

Creating a regional Map with custom polygons in Visual Analytics on Viya: Applied to Belgium

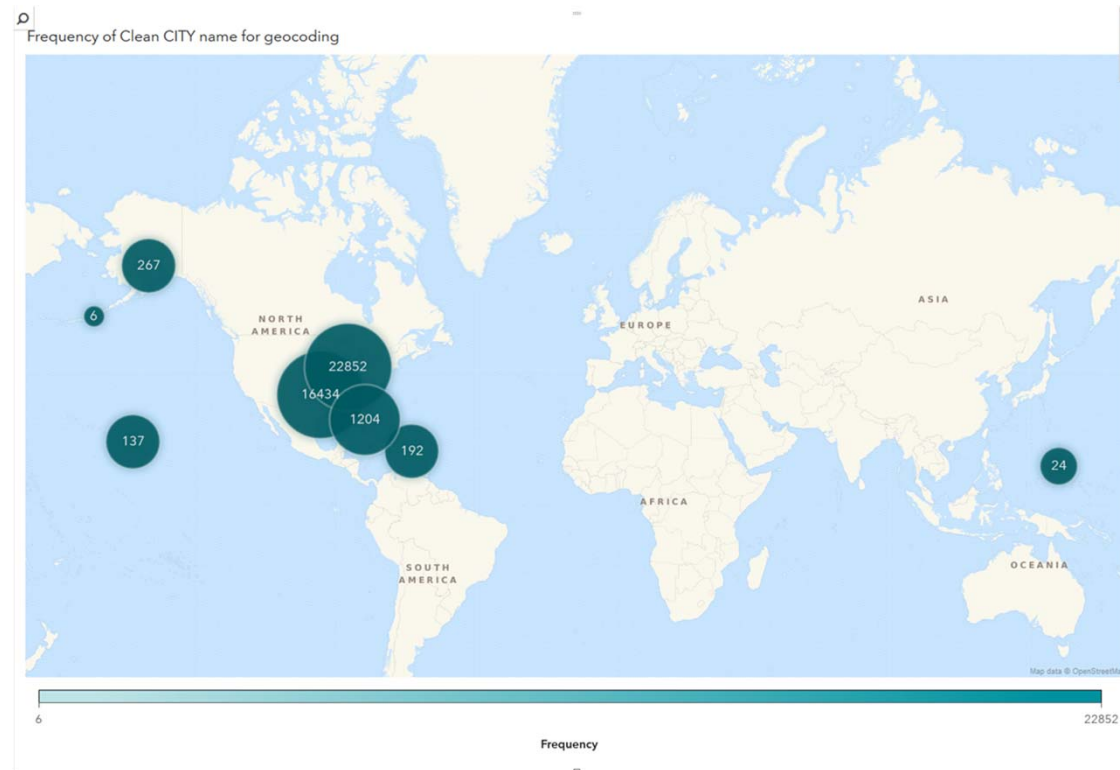
Paul Van Mol – Webinar @ lunchtime 24

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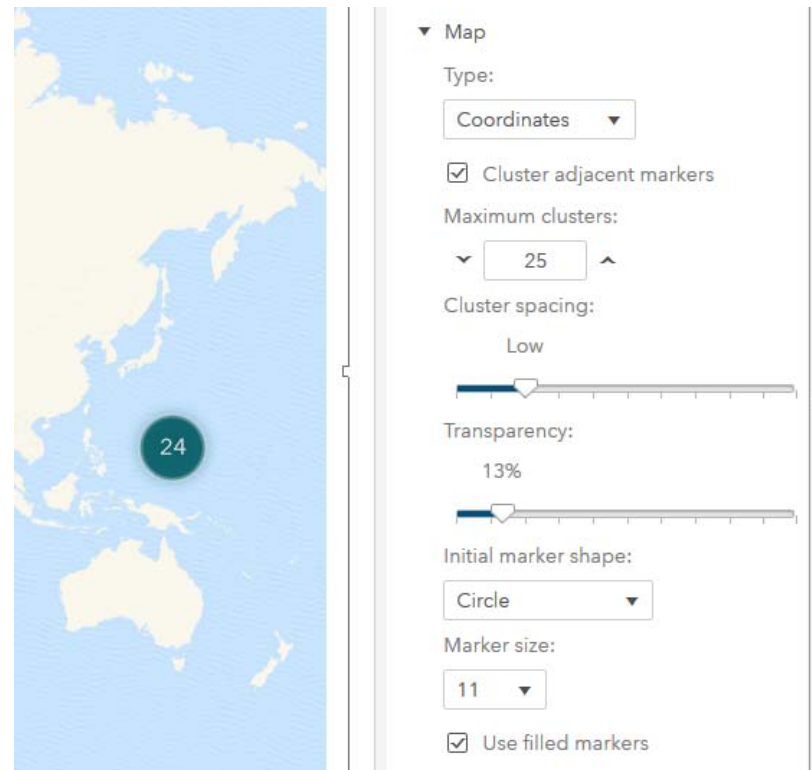
Clustering

Geographic clustering based on proximity



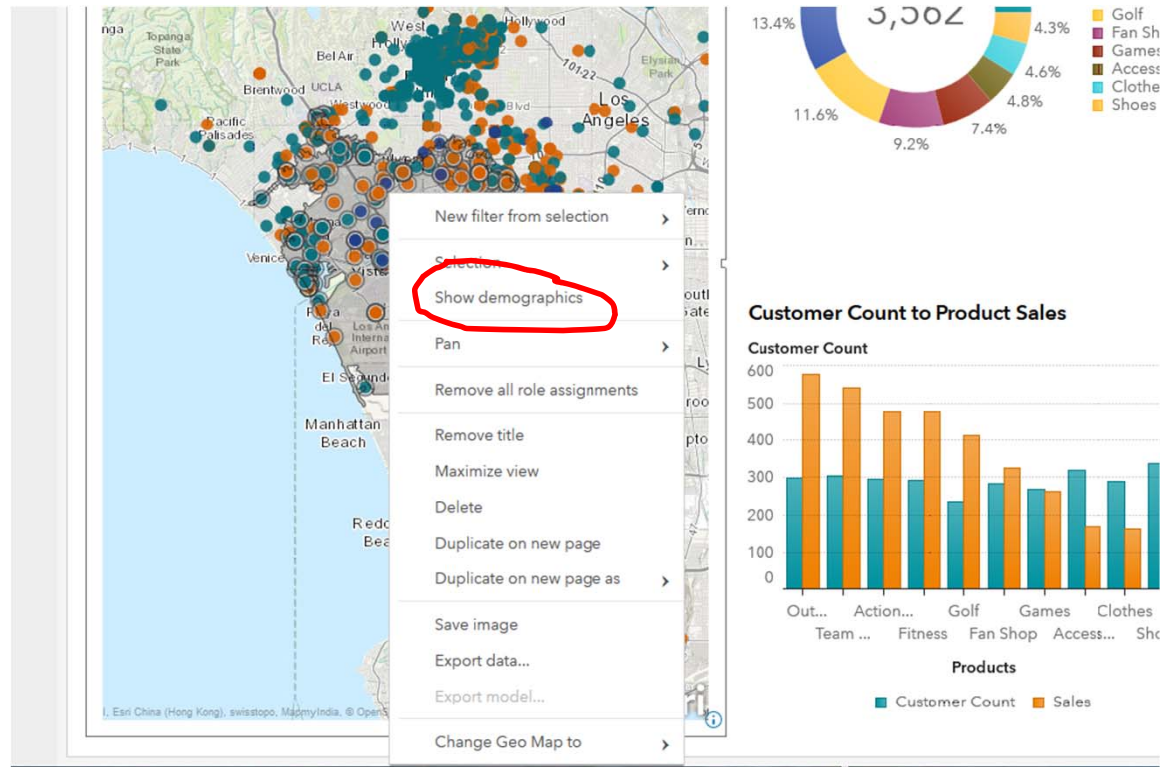
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Clustering Options



Geo-Enrichment

Context Menu after geographic selection



Geo-Enrichment

Basic Panel

Demographics

Country/Region: United States ▼ Category: All categories ▼

Basic

Advanced

- Population
 - Population by Gender
 - Average household size
 - Population In Group Quarters
 - Total Households
 - Total Population
 - Population Density
- Age
- Income
- Households
- Housing
- Marital Status

OK

Cancel

Geo-Enrichment


Advanced Panel













Demographics

Country/Region: United States ▼ Category: All categories ▼

Basic Advanced



Available items (7309 of 7309):







- ▶  Age
- ▶  At Risk
- ▶  Behaviors
- ▶  Business
- ▶  Education
- ▶  Health
- ▶  Households
- ▶  Housing
- ▶  Income
- ▶  Jobs
- ▶  Key Facts
- ▶  Landscape

Selected items (0 of 100):

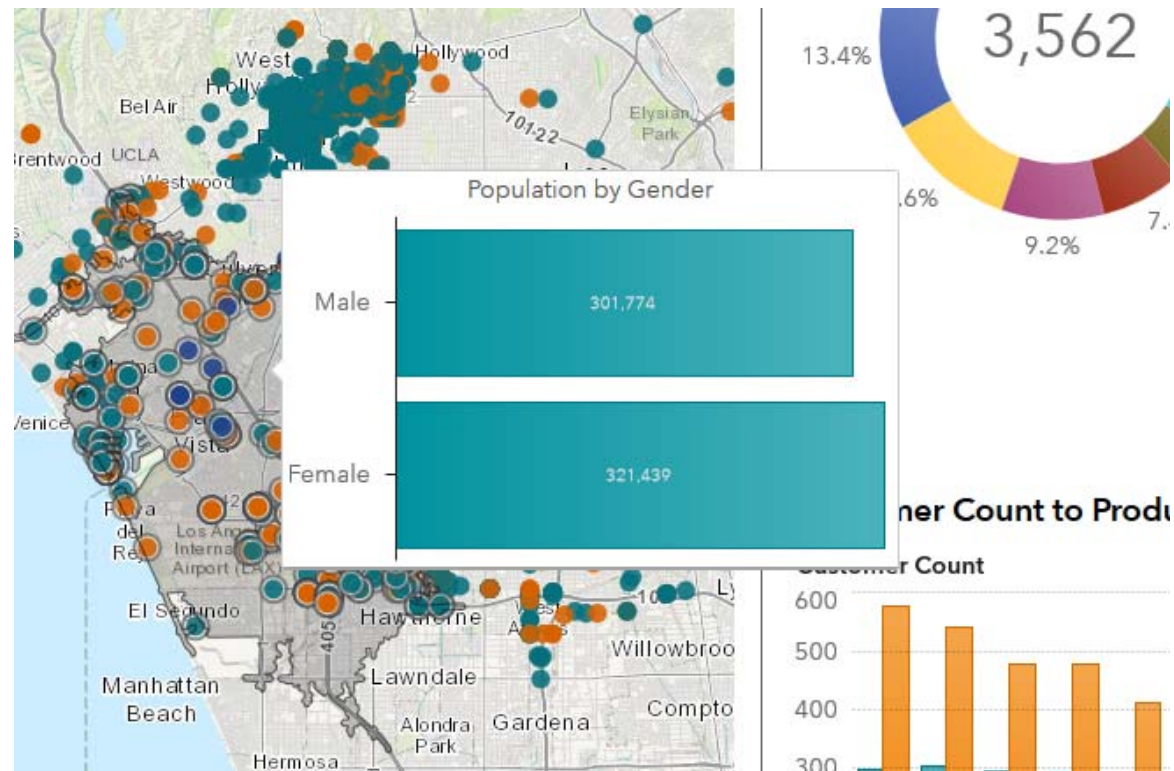
No items

OK Cancel

Geo-Enrichment Results



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Geo-Enrichment

Enriching data


Open Data Source

Available

Data Sources


Import

Add data sources from... ?

 Local File

» Social Media

» Esri

 Geo Enrichment

Geo-Enrichment

Enriching Data

AvailableData SourcesImport 1

Import (1) +

Esri Import
Esri feed

Esri Import

Import ItemImport All

Target table name: *
Esri Import

Target destination: *
cas-shared-default/HPS

Find

If target table name exists:
☒ Cancel import
☐ Replace file

Label:

Enter label

Esri Settings

Source table:
AB_PARKS_KEY

Source column: *
serial_number

Country:
United States

Level:
States

Category:
All categories

Available items (7309 of 7309):

Search

Age

At Risk

Behaviors

Business

Education


Health

Households

Housing

Selected items (0):

No items



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Esri Portal

Entering credentials

Esri Custom Services Credentials

Your organization uses an Esri server to provide map services that require a user ID and password. Enter your Esri ArcGIS credentials. These credentials can differ from your Esri ArcGIS Online credentials.

User ID:

Esri ArcGIS user id

Password:

Password is case sensitive

Validate credentials

Esri Portal

Administrator settings

localEsriServicesReq...



Indicates that the local Esri map services URL requires an authentication token for access.

localEsriServicesUrl:

https://vaesri02.na.sas.com/server/rest/services/

The URL to the local Esri map services. The URL consists of a protocol, host, port, and path (for example, http://myserver:6080/arcgis/rest/services/).

supplementalProperties:

The set of user-added, advanced properties.

[+ Add property](#)

Save

Cancel

Custom Polygons

Geographic Variable Dialog

Edit Geography Item

Name:

Based on:

Geography data type:

Custom polygon provider:^{*}

County

County

Level 1 Sales Regions

Level 2 Sales Regions

Level 3 Sales Regions

PuertoRichNetHope

San Diego CC Floorplan

seismic-hazard

Define new polygon provider..

World Geodetic System (WGS84)

Mapping information not available.

OK Cancel

Who is allowed to create Custom Polygons

Administrative Settings

Object URI	Principal	Setting	Permissions
/maps/regions	Authenticated Users	Grant	Create
/maps/providers/*/regions	Authenticated Users	Grant	Create
/maps/providers/*/confidence	Authenticated Users	Grant	Create
/maps/**	Authenticated Users	Grant	Read
/maps/providers/*	mapProviders	Grant	Update, Delete
/maps/**	Guest	Grant	Read
/maps/regions	Guest	Grant	Create, Read
/maps/providers/*/regions	Guest	Grant	Create, Read
/maps/providers/*/confidence	Guest	Grant	Create, Read
/maps/providers	mapProviders	Grant	Create

Custom Polygons

Creating a new polygon provider using CAS

Edit Geography Item

Name: ZIP

Based on: ZIP

Geography data: Custom polygon

Custom polygon: County

Region ID: * Choose Column

Latitude (y): Choose Column

Longitude (x): Choose Column

Coordinate System: World Geodetic System (WGS84)

Information not

New Polygon Provider

Name: *
Enter name

Label: *
Enter label

Type: CAS Table

Server: cas-shared-default

Library: AppData

Table: ATTRIBUTION

OK Cancel

OK Cancel

Custom Polygons

Creating a new polygon provider using CAS

Edit Geography Item

Name: ZIP

Based on: ZIP

Geography data: Custom polygon

Custom polygon: County

Region ID: * Choose Column

Latitude (y): Choose Column

Longitude (x): Choose Column

Coordinate Specification: World Geodetic System (WGS84)

Information not available

New Polygon Provider

ID Column: IUID

Sequence Column: sequence

Advanced

Segment Column: SEGMENT

Latitude (y) Column: Y

Longitude (x) Column: X

OK Cancel

OK Cancel

Custom Polygons

Creating a new polygon provider using CAS

Edit Geography Item

Name:
ZIP

Based on:
ZIP

Geography data:
Custom polygon

Custom polygon:
County

Region ID: *
Choose Column

Latitude (y):
Choose Column

Longitude (x):
Choose Column

Coordinate Space:
World Geodetic System (WGS84)

Information not

New Polygon Provider

▼ Advanced

Segment Column:
SEGMENT

Latitude (y) Column:
Y

Longitude (x) Column:
X

Coordinate Space: *
EPSG:4326

OK Cancel

OK Cancel

Custom Polygons

Create a new polygon provider using Esri

Edit Geography Item

Name: ZIP

Based on: ZIP

Geography data: Custom polygon

Custom polygon: County

Region ID: *

Choose Column

Latitude (y):

Choose Column

Longitude (x):

Choose Column

Coordinate Space: World Geodetic System (WGS84)

Information not

New Polygon Provider

Name: *
Enter name

Label: *
Enter label

Type:
Esri feature service
CAS Table
Esri feature service

Feature Service Layer:

ID Column:

OK Cancel

OK Cancel

Custom Polygons

Data limitations in Report Data Service

defaultInteractiveDrillDepth: 3
The number of interactive drill levels included in the offline data for report viewers.

defaultMaxCellsProduced: 250000
The maximum number of data cells delivered for each query result to report viewers.

enableResultCache: ☒
Enable report result caching.

exportExcelColumnLimit: 16384
The maximum number of columns allowed for export files formatted for Excel.

Custom Polygons

Data limitations in Maps Service

The screenshot shows the SAS Maps Service configuration interface. A modal dialog box titled "Add Property" is open in the center. The dialog has two input fields: "Name: *" with the value "maxRequeries" and "Value:" with the value "10". At the bottom of the dialog are "Save" and "Cancel" buttons. The background interface is dimmed and shows various configuration fields:

- numResolutions:** 18. The number of tile levels configured on the tile servers. The value must be a positive integer.
- servers:** (empty text area)
- defaultOSMCoverage:** (empty text area)
- localEsriServiceToken:** (empty text area)
- localEsriServicesUrl:** https://vaesri02.na.sas.com/server/rest/services/. The URL to the local Esri map services. The URL consists of a protocol, host, port, and path (for example, http://myserver:6080/arcgis/rest/services/).
- supplementalProperties:** The set of user-added, advanced properties.

Geographic Data Items in SAS Visual Analytics 8.5

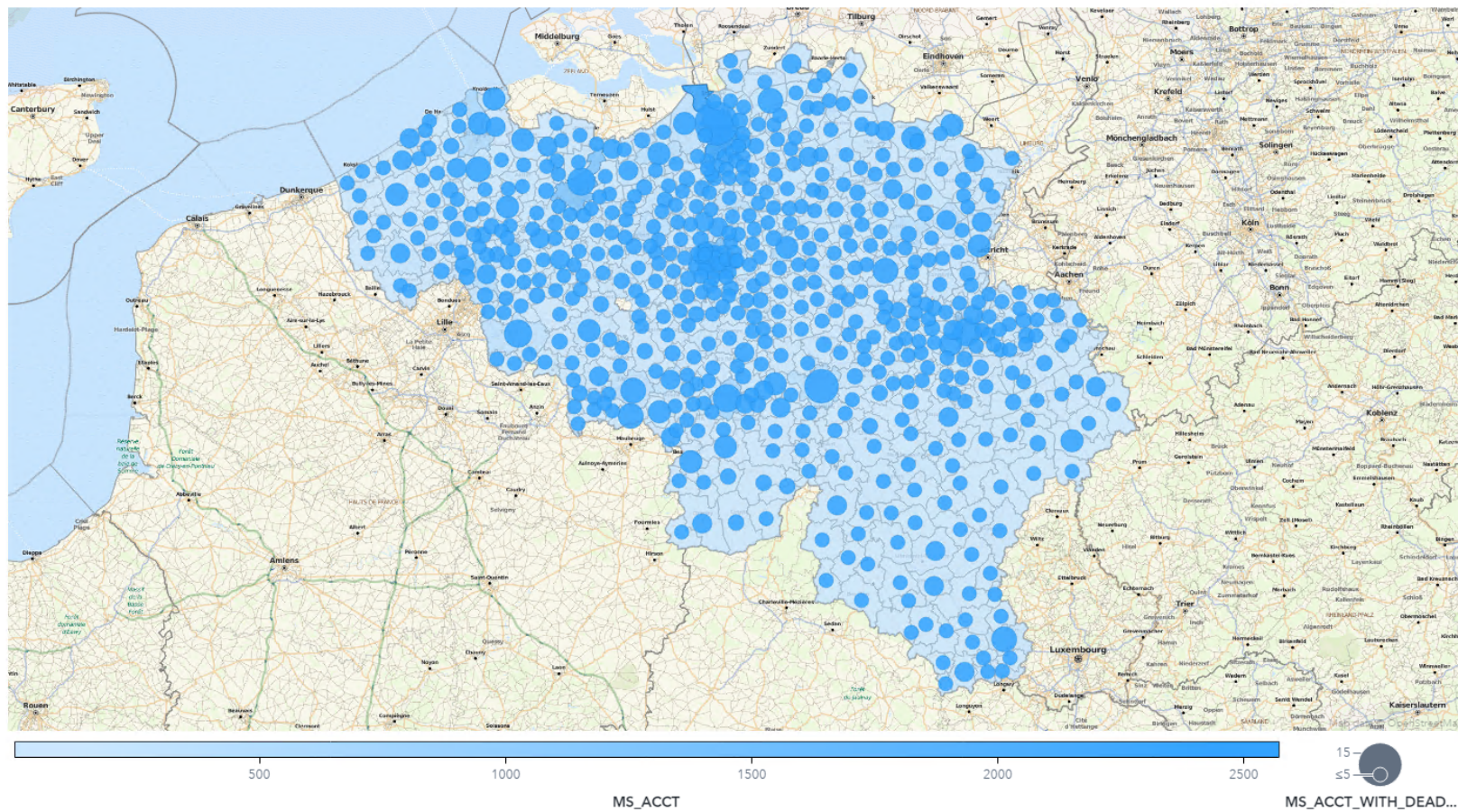
- Geographic Data Items like countries and regions are automatically recognized and displayed in SAS Visual Analytics.
- Local regions like Districts, Municipalities are not supported by SAS Visual Analytics.
- Learn how to import a shape file and create a custom polygon provider so other VA users can draw custom regions with-in the Geomap object.
- You learn how to inspect the shape file and how to create test data to test the imported shape file. We uses an example from Belgium, but the method can easily be modified to support other geographic regions.
- <https://support.sas.com/rnd/datavisualization/vageo/85/subdivs.html>

Import Custom Shapefiles in SAS Visual Analytics 8.5

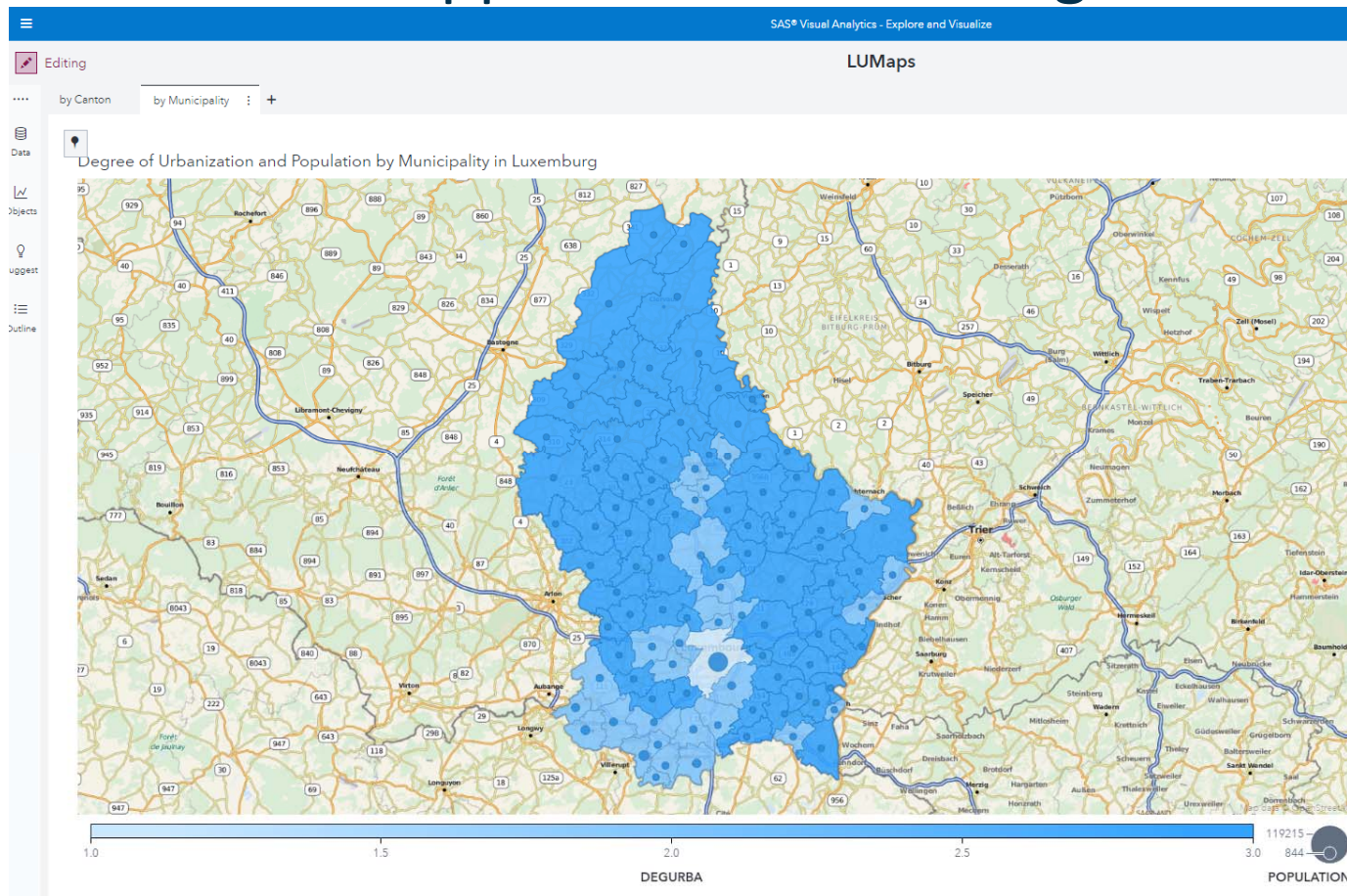
- *Add a custom polygon provider to your Viya installation*
- *Reduce the granularity of the shapes to improve performance (or even make it show up inVA for large shapefiles)*
- *Use the custom polygon provider to visualize data on a map*
- *Identify the projection of a shapefile*

The goal of this webinar

MS_ACCT, MS_ACCT_WITH_DEAD_30_DAYS by CD_MUNTY_REFNIS



Or applied to Luxembourg



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Overview

Create Polygon provider

Use Polygon provider



Examining the shape file content

Shape file

Overview of content

Mandatory files

- .shp — shape format; the feature geometry itself
- .shx — shape index format; a positional index of the feature geometry to allow seeking forwards and backwards quickly
- .dbf — attribute format; columnar attributes for each shape, in [dBase](#) IV format

Other files

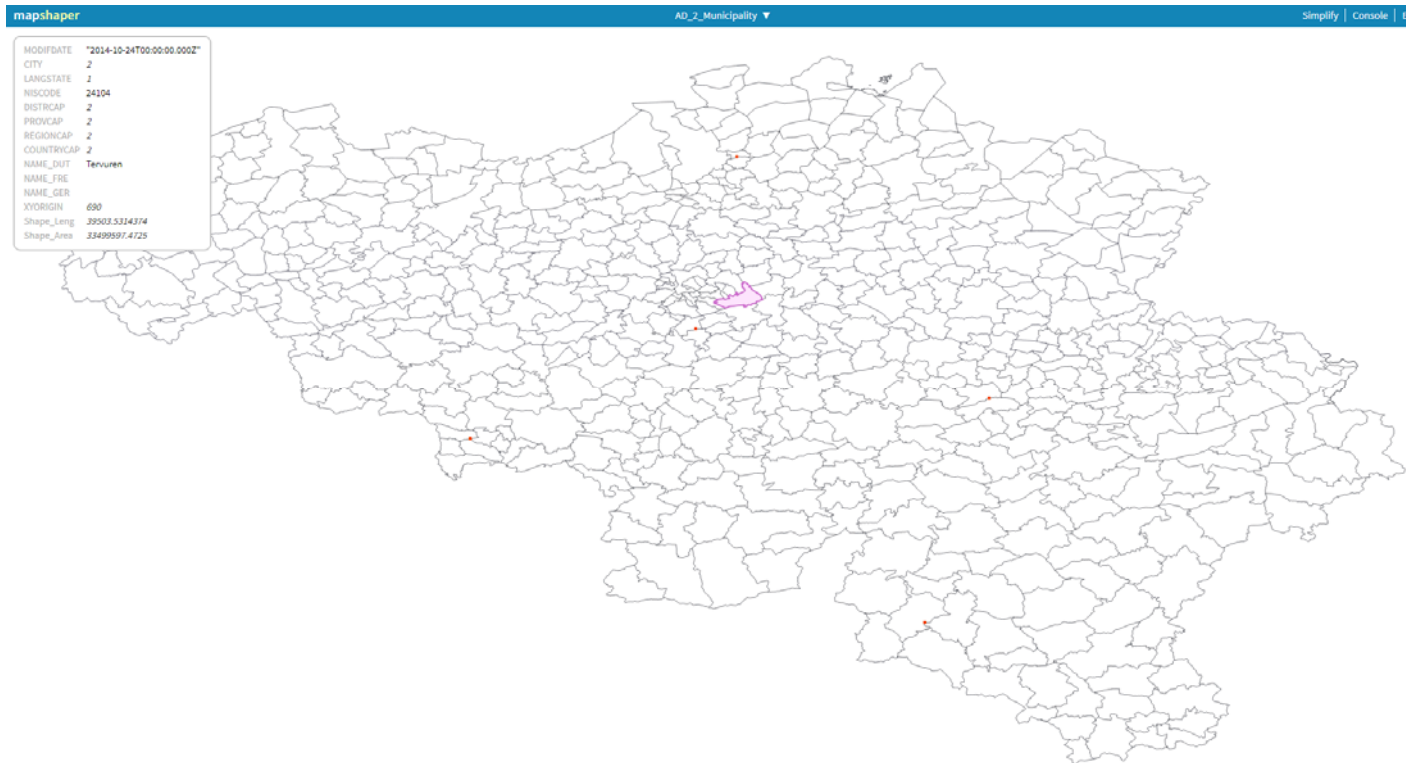
- .prj — projection description, using a [well-known text representation of coordinate reference systems](#)
- .sbn and .sbx — a [spatial index](#) of the features
- .fbn and .fbx — a spatial index of the features that are read-only
- .ain and .aih — an attribute index of the active fields in a table
- .ixs — a geocoding index for read-write datasets
- .mxs — a geocoding index for read-write datasets (ODB format)
- .atx — an attribute index for the .dbf file in the form of *shapefile.columnname.atx* (ArcGIS 8 and later)
- .shp.xml — [geospatial metadata](#) in XML format, such as [ISO 19115](#) or other [XML schema](#)
- .cpg — used to specify the [code page](#) (only for .dbf) for identifying the [character encoding](#) to be used
- .qix — an alternative [quadtree](#) spatial index used by [MapServer](#) and [GDAL/OGR](#) software

Source: <https://en.wikipedia.org/wiki/Shapefile>

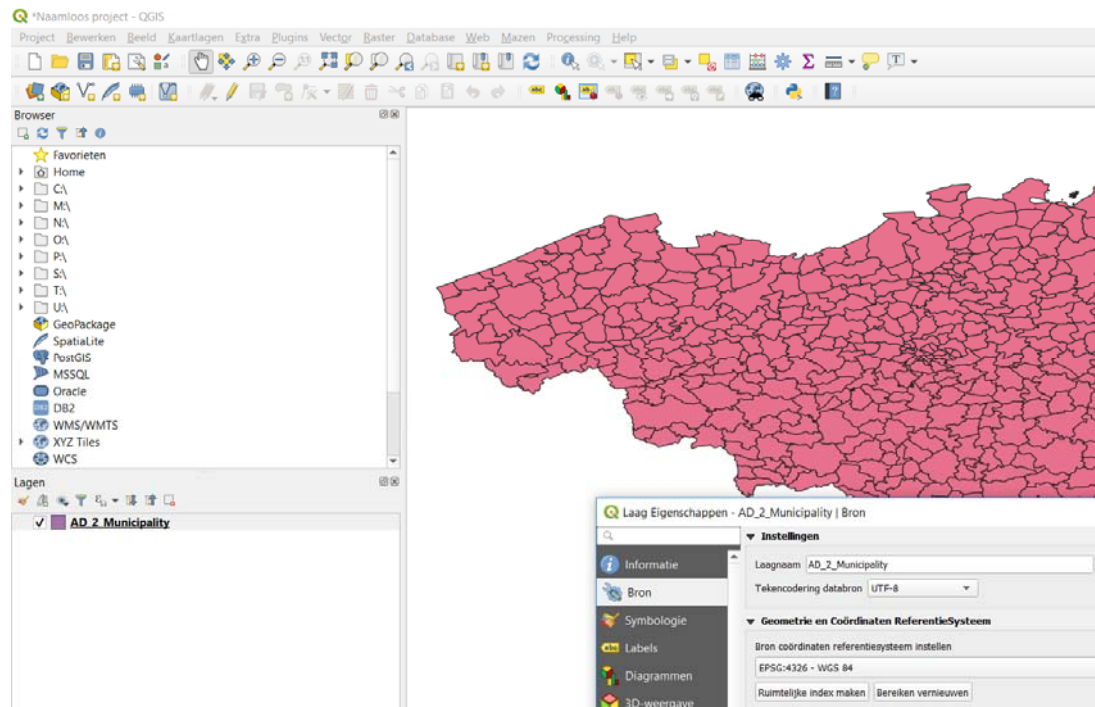


Mapshaper.org

Nice tool to verify the content of a shapefile



Qgis.org

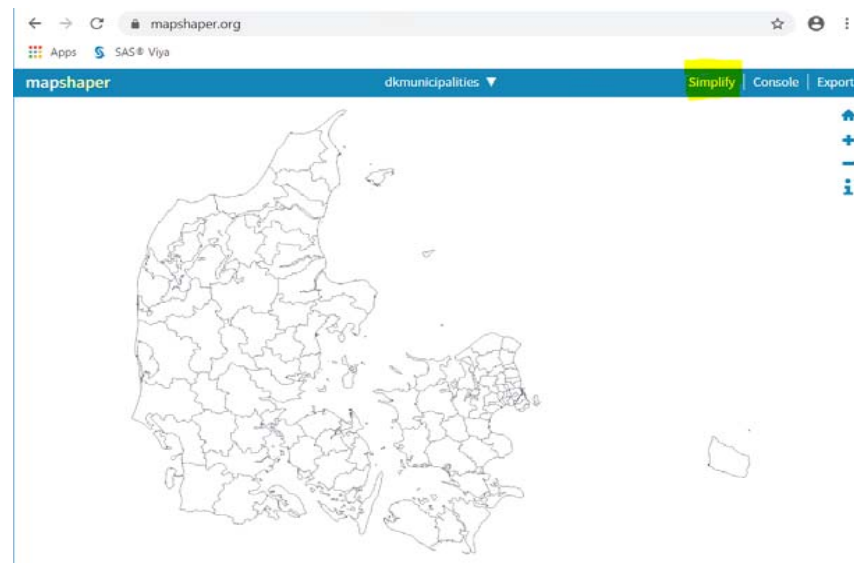


- Tool used to change Projection and Encoding
- Can be used to combine polygons in custom regions

Step 5: Reduce the density of shape data

To speed up the rendering of shapes on maps, the density of the shapedata can be reduced. In some instances (like the one we have), reducing the density is necessary to be able to show all shapes.

In this exercise we will use mapshaper.org to reduce the shapedata.



SAS macros to help import shape files

SAS provides two macros to help import shape files

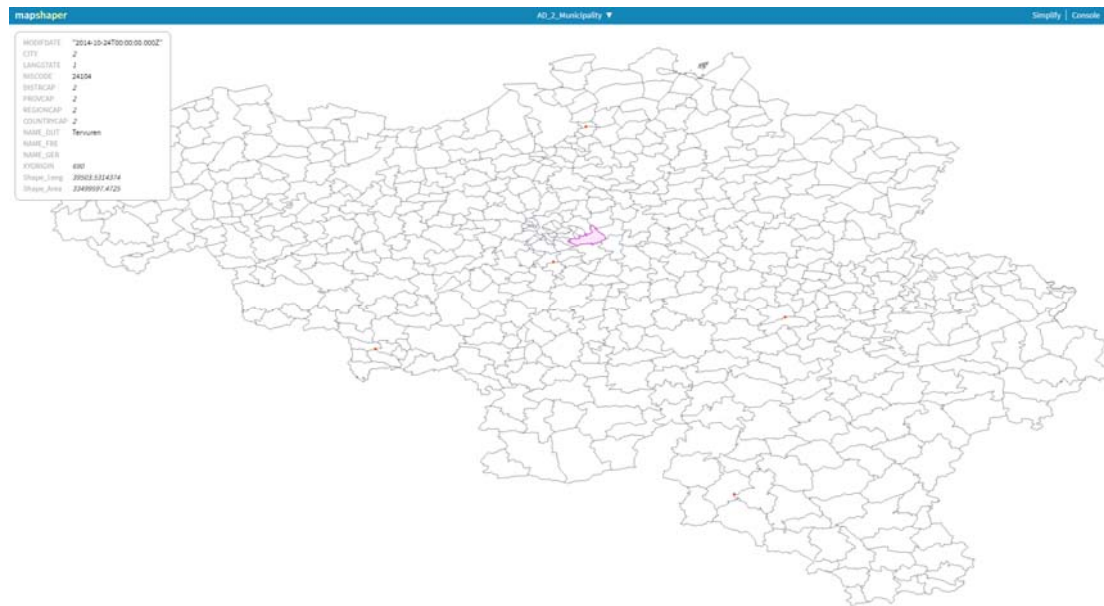
- The **%SHPCNTNT** macro displays the contents of the specified shapefile. You can use the %SHPCNTNT macro to identify which variable in the shapefile should be used as an ID variable.
- The **%SHPIMPRT** macro converts the shapefile into a SAS data set and then loads it into CAS.

Link to documentation:

<https://go.documentation.sas.com/?cdcId=calcdc&cdcVersion=3.5&docsetId=caldatamgmtcas&docsetTarget=p1dwawsidsczlpn121j0gileicxp.htm&locale=en>

Exercise 1: Investigate shapefile

In this exercise we use mapshaper.org and %SHPCNTNT to investigate the content of the shapefile.



Step 2: Import shapefile to Viya

In this step we use %SHPIMPRT to import the shapefile into a CAS dataset

Run Cancel Copy to My Snippets Debug

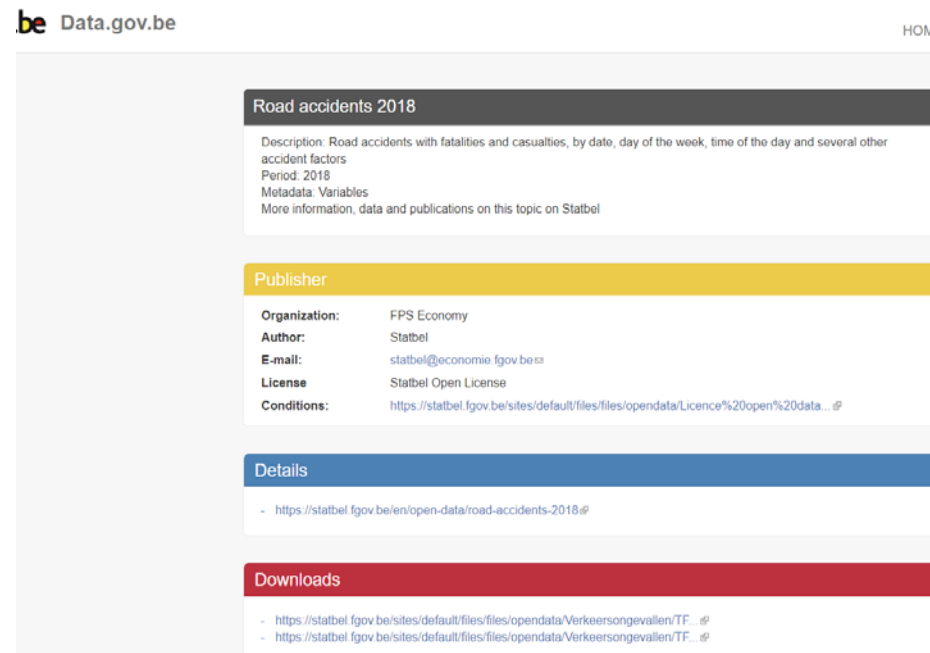
Code

```
121
122 ① proc casutil ;
123     droptable casdata="municipality&version" incaslib='mapscstm' quiet;
124     droptable casdata="municipality&version" incaslib='casuser' quiet;
125     quit;
126
127     cas mysession terminate ;
128
129     %shpcntnt(shapefilepath=&path/&shapeversion/AD_2_Municipality.shp)
130
131     %include "/opt/sas/spre/home/SASFoundation/sasautos/shprduce.sas";
132
133     %shpimprt(shapefilepath=&path/&shapeversion/AD_2_Municipality.shp,
134               ID=NISCODE,
135               outtable=municipality&version,
136               cashost=server,
137               casport=5570,
138               caslib='casuser',
139               reduce=1)
140
141     cas mysession;
142     caslib _all_ assign;
143
```


Step 3: Import Accident Data

To test the imported shapefile a set of testdata with belgian Traffic Accidents is imported.

https://data.gov.be/en/search/site/accidents?f%5B0%5D=ss_language%3Anl



The screenshot displays the Data.gov.be website interface. At the top, the logo 'be Data.gov.be' is on the left and 'HOME' is on the right. The main content area features a section titled 'Road accidents 2018' with a dark header. Below this, a description states: 'Description: Road accidents with fatalities and casualties, by date, day of the week, time of the day and several other accident factors'. It also specifies 'Period: 2018' and 'Metadata: Variables'. A link is provided: 'More information, data and publications on this topic on Statbel'. Below the description is a 'Publisher' section with a yellow header, containing details: 'Organization: FPS Economy', 'Author: Statbel', 'E-mail: statbel@economie.fgov.be', 'License: Statbel Open License', and 'Conditions: https://statbel.fgov.be/sites/default/files/files/opendata/Licence%20open%20data...'. A 'Details' section with a blue header shows a link: 'https://statbel.fgov.be/en/open-data/road-accidents-2018'. Finally, a 'Downloads' section with a red header lists two links: 'https://statbel.fgov.be/sites/default/files/files/opendata/Verkeersongevallen/TF...' and 'https://statbel.fgov.be/sites/default/files/files/opendata/Verkeersongevallen/TF...'. The SAS logo is visible in the bottom right corner.

Step 4: Create custom polygon provider

Defining a custom polygon provider based on the imported shapefile.

New Geographic Data Provider

Name:*
BE_Municipality_Refnis2015

Label:*
BE Municipality Refnis 2015

Type:
CAS Table

Server:
cas-shared-default

Library:
MAPSCSTM

Table:
MUNICIPALITY2015

OK Cancel

Edit Geographic Data Provider

niscode

Sequence Column:
_seq__

Advanced

Segment Column:
SEGMENT

Latitude (y) Column:
Y

Longitude (x) Column:
X

Coordinate Space:*
EPSG:4326

Delete OK Cancel

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References

Documentation

Working with Geography Data Items

<https://go.documentation.sas.com/?docsetId=vareportdata&docsetTarget=p031vp9uc5y5iun0zipy3c1trkqn.htm&docsetVersion=8.5&locale=nl#p1a7fw0vj2w6aln18sl77suu45o3>

Loading Geographic Polygon Data as a CAS Table

<https://go.documentation.sas.com/?docsetId=caldatamgmtcas&docsetTarget=p1dwawsidsczlpn121j0glleicxp.htm&docsetVersion=3.5&locale=nl>

References

Essentials of Map Coordinate Systems and Projections in Visual Analytics

<https://blogs.sas.com/content/sgf/2019/05/21/essentials-of-map-coordinate-systems-and-projections-in-visual-analytics/>

Creating custom region maps with SAS Visual Analytics

<https://blogs.sas.com/content/sgf/2019/03/27/creating-custom-region-maps-with-visual-analytics/>

Fundamentals of SAS Visual Analytics geo maps

<https://blogs.sas.com/content/sgf/2019/02/08/fundamentals-of-sas-visual-analytics-geo-maps/>

Finding the Treasure: Using Geospatial Data for Better Results with SAS® Visual Analytics

<https://www.sas.com/content/dam/SAS/support/en/sas-global-forum-proceedings/2018/1955-2018.pdf>

<https://communities.sas.com/t5/SAS-Communities-Library/How-to-create-your-first-web-map-into-a-SAS-Visual-Analytics/ta-p/522031>