



DOTS Demographics Plus

Developer's Guide

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Introduction

DOTS Demographics Plus (referred to as “Demographics Plus” or “DGP”) is a publicly available XML web service that provides Census Bureau information about US street addresses. The available information includes age, income, race, and ethnic distributions as well as urban classification, gender distribution, and population density. This information is usually accurate to the block or neighborhood level, with population groups as small as 50 people.

Extra information available at the ZIP code level includes:

- population change rates
- average SAT scores
- bachelor, masters, and graduate degree rates
- crime rates
- unemployment rates
- average household size
- average temperature in January, July
- average rainfall and snowfall

Web Service Structure

Web services are methods that integrate with other applications via the web, and encapsulate complex logic. Web services are too large of a topic to cover in this document, but Service Objects has developed its web services to be as easy to integrate and as accessible as possible.

The Demographics Plus web service that supports SOAP, POST and GET. Note that SOAP is done via POST, only with special XML markup in the post-body.

The host path, or physical location of the web service is here:

<http://trial.serviceobjects.com/dgp/DemographicsPlus.asmx>

The location of the WSDL, or Web Service Definition Language document, is here:

<http://trial.serviceobjects.com/dgp/DemographicsPlus.asmx?WSDL>

(This is also accessible via the “Service Definition” link.)

This WSDL is the definition of the web service, meaning its inputs, outputs, operations, and the like. Most likely, you will have another tool read this WSDL and make the operations available to you in your application. Whenever your utilities or IDE asks for a WSDL path to Demographics Plus, you can provide this URL.

Every web service has *operations* that it offers to subscribers – methods that do different work and return different output. Examining the link above, you will notice there is one available operation—it is described in detail below.

Operation Definitions

This section defines the input, output and behavior of the web service operations in Demographics Plus.

The GetDemographicsByAddress Operation

This is the basic operation for finding demographic information. Given a U.S. street address, the operation uses DOTS AddressValidation and DOTS GeoCoder US to identify the Census Bureau-assigned block identification number. The address range must exist in the Census Bureau's TIGER/Line database to find any block or neighborhood data. Otherwise ZIP level data will be returned.

GetDemographicsByAddressRequest Inputs

Name	Type	Description
Address	String	Street address to lookup
City	String	City
State	String	State
PostalCode	String	5 digit ZIP code
LicenseKey	String	Your license key to use the service. Sign up for a free trial key at www.serviceobjects.com .

GetDemographicsByAddressResult Output Groups

- AgeDistribution (see below)
- IncomeDistribution (see below)
- RaceDistribution (see below)
- EthnicDistribution (see below)
- UrbanClassification (see below)
- OtherInformation (see below)
- CensusElements (see below)

You will notice that most output groups contain an element called ResolutionLevel. This code describes how accurate that group of information is. See the table below for an explanation of the codes.

ResolutionLevel*	Meaning
B	Block
N	Neighborhood
T	Census tract
Z	Zip
C	City
U	County
S	State

* Some resolution levels may not currently appear in the output, but your code should expect to receive all possible values.

AgeDistribution Elements

- PercentUnder5
- Percent5To9
- Percent10To14
- Percent15To19
- Percent20To24
- Percent25To34
- Percent35To44
- Percent45To54
- Percent55To59
- Percent60To64
- Percent65To74
- Percent75To84
- Percent85AndOver
- Percent18AndOver
- Percent21AndOver
- Percent62AndOver
- Percent65AndOver
- MedianAge
- ResolutionLevel

IncomeDistribution Elements

- PercentUnder10000
- Percent10000To14999
- Percent15000To24999
- Percent25000To34999
- Percent35000To49999
- Percent50000To74999
- Percent75000To99999
- Percent100000To149999
- Percent150000To199999
- Percent200000OrMore
- MedianHouseholdIncome
- MedianHouseholdIncome2008
- ResolutionLevel

RaceDistribution Elements

- PercentWhite
- PercentBlack
- PercentAmericanIndian
- PercentAsian
- PercentPacificIslander
- PercentOtherRace
- PercentTwoOrMoreRaces

- ResolutionLevel

EthnicDistribution Elements

- PercentHispanicOrLatinoOfAnyRace
- PercentNotHispanicOrLatino
- ResolutionLevel

UrbanClassification Elements

- Code
- Description
- KilometersToUrbanCenter

OtherInformation Elements

- Population
- AreaInSquareKilometers
- PeoplePerSquareKilometer
- PercentFemale
- PercentMale
- ResolutionLevel

CensusElements (from DOTS GeoCensus)

- State
- City
- AreaPopulation2000
- AreaPopulationChange2005
- AreaPopulationChange2010
- CountyPopulation2000
- CountyPopulationChange2005
- CountyPopulationChange2010
- StatePopulation2000
- StatePopulationChange2005
- StatePopulationChange2010
- AreaAvgSatMath
- AreaAvgSatEnglish
- AreaAvgSatTotal
- CountyAvgSatMath
- CountyAvgSatEnglish
- CountyAvgSatTotal
- StateAvgSatMath
- StateAvgSatEnglish
- StateAvgSatTotal
- AreaGradDegree
- AreaBachDegree
- AreaAssocDegree
- AreaSomeCollege

- AreaHighSchoolGrad
- AreaBelowHighSchoolGrad
- CountyGradDegree
- CountyBachDegree
- CountyAssocDegree
- CountySomeCollege
- CountyHighSchoolGrad
- CountyBelowHighSchoolGrad
- StateGradDegree
- StateBachDegree
- StateAssocDegree
- StateSomeCollege
- StateHighSchoolGrad
- StateBelowHighSchoolGrad
- AreaPersonalCrimeRisk
- AreaPropertyCrimeRisk
- CountyPersonalCrimeRisk
- CountyPropertyCrimeRisk
- StatePersonalCrimeRisk
- StatePropertyCrimeRisk
- AreaUnemploymentRate
- AreaBlueCollar
- AreaWhiteCollar
- CountyUnemploymentRate
- CountyBlueCollar
- CountyWhiteCollar
- StateUnemploymentRate
- StateBlueCollar
- StateWhiteCollar
- AreaHouseholdIncome
- AreaHouseholdSpending
- CountyHouseholdIncome
- CountyHouseholdSpending
- StateHouseholdIncome
- StateHouseholdSpending
- AreaMedianAge
- AreaAvgHouseholdSize
- AreaHouseholdChildren
- CountyMedianAge
- CountyAvgHouseholdSize
- CountyHouseholdChildren
- StateMedianAge
- StateAvgHouseholdSize
- StateHouseholdChildren
- AreaTempJan

- AreaTempJuly
- AreaRainFall
- AreaSnowFall
- CountyTempJan
- CountyTempJuly
- CountyRainFall
- CountySnowFall
- StateTempJan
- StateTempJuly
- StateRainFall
- StateSnowFall

Errors

Generally, an error is anything that happens during a run of DOTS Demographics Plus that causes the service to fail. If an error occurs, an XML error message will return instead of the GetDemographicsByAddressResult output described above. For example:

```
<Error>  
  <Type>Authorization</Type>  
  <TypeCode>1</TypeCode>  
  <Desc>Your license key does not work on this service.</Desc>  
  <DescCode>8</DescCode>  
</Error>
```

There are four error types described below.

Type	Type Code	Billable	Standard Across All Gen2 Web Services
Authorization	1	No	Yes
User Input	2	Yes	No
Service Objects Fatal	3	No	Yes
Domain Specific	4	Yes	No

Error type 1: Authorization

Theses are standard to all Generation 2 DOTS Web Services.

DescCode	Desc
0	Unknown authorization error.
1	Please provide a valid license key for this web service.
2	The daily allowable number of transactions for this license key has been exceeded.
3	The monthly allowable number of transactions for this license key has been exceeded.
4	The total allowable number of transactions for this license key has been exceeded.
5	There are not enough transactions available. Check your daily/monthly transaction limits.
6	This license key has not yet been activated.
7	This license key has expired.
8	Your license key does not work on this service.

Error type 2: User Input

User Input errors are caused when a user inputs an invalid value or fails to provide a certain input field altogether. If a developer creates a request and mistypes a parameter name, it will probably cause a User Input Error.

DescCode	Desc
1	You must input a license key in the LicenseKey field.
2	You must input an address in the Address field.
3	You must input either a city and state or a postal code.

Error type 3: Service Objects Fatal

The Desc will always be the same and the DescCode has no meaning. This is standard to all Generation 2 DOTS Web Services. This is a rare error that signals either a bug in the DOTS Demographics Plus service, or a Network/Connectivity issue.

DescCode	Desc
1	Unhandled error. Please contact Service Objects.

Error type 4: Domain Specific

Domain specific errors represent the common errors seen in Service Objects services. Domain Specific errors indicate that the service completed successfully but the result is not good.

DescCode	Desc
1	Demographics not available for this address.

Integration and FAQ

Integrating Demographics Plus into your application should be easy and straightforward. If you are using a common platform, Service Objects may already have sample code built that you can use:

<http://www.serviceobjects.com/support/example-code>

However, if you are using a common platform that does not already have sample code, you can ask Service Objects to build you an example. Email support@serviceobjects.com for more details.

The sample code is giving strange errors or is crashing!

Most likely, the sample code cannot connect to Service Objects. Many environments will not allow you to connect out on port 80, or will clip out XML data from these requests/responses.

The easiest way to check for this is to open a browser on the machine running the sample code. In your browser, navigate to:

<http://trial.serviceobjects.com/dgp/DemographicsPlus.aspx>

Then try to run one of the operations with your trial key. If you get a browser error, or get no data back, then the sample code isn't able to connect, either. Contact your systems administrator to resolve why you are not able to connect to Service Objects.

Why is demographic information unavailable for a certain street address?

If you are receiving an error message saying demographic information is unavailable, the ZIP code may be relatively new or did not get included in the 2000 Census for some other reason.

Can Demographics Plus give me the information for a Canadian address?

No. Demographics Plus works only for U.S. street addresses.

I'm not a programmer. How do I use DOTS Demographics Plus?

Service Objects runs batches for you! A free batch trial is available at <http://www.serviceobjects.com/batch/upload>.

More Information

Service Objects is proud to offer you a free trial of DOTS Demographics Plus.

Sign up today for a free trial at:

<http://www.serviceobjects.com/products/address/demographics-plus>

Other technical questions or concerns can be directed to
support@serviceobjects.com.

If you are interested in purchasing DOTS Demographics Plus, please contact
sales@serviceobjects.com.

We welcome your feedback! Please do not hesitate to let us know what you think of our web services, documentation, or customer support.

<http://www.serviceobjects.com>