

NEMESIS 2020

Version 3 Implementation Meeting

**BOOT CAMP
RESOURCE GUIDE**

August 25, 2020





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NEMSIS v3 STATE DATA SET BUILDER

The State Data Set Builder is a UI tool to help State Data Managers build their State Data Set files. EMS agencies and their software vendors must have specific information about their state’s EMS practice requirements to accurately configure their patient care reporting software to meet state requirements. The NEMSIS Technical Assistance Center (NEMSIS TAC) has created a StateDataSet XML Schema (XSD) to provide a consistent format in which to share NEMSIS V3 state-specific information. State Managers are highly encouraged to compile the information necessary to complete the StateDataSet. Although software vendors are not required to support StateDataSet in their version 3.3.4 or v3.4.0 software, this feature will be REQUIRED in the compliance process for version 3.5.0.

Regular updates to SDS are necessary to reflect the evolving changes in the EMS community and industry, particularly in these precarious times and for the full benefit of health information exchange.

The advantages of using the StateDataSet include:

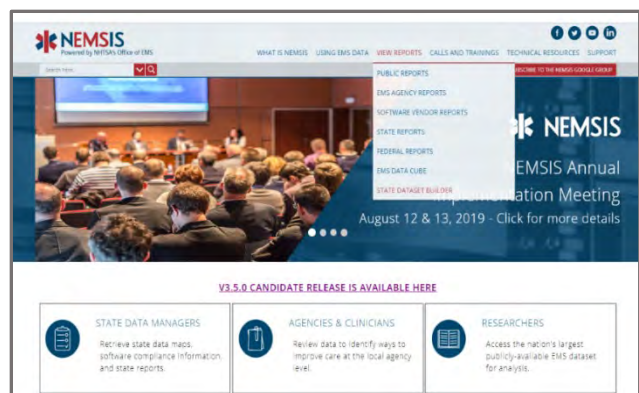
- Files can be validated using the NEMSIS StateDataSet XSD.
- Files can be quickly processed by different software systems.
- Files can be easily viewed online in human-readable form.
- The structure is based on the core NEMSIS v3 XSDs.

The StateDataSet has eight sections to ensure standardization of the following state or territory information:

1. Custom Data Elements
2. State Required Elements
3. State Certification/Licensure Levels
4. Procedures Permitted by the State
5. Medications Permitted by the State
6. Protocols Permitted by the State
7. EMS Agencies
8. Facilities (hospitals, etc.)

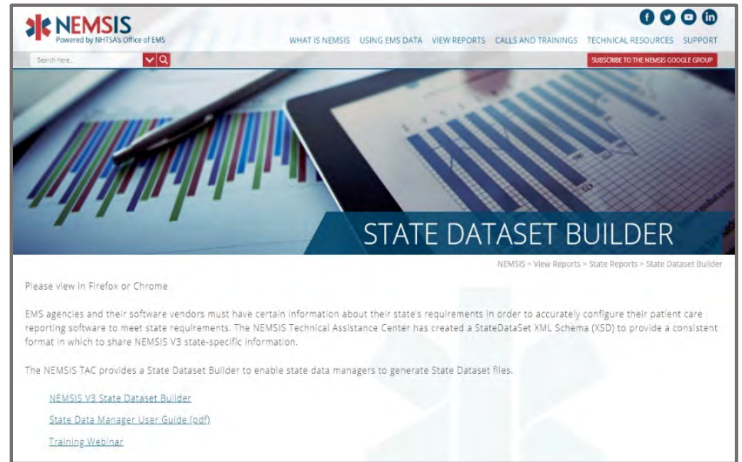
Locating the State DataSet Builder

From any page on the NEMSIS website, click on the navigation menu header titled “View Reports,” then select the title “State Dataset Builder.”



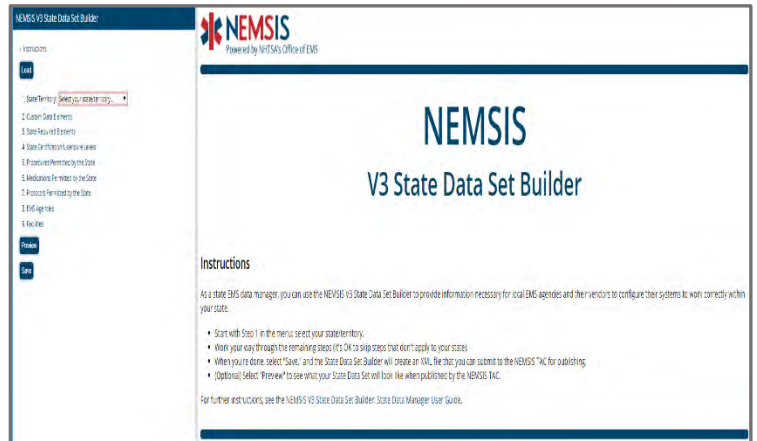
Options on the State Dataset Builder page:

1. A link to access the NEMESIS v3 Dataset Builder
2. A link to the State Data Manager User Guide (pdf)
3. Training Webinar (video)

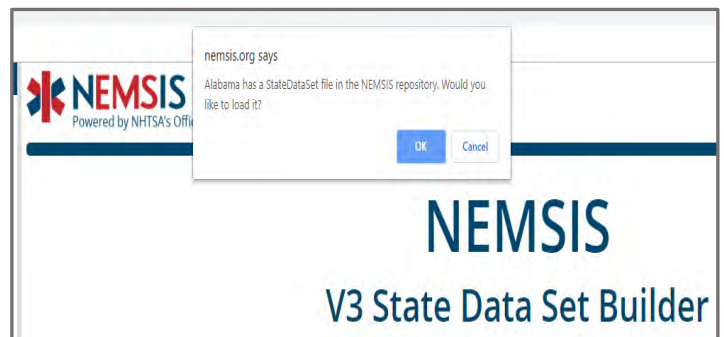
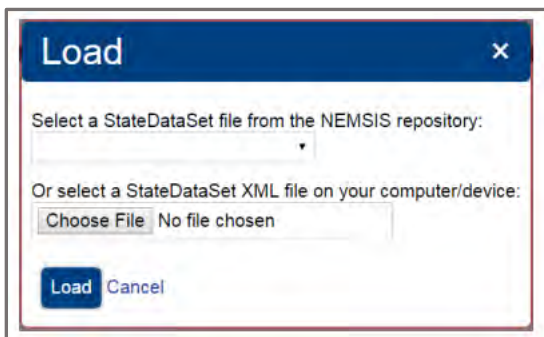


State/Territory Information

Select your state in the drop-down list.

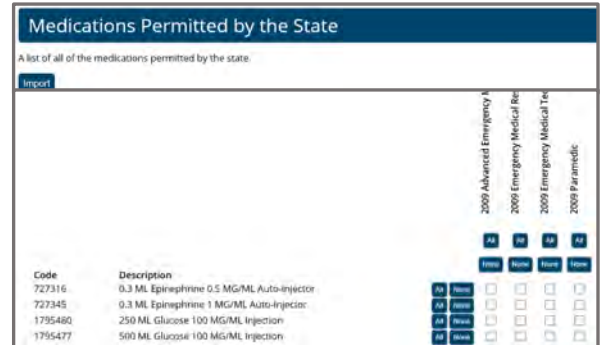


Verify if you want to load a file from another state or your state information from the NEMESIS Repository.



Enter your Medications Permitted by the State

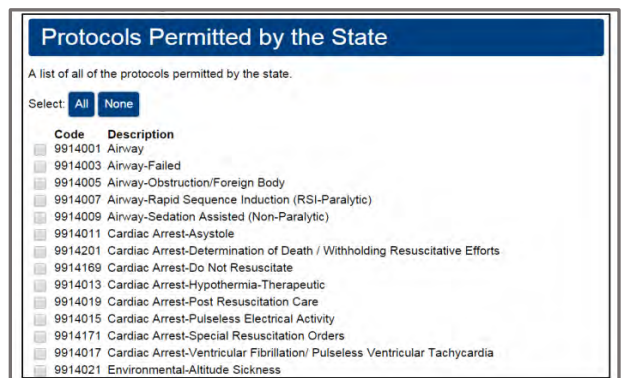
This information can help create better controls that prohibit EMS personnel from administering medications outside their certification/licensure levels.



Code	Description				
727316	0.3 ML Epinephrine 0.5 MG/ML Auto-Injector				
727345	0.3 ML Epinephrine 1 MG/ML Auto-Injector				
1795480	250 ML Glucose 100 MG/ML Injection				
1795477	500 ML Glucose 100 MG/ML Injection				

Enter your Protocols Permitted by the State

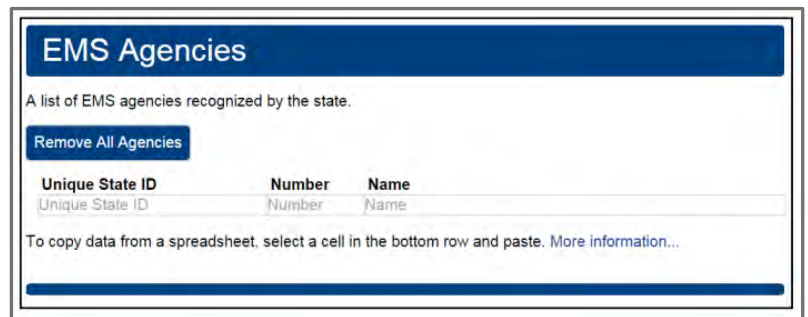
Some states do not regulate protocols but may promote the use of certain protocols, and they may be having different names across the states. This information aims to help establish consistency across the U.S. in the way protocols are defined.



Code	Description
<input type="checkbox"/>	9914001 Airway
<input type="checkbox"/>	9914003 Airway-Failed
<input type="checkbox"/>	9914005 Airway-Obstruction/Foreign Body
<input type="checkbox"/>	9914007 Airway-Rapid Sequence Induction (RSI-Paralytic)
<input type="checkbox"/>	9914009 Airway-Sedation Assisted (Non-Paralytic)
<input type="checkbox"/>	9914011 Cardiac Arrest-Asystole
<input type="checkbox"/>	9914201 Cardiac Arrest-Determination of Death / Withholding Resuscitative Efforts
<input type="checkbox"/>	9914169 Cardiac Arrest-Do Not Resuscitate
<input type="checkbox"/>	9914013 Cardiac Arrest-Hypothermia-Therapeutic
<input type="checkbox"/>	9914019 Cardiac Arrest-Post Resuscitation Care
<input type="checkbox"/>	9914015 Cardiac Arrest-Pulseless Electrical Activity
<input type="checkbox"/>	9914171 Cardiac Arrest-Special Resuscitation Orders
<input type="checkbox"/>	9914017 Cardiac Arrest-Ventricular Fibrillation/ Pulseless Ventricular Tachycardia
<input type="checkbox"/>	9914021 Environmental-Altitude Sickness

Enter your EMS Agencies

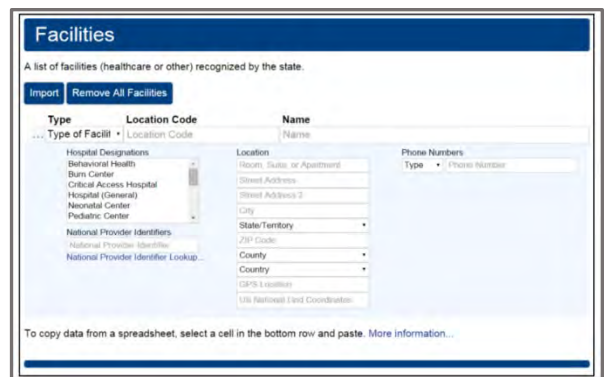
Completion of this information is necessary to auto-populate the demographic information needed in the patient care records.



Unique State ID	Number	Name
Unique State ID	Number	Name

Enter your Facilities

This section allows you to provide a specific list of facilities that you require or would encourage agencies to use. It drives the correctness of the information that is recorded in the patient care reports.



EMS SERVICE AREA BUILDER

The purpose of the NEMESIS V3 Agency Service Area Builder is to enable EMS agency administrators to correctly document the following data elements in their NEMESIS V3 agency demographic data:

- dAgency.05 - EMS Agency Service Area States
- dAgency.06 - EMS Agency Service Area County(ies)
- dAgency.07 - EMS Agency Census Tracts
- dAgency.08 - EMS Agency Service Area ZIP Codes

The purpose of the Builder *is not* to identify the precise boundary of an EMS agency service area. Instead, its purpose is to identify all census tracts and ZIP codes (and, by extension, counties, and states) that intersect or overlap, an agency's service area. Thus, even if an agency serves only a portion of a particular census tract, the Builder identifies that census tract as part of the service area.

Once you have built a service area using the Builder, you can enter the service area information into your NEMESIS-compliant ePCR software or download the service area information for future reference.

Accessing the State Data Set Builder

The NEMESIS V3 Agency Service Area Builder is available online at www.nemesis.org/media/serviceareabuilder. It is web-based. It works with all currently supported versions of web browsers. (For Internet Explorer, version 10 or higher is required.)

If you choose to share your location, the Builder will initially center the map on your location. You can pan and zoom the map as needed using the usual Google Maps features.

Building a Service Area

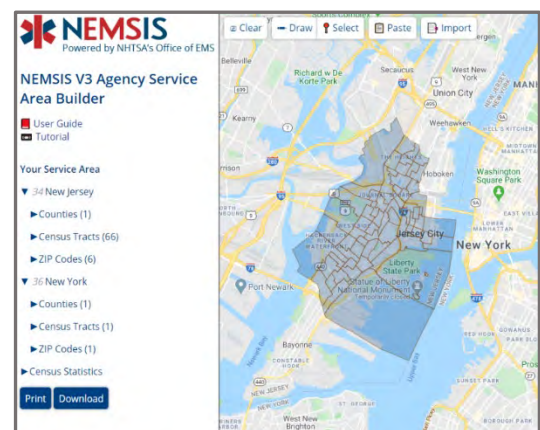
The toolbar at the top of the map provides the following features to help you build your service area:



As you use the tools to build your service area, the service area will be highlighted on the map, and information regarding the identified service area will be listed on the left side of the screen.

Clear

If you built a service area and wish to start over, the **Clear** button will completely clear all information about your service area in the Builder, resetting the Builder to a clean slate.



Draw

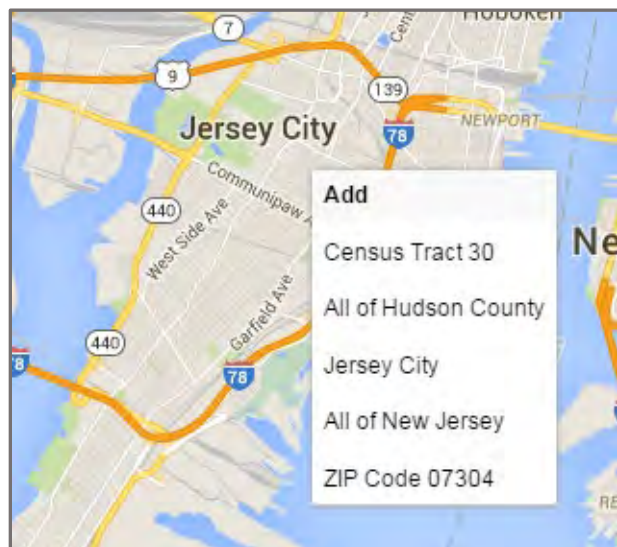
Toggle the **Draw** button to enable the drawing tool. Then click/tap on the map to set each point of the outline.

Click/tap again on either the first point or the last point to complete the outline. When you complete the outline, the Builder will identify census tracts, ZIP codes, counties, and states that overlap the shape you drew. It will highlight the census tracts on the map. Then it will remove the specific shape you outlined.



Select

Toggle the **Select** button to enable the selection tool. Then click/tap on the map to select areas to add to your service area. When you click/tap, an “Add” menu will appear:



Select an item on the menu, and the Builder will identify all census tracts, ZIP codes, counties, and states that overlap the item you chose. It will highlight the census tracts on the map.

To remove areas from your service area, click/tap on an area already highlighted as part of the service area. A “Remove” menu will appear. Select an item on the menu, and the Builder will remove the census tracts, ZIP codes, counties, and states that overlap the item you chose.

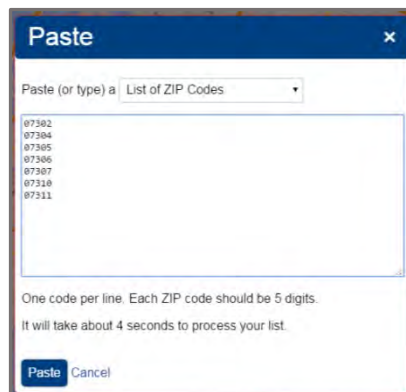


Paste

Select **Paste** to open the Paste dialog. Using the Paste dialog, you can manually add areas to your service area by typing or by copying and pasting from a list that you already have. First, select the type of list you will be providing:



Then, paste or type your list of codes:

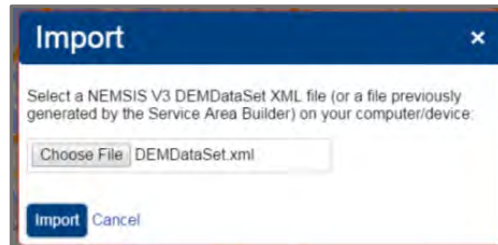


Select **Paste** at the bottom of the Paste dialog, and the Builder will identify all census tracts, ZIP codes, counties, and states that overlap the codes on your list. It will highlight the census tracts on the map.

If you choose to paste a “GIS Shape”, the GIS shape should be a single polygon in the [well-known text \(WKT\)](#) format.

Import

Select the **Import** button to import service area information from a NEMSIS V3 DEMDataSet XML file (or a file previously generated by the Service Area Builder). Select the file on your computer/device:



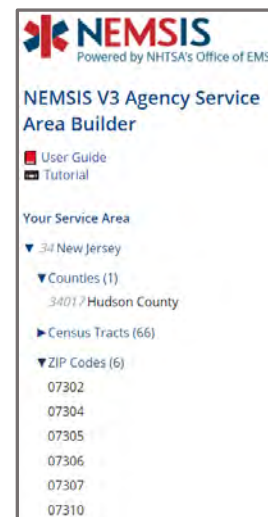
Select **Import**, and the Builder will import the information in the file. It will highlight the census tracts on the map.

If your DEMDataSet XML file contains more than one agency, the Builder will only import the first agency's service area information.

If the imported file contains census tract information, the Builder will ignore the ZIP code information. Instead, it will add all Zip codes that it knows to overlap with the census tracts listed in the imported file. If the imported file does not contain census tract information, it will use the ZIP code information to identify census tracts that overlap with the ZIP codes listed in the file. If the imported file only contains state and county information, nothing will be imported.

Viewing the Code List for Your Service Area

While you are building your service area on the map, the Builder maintains a list of all areas that are included in your service area. The list appears on the left side of the screen once you have added at least one area to your service area. The list is organized by state. Within each state, the Builder displays all counties, census tracts, and ZIP codes that are part of your service area. Select ► or ▼ to show or hide a list.



Viewing Census Statistics for Your Service Area

At the bottom of the service area list on the left side of the screen, the Builder includes a section titled “Census Statistics.” Select ► or ▼ to show or hide a list of statistics from the US Census Bureau about your service area. The statistics are updated as you modify your service area. The statistics come from the Decennial Census and the American Community Survey. Hover over each statistic for information about its definition and data source.

▼ Census Statistics	
Area	21 sq mi
Population	247,597
Population Density	16,736.7 / sq mi
Under Age 18	21%
Age 65+	9%
Poverty	19%
Uninsured	20%
Disabled	10%

Remember that the purpose of the Builder *is not* to identify the precise boundary of an EMS agency service area. Instead, its purpose is to identify all census tracts that intersect or overlap, an agency’s service area. The Census statistics reflect the entirety of all census tracts identified in the agency’s service area, even though the agency may serve only portions of some census tracts. As a result, the area and population reported by the Builder may be larger than the actual area and population served by the agency.

You may use the area and population information to record dAgency.16 Total Primary Service Area Size and dAgency.17 Total Service Area Population in your agency demographic data.

Printing Service Area Information

Select the **Print** button to print your service area information. The printout will include the lists of census tracts, ZIP codes, counties, and states in your service area, as well as a map highlighting your service area.

Downloading the Service Area Code List

Select the **Download** button to download your agency service area information. The download is an XML file containing the NEMESIS V3 dAgency.AgencyServiceGroup structure, as found in NEMESIS DEMDataset XML files. The XML data is not a complete NEMESIS agency demographic data file. It only contains service area information. To import the information into a NEMESIS V3 software product, you will need to copy the XML data into an existing NEMESIS V3 agency demographic data file and then import that file.



QUESTIONS

When I access the NEMESIS V3 Agency Service Area Builder, I see an error message saying that something went wrong. What should I do?

You may see a message saying, "Something went wrong. Try reloading. If that does not work, please contact the NEMESIS TAC." Generally, the message means that the Builder was unable to access all the resources that it needs in order to work correctly. If the problem persists after you try the [Reload](#) button, please contact the NEMESIS TAC, and the staff will help you troubleshoot the problem.

Why does the NEMESIS V3 Agency Service Area Builder highlight a larger area than the outline I drew for my service area?

The purpose of the Builder *is not* to identify the precise boundary of an EMS agency service area. Instead, its purpose is to identify all census tracts and ZIP codes (and, by extension, counties, and states) that intersect or overlap, an agency's service area. Thus, even if an agency serves only a portion of a particular census tract, the Builder identifies that census tract as part of the service area.

Can I include areas that are outside the U.S. in my service area?

No. The NEMESIS V3 standard only supports areas within the U.S. for defining an agency service area.

ZIP Codes are not purely geographical. How does the NEMESIS V3 Agency Service Area Builder figure out ZIP code coverage?

The Builder uses [ZIP Code Tabulation Area \(ZCTA\)](#) data from the U.S. Census Bureau, which are generalized geographical representations of the United States Postal Service (USPS) ZIP Code areas.

I am a software developer. Can I build my app that accesses the same data used by the NEMESIS V3 Agency Service Area Builder?

Yes. The Builder is supported by a publicly available REST web service maintained by the NEMESIS TAC and publicly available REST web services maintained by the US Census Bureau. Contact the NEMESIS TAC for more information.

Conclusions

The NEMESIS V3 Agency Service Area Builder is provided by the NEMESIS TAC to enable EMS agency administrators to easily identify the census tracts, ZIP codes, counties, and states within their service area. By reporting accurate service area information in NEMESIS agency demographics data, EMS agencies make it possible for the NEMESIS TAC to provide richer reporting capabilities.

STATE DATA CUBE

Differences Between Public and State EMS Data Cube

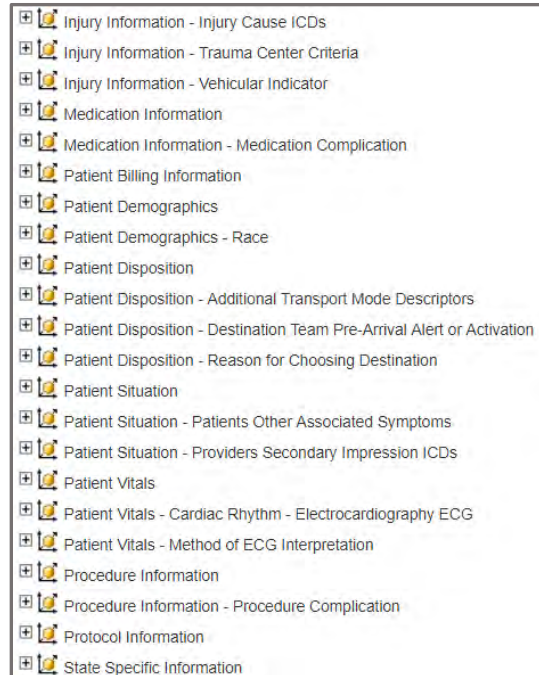
A. The State EMS Data Cube offers additional elements and values:

- a. Locations
- b. Agency Specific
- c. Destination Zip Codes



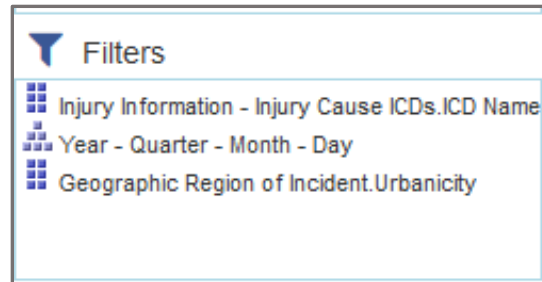
Data Request: Defining the Query

A. Identify applicable elements that may add insight to your query.



B. Clarify the Data

- a. Define the parameters of the query.
- b. Identify the elements and values that contribute.
- c. Remove elements and values that distract or confuse by filtering out extraneous information.
- d. Create a list of codes for large datasets:
 - i. ICD-10
 - ii. RxNORM
 - iii. SNOMED




Injury Information - Injury Cause ICDs.ICD 10	Injury Information - Injury Cause ICDs.ICD Name	Count of Events
V49.3	All	68,224
	Car accident NOS, nontraffic	68,224
V49.60	All	621
	Car collision NOS (traffic)	621
V49.9	All	1,772,772
	Car accident NOS	1,772,772























C. Exporting the Data

- a. The data you see on the screen in the results are what will be exported.

Support Tools

- A. EMS Data Cube Primer video series on NEMESIS YouTube channel
 - a. Short tutorials for EMS Data Cube navigation
 - b. <https://nemsis.org/view-reports/public-reports/ems-data-cube/>
- B. Suggested Lists
 - a. v3 Suggested Lists
 - b. <https://nemsis.org/technical-resources/version-3/version-3-resources/>
- C. Data Dictionary – Public and State
 - a. NEMESIS v3 Data Dictionary
 - b. <https://nemsis.org/technical-resources/version-3/version-3-data-dictionaries/>
- D. v3 Data Dictionary Supplemental Guide to the EMS Data Cube
 - a. Quick reference manual for the Public Datasets and the State Dataset
 - b. <https://nemsis.org/wp-content/uploads/2019/10/v3-Data-Dictionary-Supplemental-Guide.pdf>
- E. Extended Data Definitions
 - a. Expanded definitions for many of the NEMESIS data elements
 - b. https://nemsis.org/wp-content/uploads/2018/09/Extended-Data-Definitions_v3_Final.pdf

EMS DATA CUBE ICON GLOSSARY

ICON	NAME	DESCRIPTION
	New Report	Resets the application to the initial state so that a new query can be created
	Connect to Cube	Opens the Connect to Cube Dialog Box
	Save Report	Saves a new or existing report
	Open Report	Open a saved report
	Field List	Shows the list dimensions, levels, and measures for the cube selected in the connection panel
	Chart	Show a number of charts for the report. The chart will be interactive if the drill down or expand mode is selected
	MDX	Shows the underlying MDX statement for the selected query. One can “build”, manually modify and then “execute” a statement. The MDX statement will not be saved if a query filter is selected.
	Switch Axis	Move dimensions on rows to columns and those on columns to rows
	Expand/ Drill Down/ Expand All	Select a navigational mode. Expand mode is enabled by default
	Filter Rows	Opens the filter rows dialog box allowing you to filter the data displayed in the row area of the chart—such as removing the “NOT” values from the table
	Show Only Top	Show Top number, Top Percent, Sum of cells limit, Bottom number, Bottom Percent, Sum of cells limit
	Add Percent of Total Measures	Add Percent of Total, Percent of Filtered Result, Percent of Dimension, Percent of Parent
	Sparkline	Line chart that depicts the general trend of data without axes or coordinates
	Add Calculated Field	Add a calculated field to measures
	Add Named Set	Add, change, or delete named set for report
	Theme	Change the colors of the table in the cube
	Conditional Formatting	Apply conditional formatting to cells that fall within a given value range
	Options	Set report options such as show/hide empty items, rows, and columns summary
	Zoom	Allows scaling of the results table before it is printed or to facilitate on-screen readability
	Export	Export the result table including Excel, PDF, or HTML
	Print Data	Print what is visible in the Results Area
	Break results into pages	If a query returns too many rows, the query can be broken down into pages

*Icon Names in **BOLD** are the most commonly used functions.

NAVIGATING THE CUBE

Once you have accessed the EMS Data Cube and are ready to process your query, this is main workbook area:

Results are displayed in this area.

NEMESIS V3 Restricted - 2017 through Present

Search

Measures

- Summary Measures
 - Count of Events
- Cardiac Arrest Elements
- Cardiac Arrest Elements - Arrest Witnessed By
- Cardiac Arrest Elements - CPR Type
- Cardiac Arrest Elements - Destination Cardiac Rhythm
- Cardiac Arrest Elements - Resuscitation Attempted
- Dates-Times - Unit Notified by Dispatch Date Times
- EMS Response
- EMS Response - Additional Response Mode Descriptors
 - Mode Descriptor
- EMS Response - Delay Categories
 - Delay Hierarchies

Measures are the numerical count of EMS events in the database selected.

Elements describe aspects of the data.

Variables that have categories.

Hierarchies are variables with a parent-child relationship.

Year - Week - Day	Count of Events
All	337,060
2017	135,629
2018	135,110
2019	66,321

Rows: Elements are automatically placed here when selected. You can also drag an element to this area.

Measures: Automatically placed here when selected.

Filters: Refine your query by filtering the values of an element. See the filter tool bar in the Results Area.

Columns: Dragging an element here places it on the horizontal axis in the results area.

TABLEAU

Assessing Data Quality using Tableau

A. How to access your Tableau reports

The best way to access your Tableau dashboard reports is to go directly to <https://nemsis.org/view-reports/state-reports/version-3-state-dashboards/>



You will also be able to find important documentation and training videos on each dashboard.

Version 3 State Data Submissions

- [DASHBOARD - V3 State Data Submission Dashboard](#)
- [USER MANUAL - V3 State Data Submission User Manual](#)
- [TRAINING VIDEO - V3 State Data Submission Training Video](#)

3 Ways to Look at EMS Agency Reporting

A. The three critical dashboards

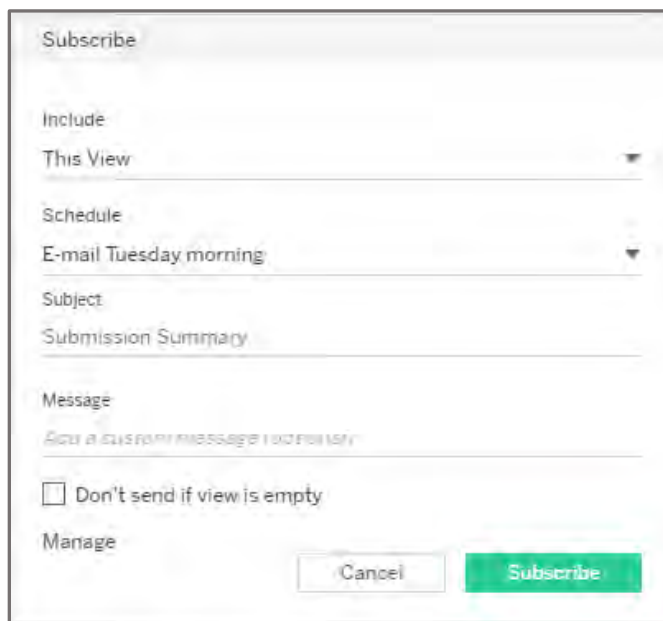
- Data Submission
<https://nemsis.org/view-reports/state-reports/version-3-state-dashboards/v3-state-data-submission-dashboard/>
- Agency Submission Tracking
<https://nemsis.org/view-reports/state-reports/version-3-state-dashboards/v3-state-agency-submissions-tracking/>
- Data Quality
<https://nemsis.org/view-reports/state-reports/version-3-state-dashboards/v3-state-data-quality-dashboard/>

Your Weekly Email Summary

- A. How to subscribe to the email summary
- a. To subscribe to a dashboard, click on the subscribe button in the toolbar at the bottom of the dashboard.



- b. Clicking on the button brings up a form that allows you to customize your subscription.



Complete the form and click the Subscribe button to complete your subscription

Data Submission Dashboard

- A. Where to find additional information on validation rules and messages
- The complete set of National validation rules are located at <https://nemsis.org/technical-resources/version-3/version-3-schematron/>

Admission Tracking Dashboard

- A. Understanding the difference between Submission Date and Unit Notified by Dispatch Date
- a. The Unit Notified by Dispatch Date is taken directly from the value of eTimes.02 in the ePCR record. https://nemsis.org/media/nemsis_v3/release-3.4.0/DataDictionary/PDFHTML/DEMEMS/sections/elements/eTimes.02.xml
 - b. The Submission Date is the date the ePCR record was submitted to the NEMESIS TAC via web services.



BEST PRACTICES FOR ANSWERING DATA-RELATED QUESTIONS

Facilitating Data Requests

- A. Data Request Form
- B. Available Data Elements
- C. Limitations
- D. FAQ

Examples of State Materials

AZ Data Request Materials	https://www.azdhs.gov/preparedness/emergency-medical-services-trauma-system/index.php#data-quality-assurance-data-request-policies
CO Data Request Form	https://www.colorado.gov/pacific/cdphe/categories/services-and-information/health/emergency-care/ems-and-trauma-data
FL Data Use Agreement	http://www.floridahealth.gov/statistics-and-data/ems-data-systems/ems-data-reports-and-research.html
OR Data Use and Confidentiality Agreement	https://www.oregon.gov/oha/PH/PROVIDERPARTNERRESOURCES/EMSTRAUMASYSTEMS/Pages/OR-EMSIS.aspx

Define Parameters of the Query

- A. Identify the element and values that contribute.
- B. Remove elements and values that distract or confuse by filtering out extraneous information.
- C. Create a list of codes for large datasets:
 - a. ICD-10
 - b. RxNORM
 - c. SNOMED

Existing Resources to Support Data Queries

- A. [Tableau Dashboards](#)
 - a. State-Restricted Reports
 - b. Public Reports
- B. [EMS Data OLAP Cube](#)
 - a. State-Restricted
 - b. Public Cube

Support Tools

- A. [NEMSIS 101 Resource Page](#)
- B. EMS Data Cube Primer video series on [NEMSIS YouTube](#) channel
 - a. [Short tutorials for EMS Data Cube navigation](#)
- C. Data Dictionary
 - a. Public and State
 - b. [NEMSIS v3.4 Data Dictionary](#)
- D. [List of Elements that are Public and Restricted](#)
- E. [Supplemental Guide](#)
- F. [NASEMSO Extended Data Definitions](#)
- G. [Suggested Lists](#)

NEMESIS DATA DICTIONARY

Where do I find the Data Dictionary?

v3.4.0

Go to <https://www.nemesis.org>, in the main menu hover over Technical Resources, then click Data Dictionary/XSD in the left column, the second item from the top.

The v3.4.0 data dictionary is found in the middle of the page. You can choose between the PDF and the Web version.



NEMESIS VERSION 3.4.0.160713CP2

Data Dictionary (v3.4.0):

v3.5.0

Same location. The v3.5.0 data dictionary is found at the top of the page. You can also choose between the PDF and the Web version.

NEMESIS VERSION 3.5.0.191130CP1

Data Dictionary (v3.5.0):

National and Extended Data Dictionaries

Same locations.

Pertinent Negatives and Not Values

Not every EMS activation requires all the same data elements to be recorded. Sometimes an element is not applicable to a call, or the clinician should indicate why he/she did NOT do something. This is where Not Values (NV) and Pertinent Negatives (PN) come into play.

Pertinent Negative and Not Value Example

In eProcedures.03, a procedure may be Denied by Order (PN), or a procedure generally required by protocol was Not Applicable (NV), or the field may have been left blank, and the EMS software auto-populates Not Recorded (NV), and the element itself is left blank.

eProcedures.03			
		State	National
eProcedures.03 - Procedure			
Definition			
The procedure performed on the patient.			
National Element	Yes	Pertinent Negatives (PN)	Yes
State Element	Yes	NOT Values	Yes
Version 2 Element	E19_03	Is Nillable	Yes
Usage	Required	Recurrence	1 : 1
Associated Performance Measure Initiatives			
Airway	Cardiac Arrest	Pediatric	STEMI Stroke Trauma
Attributes			
NOT Values (NV)			
7701001 - <u>Not Applicable</u>	7701003 - <u>Not Recorded</u>		
Pertinent Negatives (PN)			
8801001 - Contraindication Noted	8801003 - <u>Denied By Order</u>	8801019 - Refused	
8801023 - Unable to Complete	8801027 - Order Criteria Not Met		

Pertinent Negatives

Pertinent Negatives are used to document why you did not do something. This occurs in two ways:

- Example: A patient has chest pain, and there is a protocol for chest pain that indicates aspirin should be administered, but the patient has already taken it prior to EMS arrival. Document "Aspirin" for eMedications.03 – Medication Given, with the PN "Medication Already Taken".
- Example: A patient is encountered at the scene but refuses to give their name. The value for ePatient.02 – Last Name is left blank, with the PN "Refused" recorded.

For many elements, PNs only work one way (i.e., with a valid value). Some elements allow both ways (i.e., either with or without a valid value), for example, in v3.5.0 for eSituation.01 – Date/Time of Symptom Onset

- Example: The patient is asked when their symptoms began, and they respond, "yesterday morning". Document the time 5/21/2019 09:00, with the PN "Approximate".
- Example: A patient is encountered, but they are unconscious. The value for symptom onset is left blank, with the PN "Unable to Complete".



Not Values

In the NEMSIS standard, “Required” elements have either a real value or a Not Value.

Type of Not Values

Not Applicable: The data element is not applicable or pertinent.

Not Recorded: The data element is considered applicable but was left blank. The software should auto-populate it with "Not Recorded".

Not Reporting: The data element is not collected by the EMS agency or state. This NOT value does not apply to National elements where Usage is specified as "Required".

Here is an easy example: EMS responds to a call, but there is no patient contact made. For the Required element ePatient.07- Patient’s Home County, the software should auto-populate “Not Applicable” for the Not Value based on the fact that the Disposition indicates no patient was found.

Custom Elements

Custom elements allow you to extend the NEMSIS standard to collect any additional relevant data for your State (or locality). They are built into the NEMSIS standard and compliance testing so that all software will support their implementation. All NEMSIS compliant software will allow you to add any custom elements you wish. States can provide custom elements to agencies via the State Data Set.

Examples of Custom Elements

A Completely New Element

itOutcome.020 (used in NY and NV) “An indication as to whether the patient will need to be followed up by community paramedicine.” Two values choices: Yes or No.

A Modification of an Existing Element

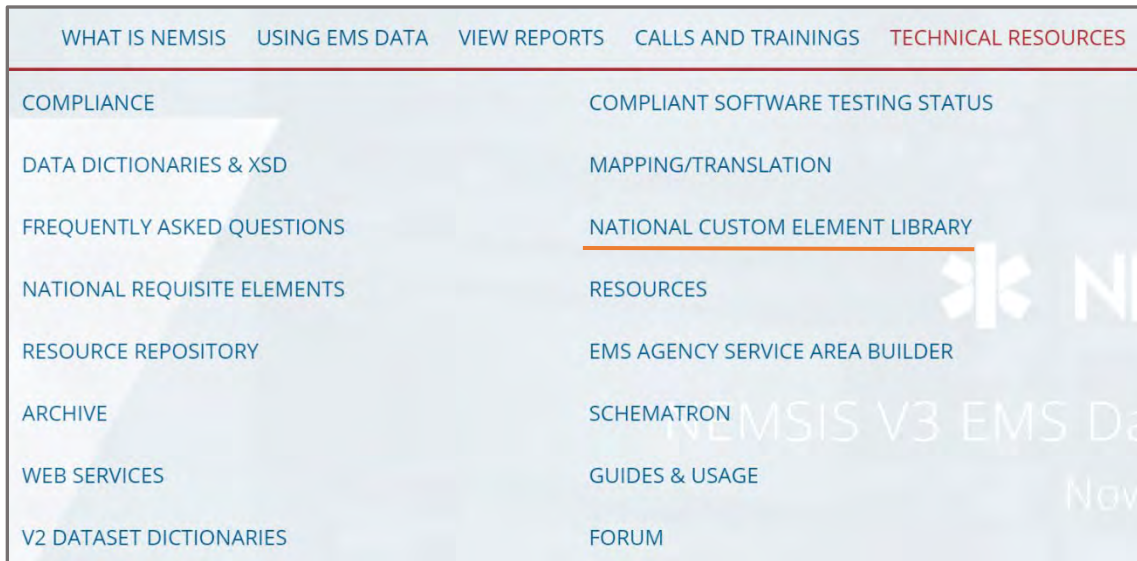
eResponse.05 modification (used in NH) adds four new value choices to the element to extend the element eResponse.05 - Type of Service Requested.

Code	NEMSIS Code	Description
it2205.104	2202005	Interfacility Transfer (PIFT/Paramedic)
it2205.116	2205005	Interfacility Transfer (CCT/AMT)
it2205.117	2205011	Bariatric Transport or Special Equipment Delivery
it2205.118	2205011	MIHC/Community Paramedicine

When extending Mandatory or Required (National) elements, the new values must roll up to standard NEMSIS values for national reporting. This is what the NEMSIS code is in the above table.

Best Practices for Custom Elements

We recommend you avoid creating too many custom elements, as it can become cumbersome for both data entry and software implementation. Before creating new elements, consider checking the Custom Elements Library to see how others are solving similar data collection situations across the country. The Custom Elements Library can be found on the NEMSIS website under Technical Resources, in the right column “[National Custom Elements Library](#)”.



Schematron

What is Schematron?

Schematron is a rule-based language for XML document and business rule validation. Schematron is an international standard defined in ISO/IEC 19757-3(2006). It is another type of validation used for NEMSIS XML files, performed after XML schema validation (XSD validation). Schematron is more dynamic than XML schema validation, allowing for more complex rules and implementation of rules.

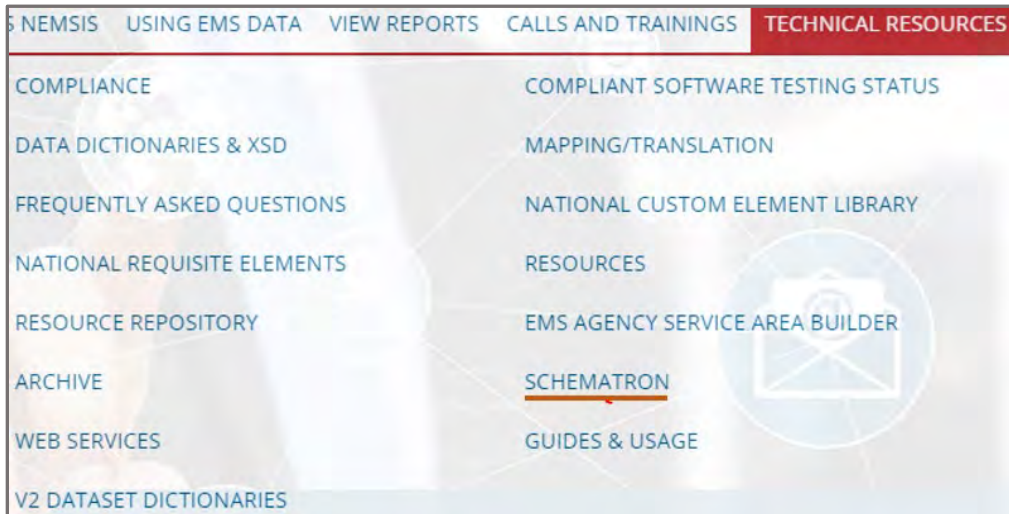
The Power of Schematron

Schematron allows us to have two levels of errors: **[FATAL]** and **[WARNING]**.

FATAL errors are used for problems that are caused by a software bug, e.g., failure to auto-populate a Not Value. **WARNING** errors are used for problems that are caused by user entry, e.g., times entered are out of order. Fatal and warning errors, associated with each element, can be found in the data dictionary.

Part of the power of Schematron lies in its ability to allow data to move along, even if it has WARNINGS. This can be useful, as it prevents records from being “lost” when they contain small problems. Records with WARNINGS can still be sent to the State or National repository, where they can be analyzed. Receiving these records is useful to help study, troubleshoot, and prevent future WARNINGS and

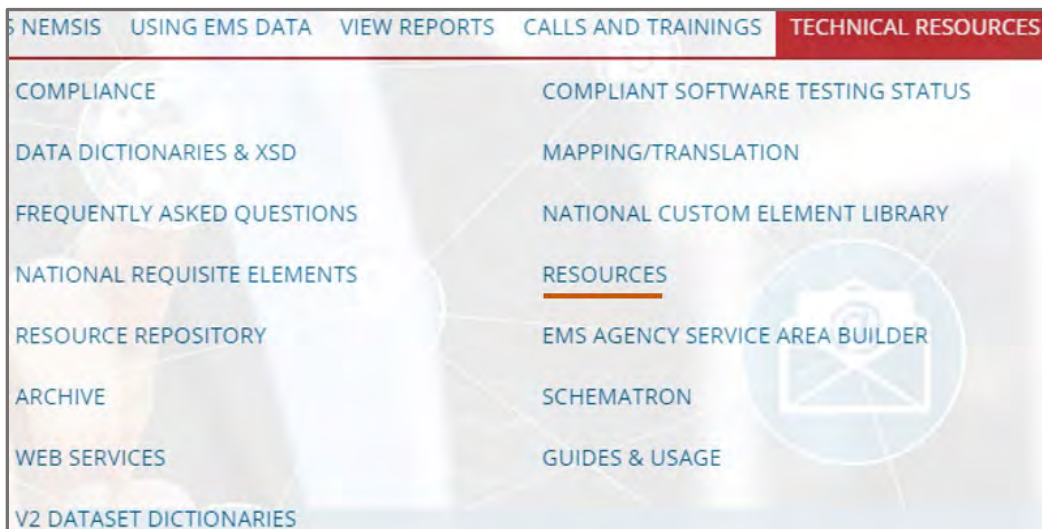
improve data quality. For example, the NEMESIS TAC provides dashboards to State Representatives to showcase what WARNINGS are occurring across different software products, versions, and agencies, among other filters. More information on the more technical aspects of Schematron can be found on the NEMESIS website under Technical Resources.



Defined Lists

What are Defined Lists?

Defined lists are provided for NEMESIS elements that rely on outside coding standards for their values. Their purpose is to minimize the use of redundant codes or diagnostic codes beyond the scope of prehospital care. States should consider using these codes to decrease the complexity and burden of data collection placed on EMS providers. A description of the defined code sets and lists of codes can be found under Resources.

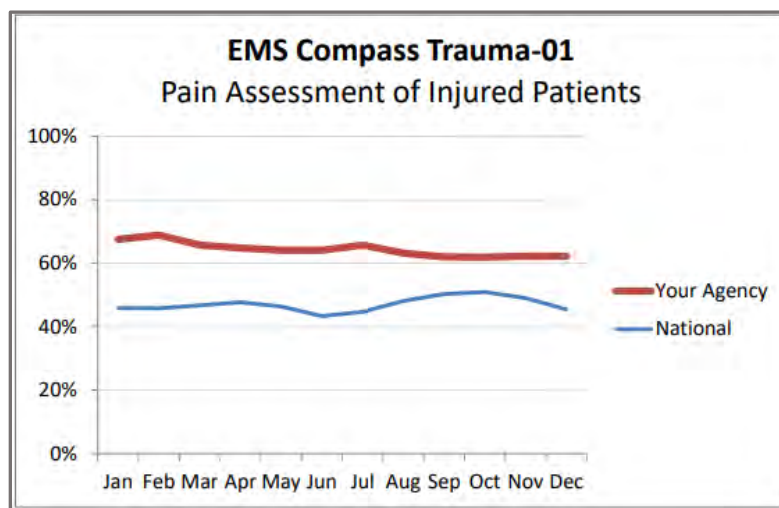


EMS Performance

What is the EMS Performance Measure Service?

It's a way for software vendors to query benchmarking data from the national repository. The available performance measures were defined by the National EMS Quality Alliance (NEMSQA). More information about EMS Compass is available at <https://www.nemsqa.org/>.

Your EMS software can use this national data to benchmark your state (or an agency, in the case of collect data software) against the nation for the defined measures. The graph below is an example of how a software program might report these benchmarks:



The service provided by the NEMSIS TAC allows vendors to pull down benchmarking data segmented and filtered along with many different parameters:

- Geography
- Urbanicity
- Organization Status
- Organizational Type
- Level of Care
- EMS Patient Contact Volume
- Calendar Year
- Calendar Month

More information, including full technical details of the EMS Performance Measures service, and a publicly available Tableau dashboard, can be found on the NEMSIS website.



ADDITIONAL RESOURCES

EMS Data Cube Primer Video Tutorials

[Access the Data Cube](#)

[Build a Simple Report](#)

[Clarify the Data Elements](#)

[Design a Graph](#)

[Exporting Data](#)



Subscribe to the [NEMESIS TAC YouTube Channel](#)

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