are provided in the sections below.

### Eligibility Category Assignment

We used the latest CCW eligibility code reported for an enrollee (EL\_CCW\_ELGLTY\_CD\_LTST) to assign the enrollee to an eligibility group for those enrollees that were not eligible for both Medicaid and Medicare. For the purposes of our analyses, we assigned each enrollee to only one eligibility group. For Medicare-Medicaid Enrollees, we used the Medicare Dually Eligible code (EL\_MDCR\_DUAL\_ANN) and the original Medicare reason for entitlement (MDCR\_ORIG\_REAS\_CD) to assign an eligibility group. In the assignment process logic, Medicare-Medicaid Enrollees were assigned first. If an enrollee was not determined to be eligible for both Medicare and Medicaid they were assigned to another eligibility category.

Figure B-1 shows the values used to identify Medicare-Medicaid eligible enrollees. This methodology was selected based upon feedback from departments within CMS. Researchers may also want to consider other methodologies and should discuss alternatives with their project teams. Values contained in the CCW may also change in future years.

**Figure B-1. Variable/Values Used to Identify Medicare-Medicaid Dual Eligible Enrollees**

| Medicare-Medicaid Enrollee Category                               | EL_MDCR_DUAL_ANN values                | MDCR_ORIG_REAS_CD values       |
|---|--|--------------------------------|
| Medicare-Medicaid Enrollee - Partially Eligible (i.e., QMB/ SLMB) | 01, 03, 05, 06, 07, 51, 53, 55, 56, 57 | Not used in assignment process |
| Full Medicare-Medicaid Enrollee - Aged                            | 02, 04, 08, 52, 54, 58                 | 0                              |
| Full Medicare-Medicaid Enrollee - Disabled                        | 02, 04, 08, 52, 54, 58                 | 1, 2, 3                        |

Figure B-2 shows the values we used to assign non-Medicare-Medicaid enrollees to eligibility groups. We used the most recent monthly value for the EL\_CHIP\_FLAG series of variables to determine an enrollee's CHIP status. This methodology was selected based upon feedback from departments within CMS. Researchers may want to consider other methodologies and should discuss alternatives with their project teams. The values contained in the CCW may also change in future years.

Figure B-2. Variable/Values Used to Identify Non-Medicare-Medicaid Enrollee Eligibility Categories

| Eligibility Category       | EL_CCW_ELGLTY_CD_LTST values           | EL_CHIP_FLAG_latest * |
|----------------------------|--|-----------------------|
| SSI                        | 11, 12, 41, 42                         |                       |
| TANF                       | 14, 15, 16, 17, 34, 35                 |                       |
| MA- Only, SSI Related      | 21, 22                                 |                       |
| MA - Only, Non SSI Related | 24, 25, 44, 45                         |                       |
| Foster Care                | 48                                     |                       |
| Waiver                     | 51, 52, 54, 55                         |                       |
| CHIP                       | 14, 15, 16, 17, 34, 35, 44, 45, 54, 55 | 2, 3                  |

### Age Category Assignment

We used age group codes (EL\_AGE\_GRP\_CD) to assign enrollees to four age categories; Newborn, Children, Adult, and Elderly. Figure B-3 shows the values used to assign enrollees to each category.

Figure B-3. Variable/Values Used to Identify Age Category

| Age Category | EL_AGE_GRP_CD values |
|--------------|----------------------|
| Newborn      | 0                    |
| Child        | 1, 2, 3              |
| Adult        | 4, 5                 |
| Elderly      | 6, 7, 8              |
| Unknown      | Any other value      |

### Managed Care Status

We used three variables in the PS file to determine care delivery model status: total months of Medicaid enrollment (EL\_ELGLTY\_MO\_CNT), total months of enrollment in managed care (EL\_PPH\_PLN\_MO\_CNT\_CMCP), and total months of enrollment in PCCM (EL\_PPH\_PLN\_MO\_CNT\_PCCM). We derived the number of months an enrollee was enrolled in “FFS” by subtracting total months of enrollment in managed care and PCCM from number of Medicaid enrollment months.

We further categorize the FFS and managed care categories as ‘full’ or ‘partial.’ Full FFS refers to enrollees who were in FFS for all months of eligibility in 2008. Partial FFS indicates enrollees who were in FFS for fewer than all eligible months. A similar rationale was used for managed care enrollees: ‘full managed care’ refers to enrollees who were in managed care for all eligible months of eligibility in 2008; ‘partial managed care’ indicate enrollees who were in managed care for fewer than all eligible months.

Appendix C: Managed Care Utilization and Penetration among the States

Figure 1: Managed Care Penetration, SSI and TANF Enrollees, 2008

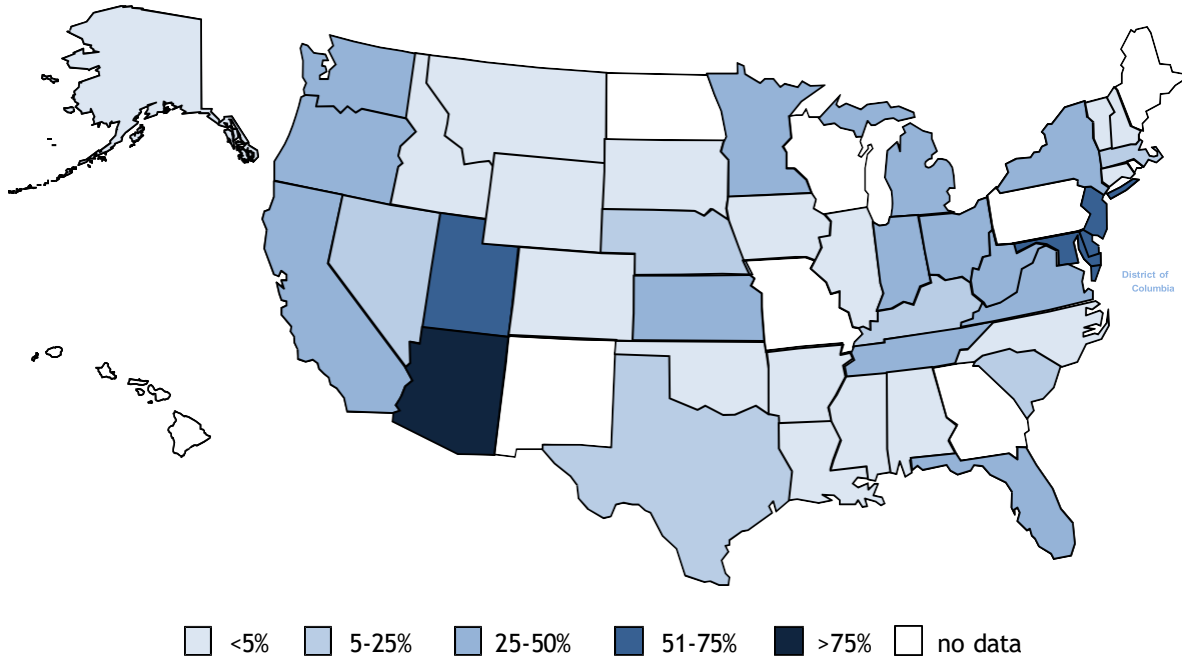


Figure 2: Managed Care Penetration by Age and Eligibility Group, 2008

| State | Percent of SSI Adults in Managed Care | Percent of SSI Children in Managed Care | Percent of TANF Adults in Managed Care | Percent of TANF Children in Managed Care |
|-------|---------------------------------------|---|--|--|
| AK    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| AL    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| AR    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| AZ    | 74.7%                                 | 51.1%                                   | 74.0%                                  | 91.7%                                    |
| CA    | 22.2%                                 | 45.8%                                   | 65.6%                                  | 78.9%                                    |
| CO    | 12.4%                                 | 5.8%                                    | 3.7%                                   | 6.7%                                     |
| CT    | 0.0%                                  | 0.0%                                    | 0.1%                                   | 0.0%                                     |
| DE    | 83.5%                                 | 95.4%                                   | 89.5%                                  | 93.3%                                    |
| FL    | 47.4%                                 | 46.6%                                   | 30.1%                                  | 54.4%                                    |
| GA    | 1.9%                                  | 6.9%                                    | 59.5%                                  | 88.3%                                    |
| IA    | 0.0%                                  | 0.0%                                    | 2.8%                                   | 4.6%                                     |
| ID    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| IL    | 0.0%                                  | 0.0%                                    | 5.5%                                   | 35.1%                                    |
| IN    | 18.3%                                 | 73.5%                                   | 61.2%                                  | 86.8%                                    |
| KS    | 0.0%                                  | 0.0%                                    | 59.5%                                  | 78.4%                                    |
| KY    | 19.9%                                 | 28.6%                                   | 73.7%                                  | 86.9%                                    |

Medicaid Enrollees' Utilization of Ambulatory Care Services

| State | Percent of SSI Adults in Managed Care | Percent of SSI Children in Managed Care | Percent of TANF Adults in Managed Care | Percent of TANF Children in Managed Care |
|-------|---------------------------------------|---|--|--|
| LA    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| MA    | 64.8%                                 | 58.0%                                   | 70.4%                                  | 74.0%                                    |
| MD    | 89.2%                                 | 87.4%                                   | 67.9%                                  | 95.2%                                    |
| MI    | 85.6%                                 | 63.3%                                   | 56.1%                                  | 74.4%                                    |
| MN    | 4.0%                                  | 0.3%                                    | 55.8%                                  | 69.2%                                    |
| MS    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| MT    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| NC    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| NE    | 20.9%                                 | 21.1%                                   | 15.9%                                  | 21.3%                                    |
| NH    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| NJ    | 53.3%                                 | 73.3%                                   | 81.3%                                  | 92.7%                                    |
| NM    | 76.8%                                 | 80.0%                                   | 58.9%                                  | 78.4%                                    |
| NV    | 0.0%                                  | 0.0%                                    | 47.7%                                  | 61.0%                                    |
| NY    | 51.1%                                 | 54.7%                                   | 73.6%                                  | 83.1%                                    |
| OH    | 56.7%                                 | 18.9%                                   | 69.5%                                  | 90.6%                                    |
| OK    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| OR    | 68.3%                                 | 69.2%                                   | 75.9%                                  | 80.2%                                    |
| RI    | 0.9%                                  | 57.1%                                   | 96.9%                                  | 96.3%                                    |
| SC    | 14.1%                                 | 30.2%                                   | 10.6%                                  | 25.8%                                    |
| SD    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| TN    | 32.3%                                 | 3.6%                                    | 46.1%                                  | 47.1%                                    |
| TX    | 47.1%                                 | 12.1%                                   | 27.8%                                  | 78.5%                                    |
| VA    | 71.4%                                 | 72.1%                                   | 31.0%                                  | 80.6%                                    |
| VT    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |
| WA    | 18.8%                                 | 0.6%                                    | 52.3%                                  | 82.6%                                    |
| WV    | 0.0%                                  | 0.0%                                    | 49.1%                                  | 75.8%                                    |
| WY    | 0.0%                                  | 0.0%                                    | 0.0%                                   | 0.0%                                     |