

2. About the 2020 Census Prototype P.L.94-171 TIGER/Line Shapefiles

2.1 What is in the 2020 Census Prototype Shapefiles

The 2020 Census Prototype Shapefiles contain both current and 2010 geography for Providence County, Rhode Island. Current geography generally reflects the boundaries of governmental units in effect as of January 1, 2018, and other legal and statistical area boundaries adjusted and/or corrected since the 2010 Census. 2010 boundaries are as of January 1, 2010.

The 2020 Census Prototype Shapefiles contain the geographic extent and boundaries of both legal and statistical entities. A legal entity is a geographic entity whose boundaries, name, origin, and area description result from charters, laws, treaties, or other administrative or governmental action. A statistical entity is any geographic entity or combination of entities identified and defined solely for the tabulation and presentation of data. The Census Bureau delineates statistical entity boundaries, and these entities have no governmental standing.

In addition to geographic boundaries, the 2020 Census Prototype Shapefiles also include geographic feature shapefiles and relationship files. Feature shapefiles represent the point, line and polygon features in the MAF/TIGER database, like roads and rivers. Relationship files contain additional attribute information users can join to the shapefiles. In this release, both the feature shapefiles and relationship files reflect updates made in the database through October 2018.

To see how the geographic entities relate to one another, please see our geographic hierarchy diagrams here:

<https://www.census.gov/geo/reference/hierarchy.html>.

The legal entities included in these shapefiles are:

- American Indian off-reservation trust lands*
- American Indian reservations (both federally and state-recognized)*
- American Indian tribal subdivisions (within legal American Indian areas)*
- Alaska Native Regional Corporations*
- Congressional districts – 113th and 116th Congress
- Consolidated cities*
- Counties and equivalent entities
- Hawaiian home lands*
- Incorporated places
- Minor civil divisions (MCDs, such as towns and townships in the Northeast and Midwest)
- School districts (elementary, secondary, and unified)
- States and equivalent entities
- State legislative districts (upper and lower chambers)
- Subbarrios (Subminor civil divisions)* (Puerto Rico only)
- Urban Growth Areas*
- Voting Districts

The statistical entities included in these shapefiles are:

- Alaska Native village statistical areas*
- American Indian/Alaska Native statistical areas*
- American Indian tribal subdivisions (within Oklahoma tribal statistical areas)*

Block groups
Census blocks
Census county divisions (CCDs)*
Census designated places (CDPs)
Census tracts
Oklahoma tribal statistical areas*
State designated tribal statistical areas*
Tribal designated statistical areas*

The feature shapefiles and relationship files are:

Address range-feature name relationship file
Address ranges
All lines (called Edges)
All roads
Area hydrography
Area landmark
Feature names relationship file
Linear hydrography
Point landmark
Primary and secondary roads
Topological faces (polygons with all geocodes)
Topological faces – area landmark relationship file
Topological faces – area hydrography relationship file

**indicates that the layer is included in prototype as a placeholder for 2020*

Table 1 shows the geographic entities and features available in state-based files for the 2020 Census Prototype Shapefiles.

Table 2 shows the geographic entities and features available in county-based files for the 2020 Census Prototype Shapefiles.

Table 1: 2020 Census Prototype state-based file availability

State-based Shapefile	2010 Version Included?	2020* Version Included?	Comments
American Indian/Alaska Native/Native Hawaiian Area	N	N	Not present in Providence County, RI
American Indian Tribal Subdivision	N	N	Not present in Providence County, RI
Alaska Native Regional Corporation	N	N	Not present in Providence County, RI
State and Equivalent	Y	Y	Covers Providence County, RI only
Block	Y	Y	Covers Providence County, RI only
Block Group	Y	Y	Covers Providence County, RI only
Census Tract	Y	Y	Covers Providence County, RI only
113th Congressional District	Y	N	Covers Providence County, RI only
116th Congressional District	N	Y	Covers Providence County, RI only
Consolidated City	N	N	Not present in Providence County, RI
County and Equivalent	Y	Y	Covers Providence County, RI only
County Subdivision	Y	Y	Covers Providence County, RI only
Place	Y	Y	Covers Providence County, RI only
Elementary School District	Y	Y	Covers Providence County, RI only
Secondary School District	Y	Y	Covers Providence County, RI only
Unified School District	Y	Y	Covers Providence County, RI only
State Legislative District Lower Chamber	Y	Y	Covers Providence County, RI only
State Legislative District Upper Chamber	Y	Y	Covers Providence County, RI only
Subbarrio (Subminor Civil Division)	N	N	Not present in Providence County, RI
Voting District	N	Y	Covers Providence County, RI only
Urban Growth Area	N	N	Not present in Providence County, RI
Primary and Secondary Roads	N	Y	Covers Providence County, RI only
* Note: Due to the timing of the prototype release, the shapefiles labeled 2020 and delivered in the Prototype release actually contain Census 2018 geography.			

Table 1: 2020 Census Prototype county-based file availability

County-based Shapefile	2010 Version Included?	2020* Version Included?	Comments
Block	Y	Y	Covers Providence County, RI only
Block Group	Y	Y	Covers Providence County, RI only
Census Tract	Y	Y	Covers Providence County, RI only
County Subdivision	Y	Y	Covers Providence County, RI only
Voting District	N	Y	Covers Providence County, RI only
All Lines	N	Y	Covers Providence County, RI only
All Roads	N	Y	Covers Providence County, RI only
Area Hydrography	N	Y	Covers Providence County, RI only
Linear Water	N	Y	Covers Providence County, RI only
Area Landmark	N	Y	Covers Providence County, RI only
Point Landmark	N	Y	Covers Providence County, RI only
Topological Faces (Polygons With All Geocodes)	N	Y	Covers Providence County, RI only
County-based Relationship File			
Address Range-Feature Name	N	Y	Covers Providence County, RI only
Address Ranges	N	Y	Covers Providence County, RI only
Feature Names	N	Y	Covers Providence County, RI only
Topological Faces-Area Landmark	N	Y	Covers Providence County, RI only
Topological Faces-Area Hydrography	N	Y	Covers Providence County, RI only
* Note: Due to the timing of the prototype release the shapefiles labeled 2020 and delivered in the Prototype release actually contain Census 2018 geography.			

2.2 Structure and Format

2.2.1 Structure

The Census Bureau provides 2020 Census Prototype Shapefiles and associated relationship files in a compressed format. One zipped file is available for each layer, with a file extension of .zip. Each zipped shapefile consists of the following seven files:

- .shp – the feature geometry
- .shx – the index of the feature geometry
- .cpg – used to identify character encoding
- .dbf – the tabular attribute information
- .prj – the coordinate system information
- .shp.iso.xml - the International Organization for Standardization (ISO 191) metadata
- .shp.ea.iso.xml - the ISO 191 (entity and attribute) metadata

Each zipped relationship file consists of the following four files:

- .cpg – used to identify character encoding
- .dbf – the tabular attribute information
- .dbf.iso.xml - the International Organization for Standardization (ISO 191) metadata
- .dbf.ea.iso.xml - the ISO 191 (entity and attribute) metadata

2.2.2 File Naming Conventions

The name of each file is:

tl_2018_<extent>_<layer>.<ext>

Where:

tl = TIGER/Line

2018 = the version of the files

<extent> = parent geography entity ID code (variable length of two to five characters)

The entity ID code identifies the geographic extent by specific entity for which the file contains data. It is of variable length depending on the type of file:

State-based: 2-character numeric state FIPS code

County-based: 5-character numeric state and county FIPS code

<layer> = layer tag of variable length

The layer tag specifies the type of geography or feature the file contains.

<ext> = the file extension

Examples:

State-based shapefile: Census 2010 State and Equivalent shapefile for Maryland

File Name: tl_2018_24_state10.shp

County-based shapefile: All Lines shapefile for Cayuga County, New York
File Name: tl_2018_36011_edges.shp

2.2.3 Datum (GCS NAD 83)

Each shapefile contains a .prj file that contains the GIS industry standard well-known text (WKT) format to describe the coordinate system/projection/datum information for each shapefile. All Census Bureau generated shapefiles are in Global Coordinate System North American Datum of 1983 (GCS NAD83). Each .prj file contains the following:

```
GEOGCS["GCS_North_American_1983",DATUM["D_North_American_1983",SPHEROID["GRS_1980",6378137,298.257222101]],PRIMEM["Greenwich",0],UNIT["Degree",0.017453292519943295]]
```

2.2.4 Metadata

Metadata are organized data files used to capture the basic descriptive characteristics about the data. For example, metadata will describe the quality, purpose, spatial extent, and history of a particular dataset. The metadata files are compatible with a text editor or web browser. The TIGER/Line Shapefiles metadata provide a detailed description of the TIGER/Line Shapefiles and relationship files. This includes publication date, contact information, and all of the valid attribute values and descriptions. Users should refer to the metadata files for extensive documentation about the contents of the shapefiles and relationship files. The All Lines metadata also contains a Spatial Metadata Identifier (SMID), which identifies the source of the coordinates for each edge and the horizontal spatial accuracy information for a particular line. Please note that the horizontal spatial accuracy refers only to those edges identified as matched to the source with that accuracy. It is not the spatial accuracy of the All Lines shapefile as a whole. For more information regarding the All Lines Shapefile, please refer to Section 3.12, Linear Features.

The Census Bureau provides metadata for each shapefile and relationship file in an Extensible Markup Language (XML) format.

- International Organization for Standardization (ISO 191) Content Standard for Digital Geospatial Metadata
 - .shp.iso.xml and .shp.ea.iso.xml
 - .dbf.iso.xml and .dbf.ea.iso.xml

2.2.5 Spatial Accuracy of Linear Features

In order to maintain a current geographic database from which to extract the TIGER/Line Shapefiles, the Census Bureau uses various internal and external processes to update the MAF/TIGER database. While it has made a reasonable and systematic attempt to gather the most recent information available about the features each file portrays, the Census Bureau cautions users that the files are no more complete than the source documents used in their compilation, the vintage of those source documents, and the translation of the information on those source documents.

2.2.6 Coordinates

Coordinates in the TIGER/Line Shapefiles have six decimal places, but the positional accuracy of these coordinates may not be as great as the six decimal places suggest. The spatial accuracy varies with the source materials used. The Census Bureau cannot specify the spatial accuracy of features changed or added by its field staff or through local updates, features derived from the GBF/DIME Files (TIGER's predecessor in 1970 and 1980), or other map or digital sources. Thus, the level of spatial accuracy in the TIGER/Line Shapefiles makes them unsuitable for high-precision measurement applications such as

engineering problems, property transfers, or other uses that might require highly accurate measurements of the earth's surface. The U.S. Government in general and the Census Bureau specifically makes no warranty, expressed or implied, with regard to the accuracy of these data, and assumes no liability as to the spatial or attributes accuracy.

2.2.7 Codes for Geographic Entities

The 2020 Census Prototype Shapefiles includes the American National Standards Institute (ANSI) codes to identify both legal and statistical entities. The ANSI codes are a standardized set of numeric or alphabetic codes issued by the American National Standards Institute (ANSI) to ensure uniform identification of geographic entities through all federal government agencies.

The ANSI publications include both the Federal Information Processing Series (FIPS) codes and the United States Geological Survey's Geographic Names Information System (GNIS) codes. The FIPS codes appear in the 2020 Census Prototype Shapefiles in fields such as "STATEFP", where "FP" indicates that the field contains a FIPS code. The GNIS codes are a permanent numeric identifier of up to eight digits. The GNIS codes appear in fields such as "STATENS", where "NS" (National Standard) indicates that the field contains a GNIS code. The Census Bureau stores the GNIS code as a fixed-width string; the official code is a numeric value without leading zeroes. The GNIS code is available beginning in the 2010 TIGER/Line Shapefiles. For geographic entities not covered by ANSI, the Census Bureau assigns a code and these appear in fields such as "TRACTCE", where "CE" stands for Census. Finally, state-submitted codes end in "ST", such as "SLDLST", and local education agency codes end in "LEA", as in "ELSDLEA".

For more information about ANSI codes, please visit:

<https://www.census.gov/geo/reference/ansi.html>.