



# **DOTS Demographics**

Developer's Guide

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## Introduction

DOTS Demographics is an XML web service that provides ZIP code-level, small segment demographics for in-depth local-area profiles. It’s built with U.S. Census data, HUD data, current-year demographics and data culled from millions of consumer purchase records.

## Web Service Structure

Web services provide a standard interface to encapsulate tricky business logic. They allow simple integration of applications via the web. Service Objects has followed web services best practices and come up with some of its own standards to ensure that its web services are as easy to integrate, and as accessible as possible.

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

<http://trial.serviceobjects.com/gce/GeoCensus.asmx>

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

<http://trial.serviceobjects.com/gce/GeoCensus.asmx?WSDL>

(This is also accessible via the “Service Definition” link on the web service page.)

The WSDL is an XML document that defines the interaction 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 via some type of proxy class. Whenever your utilities or IDE asks for a WSDL path, you can provide this one.

Every web service has *operations* that it offers to subscribers. These operations, also called methods, contain different functionality and return different outputs. DOTS Demographics has the following operations:

**GetLocalAreaProfileByZip** – Uses the provided postal code to return census information.

**GetLocalAreaIncomeByZip** - Uses the provided postal code to return income information.

## Request Types

DOTS Demographics is a public XML web service that supports SOAP(1.1 and 1.2), POST, and GET request methods. A request type is just the type of web (HTTP) request used to interact with our web services.

**GET** - All of the input data is in the query string appended to the URL. The response is simple XML.

**POST** - The input parameters are in the body of the request instead of the query string. The response is simple XML.

**SOAP** - The input parameters are in an XML SOAP message contained within the body of the request. The response is an XML SOAP message.

## Analysis of Request Types

**GET** is the easiest method to implement by hand because you just set up the URL and query string. It is also easy to debug because you can test the URL + query string in a web browser and see the output.

**POST** is probably the best method to implement by hand because you do not have to know the specifics of SOAP, and is a little cleaner than passing input parameters in the query string via GET.

**SOAP** is the best method if you are using a platform that supports SOAP. In many programming environments you can call the service's WSDL file (<http://trial.serviceobjects.com/gce/GeoCensus.asmx?WSDL>) to create a proxy class to help you interact with the web service. In this case you only have to create an instance of the proxy and use its methods. This completely abstracts the programmer from any complications like sending/receiving web requests/responses as well as any XML parsing. This is typically available in newer environments like PHP version 5, ColdFusion version 7, .NET, etc. Older languages like PHP version 4 and ColdFusion version 5 will require the use of GET or POST.

## XML Parsing

If you are not using an environment that provides a proxy class for you to use, then you will have to parse XML. If you do have a proxy, then it uses an XML parser behind the scenes for you. Although XML parsing can be done without a parser, most programming environments provide easy access to several standard ones. **We strongly recommend that you take advantage of an XML**

**parser.** These parsers may take a few more minutes to integrate if the developer is not familiar with them, but will give your application an added level of security against improper parsing. Without them it is very difficult, even for skilled programmers to write robust code that can handle all cases of XML properly. Because we have very consistent XML you could get away without this extra precaution, but we suggest you use an XML parser anyway to ensure your application is of the highest quality.

## Operation Definitions

This section defines the input, output and behavior of the operations in DOTS Demographics.

### GetLocalAreaProfileByZip

Uses the provided Postal Code to provide census information including education stats, income levels, almanac data as well as crime rates in the area.

#### GetLocalAreaProfileByZip - Inputs

Name	Type	Description
PostalCode	String	The Postal Code to retrieve profile information.
LicenseKey	String	Your license key to use the service. Sign up for a free trial key at <a href="http://www.serviceobjects.com">www.serviceobjects.com</a> .

#### GetLocalAreaProfileByZip - Outputs

If no errors are encountered a CensusElements element will be returned with the following information. If there is an error, an Error object will be returned (explained in next section).

Name	Type	Description
State	String	The state for the given postal code.
City	String	The city for the given postal code.
AreaPopulation2000	String	The area population for the given postal code taken by 2000 census.
AreaPopulationChange2005	String	The population change for the given postal code in 2005.
AreaPopulationChange2010	String	The population change for the given postal code in 2010.
CountyPopulationChange2005	String	The county population change for the given postal code in 2005.
CountyPopulationChange2010	String	The county population change for the given postal code in 2010.
StatePopulation2000	String	The state population for the given postal code in 2000.

StatePopulationChange2005	String	The state population change in 2005 for the given postal code.
StatePopulationChange2010	String	The state population change in 2010 for the given postal code.
AreaAvgSatMath	String	The area average SAT Math scores for the given postal code.
AreaAvgSatEnglish	String	The area average SAT English scores for the given postal code.
AreaAvgSatTotal	String	The area average SAT Total for the given postal code.
CountyAvgSatMath	String	The county average SAT Math scores for the given postal code.
CountyAvgSatEnglish	String	The county average SAT English scores for the given postal code.
CountyAvgSatTotal	String	The county average SAT total scores for the given postal code.
StateAvgSatMath	String	The state average SAT Math scores for the given postal code.
StateAvgSatEnglish	String	The state average SAT English scores for the given postal code.
StateAvgSatTotal	String	The state average SAT total scores for the given postal code.
AreaGradDegree	String	The area grad degree percentile for the given postal code.
AreaBachDegree	String	The area bachelor’s degree percentile for the given postal code.
AreaAssocDegree	String	The area associate’s degree percentile for the given postal code.
AreaSomeCollege	String	The area some college percentile for the given postal code.
AreaHighSchoolGrad	String	The area high school graduate percentile for the given postal code.
AreaBelowHighSchoolGrad	String	The area below high education percentile for the given postal code.
CountyGradDegree	String	The county graduate degree percentile for the given postal code.
CountyBachDegree	String	The county bachelor’s degree percentile for the given postal code.
CountyAssocDegree	String	The county associates degree percentile for the given postal code.
CountySomeCollege	String	The county percentile with some college for the given postal code.
CountyHighSchoolGrad	String	The county percentile with high school graduate for the given postal code.
CountyBelowHighSchoolGrad	String	The county percentile below high school graduate for the given postal

		code.
StateGradDegree	String	The state graduate degree percentile for the given postal code.
StateBachDegree	String	The state bachelor’s degree percentile for the given postal code.
StateAssocDegree	String	The state associate’s degree percentile for the given postal code.
StateSomeCollege	String	The state some college percentile for the given postal code.
StateHighSchoolGrad	String	The state high school graduate percentile for the given postal code.
StateBelowHighSchoolGrad	String	The state below high school graduate percentile for the given postal code.
AreaPersonalCrimeRisk	String	The area personal crime risk score for the given postal code.
AreaPropertyCrimeRisk	String	The area property crime risk score for the given postal code.
CountyPersonalCrimeRisk	String	The county personal crime risk score for the given postal code.
CountyPropertyCrimeRisk	String	The county property crime risk score for the given postal code.
StatePersonalCrimeRisk	String	The state personal crime risk score for the given postal code.
StatePropertyCrimeRisk	String	The state property crime risk score for the given postal code.
AreaUnemploymentRate	String	The area unemployment rate for the given postal code.
AreaBlueCollar	String	The area blue collar percentile for the given postal code.
AreaWhiteCollar	String	The area white collar percentile for the given postal code.
CountyUnemploymentRate	String	The county unemployment rate for the given postal code.
CountyBlueCollar	String	The county blue collar percentile for the given postal code.
CountyWhiteCollar	String	The county white collar percentile for the given postal code.
StateUnemploymentRate	String	The state unemployment rate for the given postal code.
StateBlueCollar	String	The state blue collar percentile for the given postal code.
StateWhiteCollar	String	The state white collar percentile for the given postal code.
AreaHouseholdIncome	String	The area household income for the given postal code.
AreaHouseholdSpending	String	The area household spending for the

		given postal code.
CountyHouseholdIncome	String	The county household income for the given postal code.
CountyHouseholdSpending	String	The county household spending for the given postal code.
StateHouseholdIncome	String	The state household income for the given postal code.
StateHouseholdSpending	String	The state household spending for the given postal code.
AreaMedianAge	String	The area median age for the given postal code.
AreaAvgHouseholdSize	String	The area average household size for the given postal code.
CountyMedianAge	String	The county median age for the given postal code.
CountyAvgHouseholdSize	String	The county average household size for the given postal code.
CountyHouseholdChildren	String	The county average number of children for the given postal code.
StateMedianAge	String	The state median age for the given postal code.
StateAvgHouseholdSize	String	The state average household size for the given postal code.
StateHouseholdChildren	String	The state average household number of children for the given postal code.
AreaTempJan	String	The area average temperature for the month of January for the given postal code.
AreaTempJuly	String	The area average temperature for the month of July for the given postal code.
AreaRainFall	String	The area average rain fall for the given postal code.
AreaSnowFall	String	The area average snow fall for the given postal code.
CountyTempJan	String	The county average temp for the month of January for the given postal code.
CountyTempJuly	String	The county average temp for the month of July for the given postal code.
CountyRainFall	String	The county average rainfall for the given postal code.
CountySnowFall	String	The county average snowfall for the given postal code.
StateTempJan	String	The state average temp for the month

		of January for the given postal code.
StateTempJuly	String	The state average temp for the month of July for the given postal code.
StateRainFall	String	The state average rain fall for the given postal code
StateSnowFall	String	The state average snowfall for the given postal code.

## GetLocalArealIncomeByZip

Uses the provided Postal Code to return local area income information.

### GetLocalArealIncomeByZip- Inputs

Name	Type	Description
PostalCode	String	The Postal Code to retrieve profile information.
LicenseKey	String	Your license key to use the service. Sign up for a free trial key at <a href="http://www.serviceobjects.com">www.serviceobjects.com</a> .

### GetLocalArealIncomeByZip – Outputs

If no errors are encountered a CensusIncome element will be returned with the following information. If there is an error, an Error object will be returned (explained in next section).

Name	Type	Description
City	String	The city for the given postal code.
County	String	The county for the given postal code.
State	String	The state for the given postal code.
Median Income 2000	String	The median income for the year 2000, for the given postal code.
Median Income 2005	String	The median income for the year 2005, for the given postal code.
AreaHouseholdIncome	String	The area household income for the given postal code.
CountyHouseholdIncome	String	The county household income for the given postal code.
StateHouseholdIncome	String	The state household income for the given postal code.

## Errors

Generally, an error is anything that happens during a run of DOTS Demographics that causes the service to fail. If an error occurs, an XML error message, similar to the one below, will result instead of the CensusElements output described above:

### Example:

```
<Error>
  <Desc>Your license key does not work on this service.</Desc>
  <Number>2</Number>
</Error>
```

### **Error Number 1 – “Input cannot be less than zero length”**

This error means the web service did not get any input. The connection to the service was made, and data was transferred, but no parameters were passed that the service could understand.

This error often happens when input is passed to the service with namespaces that the service does not understand. Applying a namespace to any of the parameters (PostalCode, etc.) will cause this error. Additionally, requests made in the “rpc/encoded” format will cause this error. The only namespace that should appear in any element is the “<http://www.serviceobjects.com>” namespace on the root element as so:

```
<GetLocalAreaProfileByZip xmlns="http://www.serviceobjects.com/">
```

### **Error Number 2 – Various descriptions**

This error code appears when various errors occur, but are of the expected nature. Oftentimes, malformed or incomplete input will cause an error 2.

The following is a list of the possible Error Descriptions that may accompany an Error Code 2:

#### **Failed Authentication Errors:**

- “Please provide a valid license key for this web service.”
- “The daily allowable number of transactions for this license key has been exceeded.”
- “The monthly allowable number of transactions for this license key has been exceeded.”
- “The total allowable number of transactions for this license key has been exceeded.”
- “There are not enough transactions available. Check your daily/monthly transaction limits.”
- “This license key has expired.”
- “This license key has not yet been activated.”
- “This operation is limited to specific usage. Please contact customer service to have your key enabled.”
- “Your license key does not work on this service.”

#### **Web Service Invocation Errors:**

“Error initializing service”  
“Postal code must be 5 digits in length”

### **Error Number 3/4/5 – Various descriptions**

An error code 3, 4, or 5 is a fatal error and it means something serious has gone wrong. You will never see one of these error codes in a live production environment.

## **Frequently Asked Questions**

### **Can DOTS Demographics give me information for a Canadian postal code?**

No. DOTS Demographics works only for U.S. zip codes.

### **Why is demographic information unavailable for certain ZIP codes?**

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.

### **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/gce/GeoCensus.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.

### **I’m not a programmer. How do I use DOTS Demographics?**

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

## Conclusion

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

Sign up today for a free trial at:

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

Technical questions or concerns can be directed to [support@serviceobjects.com](mailto:support@serviceobjects.com).

If you are interested in purchasing DOTS Demographics, please contact:

[sales@serviceobjects.com](mailto: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.

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