

University of Michigan

**Master Provider Index
Summary of Methodology**

MASTER PROVIDER INDEX METHODOLOGY AND DATA:

The U of M MiPCT database will contain adjudicated claims data from Medicare, Medicaid, and Commercial (BCBS MI and Blue Care Network) Payers. A provider may potentially be found on all claim types (Medical, and Drug) from each Payer, and may have a different identifier across Payers. The objective of the Master Provider ID Index/Table is to create a single identifier for each servicing and billing provider that will be unique across the time period of the database and across the different Payers (Medicare, Medicaid and Commercial.) The unique provider identifier will allow tracking of a provider's experience with their patients over time and independent of Payer. This unique ID is known as the Master Provider ID.

Methodology:

This document describes the methodology and the multiple matching process Truven Health Analytics developed to generate and assign a unique identifier to each provider. We use a multiple matching process in order to "find the best match" possible for a provider between the Master Provider Index and the eligibility/claim data. We create a hierarchy of importance in the multiple match process. Each match attempt has a unique weight of accuracy which will be used to select the "best match" for the unique provider, the Master Provider ID, and assign this to matched eligibility and claims records.

Truven Health Analytics developed methods to generate the single Provider ID for all servicing and billing medical providers and ordering prescribers and servicing pharmacies for drug claims. Each Payer may utilize a different type of ID to identify a provider (ex: NPI, TIN, internal id, etc.), so assignment logic required to set the Master Provider ID to each Payer will be different as well.

Below we describe key information regarding source provider reference tables we use in the process, followed by separate sections where we describe our methodology unique to each Payer.

University of Michigan

**Master Provider Index
Summary of Methodology**

SOURCE PROVIDER INFORMATION USED TO CREATE THE MASTER PROVIDER ID TABLE/INDEX:

We generate a Master Provider ID as a unique numeric value for each unique provider. To ensure provider names are consistent from file to file (Eligibility, Medical, Drug, and Master Provider Index,) we use the Provider's NPI to match to CMS's National Plan and Provider Enumeration System (NPPES) data file and we update the Provider's Name with the NPPES information.

Every time we update the Master Provider Index, we compare it to the NPPES data file to determine if there is any new or additional information on the file that is not contained on the Master Provider Index. Where we find new information for any ID on the NPPES file the additional information is added to the Master Provider Index.

We add the DEA Number to the NPPES table by NPI Number. We source the DEA Numbers from the Loadstone table (provided by Truven Healthcare Analytics Codes and Methods.) We are permitted to only provide DEA Numbers for Providers appearing in the data on the MiPCT project.

On eligibility, we assign a Master Provider ID for the "Member PCP ID / Attributed Physician ID." On medical claims, we assign a Master Provider ID for the Servicing Provider and the Billing Provider. On drug claims, we assign a Master Provider ID to the Prescribing/Ordering Physician and the Servicing/Rendering Pharmacy.

To ensure clarity for Payer Specific IDs found on drug claims for the Prescribing Physician and the Servicing Pharmacy providers (for Medicaid data, the same Payer Specific ID value was used for both the Prescribing Physician and the Servicing Pharmacy fields, but the values represent 2 different Providers), we add "RX" as a prefix on the Servicing Pharmacy ID. This method will keep the IDs unique and ensure the correct Master Provider ID is assigned to the Servicing Pharmacy.

We create and maintain the table using the methodology noted below:

University of Michigan

**Master Provider Index
Summary of Methodology**

MASTER PROVIDER INDEX/TABLE:

	Field Name	Type	Size	Description/Code/Source	Current or Historic Data
1	Master Provider ID	Text	20	Unique Provider Identifier Generated by Truven Health Analytics	N/A – Assigned and retained
2	Provider First Name	Text	50	The provider’s first name.	History – up to 20 values
3	Provider Middle Name	Text	50	The provider’s middle name	History – up to 20 values
4	Provider Last Name	Text	100	The provider’s last name	History – up to 20 values
5	Provider NPI	Text	20	The provider’s national provider ID	History – up to 20 values
6	Provider TIN	Text	10	Federal taxpayer’s identification number	History – up to 20 values
7	Provider DEA	Text	20	Provider’s DEA Number	History – up to 20 values
8	Provider Taxonomy	Text	10	Taxonomy code	History – up to 20 values
9	BCBSM Provider Number	Text	20	BCBSM’s assigned service provider number	History – up to 20 values
10	BCN Provider Number	Text	20	BCN’s assigned service provider number	History – up to 20 values
11	Medicaid Provider Number	Text	20	Medicaid’s assigned service provider number	History – up to 20 values
12	Medicare Provider Number	Text	20	Medicare’s assigned service provider number	History – up to 20 values

University of Michigan

**Master Provider Index
Summary of Methodology**

ASSIGNING THE MASTER PROVIDER ID

Eligibility

The initial Master Provider Id Table is created through the various matching attempts below, using an initial data set provided for the project. For each new provider identified, a Master Provider Id record is created, which is then compared against subsequent data sets.

Below is the matching attempt used to assign the Master Provider ID to the eligibility data for attributed Physician ID. The eligibility data contains limited Provider information. Only the Member PCP ID / Attributed Physician ID (Provider NPI) is on the eligibility file. Due to eligibility limitations, we have only one matching attempt available on this data.

Attempt	Source Field	Master Provider Index Field	Notes
First	Member PCP ID / Attributed Physician ID	Provider NPI	

Medical – Servicing Provider

Below are the multiple matching attempts we use to assign the Master Provider ID to the Medical data for Servicing Provider. The matching attempts are listed in hierarchy order from highest to lowest (this is the “weight of accuracy” order.)

Attempt	Source Field	Master Patient Index Field	Notes
First	Payer Specific Provider Number	Payer Specific Provider Number	This will be the BCBSM Provider Number, BCN Provider Number, Medicaid Provider Number or Medicare Provider Number depending on the source data

University of Michigan

**Master Provider Index
Summary of Methodology**

Attempt	Source Field	Master Patient Index Field	Notes
Second	Provider NPI	Provider NPI	
Second	Provider First Name	Provider First Name	
Second	Provider Last Name	Provider Last Name	
Third	Provider NPI	Provider NPI	
Third	Provider First Name short	Provider First Name short	First 5 char
Third	Provider Last Name short	Provider Last Name short	First 5 char
Fourth	Provider NPI	Provider NPI	
Fourth	Provider First Name Abbr	Provider First Name Abbr	First 2 char
Fourth	Provider Last Name short	Provider Last Name short	First 5 char
Fifth	Provider TIN	Provider TIN	
Fifth	Provider First Name	Provider First Name	
Fifth	Provider Last Name	Provider Last Name	
Sixth	Provider TIN	Provider TIN	
Sixth	Provider First Name short	Provider First Name short	First 5 char
Sixth	Provider Last Name short	Provider Last Name short	First 5 char
Seventh	Provider TIN	Provider TIN	
Seventh	Provider First Name Abbr	Provider First Name Abbr	First 2 char
Seventh	Provider Last Name short	Provider Last Name short	First 5 char
Eighth	Provider NPI	Provider NPI	

University of Michigan

**Master Provider Index
Summary of Methodology**

Medical – Billing Provider

Below are the multiple matching attempts used to assign the Master Provider ID to the Medical data for Billing Provider. The matching attempts are listed in hierarchy order from highest to lowest (this is the “weight of accuracy” order).

Attempt	Source Field	Master Patient Index Field	Notes
First	Payer Specific Provider Number	Payer Specific Provider Number	
Second	Provider NPI	Provider NPI	
Second	Provider Last Name	Provider Last Name	
Third	Provider NPI	Provider NPI	
Third	Provider Last Name short	Provider Last Name short	First 5 char
Fourth	Provider NPI	Provider NPI	

Drug – Prescribing Physician

Below is the list of multiple matching attempts used to assign the Master Provider ID to the Drug data for Prescribing Physician. The matching attempts are listed in hierarchy order from highest to lowest (this is the “weight of accuracy” order).

Attempt	Source Field	Master Patient Index Field	Notes
First	Provider NPI	Provider NPI	
First	Provider First Name	Provider First Name	
First	Provider Last Name	Provider Last Name	
Second	Provider NPI	Provider NPI	
Second	Provider First Name short	Provider First Name short	First 5 char
Second	Provider Last Name short	Provider Last Name short	First 5 char

University of Michigan

**Master Provider Index
Summary of Methodology**

Attempt	Source Field	Master Patient Index Field	Notes
Third	Provider NPI	Provider NPI	
Third	Provider First Name Abbr	Provider First Name Abbr	First 2 char
Third	Provider Last Name short	Provider Last Name short	First 5 char
Fourth	Provider DEA	Provider DEA	
Fourth	Provider First Name	Provider First Name	
Fourth	Provider Last Name	Provider Last Name	
Fifth	Provider DEA	Provider DEA	
Fifth	Provider First Name short	Provider First Name short	First 5 char
Fifth	Provider Last Name short	Provider Last Name short	First 5 char
Sixth	Provider DEA	Provider DEA	
Sixth	Provider First Name Abbr	Provider First Name Abbr	First 2 char
Sixth	Provider Last Name short	Provider Last Name short	First 5 char
Seventh	Provider NPI	Provider NPI	
Eighth	Provider DEA	Provider DEA	

University of Michigan

**Master Provider Index
Summary of Methodology**

Drug – Servicing Pharmacy

Below is the list of multiple matching attempts used to assign the Master Provider ID to the Drug data for Servicing Pharmacy. The matching attempts are listed in hierarchy order from highest to lowest (this is the “weight of accuracy” order).

Attempt	Source Field	Master Patient Index Field	Notes
First	Payer Specific Provider Number	Payer Specific Provider Number	
Second	Provider NPI	Provider NPI	
Second	Provider Last Name	Provider Last Name	
Third	Provider NPI	Provider NPI	
Third	Provider Last Name short	Provider Last Name short	First 5 char
Fourth	Provider NPI	Provider NPI	
Fifth	Provider TIN	Provider TIN	
Fifth	Provider Last Name	Provider Last Name	
Sixth	Provider TIN	Provider TIN	
Sixth	Provider Last Name short	Provider Last Name short	First 5 char

University of Michigan

Master Provider Index
Summary of Methodology

IDENTIFYING NEW PROVIDERS AND ADDING THEM TO THE MASTER PROVIDER INDEX

Eligibility

Once all attempts to assign a Master Provider ID to a provider found in **eligibility** have been exhausted, the provider on the eligibility record is identified as a new provider to add to the Master Provider Index. For all of the rows of data identified as new providers to add to the Master Provider Index, some of the rows could be for the same provider. Those multiple rows for the same provider could contain different values (change of Last Name, for example). Below is the process used to identify the same provider from multiple rows of data with potential changes of data within those rows:

Attempt	Source Field	Notes
First	Provider NPI	All providers with the same NPI are treated as the same provider and assigned the same Master Provider ID.

Medical Servicing/Billing

Once all attempts to assign a Master Provider ID for a servicing/billing provider have been exhausted, the provider on the medical record is identified as a new provider to add to the Master Provider Index. For all rows of data identified as new providers to add to the Master Provider Index, some of the rows may be for the same provider. Those multiple rows for the same provider could contain different values (change of Last Name, change of group practice affiliation, new TIN, etc...). Below is the process used to identify the same provider in multiple rows of data with potential changes of data within those rows:

Attempt	Source Field	Notes
First	Provider NPI	All providers with the same NPI are treated as the same provider and assigned the same Master Provider ID.
Second	Payer Specific Provider Number	With the rollup attempt listed above, there is a possibility that records with the same Payer Specific Provider Number could be rolled up to two different Master Provider IDs (this would occur if there were multiple NPI values associated to the same Payer Specific Provider Number). This attempt is run in order

University of Michigan

**Master Provider Index
Summary of Methodology**

Attempt	Source Field	Notes
		<p>to keep all records with the same Payer Specific Provider Number together.</p> <p>All providers with the same Payer Specific Provider Number are grouped together and the Master Provider ID value that occurs most often (mode) is assigned to all records with the same Payer Specific Provider Number.</p>

University of Michigan

Master Provider Index
Summary of Methodology

Drug Prescribing

Once all attempts to assign a Master Provider ID for a Prescribing provider have been exhausted, the provider on the drug record is identified as a new provider to add to the Master Provider Index. For all rows of data identified as new providers to add to the Master Provider Index, some of the rows may be for the same provider. Those multiple rows for the same provider could contain different values (change of Last Name, change of group practice affiliation, new TIN, etc...). Below is the process used to identify the same provider from multiple rows of data with potential changes of data within those rows:

Attempt	Source Field	Notes
First	Provider DEA	All providers with the same DEA Numbers are treated as the same provider and assigned the same Master Provider ID.
Second	Provider NPI	<p>With the rollup attempt listed above, there is a possibility that records with the same NPI could be rolled up to two different Master Provider IDs (this would occur if there were multiple DEA Number values associated to the same NPI Number). This attempt is run in order to keep all records with the same NPI together.</p> <p>All providers with the same NPI Number are grouped together and the Master Provider ID value that occurs most often (mode) is assigned to all records with the same NPI.</p>

University of Michigan

Master Provider Index
Summary of Methodology

Drug Rendering/Servicing Pharmacy

Once all attempts to assign a Master Provider ID to a Rendering/Servicing provider have been exhausted, that provider is identified as a new provider to add to the Master Provider Index. For all rows of data identified as new providers to add to the Master Provider Index, some of the rows may be for the same provider. Those multiple rows for the same provider could contain different values (change of Last Name, change of group practice affiliation, new TIN, etc...). Below is the process used to identify the same provider from multiple rows of data with potential changes of data within those rows:

Attempt	Source Field	Notes
First	Provider NPI	All providers with the same NPI are treated as the same provider and assigned the same Master Provider ID.
Second	Payer Specific Provider Number	<p>With the rollup attempt listed above, there is a possibility that records with the same Payer Specific Provider Number could be rolled up to two different Master Provider IDs (this would occur if there were multiple NPI values associated to the same Payer Specific Provider Number). This attempt is run in order to keep all records with the same Payer Specific Provider Number together.</p> <p>All providers with the same Payer Specific Provider Number are grouped together and the Master Provider ID value that occurs most often (mode) is assigned to all records with the same Payer Specific Provider Number.</p>