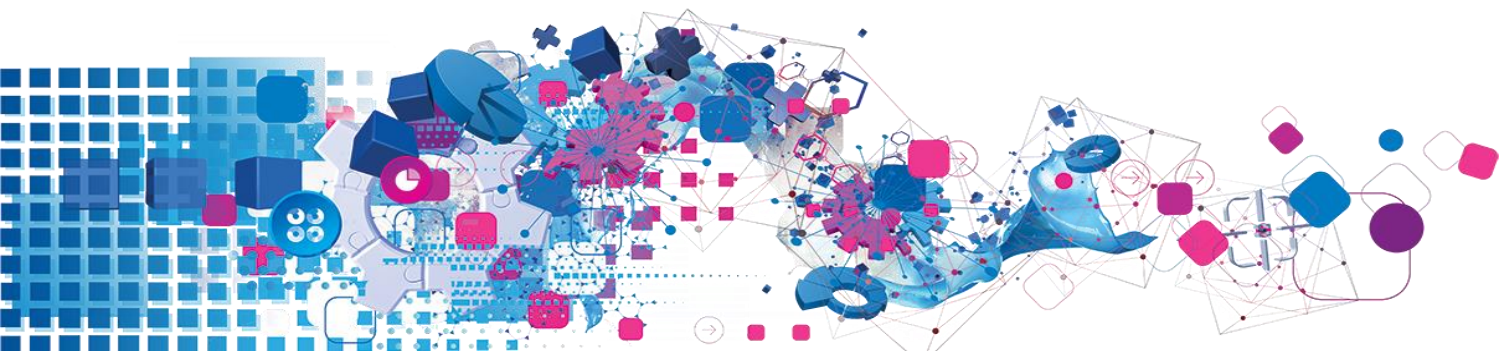
DataPlus guide

Tiger Co-ordinates



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Contents

Introduction 2
- What is a DataPlus Set? 2
- Latitudes and Longitudes 2

About This Data 3
- What is the USA TIGER Co-ordinates DataPlus? 3
- Area Covered 3

About DataPlus Information 4
- DataPlus Elements 4
- Match Levels 4
- Calculation of the Co-ordinates 5
  - Single Record Match 5
  - Multiple Record Match 5
  - No Matching Records 5

Introduction

Filename:	usatgr.dap
Approximate Data Size:	200MB
Data Source:	United States Postal Service (USPS) All data, extracts and updates © USPS
Update Frequency:	Bi-monthly
Expiry:	Data Files will expire 135 days after creation. Ensure every data update is applied promptly, otherwise the data may expire and the product will become unusable.

What is a DataPlus Set?

DataPlus is a product that enables you to retrieve specific data for an address. DataPlus can provide a wide range of information relating to an address, as a supplement to Pro. DataPlus information is contained in data sets. Each piece of information relates to a locality, ZIP code, or, when the Data requires higher resolution, to the Delivery point (letter box). DataPlus handles information in terms of a code and its related description (if there is one). For example, a data set containing co-ordinates would contain only codes.

Latitudes and Longitudes

Latitudes and longitudes are co-ordinates, based on degrees, used to describe a position on Earth.

Longitude lines are made by circles that intersect with both the North and the South Poles. Each longitude can be thought of as dividing the Earth in half. Longitudes are measured in half circles of 0˚ to 180˚ East and from 0˚ to 180˚ West from the Royal Greenwich Observatory in Greenwich, England.

Latitude lines are made by circles that run parallel to the equator and grow progressively smaller as they get closer to the poles. Latitude is measured as an angle from the Equator of the Earth (0˚) to the North Pole (90˚ North) or to the South Pole (90˚ South).

About This Data

What is the USA TIGER Co-ordinates DataPlus?

The USA TIGER Co-ordinates DataPlus (referred to as 'TIGER') is a data set that is used in conjunction with USA data. The TIGER data is provided by the USPS and is based on surveys carried out by the US Census Bureau. It returns latitude and longitude co-ordinates against ZIP+4 codes.

The TIGER DataPlus is designed to be used with Pro and Pro Web. When an address search is completed the DataPlus set provides latitude and longitude co-ordinates for that address.

Where there is no co-ordinate for a ZIP+4 in the TIGER data, a ZIP+2 area average is calculated and returned. Where there is no co- ordinate for a ZIP+2 in the TIGER data, a ZIP average is returned. If it is not possible to return to a ZIP match, then no data is returned. The set contains a flag to indicate the match level.

Area Covered

The TIGER data covers the United States of America.

About DataPlus Information

DataPlus Elements

The TIGER DataPlus set returns a maximum of three elements. The elements returned from the DataPlus set are as follows:

Name	Description
Latitude	The latitude, given to an accuracy of six decimal places. All latitudes in the USA are positive.
Longitude	The longitude, given to an accuracy of six decimal places. All longitudes in the USA are negative.
Match level	The accuracy with which the address was matched with the TIGER data.

The following address returned by Pro:

> 1 Times Sq
> New York NY 10036-6519

Will have this information attached:

> Latitude: 40.756251
> Longitude: -73.986183
> Match Level: Four

The co-ordinates for this address are:

> 40.756251° N, 73.986183° W

Match Levels

There are four different types of match level that can be returned. These are:

Name	Description
Four	This indicates that a ZIP+4 match has been achieved.
Two	This indicates that a ZIP+4 match was not possible as there were no co-ordinates for the ZIP+4 in the USPS data. In this case, the co-ordinates that have been returned are a ZIP+2 level centroid.
ZIP	This indicates that the neither a ZIP+4 or a ZIP+2 match was available; instead the match level is at ZIP code level.
Blank	If there is no match level returned, then there will be no co- ordinates returned either. For instance, this is the case with overseas military addresses and non-residential areas.

Calculation of the Co-ordinates

The TIGER data consists of start and end points of lines (roads). It therefore contains a start co-ordinate and an end co-ordinate for each line.

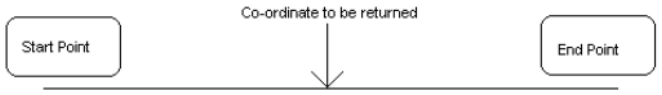
The following is a description of how the co-ordinates returned by the TIGER DataPlus set are calculated.

When an address is searched for, for a given ZIP+4, one of the following scenarios occurs:

- Single record match.
- Multiple record match.
- No matching records.

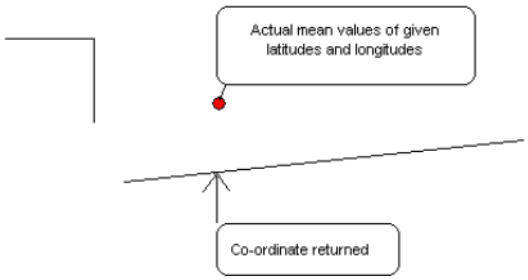
Single Record Match

A single record match occurs when one TIGER record is matched against the ZIP+4 of the address searched for in Pro. One TIGER record contains the start and end points for the ZIP+4. This means a start point with latitude and longitude, and an end point with latitude and longitude. The co-ordinate returned is the mid-point of the line, and the match level is “Four”.



Multiple Record Match

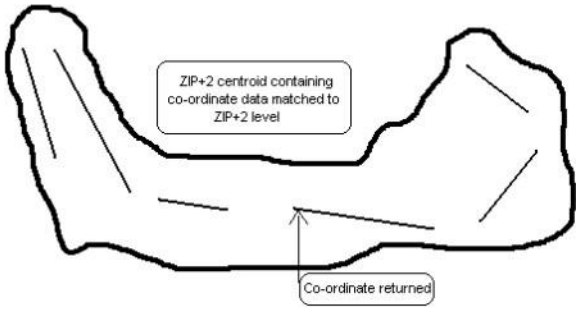
A multiple record match occurs where there are multiple TIGER records matching the same ZIP+4. In this case, the mean point of all the start and end co-ordinates is calculated, then the TIGER co- ordinate closest to that mean point is returned. This is shown in the following diagram:



In the above diagram there are three lines returned for this particular ZIP+4. This means that there are six co-ordinates returned. The mean point for these six co-ordinates is calculated. The nearest point, on one of the lines, to the mean is returned.

No Matching Records

This occurs when there are no TIGER records present for an address’ ZIP+4. If this occurs the DataPlus set will find all the co-ordinates for the ZIP+2. A centroid is generated for all matching TIGER rows for the Zip+2. A mean of all of the generated co-ordinates is calculated and the closest point on the line to the mean is returned. The match level is “Two”.



There may also be instances when there are no TIGER records present for an address' ZIP+2. If this occurs, then a centroid of all the co-ordinates matched against the ZIP level is created. The co-ordinate returned is calculated the same way as the ZIP+2 level match above. The match level is "ZIP".

If there are no TIGER records present for an address' ZIP level, then no co-ordinate is returned, and the match level is blank. This can happen with overseas military bases.