

2022 Data Attribute Supplement for Data Requesters

08.09.2022



HEALTHCARE
TRANSPARENCY
INIITIATIVE

What You Will Find in This Resource

- Data file types
- Data file type attributes
- Data connections
 - Enrollees/Individuals/Patients
 - Providers
 - Claims
- Data user support

This resource will help the data requester understand the types of data available in the Arkansas APCD that can be requested.

*Use it with the **Arkansas APCD 2019 Data Request Pricing Schedule** document to build your data request.*

Abbreviations and Terms

| Abbreviation/Term | Term |
|---------------------|--|
| ADH | Arkansas Department of Health |
| Enrollee ID | Enrollee's Member ID at the SE level |
| MCR | Medicare |
| NPI | National Provider ID |
| PBM | Pharmacy Benefit Manager |
| SE | Code representing the submitting entity (refers to carrier or payer) on all file types |
| SE_ID | Carrier/Payer Identifier + Carrier/Payer enrollee identifier. SE_ID can be generated on member, claims and provider data. |
| STUDY_ID or Hash ID | Concatenated APCD Unique ID (ME998) and Member Gender (ME013) for claims based data or hashed source last name/DOB plus source gender for non-claims based data. |
| TPA | Third-party administrators |

Arkansas APCD Data File Types

- Arkansas APCD Data Request Data File Types (Administrative Healthcare Data)
 - Claims-Based Data Files
 - Fully insured commercial carriers
 - Self-insured entities receiving public funds
 - Arkansas Medicaid (benefit payer)
 - Arkansas Medicare* (benefit payer)
 - Non-Claims-Based Data File Linkages
 - Arkansas Department of Health (ADH) Vital Statistics Data
 - ADH Hospital Discharge and Emergency Department Data for the uninsured
 - ADH Arkansas Cancer Registry Data
 - ADH Medical Marijuana Cardholder Data
 - Arkansas Workers Compensation Data

**Additional restrictions may apply to the acquisition of Medicare data. See [Medicare Data](#) slide.*

Claims-Based Data File Types

| Claims-Based Data File Type | Information Available | Available Data (in years) |
|--|--|--|
| Plan/Enrollment data <ul style="list-style-type: none"> Fully insured commercial payers Self-insured entities receiving public funds Arkansas Medicaid Arkansas Medicare* | Plan information, including plan names and enrollment/disenrollment dates. Includes enrollees with and without associated claims. Contains information about enrollees regardless of claim activity. | Jan 2013-June 2021 (Medicare data: 2013-2019) |
| Medical claim/claim line data <ul style="list-style-type: none"> Fully insured commercial payers Self-insured entities receiving public funds Arkansas Medicaid Arkansas Medicare* | Professional, inpatient, outpatient, durable medical equipment services, hospital-based pharmaceuticals including service dates, payment information, diagnoses, procedures, and provider information. May be sourced from carriers, payers, or TPA. | Jan 2013-June 2021 (Medicare data: 2013-2019) |
| Pharmacy claim/claim line data <ul style="list-style-type: none"> Fully insured commercial payers Self-insured entities receiving public funds Arkansas Medicaid Arkansas Medicare Part D* | Prescriptions fulfilled at a pharmacy, not within a hospital, including service dates, payment information, drug and dosage information, and provider information. May be sourced from carriers, payers, or pharmacy benefits managers (PBM). | Jan 2013-June 2021 (Medicare data: 2013-2019) |
| Dental claim/claim line data <ul style="list-style-type: none"> Fully insured commercial payers Self-insured entities receiving public funds Arkansas Medicaid | Professional dental services, not within a hospital, including service dates, payment information, diagnoses, procedures, and provider information. | Jan 2013-June 2021 |
| Provider data <ul style="list-style-type: none"> Fully insured commercial payers Self-insured entities receiving public funds Arkansas Medicaid | Location and specialty information for carrier network providers. | Jan 2013-June 2021 |

Arkansas Medicare FFS enrollment and claims data is available to Arkansas State Agencies only.

**Additional restrictions may apply to the acquisition of Medicare data. See [Medicare Data slide](#).*

Claims-Based Data Attributes

| Types of Information Per Data File Type | Plan/Enrollment Data | Medical Claims | Pharmacy Claims | Dental Claims | Provider Data |
|---|------------------------------------|-----------------|---------------------------|-----------------|-----------------|
| Carrier, payer identifiers | ✓ | ✓ | ✓ | ✓ | ✓ |
| Enrollee/subscriber demographics, age, identifiers | ✓ | ✓ | ✓ | ✓ | ✗ |
| Plan information — Enrollment/dis-enrollment dates, plan name, plan types, etc. | ✓ | ✗ | ✗ | ✗ | ✗ |
| Service information — claim identifiers/numbers, service dates, diagnoses, procedures, DRGs (medical claims) | ✗ | ✓ | ✗ | ✓ | ✗ |
| Payment fields including allowed amount, paid amount, and cost sharing amounts — e.g., deductible, co-insurance, etc. | ✗ | ✓ | ✓ | ✓ | ✗ |
| Provider information — NPI, specialties, provider demographics, locations | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prescription information — claim identifiers/numbers, service dates, drug name, dosage, etc. | ✗ | ✗ | ✓ | ✗ | ✗ |
| Multiple lines delivered per enrollee or provider selected | ✓ | ✓ | ✓ | ✓ | ✓ |
| Date on which selection is based | Enrollment/ Disenrollment Dates | Date of Service | Paid Date or Fill Date | Date of Service | Latest Received |

NOTE: Not every carrier/payer has all file types. All carriers/payers submit member and provider data. Others submit medical only, pharmacy only, dental only, or combinations of those.

Claims-Based Data – Medicare

- Arkansas Medicare medical claim and Part D pharmacy data is available from the Arkansas APCD through two paths:
 - Data for state-directed/state-funded projects can request data directly from the Arkansas APCD
 - Data used for other types of projects must be requested through the Arkansas APCD in conjunction with the Research Data Assistance Center ([ResDAC](#))
- The Arkansas APCD technical support team will provide guidance to the data requester for procuring Arkansas Medicare data through [ResDAC](#)
- Arkansas Medicare data can be purchased without other claims-based data.

Non-Claims-Based Data File Types

| Non-Claims-Based Data File Type | Information Available | Available Data (in years) |
|--|--|----------------------------|
| ADH Vital Statistics Data* | Birth certificate information, including baby age, date of birth, parent demographics, mother history, risk factors, and conditions and/or abnormalities observed at birth. | Jan 2013-Dec 2020 |
| | Death certificate information, including death date, decedent's demographics, age, gender, and primary cause of death. | Jan 2013-Dec 2020 |
| ADH Hospital Discharge Data* | Uninsured hospital discharge information, including patient demographics, age, gender, service dates, diagnoses, procedures, DRGs, charges, and provider information. | Jan 2013-Dec 2020 |
| ADH Emergency Department Data* | Uninsured Emergency Department information, including patient demographics, age, gender, service dates, diagnoses, procedures, admission types, charges, and provider information. | Jan 2013-Dec 2020 |
| ADH Cancer Registry Data* | Annual cancer diagnosis and treatment information, including date of diagnosis, patient demographics, age, gender, cancer site areas, provider information, and cancer types. | Jan 2013-Dec 2018 |
| ADH Medical Marijuana Cardholder Data | Records representing individuals who have received a medical marijuana eligibility card. | August 2018-September 2020 |
| Arkansas Workers' Compensation Data (Claims Data, Forms 2 and 4 Data) <i>For additional information:</i> http://www.awcc.state.ar.us/revforms1.html | Information about events and employee costs incurred as a result of job-related accidents and diseases. These data represent claims that were not resolved through the employer provided workers' compensation insurance but were escalated to the state-level Arkansas Workers' Compensation Commission. Though called claims, these data do not represent payment information. | Jan 2013-June 2021 |
| | Employer's intent to accept or controvert claim, including the insurer's name, service dates, payment dates, and controvert reasons. | |
| | Employer's report of payment information, including service dates, wage information, and expense details (e.g., medical expense, drug expense, rehab expense, etc.). | |

Non-claims-based data can only be provided through linkage to claims-based data.

Non-Claims-Based Data Attributes

| Types of Information Per Data File Type | ADH Vital Statistics Data: Birth Certificates | ADH Vital Statistics Data: Death Certificates | ADH Hospital Discharge or Emergency Department Data | ADH Arkansas Cancer Registry Data | ADH Medical Marijuana Cardholder Data | Arkansas Workers' Compensation Data |
|--|---|---|---|-----------------------------------|---------------------------------------|-------------------------------------|
| Individual demographics, age, identifiers | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Birth risk factors, conditions, and/or abnormalities observed at birth, mother pregnancy history | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| Cause of death, date of death | ✗ | ✓ | ✓ | ✗ | ✗ | ✗ |
| Diagnoses, procedures, DRGs, etc. | ✗ | ✓ | ✓ | ✓ | ✗ | ✗ |

Non-claims-based data can only be provided through linkage to claims-based data.

Non-Claims-Based Data Attributes

| Types of Information Per Data File Type | ADH Vital Statistics Data: Birth Certificates | ADH Vital Statistics Data: Death Certificates | ADH Hospital Discharge or Emergency Department Data | ADH Arkansas Cancer Registry Data | ADH Medical Marijuana Cardholder Data | Arkansas Workers' Compensation Data |
|---|---|---|---|-----------------------------------|---------------------------------------|-------------------------------------|
| Provider information (NPI, specialties, provider demographics, locations) | ✓ | ✓ | ✓ | ✓ | ✗ | ✓ |
| Dates of service, birth, payments, etc. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Multiple lines delivered per enrollee selected | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ |
| Date on which selection is based | Birth Year | Death Year | Service Year | Year of Diagnosis | Card-Issue Date* | Claim-Posting Year |

Non-claims-based data can only be provided through linkage to claims-based data.

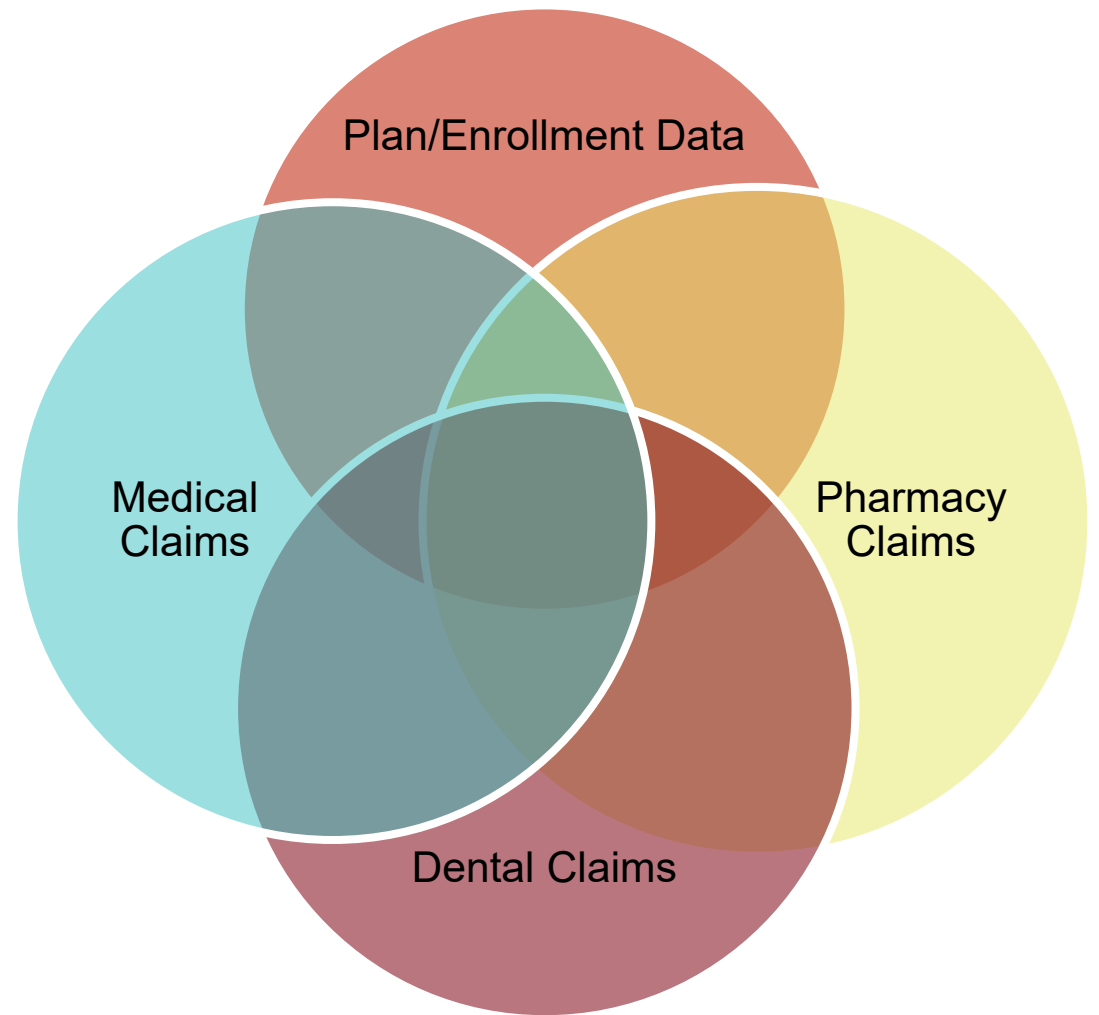
**These data contain multiple records per individual, one for every month the individual has a valid Medical Marijuana card. To find an individual's enrollment start and end date, query the card-issue date to identify the earliest and latest date of enrollment.*

How Data Can Be Connected

Administrative Healthcare Data File Type Relationships

Enrollees/individuals are connected using three types of linkages across data file types:

- Within submitting entities, i.e. carriers or payers
- Across submitting entities
- Between claims-based and non-claims based data (when available)

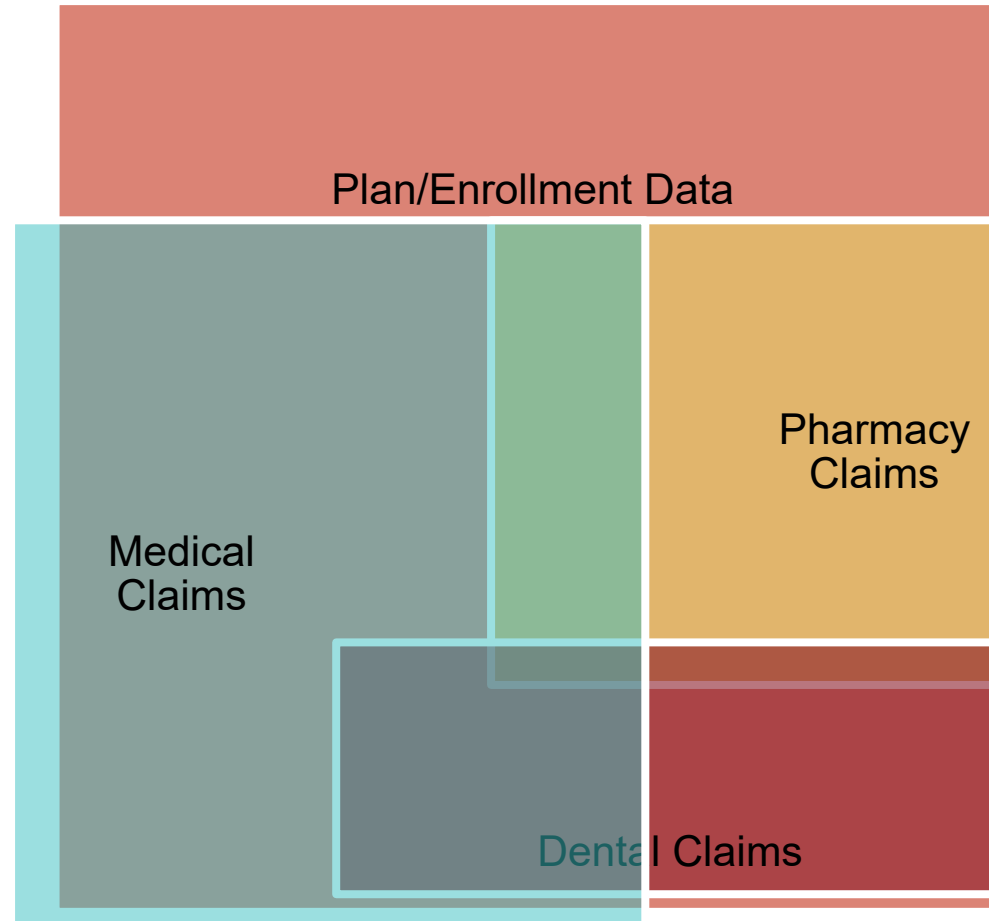


Administrative Healthcare Data File Type Relationships

The overlap between file types is not even or consistent.

Not every member/enrollee has medical, pharmacy, and dental coverage.

When linking data it is important to understand these relationships.



Connecting Enrollees/Individuals

| Connection Type | Linkage Use | Primary Linkage ID |
|---|--|--------------------|
| Connections within an SE | <ul style="list-style-type: none"> Assesses enrollee experience within carrier or payer-specific plans Tracks enrollee experience within an SE over time | SE_ID |
| Connections across carriers or payers | <ul style="list-style-type: none"> Tracks enrollee experience across different SEs over time Appends concurrent coverage for an enrollee Denominates a population for analytics and research Links plan/enrollment data across plans that use TPAs or PBMs to administer claims data (these systems may not use the same IDs for the same enrollees) Supplements enrollee linkage within SEs when enrollee IDs are modified by marital status changes, plan changes, etc. | STUDY_ID |
| Connections between claims-based and non-claims-based data (when available) | <ul style="list-style-type: none"> Associates health statistics outcome information with claims information (e.g., individuals on Arkansas Cancer Registry data with enrollees from claims-based data) Associates uninsured inpatient and emergency department data with claims-based data to assess utilization and/or outcomes | STUDY_ID |

Linkage IDs

- SE_ID
 - APCD submitting entity ID + APCD enrollee ID
 - Represents the member with a single SE
- STUDY_ID
 - Claims based data - APCD Unique ID + Member Gender
 - Non-claims based data – hashed source last name and date of birth + source gender
 - ‘Collisions’ occur when different enrollees have the same last name and gender. These enrollees will receive the same STUDY_IDs.
 - ‘Divergences’ occur when the same enrollee within an SE has different STUDY_IDs.

Connecting Fields

These fields can be used to group data within and across file types within an SE and non-claims-based data.

Claims-Based Data (using SE_ID)

| Data File Type | Entity ID | Enrollee ID |
|------------------------|-----------|-------------|
| Member/Enrollment Data | ME001 | ME107 |
| Medical Claims | MC001 | MC137 |
| Pharmacy Claims | PC001 | PC107 |
| Dental Claims | DC001 | DC056 |
| Provider Data | PV114 | N/A |
| Lookup Data | LU005 | N/A |

Non-Claims-Based Data (using patient file type ID)

| Data File Type | Entity ID | Patient File Type ID |
|---|-----------|---|
| Birth Certificate Data | N/A | BC001 - Birth Certificate Number |
| Death Certificate Data | N/A | DTH001 - Death Certificate Number |
| Hospital Discharge Data | N/A | HSP003 - Patient Control Number |
| Emergency Department Data | N/A | ED001 - Patient Control Number (Hospital ID + Patient ID) |
| Cancer Registry Data | N/A | CR012 - Case Identifier |
| Medical Marijuana | N/A | MM001 - APCD Unique ID |
| Arkansas Workers Compensation Commission | N/A | AC001 - File Number |
| Arkansas Medicare Medical Claims and Part D Pharmacy claims | N/A | Bene_ID – Beneficiary ID |

Connecting Fields

These fields can be used to group data within and across SEs and non-claims-based data.

Claims-Based Data

| Data File Type | STUDY_ID |
|------------------------|----------------|
| Member/Enrollment Data | ME998 + ME013* |
| Medical Claims | N/A |
| Pharmacy Claims | N/A |
| Dental Claims | N/A |
| Provider Data | N/A |
| Lookup Data | N/A |

*ME998 – APCD Unique ID
ME013 = Member Gender

Non-Claims-Based Data

| Data File Type | STUDY_ID |
|---|--------------------------------------|
| Birth Certificate Data | APCD Unique ID + File Type Gender |
| Death Certificate Data | |
| Hospital Discharge Data | |
| Emergency Department Data | |
| Cancer Registry Data | |
| Medical Marijuana | |
| Arkansas Workers Compensation Commission | |
| Arkansas Medicare Medical Claims and Part D | |
| Pharmacy claims | |

What is the APCD Unique ID?

- The Arkansas APCD does not include personally identifiable data
 - APCD Unique ID is the data element available to represent an enrollee across sources and data file types
- APCD Unique ID represents enrollee's last name and date of birth
- APCD Unique ID is hashed securely, masking enrollee's last name and date of birth so that it cannot be re-identified

Example:

If the enrollee's last name and date of birth = JONES1983-12-30, the hashed value placed in the APCD Unique ID field representing this combination is:

aJDhkskZ9OwP1n1akloOgReHjm+iFJ0ofPt3CNhvFy8=

Only the hashed value is available in the Arkansas APCD

What is the APCD Unique ID?

- The APCD Unique ID field is defined in the Arkansas APCD Data Submission Guide (DSG), data element ME998
- The APCD Unique ID must be hashed securely prior to being delivered to the Arkansas APCD
- Additional hashing is applied during the APCD data intake process to further secure the unique ID values
- This allows for unique IDs that are requester-specific
 - The additional hashing approach is intended to prevent re-identification and will not be disclosed

Connections by Data File Type

| Claims-Based Data: Linkages Within Carriers/Payers | Plan/Enrollment Data | Medical Claims | Pharmacy Claims | Dental Claims | Provider Data |
|---|-------------------------|-------------------|--------------------|------------------|------------------|
| Enrollee Identification across file types (SE_ID) | ✓ | ✓ | ✓ | ✓ | n/a |
| Provider ID (National Provider ID) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Enrollee Identification only (STUDY_ID) | ✓ | n/a | n/a | n/a | n/a |

| Claims-Based Data: Linkages Across Carriers/Payers | Plan/Enrollment Data | Medical Claims | Pharmacy Claims | Dental Claims | Provider Data |
|---|-------------------------|-------------------|--------------------|------------------|------------------|
| Enrollee Identification across file types (SE_ID) | ✗ | ✗ | ✗ | ✗ | n/a |
| Provider ID (National Provider ID) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Enrollee Identification only (STUDY_ID) | ✓ | n/a | n/a | n/a | n/a |

Connections by Data File Type

| Linkages Within Non-Claims-Based Data | ADH Vital Statistics Data: Birth Certificates | ADH Vital Statistics Data: Death Certificates | ADH Arkansas Hospital Discharge or ED Data | ADH Arkansas Cancer Registry Data | ADH Medical Marijuana Cardholder Data | Arkansas Workers' Compensation Data |
|---------------------------------------|---|---|--|-----------------------------------|---------------------------------------|-------------------------------------|
| National Provider ID | ✓ | ✓ | ✓ | ✓ | ✗ | ✓ |
| Individual (STUDY_ID) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Case Number* | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ |
| Birth Certificate Number* | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| Death Certificate Number* | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ |
| Patient ID* | ✗ | ✗ | ✓ | ✗ | ✗ | ✗ |
| File Number* | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ |

Non-claims-based data can only be provided through linkage to claims-based data.

*All enrollee or individual identifiers are masked.

Connections by Data File Type

| Linkages Between Claims-Based Data and Non-Claims-Based Data (when available) | Plan/ Enrollment Data | Medical, Pharmacy, Dental Claims Data | ADH Vital Statistics Data: Arkansas Birth and Death Certificates | ADH Arkansas Hospital Discharge or Emergency Department Data | ADH Arkansas Cancer Registry Data | ADH Medical Marijuana Cardholder Data | Arkansas Workers' Compensation Data |
|---|-----------------------|---------------------------------------|--|--|-----------------------------------|---------------------------------------|-------------------------------------|
| Provider ID (National Provider ID) | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ | ✓ |
| Enrollee Identification (SE_ID) | ✓ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| Enrollee or Individual (STUDY_ID) | ✓ | ✗ | ✓ | ✓ | ✓ | ✓ | ✓ |

Non-claims-based data can only be provided through linkage to claims-based data.

Enrollee Connections Within a Carrier/Payer

When connecting enrollees to claims data within carriers or payers, use the **SE_ID** to link an enrollee's plan/enrollment data to their claims information.

Important: Because duplicate Enrollee IDs can occur across different carriers or payers (e.g., John Smith on Carrier A has enrollee ID = 123, and Mary Green on Carrier B has enrollee ID = 123), it is important to include the Entity ID representing the carrier when identifying unique enrollees.

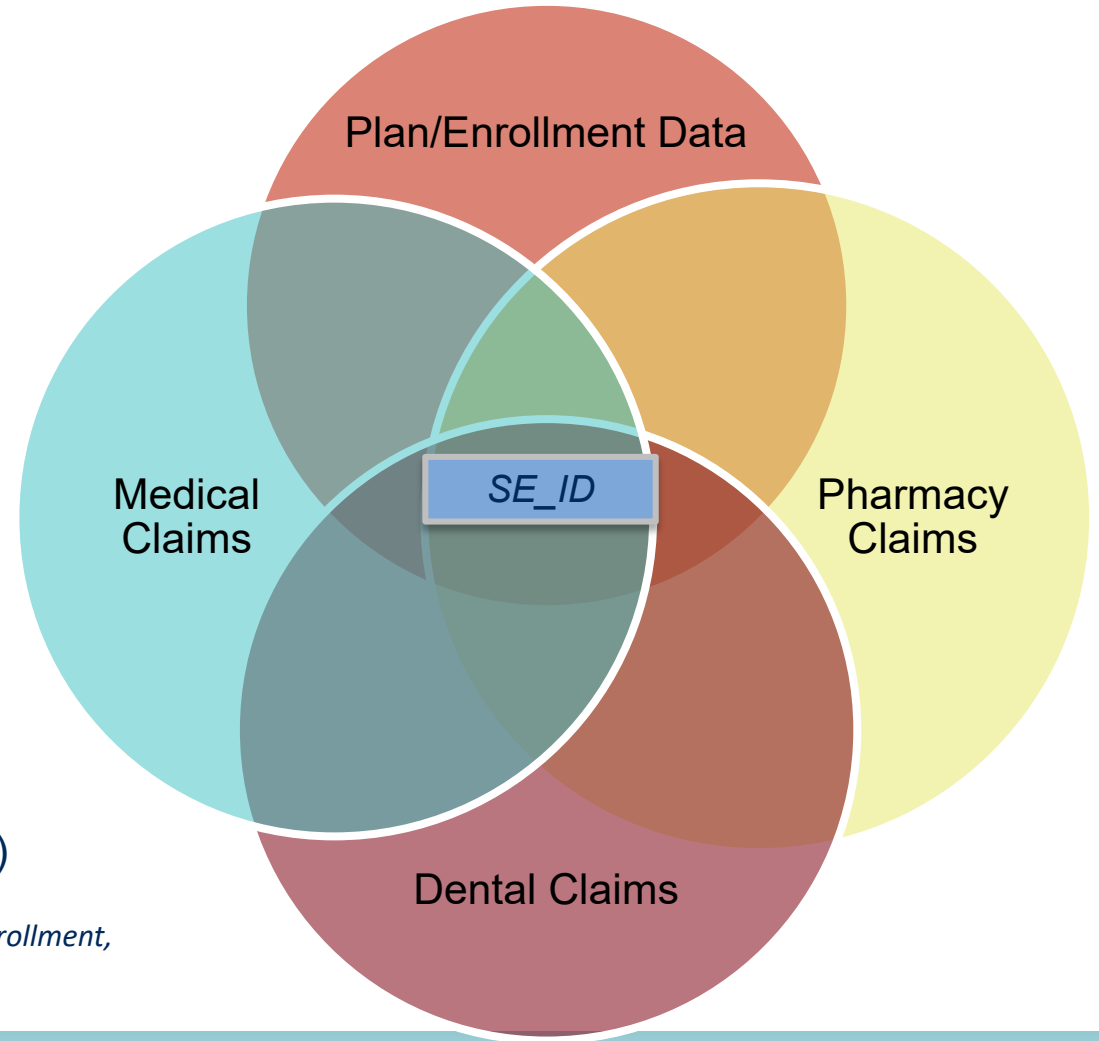
For example:

SE_ID (Entity ID + Enrollee ID) = Carrier A 123 (John Smith)

SE_ID (Entity ID + Enrollee ID) = Carrier B 123 (Mary Green)

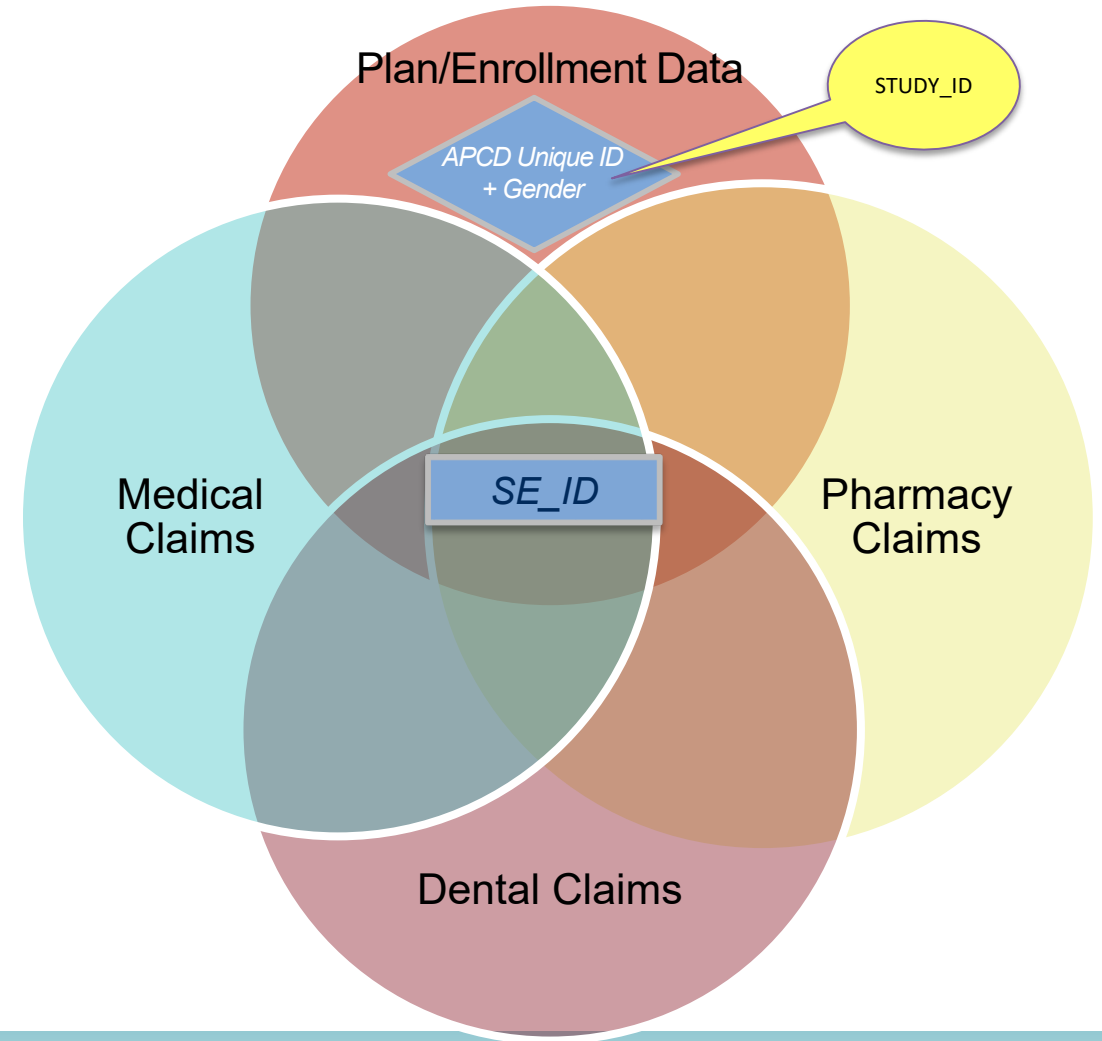
**Entity ID is an alphanumeric code that represents a carrier or payer within the plan/enrollment, claims, and provider data.*

***Enrollee ID can also be referred to as Member ID*



Enrollee Connections Across Carriers/Payers

When connecting enrollees across carriers or payers, use the **STUDY_ID**. The Arkansas APCD does not contain personal identifiers, however the **STUDY_ID** can be used as a proxy.



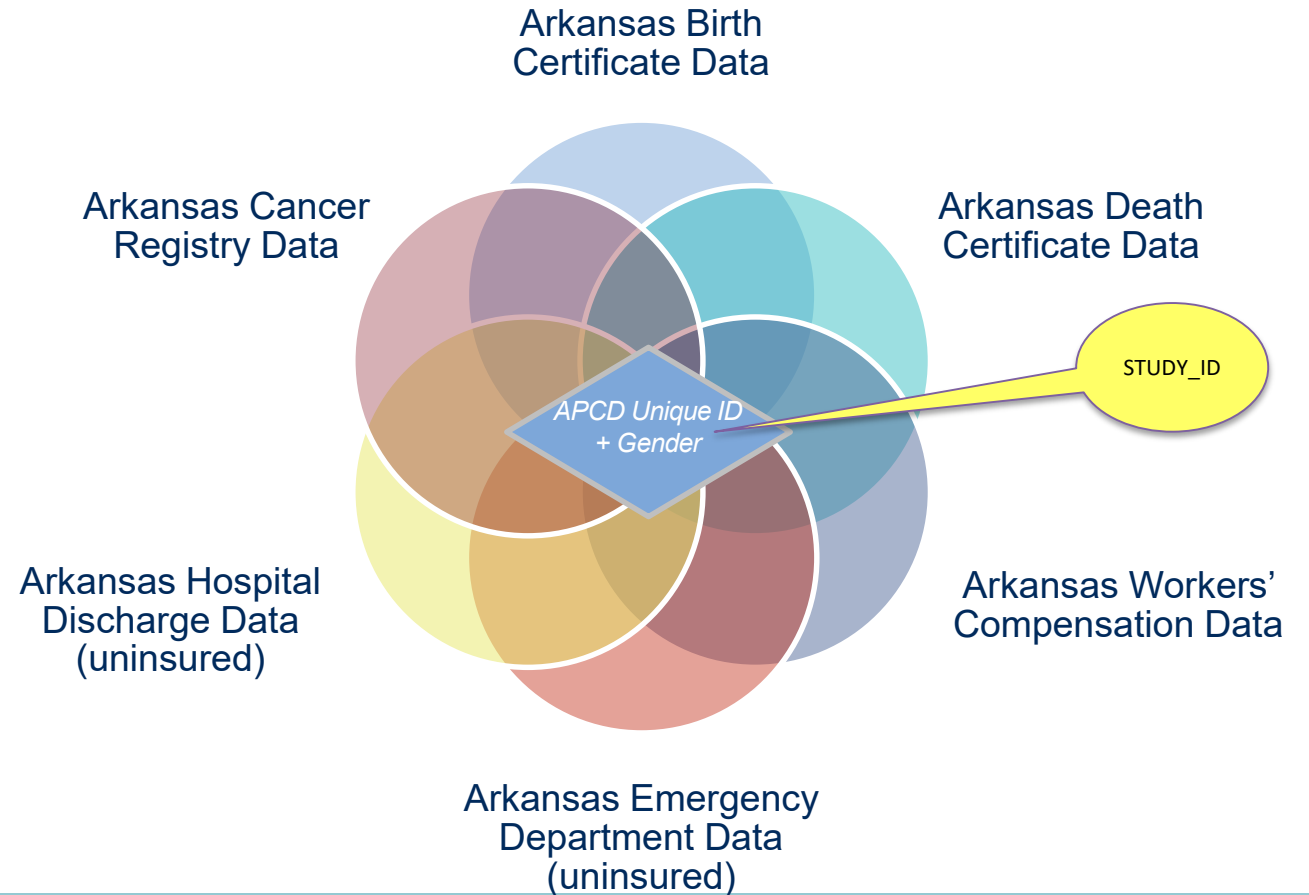
Individual Connections Across Non-Claims-Based Data Types

When available:

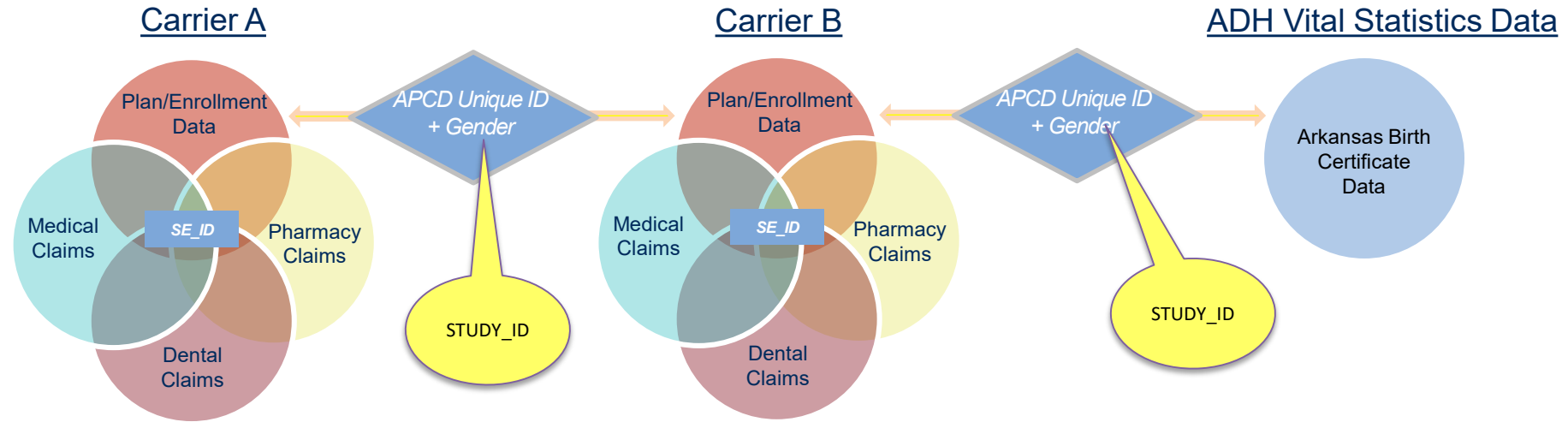
The STUDY_ID can identify unique individuals across non-claims-based data types with high accuracy.

To link individuals across non-claims-based data types:

1. Find individuals with the same STUDY_ID within each non-claims-based data type.
2. Once a linkage has been established with the STUDY_ID, use source-specific individual identifiers to find associated data on other data file types.



Connections Across Source Types

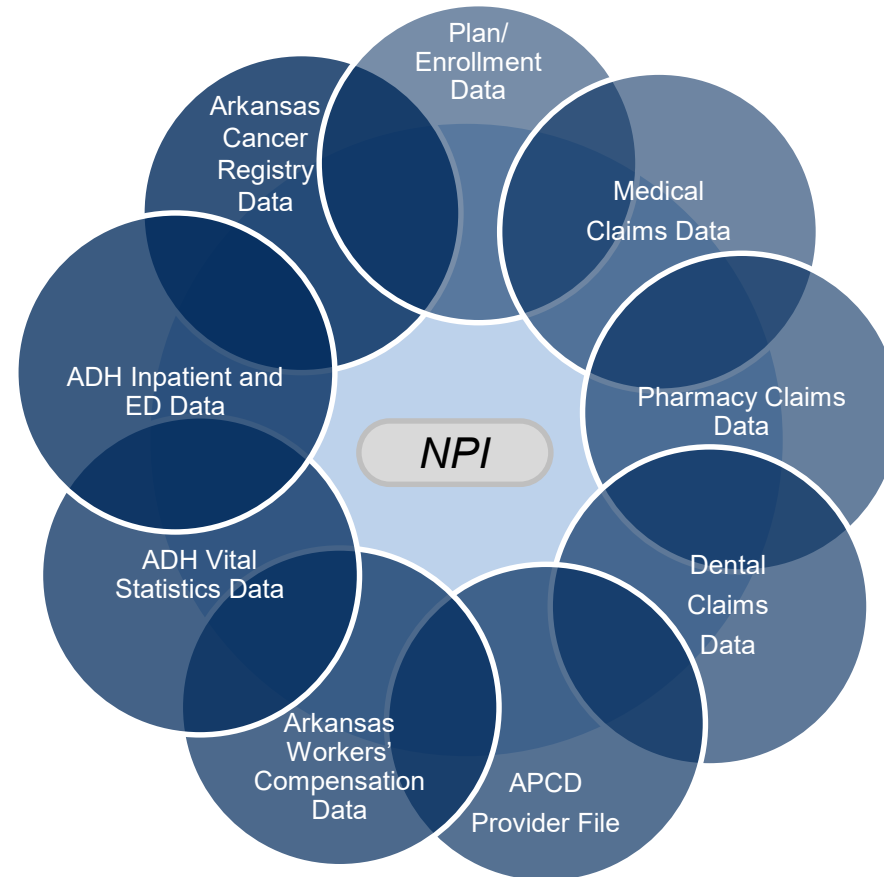


Data linkages example:

1. Identify the enrollees and individuals within the Carrier A data, Carrier B data, and Arkansas Birth Certificate data using the STUDY_ID.
2. Select Carrier A plan/enrollment data using the selected STUDY_IDs.
3. Select Carrier A claims-based data using the SE_IDs associated with the selected STUDY_IDs.
4. Select Carrier B plan/enrollment data using the selected STUDY_IDs.
5. Select Carrier B claims-based data using the SE_IDs associated with the selected STUDY_IDs.
6. Select Arkansas Birth Certificate data using the selected STUDY_IDs.
7. Create analytic dataset with selected data from steps 1 through 6.

Provider Linkages Across Data Types

Use the National Provider Identifier (NPI) code to identify provider data across claims-based and non-claims-based data (when available).



How to count individuals

- Which ID to use?
 - SE_ID
 - Can overestimate number of individuals because it does not represent the same enrollee across multiple submitting entities.
 - STUDY_ID –
 - Can underestimate number of individuals because in some cases different enrollees can have the same STUDY_ID, causing a **‘collision’**.
 - Can overestimate the number of enrollees within an SE when an enrollee has multiple STUDY_IDs caused by name changes or data quality issues, causing a **‘divergence’**.

Collision Management

Frequency of collisions is dependent on the size of the analytic dataset

- Rare conditions or procedures typically don't include collisions
- For large datasets – colliding STUDY_IDs could be omitted and still maintain a viable analytic dataset

Depending on the data sources to be linked, colliding STUDY_IDs may cause cartesian products

- Across submitters – duplicate claim lines
- Across claims/non-claims – linking health care to in appropriate records of interest

Collision Reduction Methodology

- To mitigate this situation use the SE_ID and the STUDY_ID:
 - SE_ID = Submitting entity + member ID (ME001||ME107, etc)
 - The variables making up SE_ID can also be made from the medical claims, pharmacy claims, and dental claims data
 - STUDY_ID = APCD Unique ID + gender (ME998||ME013)
 - This variable can only be developed from the member table in claims and is source specific in non-claims based tables
- A single STUDY_ID can have multiple different SE_ID values or records in non-claims based data

Collision Reduction Methodology – Types of Collisions

| STUDY_ID | SE_ID |
|----------|---------|
| AM | BCBS123 |
| AM | EBD567 |
| BF | BCBS910 |
| BF | BCBSXYZ |
| BF | CAR623 |
| BF | MCD305 |

Different Periods of Enrollment

Different Types of Coverage

SE_ID Collision

Collision Reduction Methodology

Goal – Drop as few STUDY_ID collisions as possible to get the best estimate of population size

- 1 STUDY_ID to three or less SE_IDs
- Look out for 1 SE_ID to greater than 1 STUDY_ID
 - Perhaps name changes or data cleaning

Collision Reduction Methodology

For each year of study

1. Select active segments
2. Separate member records into payer types
3. Create SE_ID and STUDY_ID
4. Review collisions and make decisions

Collision Reduction Methodology – Selecting Active Segments

- For each year of study select only active segments
- Use both date of enrollment and date of disenrollment
 - ME162A (date of enrollment) is less than or equal to the end of study period
 - ME163A (date of disenrollment) is greater than or equal to the start of study period
- Use a year or less for segments

Collision Reduction Methodology – Separate Member Records

- Medicaid – Use SE_ID
 - ME001 = “99MCD1”
 - Exclude individuals with the private option
- Medicare Advantage – Use Insurance Product Type
 - ME003 = 'HN','HS','MA','MB','MD','MDV','MH','MHO','MI','MPO'
- Dental and pharmacy plans together Insurance Product Type and SE_ID
 - ME003 = “DNT”
 - ME001 = “99CAR1”, “99MDI1”
- Commercial (excludes all of the above)
 - Label EBD, the private option, and all other commercial separately

Collision Reduction Methodology – Create SE_ID and STUDY_ID

- Create SE_ID for within coverage type – Medicaid, Medicare Advantage, Pharmacy & Dental, Commercial
- Assign one STUDY_ID to each SE_ID by selecting the most recent record using enrollment dates
 - Name changes
 - Data corrections

Collision Reduction Methodology – Review and Decide

- Review payer type tables separately
 - Commercial
 - MCD
 - Dental/Pharm
 - MCR advantage?
- Append payer type tables

Collision Reduction Methodology – Review and Decide

| STUDY_ID | SE_ID | Type of Coverage |
|----------|---------|------------------|
| AM | BCBS123 | COM |
| AM | EBD567 | EBD |
| BF | BCBS910 | COM |
| BF | BCBSXYZ | DNT |
| BF | CAR623 | Pharm |
| BF | MCD305 | MCD |

- Separate payer type tables

Collision Reduction Methodology – Review and Decide

| STUDY_ID | SE_ID | Type of Coverage |
|----------|---------|------------------|
| AM | BCBS123 | COM |
| AM | EBD567 | EBD |
| BF | BCBS910 | COM |

- Separate payer type tables
- Greater than 2 SE_IDs
 - Assumption – coverage switched during year

Collision Reduction Methodology – Review and Decide

| STUDY_ID | SE_ID | Type of Coverage |
|----------|---------|------------------|
| AM | BCBS123 | COM |
| AM | EBD567 | EBD |
| BM | QC123 | COM |
| BM | EBD283 | EBD |
| CF | QC789 | COM |
| CF | EBD431 | EBD |

- Separate payer type tables
- Greater than 2 SE_IDs
 - Assumption – coverage switched during year
- At least 2 SE_IDs
 - Can help find problems with submitting entities

Collision Reduction Methodology – Review and Decide

| STUDY_ID | SE_ID | Type of Coverage |
|----------|---------|------------------|
| BF | BCBS910 | COM |
| BF | BCBSXYZ | DNT |
| BF | CAR623 | Pharm |
| BF | MCD305 | MCD |

- Append payer types
- Greater than 3-4 SE_IDs
- Type of coverage can help limit collisions
 - We assume the dental and pharmacy coverage is a reasonable collision

Collision Reduction Methodology – Review and Decide

| STUDY_ID | SE_ID | Type of Coverage |
|----------|---------|------------------|
| AM | BCBS123 | COM |
| AM | EBD567 | EBD |
| BF | BCBS910 | COM |
| BF | BCBSXYZ | DNT |
| BF | CAR623 | Pharm |
| BF | MCD305 | MCD |

- Decide their fate
 - What is the purpose?
 - Will undesirable cartesian products form?
 - Will we get a reasonable estimate of individuals in the population?

Collision Reduction Methodology – Review and Decide

| STUDY_ID | SE_ID | Type of Coverage |
|----------|---------|------------------|
| AM | BCBS123 | COM |
| AM | EBD567 | EBD |
| BF | BCBS910 | COM |
| BF | BCBSXYZ | COM |
| BF | CAR623 | Pharm |
| BF | MCD305 | MCD |

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 - What is the purpose?
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Collision Reduction Methodology – Review and Decide

| STUDY_ID | SE_ID | Type of Coverage |
|----------|---------|------------------|
| AM | BCBS123 | COM |
| AM | EBD567 | EBD |
| BF | BCBS910 | COM |
| BF | BCBSXYZ | COM |
| BF | CAR623 | Pharm |
| BF | MCD305 | MCD |

- Decide their fate
 - What is the purpose?
 - Will undesirable cartesian products form?
 - Will we get a reasonable estimate of individuals in the population?

Collision Reduction Methodology – Review and Decide

| STUDY_ID | SE_ID |
|----------|---------|
| AM | BCBS123 |
| AM | EBD567 |
| BF | BCBS910 |
| BF | BCBSXYZ |
| BF | CAR623 |
| BF | MCD305 |

- Without Collision Reduction Methods
STUDY_ID = “BF” would have been dropped

Collision Reduction Methodology – Final Considerations

- Counting Individuals:
 - 2 or 3 versus 6?
 - Use STUDY_ID joined to claims to count “individuals” in large data sets
 - Small studies can use SE_ID to count individuals
- Consider dropping all collisions in the member record when linking to non-claims based data sources.
- Purpose of analysis
 - Rigorous research versus information finding and policy support

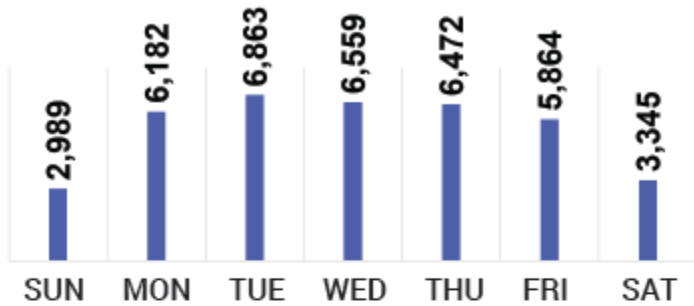
Collision Prevalence

- Collision influencers
 - Twins: there is about 1 to 3% rate of twins
 - Common last names over time
 - Common dates of birth within groups or years
 - Data quality errors
- The collision rate in a randomly created analytic set is expected to be around **3.5%** and potentially lower for a smaller set size

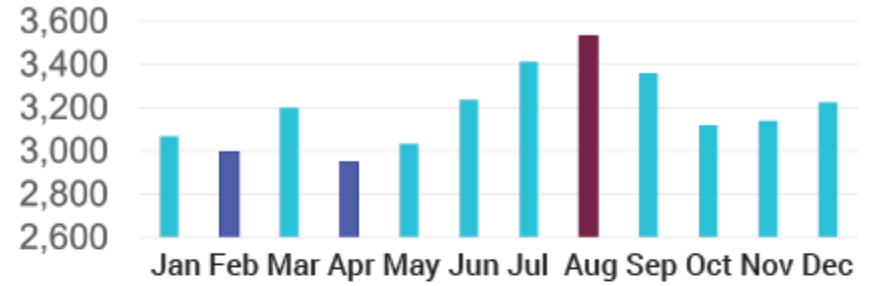
Collision rates can vary depending on the size and design of the analytic dataset.

MODEL AND RESULTS

2016 BIRTHS BY DAY OF WEEK



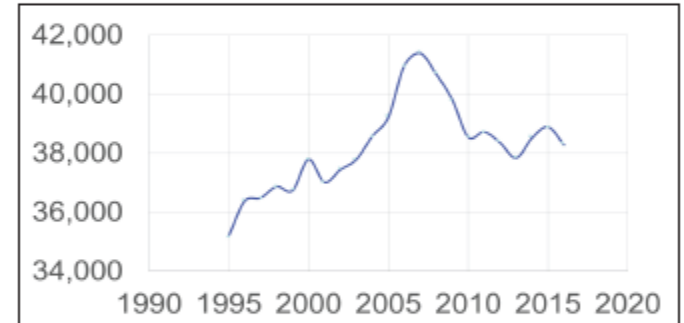
NUMBER OF BIRTHS PER MONTH



DIVERSIFICATION OF LAST NAMES

| 1990 | | 2015 | |
|-----------|----------|-----------|----------|
| Last Name | Rate (%) | Last Name | Rate (%) |
| SMITH | 1.6 | SMITH | 1.2 |
| WILLIAMS | 1.2 | WILLIAMS | 1.0 |
| JOHNSON | 1.1 | JOHNSON | 0.9 |
| JONES | 1.1 | DAVIS | 0.8 |

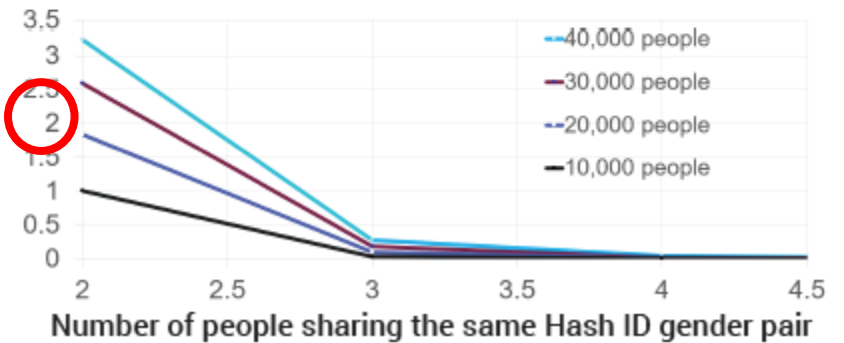
NUMBER OF BIRTHS IN ARKANSAS



Estimate $p(\text{birthday} | \text{last name, birth year})$ while utilizing a smoothing variable



EXPECTED RATE OF NON-UNIQUE HASH ID GENDER PAIR



Collision Example: STUDY_ID (ME998) = '123456789XYZ' || Gender (ME013) = 'M'

| Individual | Submitting Entity (ME001) (SE_ID) | Member ID (ME107) | Enroll Date (ME162A) | Dis-enroll Date (ME162A) |
|------------|---|----------------------|----------------------|-----------------------------|
| 1 | 12231 | H89aJD5503 | 8/29/2013 | 12/31/2013 |
| 1 | 95448A | 64672027e8e | 1/1/2014 | 12/31/2014 |
| 1 | 95448A | 64672027e8e | 1/1/2015 | 12/31/2015 |
| 1 | 95448A | 64672027e8e | 1/1/2016 | 12/31/2017 |
| 1 | 95448A | ux8BD6WQX | 1/1/2018 | 12/31/2018 |
| 1 | 79413A | 116174576 | 1/1/2019 | 12/31/9999 |
| 2 | 83470 | 4817410000 | 8/1/2017 | 12/31/2018 |
| 2 | 83470 | 4817410000 | 1/1/2019 | 3/31/2019 |
| 3 | 83470 | 415810000 | 11/1/2015 | 7/31/2018 |
| 3 | 83470 | 43600000 | 8/1/2018 | 7/31/2019 |

- These 10 member records have the same gender and APCD Unique ID
- They are found across 4 submitting entities with 7 different member IDs

This group was segmented to contain the coverage type Commercial only.

Collision Example: STUDY_ID (ME998) = '123456789XYZ' || Gender (ME013) = 'M'

| Individual | Submitting Entity (ME001) (SE_ID) | Member ID (ME107) | Enroll Date (ME162A) | Dis-enroll Date (ME162A) | Policy Number (ME006) | Contract Number (ME009) | Group Name (ME032) |
|------------|---|----------------------|----------------------|-----------------------------|--------------------------|-------------------------------|--------------------------|
| 1 | 12231 | H89aJD5503 | 8/29/2013 | 12/31/2013 | 8H901 | JD5503628 | PIKE COUNTY |
| 1 | 95448A | 64672027e8e | 1/1/2014 | 12/31/2014 | 160437 | NULL | Pike County |
| 1 | 95448A | 64672027e8e | 1/1/2015 | 12/31/2015 | 160437 | NULL | Pike County |
| 1 | 95448A | 64672027e8e | 1/1/2016 | 12/31/2017 | 160437 | NULL | Pike County |
| 1 | 95448A | ux8BD6WQX | 1/1/2018 | 12/31/2018 | 160437 | NULL | Pike County |
| 1 | 79413A | 116174576 | 1/1/2019 | 12/31/9999 | XF92000009 | XF92000009 | PIKE COUNTY |
| 2 | 83470 | 4817410000 | 8/1/2017 | 12/31/2018 | SX7D12B-L | BY3Wa9827 | ABCBS SILVER AW1 |
| 2 | 83470 | 4817410000 | 1/1/2019 | 3/31/2019 | 72002G9213 | 86326X | ABCBS SILVER AW1 |
| 3 | 83470 | 415810000 | 11/1/2015 | 7/31/2018 | 19464606 | 19464606 | SOUTHERN RAIL COMPANY |
| 3 | 83470 | 43600000 | 8/1/2018 | 7/31/2019 | 1946460000 | 1946460000 | SOUTHERN RAIL COMPANY |

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Collision Example: STUDY_ID (ME998) = '123456789XYZ' || Gender (ME013) = 'M'

| Individual | Submitting Entity (ME001) (SE_ID) | Member ID (ME107) | Enroll Date (ME162A) | Dis-enroll Date (ME162A) | Policy Number (ME006) | Contract Number (ME009) | Group Name (ME032) |
|------------|---|----------------------|----------------------|-----------------------------|--------------------------|-------------------------------|--------------------------|
| 1 | 12231 | H89aJD5503 | 8/29/2013 | 12/31/2013 | 8H901 | JD5503628 | PIKE COUNTY |
| 1 | 95448A | 64672027e8e | 1/1/2014 | 12/31/2014 | 160437 | NULL | Pike County |
| 1 | 95448A | 64672027e8e | 1/1/2015 | 12/31/2015 | 160437 | NULL | Pike County |
| 1 | 95448A | 64672027e8e | 1/1/2016 | 12/31/2017 | 160437 | NULL | Pike County |
| 1 | 95448A | ux8BD6WQX | 1/1/2018 | 12/31/2018 | 160437 | NULL | Pike County |
| 1 | 79413A | 116174576 | 1/1/2019 | 12/31/9999 | XF92000009 | XF92000009 | PIKE COUNTY |
| 2 | 83470 | 4817410000 | 8/1/2017 | 12/31/2018 | SX7D12B-L | BY3Wa9827 | ABCBS SILVER AW1 |
| 2 | 83470 | 4817410000 | 1/1/2019 | 3/31/2019 | 72002G9213 | 86326X | ABCBS SILVER AW1 |
| 3 | 83470 | 415810000 | 11/1/2015 | 7/31/2018 | 19464606 | 19464606 | SOUTHERN RAIL COMPANY |
| 3 | 83470 | 43600000 | 8/1/2018 | 7/31/2019 | 1946460000 | 1946460000 | SOUTHERN RAIL COMPANY |

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Collision Example: STUDY_ID (ME998) = '123456789XYZ' || Gender (ME013) = 'M'

| Individual | Submitting Entity (ME001) (SE_ID) | Member ID (ME107) | Enroll Date (ME162A) | Dis-enroll Date (ME162A) | Policy Number (ME006) | Contract Number (ME009) | Group Name (ME032) |
|------------|---|----------------------|----------------------|-----------------------------|--------------------------|-------------------------------|-----------------------------|
| 1 | 12231 | H89aJD5503 | 8/29/2013 | 12/31/2013 | 8H901 | JD5503628 | PIKE COUNTY |
| 1 | 95448A | 64672027e8e | 1/1/2014 | 12/31/2014 | 160437 | NULL | Pike County |
| 1 | 95448A | 64672027e8e | 1/1/2015 | 12/31/2015 | 160437 | NULL | Pike County |
| 1 | 95448A | 64672027e8e | 1/1/2016 | 12/31/2017 | 160437 | NULL | Pike County |
| 1 | 95448A | ux8BD6WQX | 1/1/2018 | 12/31/2018 | 160437 | NULL | Pike County |
| 1 | 79413A | 116174576 | 1/1/2019 | 12/31/9999 | XE92000009 | XE92000009 | PIKE COUNTY |
| 2 | 83470 | 4817410000 | 8/1/2017 | 12/31/2018 | SX7D12B-L | BY3Wa9827 | ABCBS SILVER AW1 |
| 2 | 83470 | 4817410000 | 1/1/2019 | 3/31/2019 | 72002G9213 | 86326X | ABCBS SILVER AW1 |
| 3 | 83470 | 415810000 | 11/1/2015 | 7/31/2018 | 19464606 | 19464606 | SOUTHERN RAIL COMPANY |
| 3 | 83470 | 43600000 | 8/1/2018 | 7/31/2019 | 1946460000 | 1946460000 | SOUTHERN RAIL COMPANY |

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Collision Example: STUDY_ID (ME998) = '123456789XYZ' || Gender (ME013) = 'M'

| Individual | Submitting Entity (ME001) (SE_ID) | Member ID (ME107) | Enroll Date (ME162A) | Dis-enroll Date (ME162A) | Policy Number (ME006) | Contract Number (ME009) | Group Name (ME032) |
|------------|---|----------------------|----------------------|-----------------------------|--------------------------|-------------------------------|----------------------------------|
| 1 | 12231 | H89aJD5503 | 8/29/2013 | 12/31/2013 | 8H901 | JD5503628 | PIKE COUNTY |
| 1 | 95448A | 64672027e8e | 1/1/2014 | 12/31/2014 | 160437 | NULL | Pike County |
| 1 | 95448A | 64672027e8e | 1/1/2015 | 12/31/2015 | 160437 | NULL | Pike County |
| 1 | 95448A | 64672027e8e | 1/1/2016 | 12/31/2017 | 160437 | NULL | Pike County |
| 1 | 95448A | ux8BD6WQX | 1/1/2018 | 12/31/2018 | 160437 | NULL | Pike County |
| 1 | 79413A | 116174576 | 1/1/2019 | 12/31/9999 | XF92000009 | XF92000009 | PIKE COUNTY |
| 2 | 83470 | 4817410000 | 8/1/2017 | 12/31/2018 | SX7D12B-L | BY3Wa9827 | ABCBS SILVER AW1 |
| 2 | 83470 | 4817410000 | 1/1/2019 | 3/31/2019 | 72002G9213 | 86326X | ABCBS SILVER AW1 |
| 3 | 83470 | 415810000 | 11/1/2015 | 7/31/2018 | 19464606 | 19464606 | SOUTHERN RAIL COMPANY |
| 3 | 83470 | 43600000 | 8/1/2018 | 7/31/2019 | 1946460000 | 1946460000 | SOUTHERN RAIL COMPANY |

This group was segmented to contain the coverage type Commercial only.

Divergence Management

- A divergence occurs when an enrollee has more than one STUDY_ID (one SE_ID to many STUDY_IDs).
- Name changes resulting from marriages and divorces or data quality issues, e.g. misspellings, cause the APCD Unique ID to change.
- Group additional data elements such as Gender and Date of Birth with the SE_ID to consolidate STUDY_IDs.

Divergence Management

| Individual | Submitting Entity (ME001) | Member ID (ME107) | STUDY ID | Gender (ME013) | Birth Year (ME014_Year) | Relationship Code (ME012) | NOTES |
|------------|---------------------------|-------------------|-----------|----------------|-------------------------|---------------------------|---|
| 1 | 95448A | 64672027e8e | 123XyZabc | F | 2000 | 18 | These records represent a female member whose name changed because marriage. The Relationship code changed from self to spouse. |
| 1 | 95448A | 64672027e8e | 123XyZabc | F | 2000 | 18 | |
| 1 | 95448A | 64672027e8e | 564#7hZ@ | F | 2000 | 01 | |
| | | | | | | | |
| 2 | 83470 | 4817410000 | 062Z#Qbu0 | F | 1985 | 18 | These records represent a parent and child sharing the same member ID. Birth Year identifies the difference. |
| 2 | 83470 | 4817410000 | 83&Qtu@9 | F | 2018 | 19 | |
| | | | | | | | |
| 3 | 83470 | 415810000 | 60@78d!y | M | 2010 | 18 | These records belong to the same male member however the STUDY_IDs are different because of data quality issues in the member's last name or date of birth. |
| 3 | 83470 | 415810000 | 2061%hT7 | M | 2010 | 18 | |

Divergence Management Methodology

- Group on primary divergence management fields
 - SE_ID (ME001 + ME107)
 - Birth Year (ME014_Year) or Date of Birth (ME014)
 - Gender (ME013)
- Then group records with same SE_ID and multiple STUDY_IDs on secondary divergence management fields
 - Enroll Date (ME162A)
 - Dis-enroll Date (ME162A)
 - Policy Number (ME006)
 - Contract Number (ME009)
 - Group Name (ME032)
 - Relationship Code (ME012)

When selecting the enrollment record to use in your analytic universe, divergent STUDY_IDs can be managed by selecting the most recent enrollment record as it contains the most up-to-date information.

Grouping Claims

- Medical, pharmacy, or dental claims are differentiated by claim numbers and claim line numbers.
- A claim can be represented by one or more records.
- Claims are grouped by claim number/claim line.
- Claim data elements by file type:

| File Type | Claim Number Data Element | Claim Line Data Element |
|-----------------|---------------------------|-------------------------|
| Medical claims | MC004 | MC005 |
| Pharmacy claims | PC004 | PC005 |
| Dental claims | DC004 | DC005 |

Grouping Claims Examples

| # | MC001 (SE) | MC004 (Claim Number) | MC005 (Claim Line) | MC017 (Paid Date) | MC055 (Procedure Code) | MC063 (Paid Amount) | MC137 (Member ID) |
|---|------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------|
| 1 | 99TST1 | 12345 | 001 | 2014-06-30 | 71275 | \$395.93 | ABC123 |
| 2 | 99TST1 | 12345 | 002 | 2014-06-30 | 99283 | \$205.15 | ABC123 |
| 3 | 99TST1 | 12345 | 003 | 2014-06-30 | Q9967 | \$0.00 | ABC123 |
| 4 | 99TST2 | 93B-6322 | 1 | 2014-11-06 | 99282 | 134.42 | DEX602 |
| 5 | 99TST1 | 93867 | 001 | 2017-04-25 | 99222 | 134.43 | ABC123 |
| 6 | 99TST1 | 93867 | 002 | 2017-04-25 | 99232 | \$71.17 | ABC123 |

How to read the claims in this example. *NOTE: While this example is for medical claims, pharmacy and dental claims are grouped in the same way.*

- Rows 1, 2, and 3 represent one claim, claim number 12345. This claim has three claim lines – 001, 002, 003.
- Row 4 represents one claim, 93B-6322, with only one claim line. It is not uncommon for claims to have a single line.
- Rows 5 and 6 represent one claim with 2 claims lines for the same member as claim number 12345.
- Total paid for claim number 12345 = \$601.08 (sum of all 3 rows)
- Total paid for member ABC123 = \$806.68 (sum of all claim lines for all claim numbers for that member)

Data User Support

Data Request Forms and Process

- Arkansas APCD data request information is located here:
 - <https://www.arkansasapcd.net/Other/DataReleaseDocs/>
- Complete the data request packet using the process instructions at the above link

Use this resource in conjunction with the Arkansas APCD 2019 Data Request Pricing Schedule.

Helpful Information

- [APCD Website](#)
- APCD Release notes available [here](#):
 - Overall coverage dates
 - Source-specific release notes (problematic submitting entities)
 - Inclusion of previously omitted submitters
- Utilize searchable Arkansas APCD [data dictionaries](#) & [tip sheets](#)
- Contact Arkansas APCD Technical Support at adrs@achiapcd.atlassian.net for questions about data requests, data use, or pricing



Call to Action

- Sign up for the ACHI Newsletter
- Follow on social media: ACHI and the Arkansas Healthcare Transparency Initiative featuring the Arkansas APCD



- Check out the blog posts on ACHI website
- Look for upcoming APCD Data Users Group webinars

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