Issue Brief: The billions in prescription drug savings from enhancements to NADAC

1 METHODOLOGY

1.1 DATA SOURCES

All analytics performed in this study were based on the following raw data sources:

1. Medi-Span PriceRx by Wolters Kluwer Clinical Drug Information, Inc.
2. CMS' State Drug Utilization Data (SDUD) database
3. CMS' National Average Drug Acquisition Cost (NADAC) database
4. Alabama Actual Acquisition Cost (AAC) database

Details regarding the data sources and their transformations used as part of our analysis are provided below.

1.1.1 Medi-Span PriceRx by Wolters Kluwer Clinical Drug Information, Inc.

Medi-Span PriceRx, an online pricing and drug information portal, offers one of the most extensive histories of drug manufacturer pricing, with NDC-level drug pricing dating back to the 1980s.

PriceRx was the source of the raw AWP and WAC data that we used to calculate aggregated drug reference prices for our analyses. Specifically, all prices were effectuated to each date from 7/1/2019 to 6/30/2020 by NDC, and then the per NDC price was averaged across each quarter and year by the number of days.

PriceRx also contains clinical information, enabling identification of drug products by a hierarchical therapeutic classification system. This classification helps standardize drug lists and is the basis for all category investigations. It was used to identify brand versus generic status, prescription drug status, and therapeutic drug classes, among other clinical information.

1.1.2 CMS' State Drug Utilization Data (SDUD) Database

State agencies responsible for Medicaid operations are responsible for reporting drug utilization for covered outpatient drug expenditures incurred by their programs to the Centers for Medicare and Medicaid Services (CMS). Utilization is reported on a quarterly basis and published on Medicaid.gov approximately four months after the close of each quarter. This database is not a complete representation of all state expenditures under each state Medicaid program, as it excludes state-only programs (e.g., AIDS Drug Assistance Program) and purportedly also excludes 340B claims from 340B providers, as these are not included in the Federal State Medicaid Drug Rebate Program (MDRP).[i] Due to privacy concerns, the database also excludes any rows with counts less than 11. These exclusions are represented within the database as under "Suppression." The database includes data in the following format (on the next page).

Table 1-1: SDUD Field Descriptions

Field Name	Description
Utilization Type	Constant "FFSU" or "MCOU." The FFSU Record ID indicates that the information for this National Drug Code (NDC) represents an FFS utilization record. The MCOU Record ID indicates that the information for this NDC represents a Managed Care Organization (MCO) utilization record. Valid values: 4Q2009 and earlier = Constant record ID of FFSU. 1Q2010 and beyond = FFSU & MCOU. Note: Per the Affordable Care Act, MCOU data cannot be reported for periods prior to 1Q2010.
State	Two-character postal abbreviation for state. Note: For any data where NDCs are aggregated (e.g., national totals), the state code is "XX" to represent multiple states.
Labeler Code	First segment of NDC that identifies the manufacturer, labeler, re-labeler, packager, re-packager, or distributor of the drug.
Product Code	Second segment of NDC.
Package Size Code	Third segment of NDC.
Year	Formerly "Period Covered" and was combined with Quarter "YYYYQ."
Quarter	Valid values are: 1 = January 1–March 31 2 = April 1–June 30 3 = July 1–September 30 4 = October 1–December 31 (Formerly "Period Covered" and was combined with Year "YYYYQ") Note: For FFS units, the Quarter/Year represents when the 11-digit NDC was paid for by the state. For MCO units: 2Q2017 and earlier, the Quarter/Year may either represent when the 11-digit NDC was dispensed or when it was paid for by the state; 3Q2017 and thereafter, the Quarter/Year represents when the 11-digit NDC was dispensed.
Product Name	First 10 characters of product name as approved by the Food and Drug Administration (FDA).
Suppression Used	The State Drug Utilization Data (SDUD) includes state, drug name, NDC, number of prescriptions, and dollars reimbursed. As CMS is obligated by the Federal Privacy Act, 5 U.S.C. Section 552a, and the HIPAA Privacy Rule, 45 C.F.R Parts 160 and 164, to protect the privacy of individual beneficiaries and other persons, all direct identifiers have been removed, and data that are less than 11 counts are suppressed. A checkmark in the "Suppression Used" column notes suppressed data. CMS applies counter or secondary suppression in cases where only one prescription is suppressed for primary reasons (e.g., one prescription in a state). Also, if one subgroup (e.g., number of prescriptions) is suppressed, then the other subgroups are suppressed.
Units Reimbursed	FFS units are the number of units (based on Unit Type) of the drug 11-digit NDC reimbursed by the state during the quarter/year covered. MCO units are the number of units (based on Unit Type) of the 11-digit NDC dispensed during the quarter/year covered.
Number of Prescriptions	The number of prescriptions should include any prescription for which Medicaid paid a portion of the claim, as well as those prescriptions for which Medicaid paid the claim in full. FFS: the number of prescriptions reimbursed by the state Medicaid agency as outpatient drug claims during the quarter/year covered. MCO: the number of prescriptions dispensed as outpatient drug claims during the quarter/year covered.
Total Amount Reimbursed	The FFS or MCO total amount reimbursed by both Medicaid and non-Medicaid entities to pharmacies or other providers for the 11-digit NDC drug in the period covered (two previous fields added together). Payments represent the amount on the claim and are not reduced or affected by Medicaid rebates paid to the state. This amount represents both federal and state reimbursement and is inclusive of dispensing fees. Note: As capitated payment arrangements are sometimes used by states and MCOs, a zero value in this field could be appropriate for MCO data; however, FFS utilization records will reject if this field is reported with a value of zero.

Field Name	Description
Medicaid Amount Reimbursed	The amount reimbursed by the Medicaid program ONLY to pharmacies or other providers for the 11-digit NDC by delivery system (FFS or MCO) in the quarter/year covered. This total is not reduced or affected by Medicaid rebates paid to the state. This amount represents both federal and state reimbursement and includes dispensing fees. Note: As capitated payment arrangements are sometimes used by states and MCOs, a zero value in this field could be appropriate for MCO data; however, FFS utilization records will reject if this field is reported with a value of zero.
Non-Medicaid Amount Reimbursed	The amount reimbursed by non-Medicaid entities to pharmacies or other providers for the 11-digit NDC by delivery system (i.e., FFS or MCO) in the quarter/year covered. The Non-Medicaid Amount Reimbursed includes any drug reimbursement amount for which the state is not eligible for federal matching funds.
Quarter Begin	Beginning date for quarter. Derived field provides ability to create comparisons over time. Can be used as a label for timelines.
Quarter Begin Date	Beginning date for quarter. Derived field provides ability to create comparisons over time. Also can be used to create timeline visualizations.
Latitude	Location within state. Derived from state code and provides ability to create maps and geographic comparisons.
Longitude	Location within state. Derived from state code and provides ability to create maps and geographic comparisons.
Location	Location within state. Derived from state code and provides ability to create maps and geographic comparisons.

For this report, we obtained SDUD for the all Medicaid programs from quarter 3, 2019 to quarter 2, 2020. Specifically, we utilized the data available when the [State] value equaled "XX," and the concatenation of the year and quarter values were either "20193", "20194", "20201", or "20202."

1.1.3 CMS' National Average Drug Acquisition Cost (NADAC) database

NADAC was developed by CMS, "to provide a national reference file to assist State Medicaid programs in the pricing of Covered Outpatient Drug claims to reflect the actual acquisition cost (AAC) of drugs."[ii] As such, NADAC's goal is to be a comprehensive public measurement of market-based retail pharmacy acquisition cost available.

NADAC is compiled by Myers & Stauffer on behalf of CMS. It is generated from a voluntary monthly invoice cost survey of 2,500 randomly selected retail pharmacies (with 450 to 600 respondents). After Myers & Stauffer completes its data processing and cleanup activities, it publishes the survey results at the National Drug Code (NDC) level on Medicaid.gov. As state Medicaid FFS programs have shifted to an AAC basis to comply with the Covered Outpatient Drug Rule (CMS-2345-FC), many states have used NADAC as the primary proxy for acquisition cost. As a result, **we believe NADAC is the best publicly available pricing benchmark to approximate average pharmacy invoice costs**.[1] We relied on the NADAC database extensively throughout this report as the best estimate for a drug's AAC.

NADAC information is provided in the following data format (on the next page).

[1] See limitations

Table 1-2: CMS' NADAC Field Descriptions

Field Name	Description
NDC Description	Identifies the name, strength, and dosage form of the drug product.
NDC	The National Drug Code (NDC) is an 11-digit code maintained by the FDA that includes the labeler code, product code, and package code.
NADAC_per_Unit	The National Average Drug Acquisition Cost per unit.
Effective_Date	The effective date of the NADAC per Unit cost.
Pricing_Unit	Indicates the pricing unit for the associated NDC for pharmacy claims processing (ML, GM, or EA).
Pharmacy_Type_ Indicator	The source of pharmacy survey data used to calculate the NADAC. C/I indicates data was collected from surveys of Chain/Independent pharmacies. Other pharmacy type indicators are not used at this time.
OTC	Indicates whether the NDC is for an over-the-counter (OTC) product (Y or N).
Explanation_Code	Codes that pertain to how the NADAC was calculated. • Code 1: The NADAC was calculated using information from the most recently completed pharmacy survey. • Code 2: The average acquisition cost of the most recent survey was within ± 2% of the current NADAC; therefore, the NADAC was carried forward from the previous file. • Code 3: The NADAC, based on survey data, has been adjusted to reflect changes in published pricing, or as a result of an inquiry to the help desk. • Code 4: The NADAC was carried forward from the previous file. • Code 5: The NADAC was calculated based on package size. • Code 6: The CMS Covered Outpatient File drug category type of S/I/N (Single Source/Innovator/Non-Innovator) has not been applied. Most S/I drugs with the same strength, dosage form, and route of administration were grouped together for the purpose of the NADAC calculation, and N drugs were also grouped. In some cases, however, in calculating a NADAC, the CMS S/I/N designation was not applied when the state Medicaid brand or generic payment practices for these drugs generally differed from the CMS Covered Outpatient File designation. For example, authorized generic drugs are listed in the CMS Covered Outpatient File as I drugs for the purpose of rebates as they were approved under a New Drug Application (NDA). However, they are grouped as N for the NADAC calculation since they are generally designated as generic by most state Medicaid programs for the purposes of reimbursement. Another example of this occurrence is when proprietary named drugs, approved under an Abbreviated New Drug Application (ANDA), are in the CMS Covered Outpatient Drug file as N for the purpose of rebates. However, they are grouped as S/I for the NADAC calculation since they are generally reimbursed as brand drugs by state Medicaid programs. • Codes 7 through 10: Reserved for future use.
Classification_for_Rate_ Setting	Indicates whether the NDC was considered brand (B) or generic (G) for the NADAC rate calculation process. If the NDC was considered B and approved under an Abbreviated New Drug Application (ANDA), the indicator is shown as B-ANDA.
Corresponding_Generic_ Drug_NADAC_per_Unit	The NADAC for the corresponding generic drug.
Corresponding_Generic_ Drug_Effective_Date	The effective date of when the Corresponding Generic Drug NADAC Per Unit is assigned to a multiple source brand drug NDC. This date may not correspond to the NADAC effective date for the generic drug due to the method by which the corresponding generic drug NADAC effective date is assigned. The corresponding generic drug NADAC effective date is the latter of the following dates: a) date of the NADAC reference file upon which the corresponding generic drug NADAC first appears; b) the current corresponding generic drug NADAC effective date plus one day (one day is added to the previous date so that there are no overlapping rate segments); or c) the NADAC Effective Date for the generic drug group. This data assignment process is necessary to eliminate the potential for applying corresponding generic drug NADACs to past claims.
As of Date	Survey date for which data is accurate.

For this report, NADAC weekly pricing information was averaged for each NDC to a year and quarter level. Specifically, all prices were effectuated to each date from 7/1/2019 to 6/30/2020 and then the per NDC price was averaged across each quarter by the number of days.

1.1.4 Alabama Actual Acquisition Cost (AAC) database

3 Axis obtained Alabama AAC pricing for brand and generic drugs at the NDC level in the following format:

Table 1-3: Alabama AAC Database format

Field Name	Description
Price Type	Identifies whether the price is Alabama AAC for Brand or Generic
NDC	The National Drug Code (NDC) is an 11-digit code maintained by the FDA that includes the labeler code, product code, and package code.
Unit Price	The Alabama AAC unit price
Begin Date	The start date for the unit price to be effective
End Date	The end date for the unit price

Because Alabama mandates responses to their AAC pricing survey, it was relied upon as a proxy for the potential benefits of mandatory NADAC survey responses. Within the source data, we identified NDCs with both a listed brand and generic price. To compensate for these, we chose the brand price when both were available. All prices were effectuated to each date from 7/1/2019 to 6/30/2020 by NDC, and then the per NDC price was averaged across each quarter and year by the number of days.

1.2 Data Transformations

The following describes the transformations made to the data sources used in this report.

1.2.1 SDUD data joined to Pricing Data

In order to conduct our analysis, we first needed to join the SDUD to the various pricing and drug reference files. This was accomplished through the following SQL query:

```
SELECT [Utilization_Type]
      ,[State]
      ,S.[Year]
      ,S.[Quarter]
      ,S.[Product_Name] PRODUCTNAME_SDUD
      ,D.Product_Name PRODUCTNAME_MEDISPAN
      ,Dosage_Form
      ,Brand_Name_Code_BNC
      ,Marketing_Category
      ,Route_of_Administration_RT
      ,[Suppression_Used]
      ,[Units_Reimbursed]
      ,[Number_of_Prescriptions]
      ,(Units_Reimbursed / Number_of_Prescriptions) UNITS_PER_SCRIPT
      ,[Total_Amount_Reimbursed]
      ,[Medicaid_Amount_Reimbursed]
      ,[Non_Medicaid_Amount_Reimbursed]
      ,S.[NDC]
      ,A.AVG_AAC_B
```

```
      ,A.AVG_AAC_G
      ,A.AVG_MIN_AAC
      ,N.AVG_NADAC
      ,D.Size
      ,D.Qty
      ,CASE
      WHEN AVG_AAC_B IS NOT NULL THEN AVG_AAC_B
      ELSE AVG_AAC_G
      END AVG_AL_AAC
      ,(N.AVG_NADAC * Units_Reimbursed) TOTAL_NADAC
      ,((CASE WHEN AVG_AAC_B IS NOT NULL THEN AVG_AAC_B ELSE AVG_AAC_G END) *
      Units_Reimbursed) TOTAL_AL_AAC
        ,case when (CASE WHEN AVG_AAC_B IS NOT NULL THEN AVG_AAC_B ELSE AVG_AAC_G END)
        is null then 0 else 1 end Missing_AAC
        ,case when N.AVG_NADAC is null then 0 else 1 end Missing_NADAC
        ,Avg_WAC_Per_Unit
        ,(Avg_WAC_Per_Unit * Units_Reimbursed) TOTAL_WAC
        ,case when Avg_WAC_Per_Unit is null then 0 else 1 end Missing_WAC
  FROM [SDUD_Q3_2019_to_Q2_2020] S
      LEFT JOIN [AVG_ AL_AAC_PER_QUARTER_Q319toQ220] A ON S.NDC = A.NDC11 AND S.Quarter
      = A.Quarter AND S.Year = A.Year
      LEFT JOIN [AVG_NADAC_PER_QUARTER_2019_2020] N ON S.NDC = N.NDC AND S.Quarter =
      N.Quarter AND S.Year = N.Year
      LEFT JOIN [AVG_YEAR_QTR_WAC] W ON S.NDC = W.NDC_UPC_HRI_Unformatted AND S.Quarter
      = W.Quarter AND S.Year = W.Year
      LEFT JOIN [MediSpan_Definitions] D ON S.NDC = D.NDC_UPC_HRI_Unformatted
      where Units_Reimbursed is not null
```

1.2.2 NADAC to AL AAC generic comparisons

The following SQL query was utilized to compare existing NADAC prices to existing Alabama AAC prices when both prices were available for comparison on the same drug. Note we relied upon the FDA license type of "ANDA[2]" to screen drugs as generics.

```
SELECT PRODUCTNAME_MEDISPAN
      ,Marketing_Category
      ,Brand_Name_Code_BNC
      ,SUM(Medicaid_Amount_Reimbursed) MEDICAID_SPEND
      ,sum(TOTAL_NADAC) NADAC
      ,avg(AVG_NADAC) AVG_NADAC
      ,sum(TOTAL_AL_AAC) AAC
      ,avg(AVG_AL_AAC) AVG_AL_AAC
      ,(sum(TOTAL_NADAC) - sum(TOTAL_AL_AAC)) DIFF
      ,avg(UNITS_PER_SCRIPT) AVG_UNITS_PER_SCRIPT
      ,AVG(CONVERT(FLOAT,Size)) AVG_SIZE
      ,AVG(CONVERT(FLOAT,Qty)) AVG_QTY
      ,(AVG(CONVERT(FLOAT,Size)) * AVG(CONVERT(FLOAT,Qty))) SIZExQTY
  FROM Section 1.2.1
  WHERE STATE = 'XX'
  and Missing_AAC = 1 and Missing_NADAC = 1
  and Marketing_Category = 'ANDA'
  group by PRODUCTNAME_MEDISPAN, Marketing_Category, Brand_Name_Code_BNC
  order by SUM(Medicaid_Amount_Reimbursed) desc
```

[2] ANDA = Abbreviated New Drug Application

The resulting data informed our analysis regarding the Additional Generic Drug Savings of our report.

1.2.3 NADAC to WAC comparisons

The following SQL query was utilized to compare existing Medicaid expenditures on drugs lacking an AL AAC and / or a NADAC to their current reimbursement and WAC based pricing. Note we limited the results to just oral solid drugs due to concerns over the accuracy of SDUD reporting of non-solid dosage forms we have observed in our prior work.

```
SELECT PRODUCTNAME_MEDISPAN
       ,Marketing_Category
       ,Brand_Name_Code_BNC
       ,SUM(Medicaid_Amount_Reimbursed) MEDICAID_SPEND
       ,SUM(TOTAL_WAC) TOT_WAC
       ,avg(UNITS_PER_SCRIPT) AVG_UNITS_PER_SCRIPT
       ,AVG(CONVERT(FLOAT,Size)) AVG_SIZE
       ,AVG(CONVERT(FLOAT,Qty)) AVG_QTY
       ,(AVG(CONVERT(FLOAT,Size)) * AVG(CONVERT(FLOAT,Qty))) SIZExQTY
  FROM Section 1.2.1
  WHERE STATE = 'XX'
       and Missing_WAC = 1 and Missing_NADAC = 0 and Missing_AAC = 0
       and Route_of_Administration_RT ='oral' and (Dosage_Form like '%capsule%' or
       Dosage_Form like '%tablet%') and Dosage_Form not like '%therapy%'
  group by PRODUCTNAME_MEDISPAN, Marketing_Category, Brand_Name_Code_BNC
  order by SUM(Medicaid_Amount_Reimbursed) desc
```

We observed a strong correlation to WAC compared to existing Medicaid payments for the identified products within the market currently. A sampling of the top 100 NDCs by Medicaid spend from Q3 2019 to Q2 2020 identified a less than 2% difference between WAC and Medicaid reimbursement and served as the basis of our savings assessment.

1.3 LIMITATIONS

As with all research, our report is predicated on the accuracy of the data provided.

1.3.1 Limitations of NADAC

NADAC's main limitation is that it does not include off-invoice rebates that pharmacies may receive from wholesalers. Rebates lower the net cost to the pharmacy for many drugs and tend to be a percent discount off the invoice cost if a pharmacy meets various generic purchasing targets with its primary wholesaler or pays its wholesaler bill on-time. As such, NADAC should not be viewed as a reflection of pharmacy **net** costs – these will vary depending on pharmacy size and wholesaler contract terms. Anecdotally, rebates on generic drug purchases can reach up to 30-40% of invoice cost for larger pharmacies, but this value is partly offset by wholesaler requirements that prevent the pharmacy from shopping with other wholesalers for the best invoice price. **In other words, there is nothing preventing the wholesaler from increasing the pharmacy's invoice cost to partly offset the rebate, resulting in an invoice cost that is above NADAC**. Smaller pharmacies, pharmacies that choose to shop more aggressively for better invoice costs, or pharmacies that are predominantly buying from smaller wholesalers may receive rebates that are considerably lower than 30-40%, or there may be no rebates at all. All told, 3 Axis Advisors' qualitative research suggests that net average pharmacy acquisition cost

is some discount to NADAC, but not as large as 30-40%. We believe that the restrictions placed on pharmacies by wholesalers, combined with above-NADAC invoice costs, are offsetting some portion of the rebate.

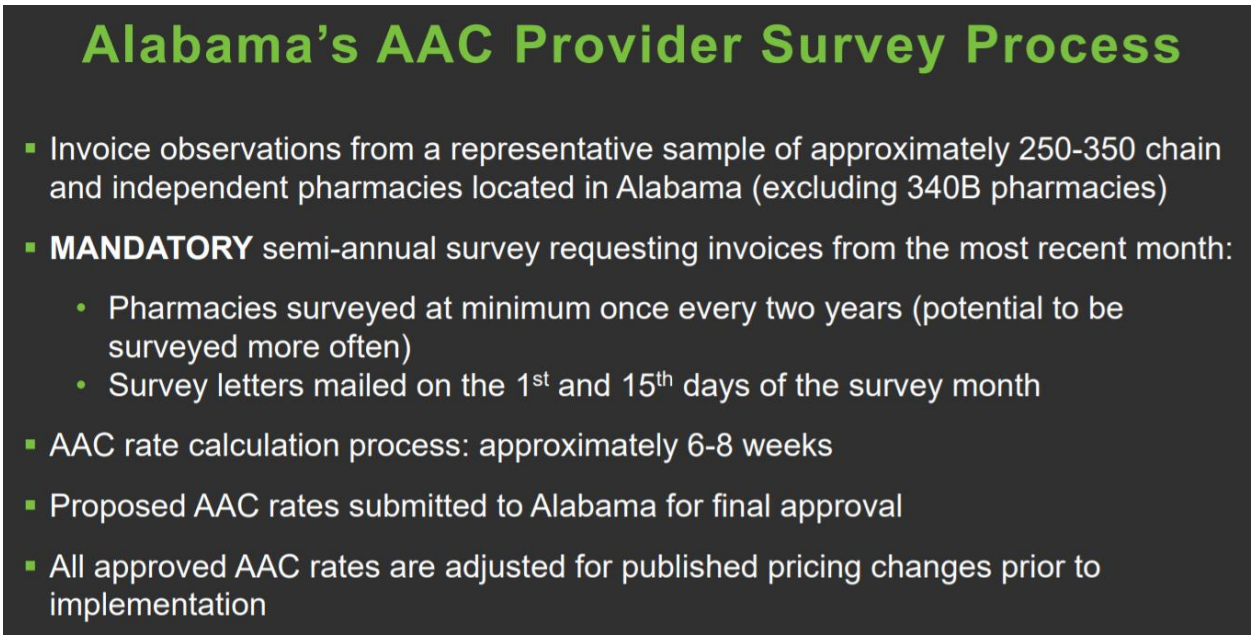
A secondary limitation of NADAC is that the survey of retail pharmacies that it is based on is voluntary. Myers and Stauffer randomly selects and surveys ~2,500 pharmacies a month. Of this group, 450-600 pharmacies per month provide their acquisition costs, which become the basis for NADAC. Of course, to the extent that there are NDCs that have not been purchased by the 450-600 pharmacies that respond to the survey, NADAC will not capture these NDCs. In April 2017, CMS assessed the materiality of this limitation. They found that NADACs were calculated for approximately 96% of all Medicaid claim submissions – 87% of brand claims, and 97% of generic claims.[iii] This significant level of NDC coverage for generic drugs mitigates the risk introduced by the voluntary nature of the survey, in our view, but does not mean that NADAC could not be improved.

A final limitation of NADAC worth noting within this report is the lag between NADAC survey date and NADAC publication. There is an approximate two-month gap between the pharmacy's purchase of a drug and that purchase being reflected in NADAC. When NADAC is used in claims processing, it is therefore more reflective of a price to compensate pharmacies for purchases already made rather than the cost to replace spent inventory (i.e. purchase new units).

1.3.2 Alabama AAC

The Alabama Medicaid Agency (ALMA) has contracted Myers and Stauffer LC to assist with the development, maintenance, update and improvements of their AAC. Note that Myers and Stauffer is the same firm responsible for NADAC; however, the methodology used to derive Alabama AAC differs from that of NADAC. Specifically, the reporting of cost to Alabama is mandatory by pharmacies within its program; however, the survey for a given pharmacy is only semi-annually. The resulting price published by Alabama is based upon published pricing changes and provider inquires. Similar to NADAC, Alabama AAC is calculated using drug groups of therapeutically equivalent products to maximize cost effectiveness. Additional details regarding the methods used to derive Alabama's AAC are presented below from a September 26, 2019 presentation given on behalf of Myers and Stauffer LC[iv]:

Figure 1-1: Alabama's AAC Methodology



In addition, this presentation provided the following comparison between NADAC and Alabama AAC:

Figure 1-2: NADAC vs. Alabama AAC methods comparison

Policy	AL AAC	NADAC
Timing for survey-based rate updates	Semi-Annual	Monthly
Frequency of rate changes in published pricing	Weekly for brand and generic drugs	Weekly for brand drugs only
Frequency of rate adjustments in response to provider inquires	Up to daily – can be backdated to the pharmacy's date of service	Weekly – cannot be backdated
Drugs included in the rate calculations	All AL Medicaid covered drugs are eligible for an AAC rate; allows for flexibility to calculate AAC rates based upon Alabama-specific conditions	Only drugs on the Medicaid Covered Outpatient drugs file; does not consider individual states' conditions in the NADAC calculation

Figure 1-3 (continued): NADAC vs. Alabama AAC methods comparison

Policy	AL AAC	NADAC
Publication Basis	FDB's clinical formulation ID drug group (GSN)	NDC
Rates for drugs with different package sizes (e.g. creams, ointments, vials)	Blended AAC rate for different package sizes in the drug group	Possible different rates for different package sizes in the drug group
Rates for brand drugs from multiple manufacturers within the same drug group (e.g. Proventil, ProAir, Ventolin)	Blended brand AAC rate for multiple manufacturers' products when appropriate. Otherwise, no AAC rate is set for the drug group	When there are clear pricing differences, specific rates are calculated for each manufacturer's product
Rates for drugs that have both legend and OTC products	Same rate for both legend and OTC products	Different rates for legend and OTC products

The methodological differences between Alabama AAC and NADAC introduce potentially confounding variables into our analysis; however, these potential confounding variables are felt to be appropriately mitigated given that Myers and Stauffer LC is the firm developing both pricing benchmarks. It is further believed that methodological changes to NADAC will be necessary to facilitate a mandatory NADAC response and likely that Myers and Stauffer will rely upon its prior work, such as that with Alabama, to implement those changes.

Specific limitations to our study regarding Alabama AAC are in relation to the publication of both a brand and generic rate for certain drugs (as identified in Figure 1-2). While actual payment within Alabama is a blended rate, we elected to utilize just the brand rate whenever there were two rates to make our estimations more conservative. This is because the brand rate is higher than the generic rate, so any resulting differences between Alabama AAC and NADAC would be lower. Additionally, we identified one apparent error within the historic Alabama AAC unit prices related to a therapeutically equivalent product. During the course of Q3 2019 to Q2 2020, metformin ER prices were temporarily set at the metformin ER osmotic or gastric release level. This resulted in a significant overpayment on a very commonly utilized drug due to inappropriate therapeutic interchange classification, and so all metformin ER products were excluded from our analysis.

1.4 REFERENCES

[i] Centers for Medicare & Medicaid (CMS). (2018, February 15). State Drug Utilization Data (SDUD) FAQs. Retrieved from https://www.medicaid.gov/medicaid/prescription-drugs/state-drug-utilization-data/state-drug-utilization-data-faq/index.html

[ii] Center for Medicaid and CHIP Services & Myers and Stauffer LC. (2017, August 17). "CMS Retail Price Survey National Average Drug Acquisition Cost (NADAC) Overview and Help Desk Operations." Retrieved from https://www.medicaid.gov/medicaid/prescription-drugs/downloads/retail-price-survey/nadac-overview-operations.pdf

[iii] Center for Medicaid and CHIP Services & Myers and Stauffer LC. (2017, August 17). "CMS Retail Price Survey National Average Drug
Acquisition Cost (NADAC) Overview and Help Desk Operations." Retrieved from https://www.medicaid.gov/medicaid/prescriptiondrugs/downloads/retail-price-survey/nadac-overview-operations.pdf

[iv] https://medicaid.alabama.gov/documents/2.0_Newsroom/2.5_Media_Library/2.5.1_Slide_Presentations/2.5.1_Pharmacy-DME/2.5.1_ALMA_MSLC_9-26-19.pdf