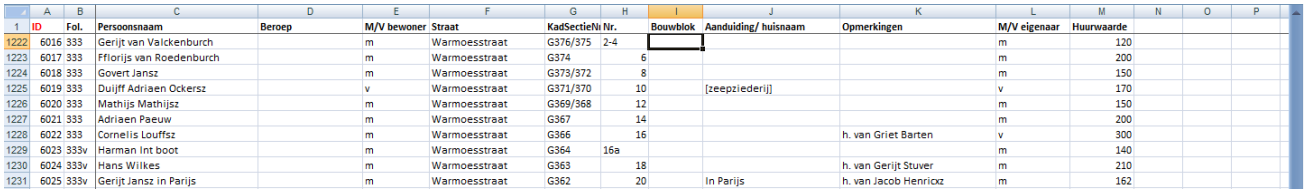
The Digital City: Warmoesstraat in 16th Century

Manual: Weixuan Li, summer 2017

PART I: A data view of Warmoesstraat and its surroundings

You probably have wandered in the restaurant/shop-packed Warmoesstraat in the heart of Amsterdam. Now you have a chance to create a virtual time machine taking people back to the 16th century by visualizing the same street using the data available from historical records.

The historical information about Warmoesstraat and its surroundings is summarized in an Excel spreadsheet including the following columns:



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	ID	Fol.	Persoonsnaam	Beroep	M/V bewoner	Straat	KadSectieNr	Nr.	Bouwblok	Aanduiding/ huisnaam	Opmerkingen	M/V eigenaar	Huurwaarde			
1222	6016	333	Gerijt van Valckenburch		m	Warmoesstraat	G376/375	2-4				m	120			
1223	6017	333	Fflorijs van Roedenburch		m	Warmoesstraat	G374	6				m	200			
1224	6018	333	Govert Jansz		m	Warmoesstraat	G373/372	8				m	150			
1225	6019	333	Duijff Adriaen Ockersz		v	Warmoesstraat	G371/370	10		[zeepziederij]		v	170			
1226	6020	333	Mathijs Mathijsz		m	Warmoesstraat	G369/368	12				m	150			
1227	6021	333	Adriaen Paeuw		m	Warmoesstraat	G367	14				m	200			
1228	6022	333	Cornelis Louffsz		m	Warmoesstraat	G366	16			h. van Griet Barten	v	300			
1229	6023	333v	Harman Int boot		m	Warmoesstraat	G364	16a				m	140			
1230	6024	333v	Hans Wilkes		m	Warmoesstraat	G363	18			h. van Gerijt Stuver	m	210			
1231	6025	333v	Gerijt Jansz in Parijs		m	Warmoesstraat	G362	20		In Parijs	h. van Jacob Henrickz	m	162			

- ID — An unique number that indicates the number of the record in the entire document
- Fol. — Page number of the original document
- Persoonsnaam — Person's name
- Beroep — Profession
- M/V bewoner — Male/Female inhabitant/tenant
- Straat — Street
- KadSectieNr — Section in 19th century map
- Nr. — House number
- Bouwblok — Building block, we can add this, based on the block map
- Aanduiding/ huisnaam — House name
- Opmerkingen — h. van means: tenant, house is owned by XX
- M/V eigenaar — Male/Female house owner
- Huurwaarde — Rent value of the house (per year)

The following assignments will guide you to present this information on a map of Amsterdam using QGIS.

PART II: Install QGIS and introduction

1. Installation:

For Windows users:
Download and run the standalone installer, available here:
http://qgis.org/en/site/forusers/download.html (QGIS Standalone Installer Version 2.12)
When it gives you the option, you do not need to download the sample datasets, although feel free to do so and use them for other tutorials or examples.
Double click your installation package and follow the steps.

Video guide: https://www.youtube.com/watch?v=IoNPpcOb-sE

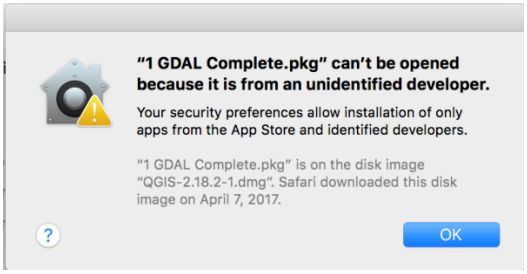
For Mac OS users:
OS 10.7 and Higher: Follow the installation instructions provided here:
http://www.kyngchaos.com/software/qgis
OS 10.6.8: Try using the latest experimental builds for Mac OS 10.6.8 provided here:
http://qgis.dakotacarto.com/ (scroll down to and click on "Nightly for Snow Leopard - Mac OS X 10.6").
Alternatively, try compiling with HomeBrew (http://brew.sh/), following instructions here:
https://github.com/OSGeo/homebrew-osgeo4mac

Notes for Mac OS users:

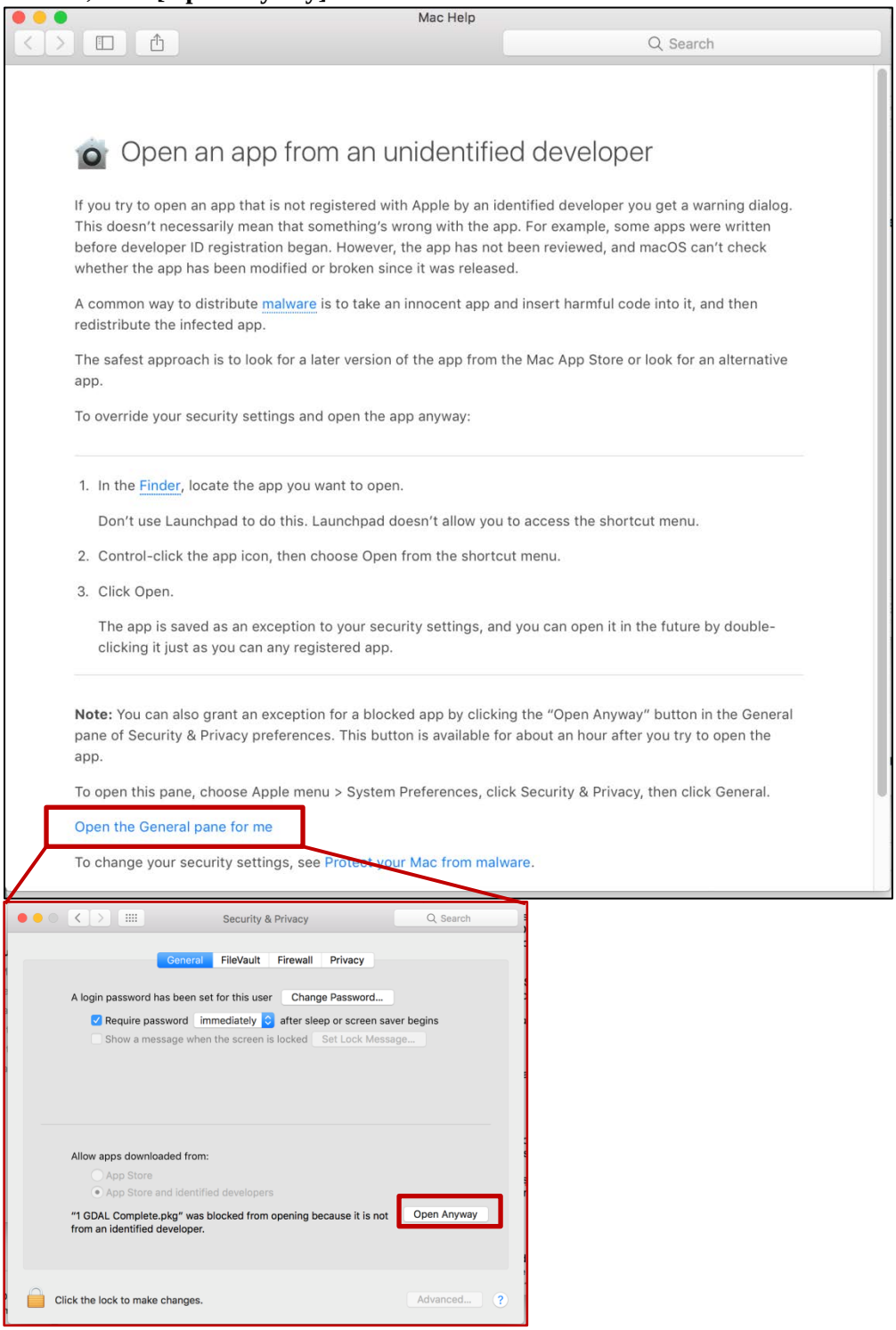
Unlike Windows, QGIS has 4 packages for Mac OS to install. They are numbered in the package you have just downloaded, so please install following the sequence.

Video guide: https://www.youtube.com/watch?v=MnXi5b2pqDo

LET OP: Since QGIS is a third-party software (i.e., not from the Apple store), you *may* need an extra step to authorize the installation. When you double click on the first package, you will see this window:



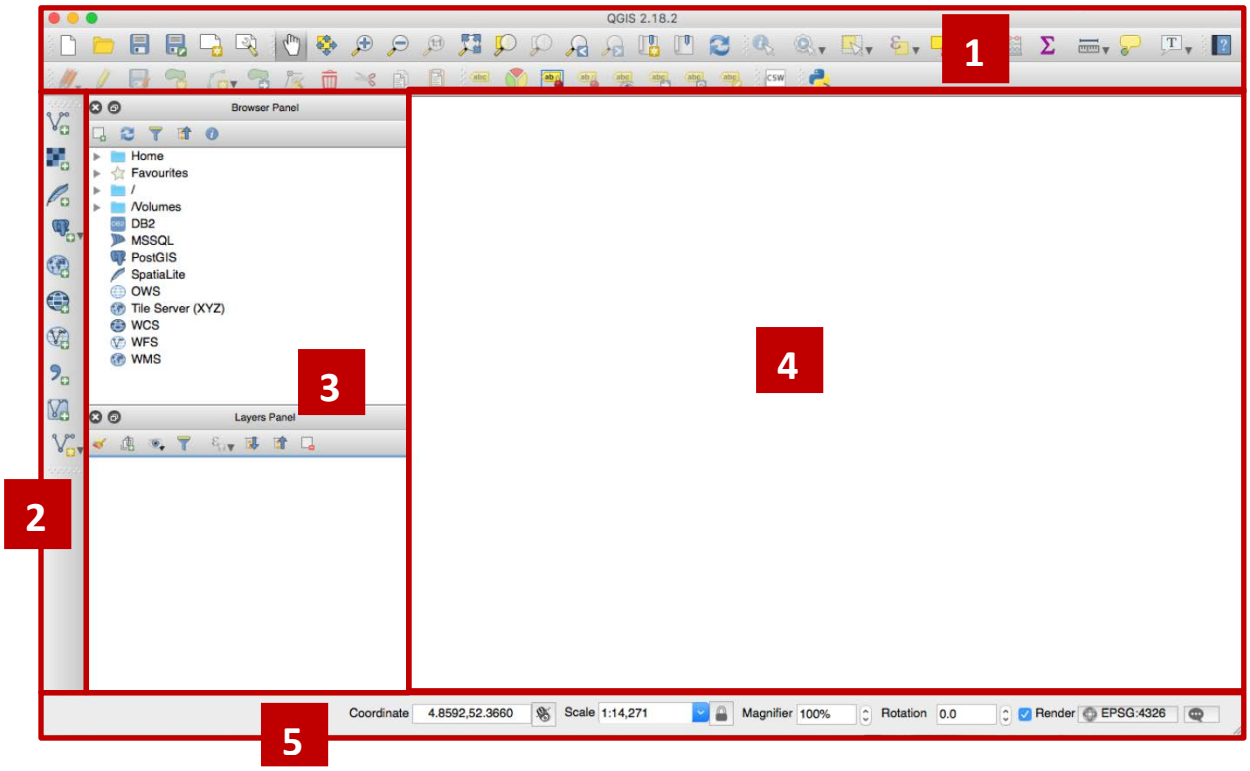
Click **[OK],** and this window will pop up, then click **[Open the General panel for me**], and in the following window, click **[Open anyway]**:



After you have clicked **[Open anyway]**, the new window will have a [Open] button. Click it and do the same for all four packages. Then follow the instructions to install.

After successfully installing QGIS, you can open it by clicking:

2. The basics of the QGIS user interface:



The elements identified in the figure above are:

1. Toolbars
2. Side Toolbar
3. Layers List / Browser Panel
4. Map canvas
5. Status bar

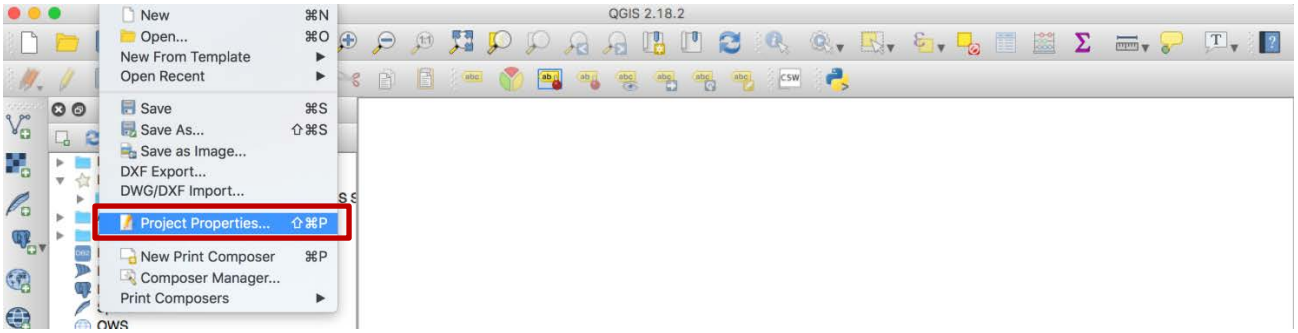
You will use the sections for the next tasks.

In the following sections, Text that **[Looks like this]** directs you through menus and buttons.

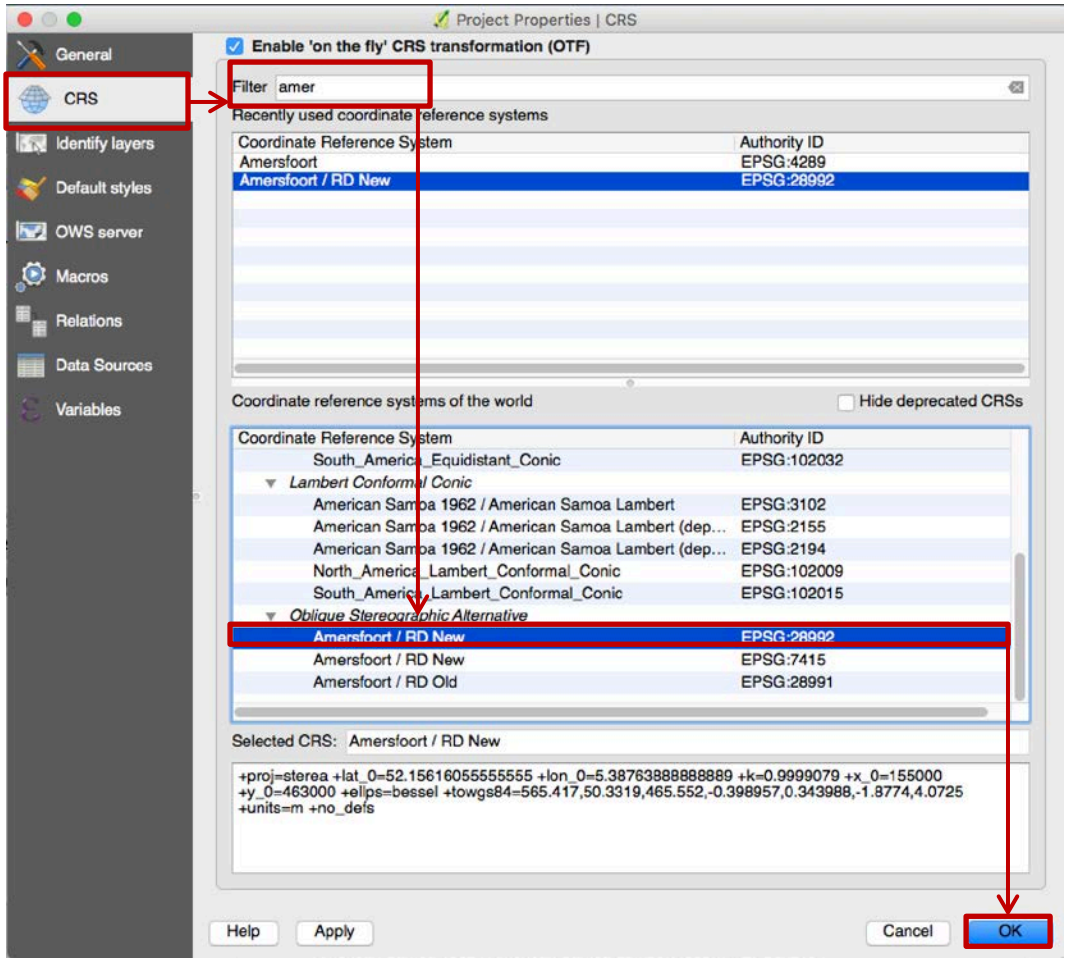
PART III: Creating your own maps in QGIS

Task 1: Create a new map and set coordinate system

- Open QGIS and create a blank project (default)
- Set coordinate system:
  - Click top menu: **[Project]** → **[Project Properties…]**

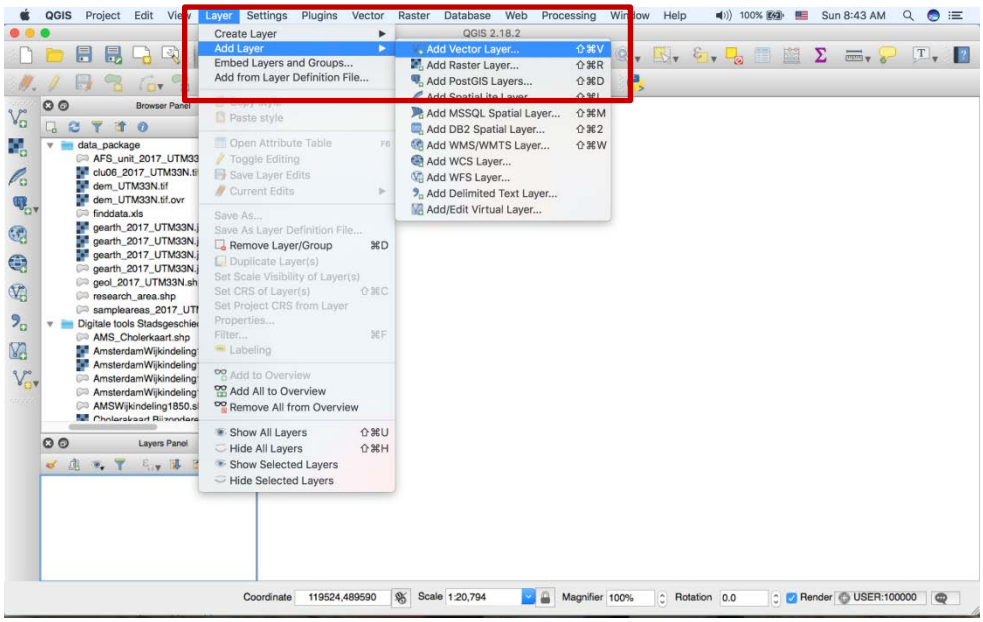


  - In the pop up window:
    - Click **[CRS]** on the side menu
    - Check [Enable 'on the fly' CRS transformation (OTF)] box
    - Type in *Amersfoort* in the **[Filter]**
    - Select **Amersfoort RD/new; EPSG:28992** from the list below
    - Click **[OK]**



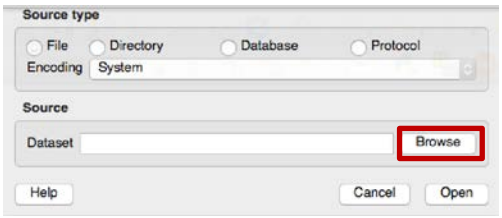
Task 2: Load the shape files

- Go to [**Layer**] → [**Add Layer**] →  [**Add Vector Layer**]



- In the pop up window, click **[Browse]** and select shapefile `AMS_Blokkenkaart.shp` from the list. This shape file shows the building blocks of Amsterdam around 1550s.
- Click **[Open]** and it loads into your QGIS project

(You only need to load the **.shp** file, since the other files in the shapefile folder provide supporting information for .shp file.)



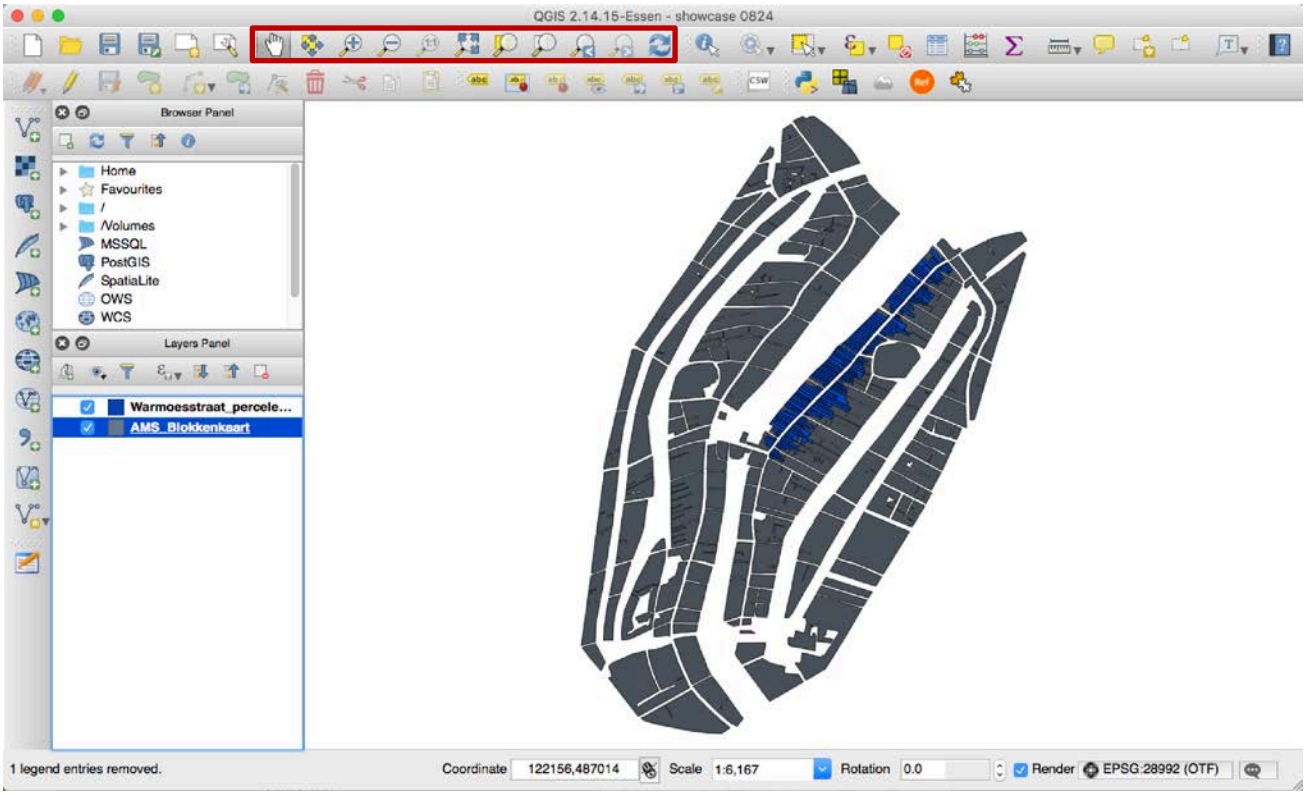
Congratulations! You now have a basic map. Repeat the previous steps to load the other layer `Warmoesstraat_percelen1550.shp` (with parcels of land along Warmoesstraat).

The two layers will serve as a basis for your future mapping.

- Now would be a good time to save your work.
- Click on the **[Save as]** button: 
- Save the project under the folder of your choice. Your project will be saved in `.qgs` format.

Once the shapefile is loaded, you can see the blocks and parcels of Amsterdam in simple, (random) single-color polygons. Now you can zoom around it using the map navigation tools (in the red bar area).

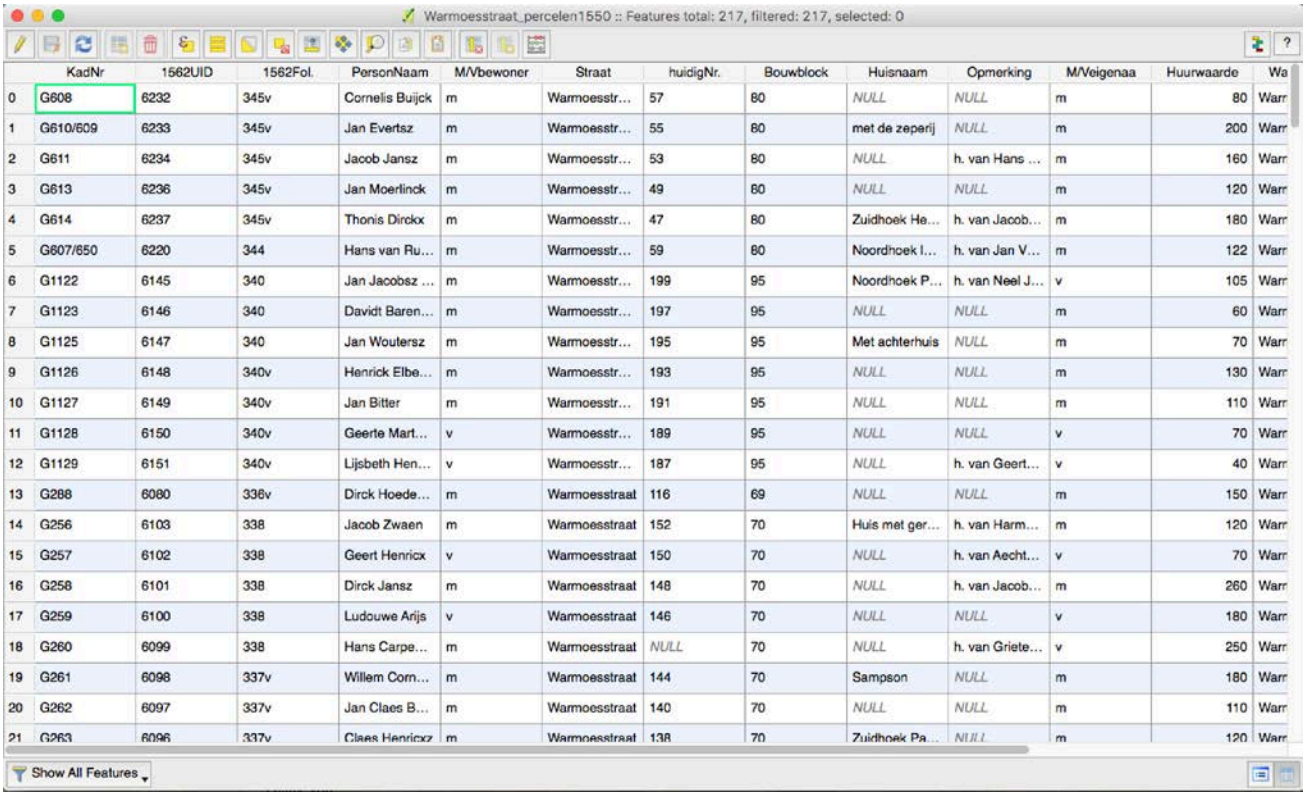
[Tip] Apart from using the  pan and  zoom-in /  zoom-out icons on the toolbar with the mouse, navigating can also be done with the mouse wheel, spacebar and the arrow keys.



[Tip] in case you 'lost' the map (by zooming out too much or move it out of your sight), you can always click **[zoom full]** to bring the shape file to your screen.

Let's take a look at the data behind the polygons:

- Open the attribute table of **Warmoesstraat_percelen1550**: Right click the layer → **[Open Attribute table]**



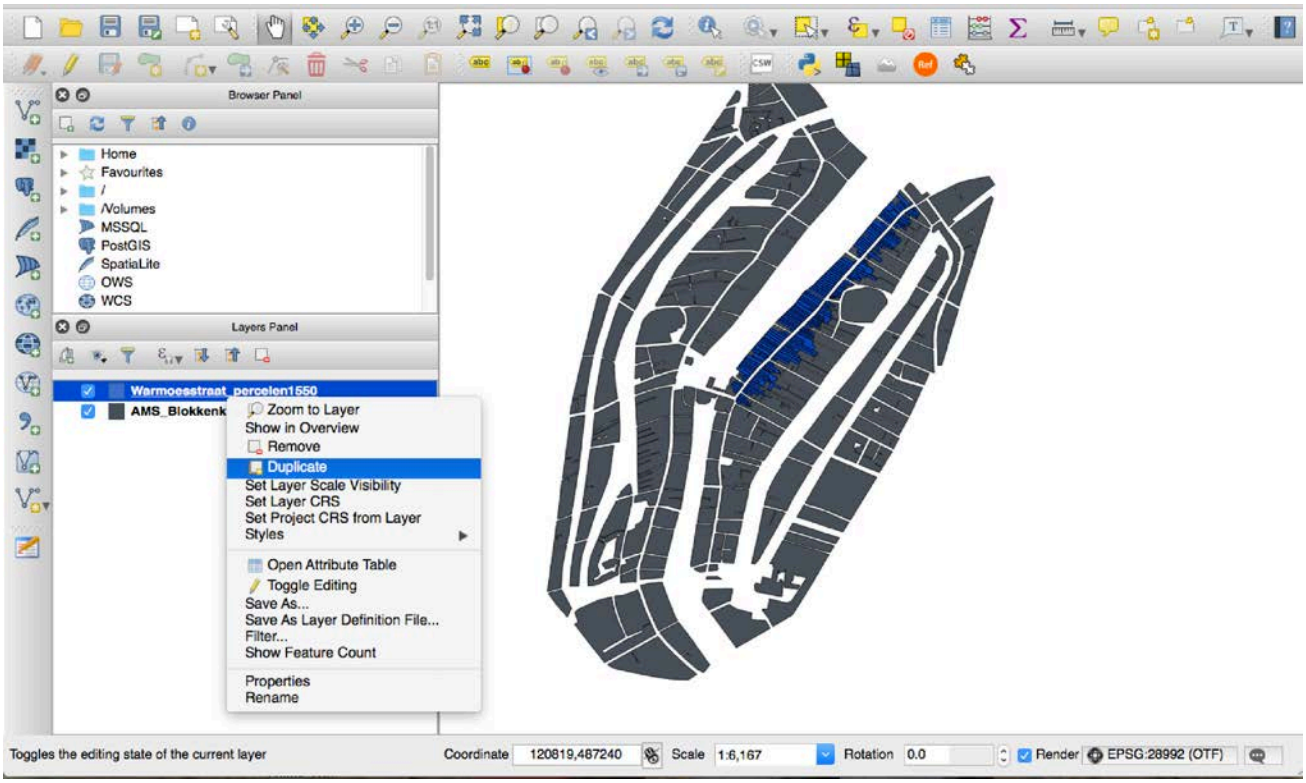
	KadNr	1562UID	1562Fol.	PersonNaam	M/Vbewoner	Straat	huidigNr.	Bouwblock	Huisnaam	Opmerking	M/Veigenaa	Huurwaarde	Wa
0	G608	6232	345v	Cornelis Buijck	m	Warmoesstr...	57	80	NULL	NULL	m	80	Warr
1	G610/609	6233	345v	Jan Evertsz	m	Warmoesstr...	55	80	met de zeperij	NULL	m	200	Warr
2	G611	6234	345v	Jacob Jansz	m	Warmoesstr...	53	80	NULL	h. van Hans ...	m	160	Warr
3	G613	6236	345v	Jan Moerlinck	m	Warmoesstr...	49	80	NULL	NULL	m	120	Warr
4	G614	6237	345v	Thonis Dirckx	m	Warmoesstr...	47	80	Zuidhoek He...	h. van Jacob...	m	180	Warr
5	G607/650	6220	344	Hans van Ru...	m	Warmoesstr...	59	80	Noordhoek I...	h. van Jan V...	m	122	Warr
6	G1122	6145	340	Jan Jacobsz ...	m	Warmoesstr...	199	95	Noordhoek P...	h. van Neel J...	v	105	Warr
7	G1123	6146	340	Davidt Baren...	m	Warmoesstr...	197	95	NULL	NULL	m	60	Warr
8	G1125	6147	340	Jan Woutersz	m	Warmoesstr...	195	95	Met achterhuis	NULL	m	70	Warr
9	G1126	6148	340v	Henrick Elbe...	m	Warmoesstr...	193	95	NULL	NULL	m	130	Warr
10	G1127	6149	340v	Jan Bitter	m	Warmoesstr...	191	95	NULL	NULL	m	110	Warr
11	G1128	6150	340v	Geerte Mart...	v	Warmoesstr...	189	95	NULL	NULL	v	70	Warr
12	G1129	6151	340v	Lijsbeth Hen...	v	Warmoesstr...	187	95	NULL	h. van Geert...	v	40	Warr
13	G288	6080	336v	Dirck Hoede...	m	Warmoesstraat	116	69	NULL	NULL	m	150	Warr
14	G256	6103	338	Jacob Zwaen	m	Warmoesstraat	152	70	Huis met ger...	h. van Harm...	m	120	Warr
15	G257	6102	338	Geert Henricx	v	Warmoesstraat	150	70	NULL	h. van Aecht...	v	70	Warr
16	G258	6101	338	Dirck Jansz	m	Warmoesstraat	148	70	NULL	h. van Jacob...	m	260	Warr
17	G259	6100	338	Ludouwe Arijs	v	Warmoesstraat	146	70	NULL	NULL	v	180	Warr
18	G260	6099	338	Hans Carpe...	m	Warmoesstraat	NULL	70	NULL	h. van Griete...	v	250	Warr
19	G261	6098	337v	Willem Corn...	m	Warmoesstraat	144	70	Sampson	NULL	m	180	Warr
20	G262	6097	337v	Jan Claes B...	m	Warmoesstraat	140	70	NULL	NULL	m	110	Warr
21	G263	6096	337v	Claes Henricxz	m	Warmoesstraat	138	70	Zuidhoek Pa...	NULL	m	120	Warr

Take a close look at the attribute table. If you feel more comfortable playing with data in Excel, the Excel spreadsheet of the same dataset can also be found in the package.
In the following assignments, you will use the information in the attribute table to create your own map showing the desired information.

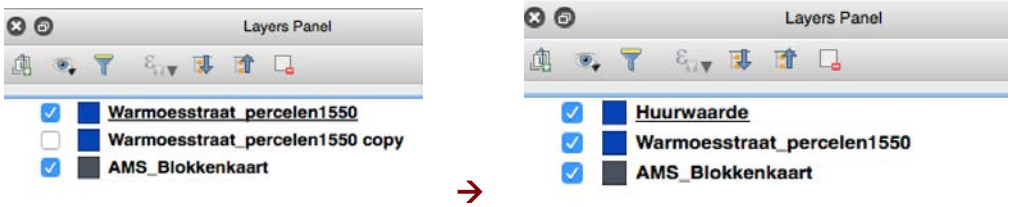
Task 3: Add a new layer/ Copy a layer to show rental values

At this stage we have a base map showing the building blocks in Amsterdam and the parcels along Warmoesstraat. We will need another layer to show the spatial distribution of rental values along Warmoesstraat. Instead of creating another map file from scratch, we can simply duplicate the ***Warmoesstraat_percelen1550*** layer and change the display to a different attribute, in this case, the rental value.

- Right click on **Warmoesstraat_percelen1550,** then click on **[Duplicate]**

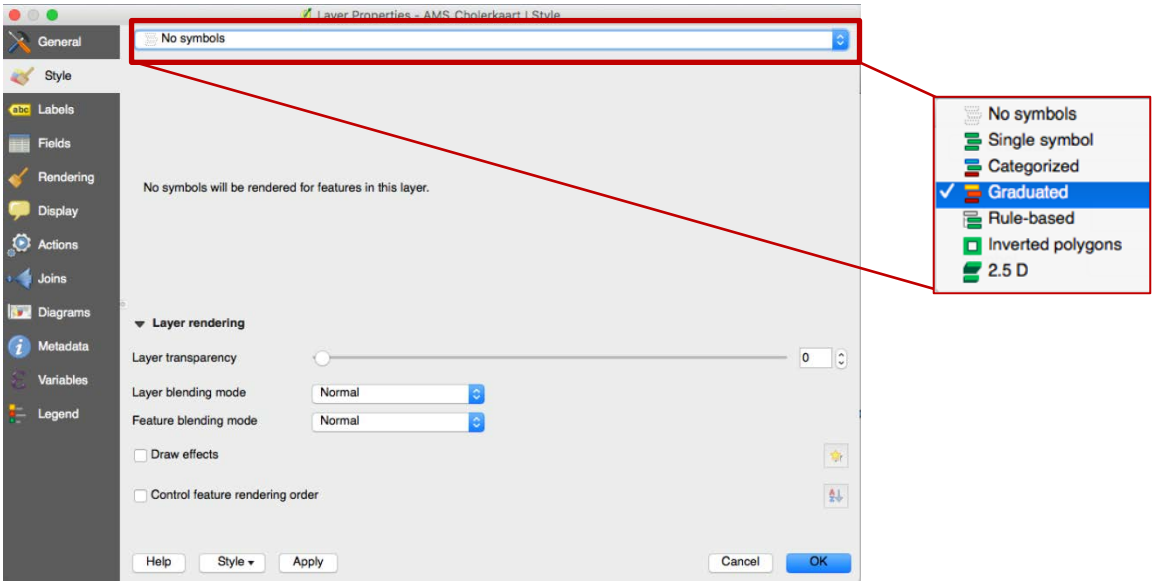


- In the **[Layers Panel]** on the left, click on the box before the copied layer to make it visible and drag it to the top of the list. Please note that the display of layers in QGIS follows the sequence showing on the [Layers Panel]. For layers with overlapping area, you need to place the layer you want to show on top, or make the layers above invisible by unchecking them.
- Then, right click on the layer name, select **[Rename]** and change the layer name to **'Huurwaarde.'**

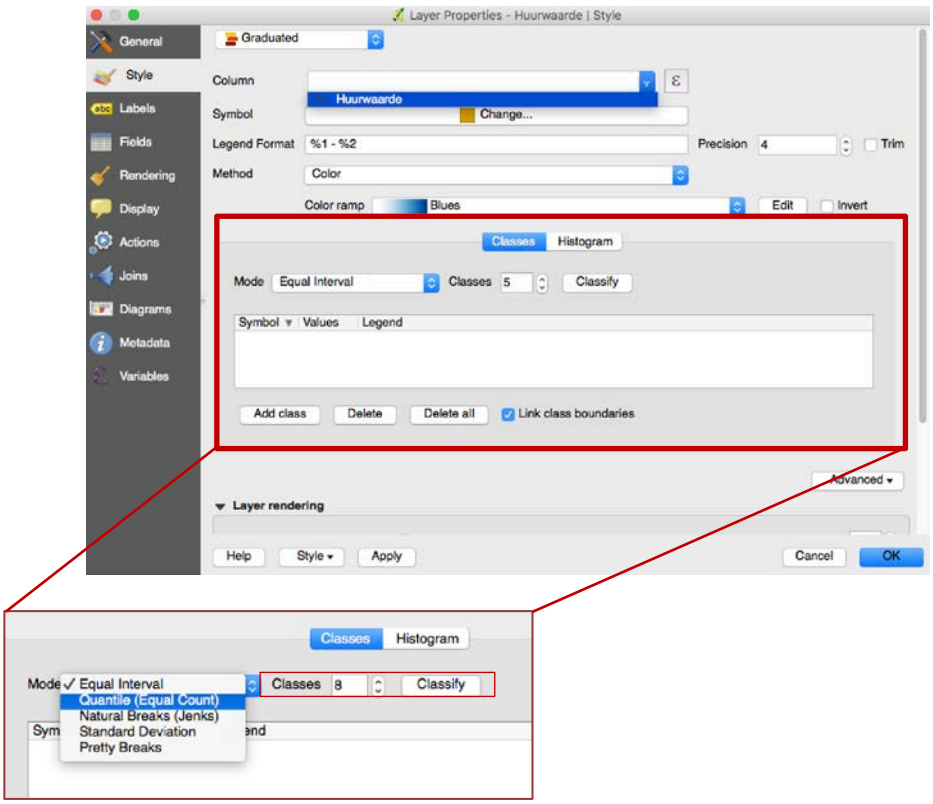


Task 4: Color-coding Warmoesstraat parcels based on Huurwaarde

- Double click the layer's name: **Huurwaarde (**or right click on layer's name, then click on **[Properties]**)
- Click on the **[Style]** side menu

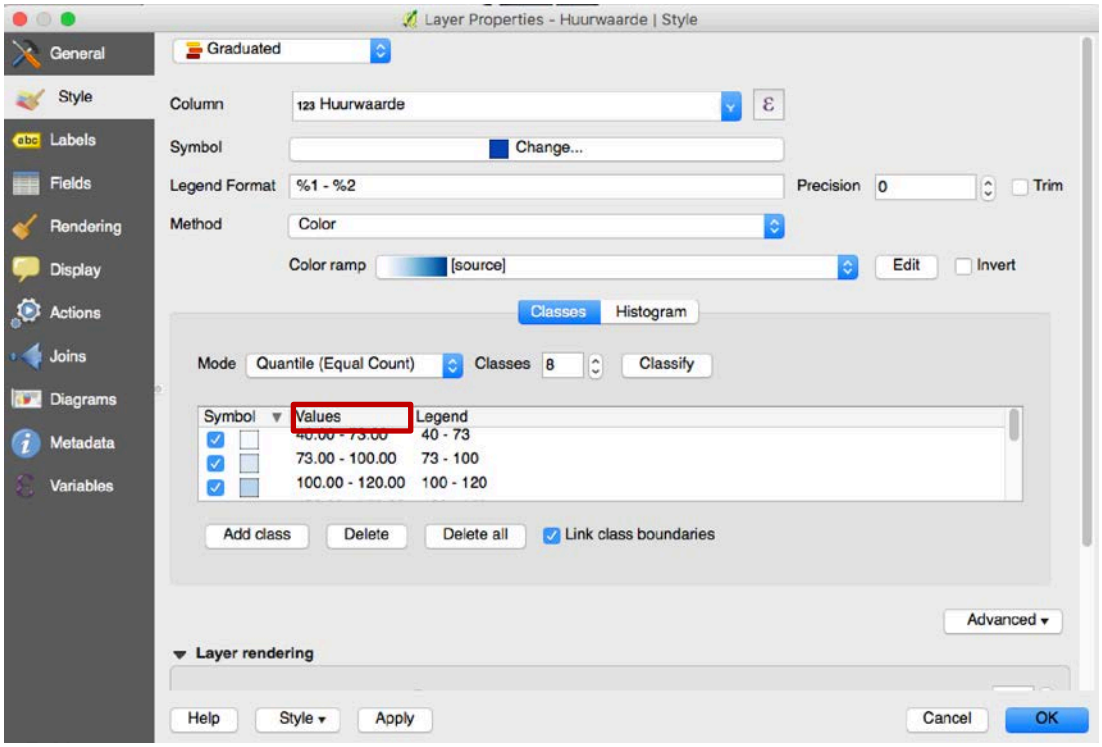


- Select **[Graduated]** from **[No symbols]** drop-down menu
- In the **[Column]** drop-down menu, select **[Huurwaarde]. This** option defines which attribute will be presented on the map. [1]
- Then in the **[Mode]** menu, select **[Quantile (Equal Count)]**
- Change the **[Classes]** number from the default 5 to 8, then click **[Classify]**

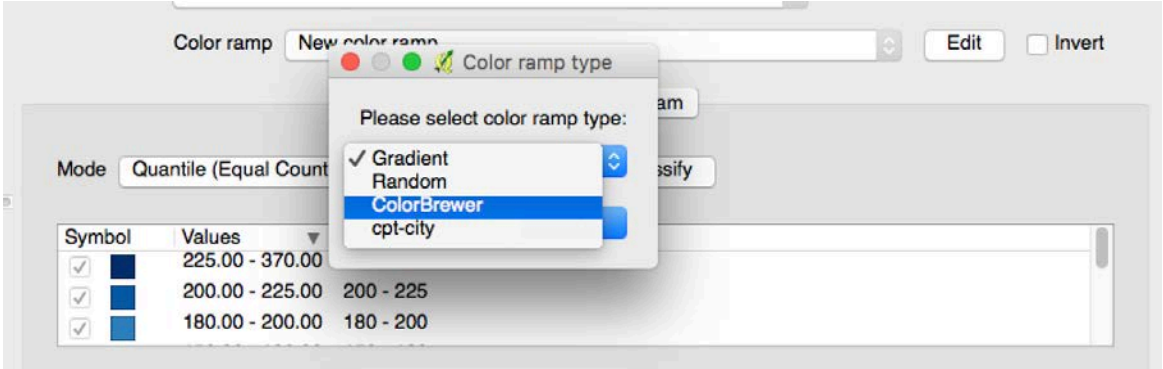


- Click **[Values]** column to have the value show in a descendent order

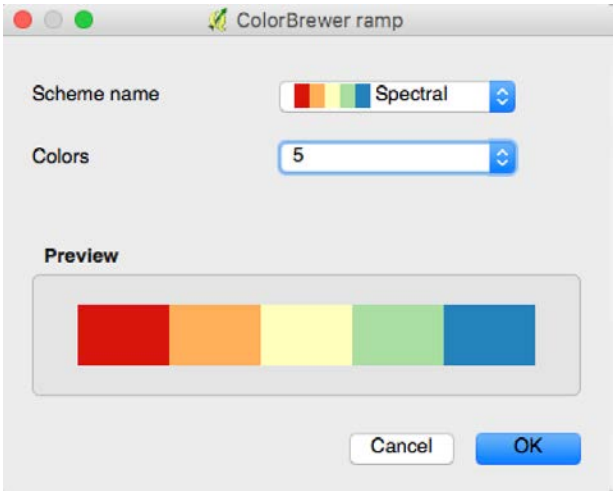
[1] The rental value is mentioned in the kohier of 1562. People who rented a house had to show the tax officials the lease agreement, which also mentioned the sum they should pay for rent. The tax officials estimated the value of the houses, which were occupied by their owners. How they exactly came to this estimation, is still a theme for further research.



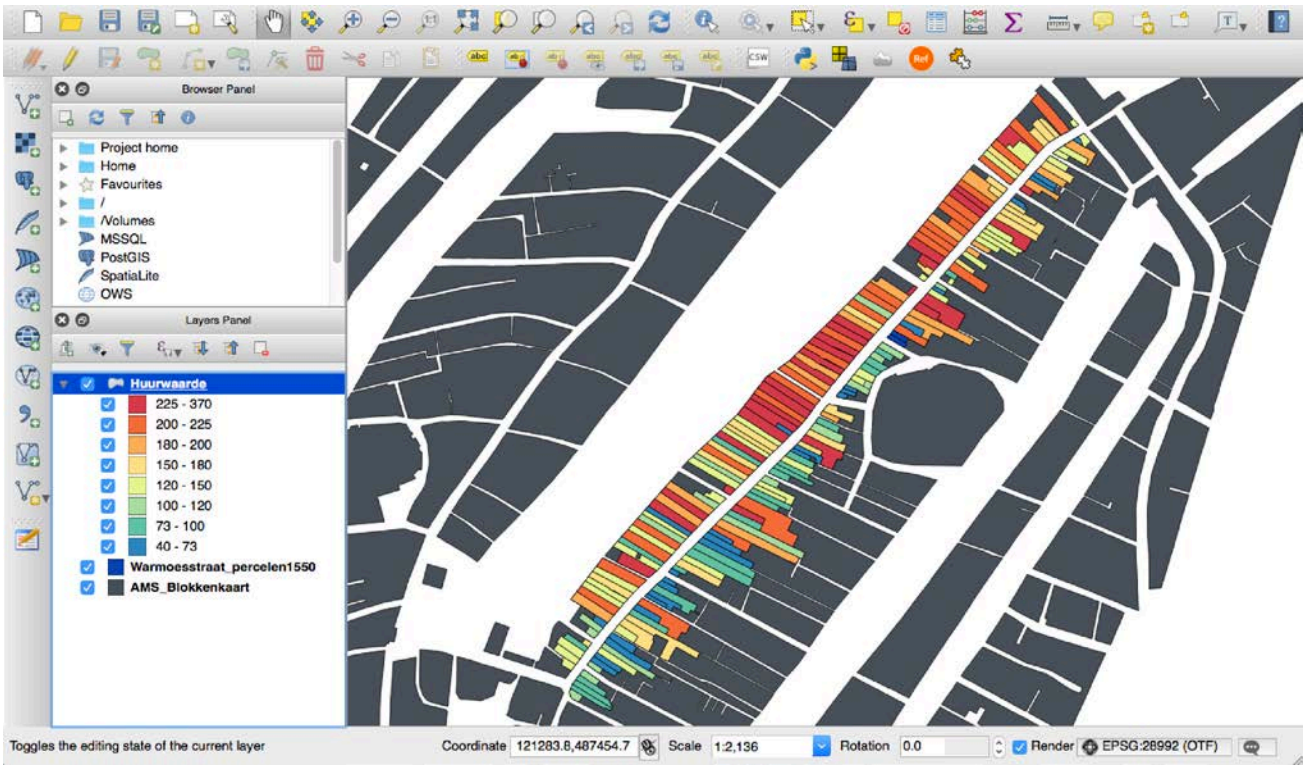
- Click the **[Color ramp]** menu, and select **[New color ramp]**



- In the pop-up window, select **[ColorBrewer]** – **[Scheme name]** to *Spectral* and **[Colors]** to *8* and click **[OK]** (you can save the scheme with the name of your choice)



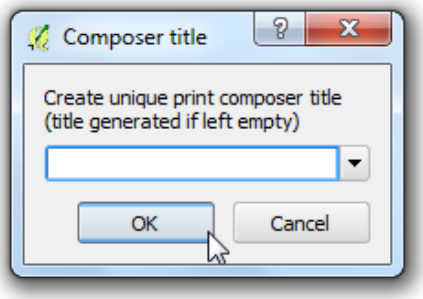
- Click **[OK]**. You will now see the parcels are shown in different colors based on *huurwaarde*. Your map may look like this:



Question: What can you learn from this map?

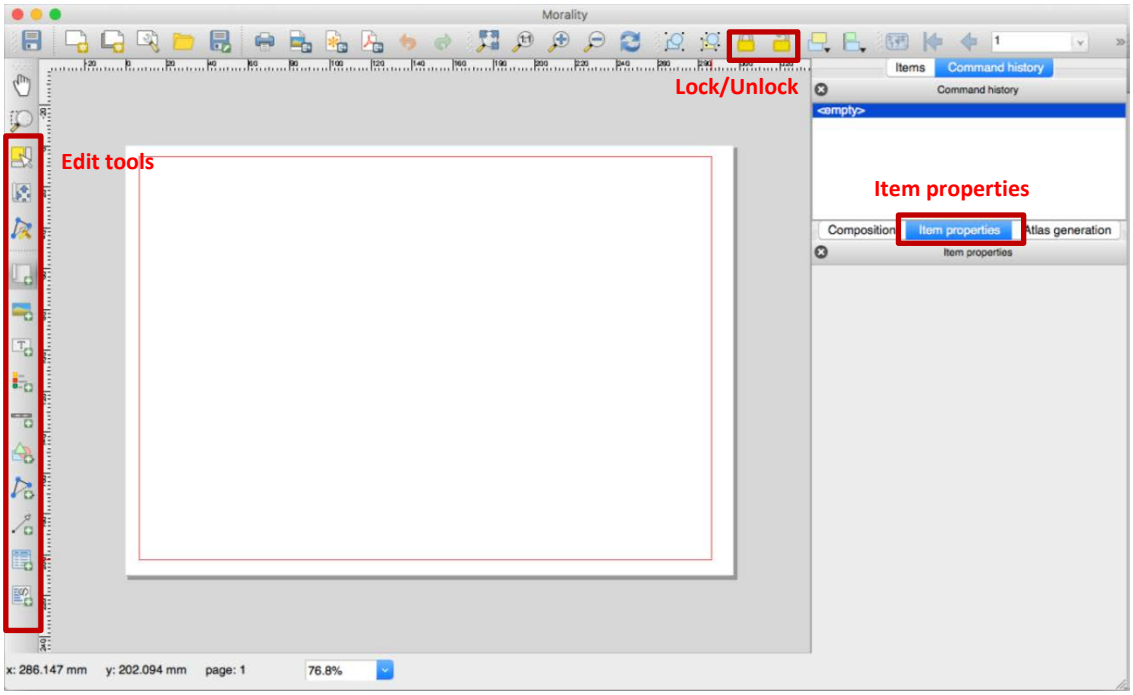
PART VI: Export a Map

Before you export a map or start working with the ***Print Composer***, you need to load the QGIS map canvas and adapt its properties to suit your own convenience (i.e., zooming in to the parts you want to show). After everything is rendered and symbolized to your liking, click the  New Print Composer icon in the toolbar or choose **[Project]** → **[New Print Composer]**. You will be prompted to choose a title for the new Composer.



Task 1: Add a Mapping Area

Click on the  Add new map toolbar button in the Print Composer toolbar to add the QGIS map canvas. Now, drag a rectangle onto the Composer canvas with the left mouse button to add the map.

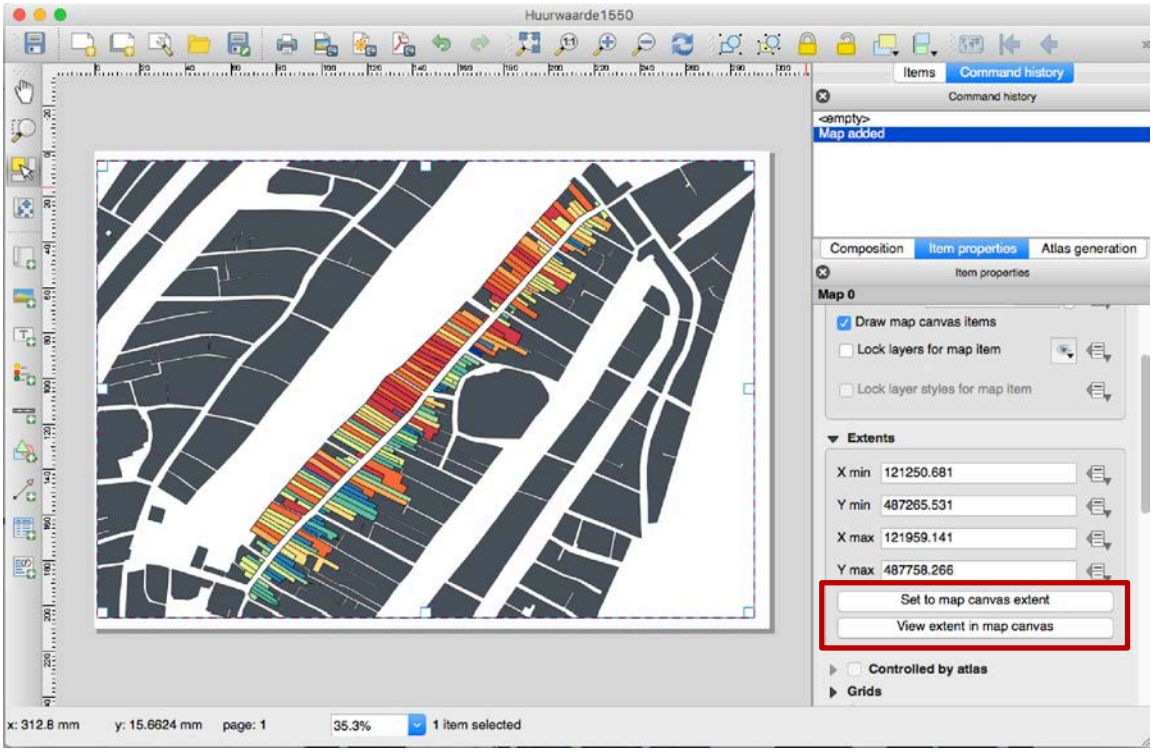


Task 2: Edit a Mapping Area

You can resize the map item by clicking on the Select/Move item button, selecting the element, and dragging one of the blue handles in the corner of the map. This button also helps to move the map to another place. Select the item and while holding the left mouse button, move to the new place and release the mouse button.

To move layers within the map element, select the map element, click the Move item content icon and move the layers within the map item frame with the left mouse button.

To zoom in and out for the content area of the map, click the Move item content icon, and scroll up and down to zoom in and out within the content area. Or click **[Set to map canvas extent]** on the **[Item properties]** tab.

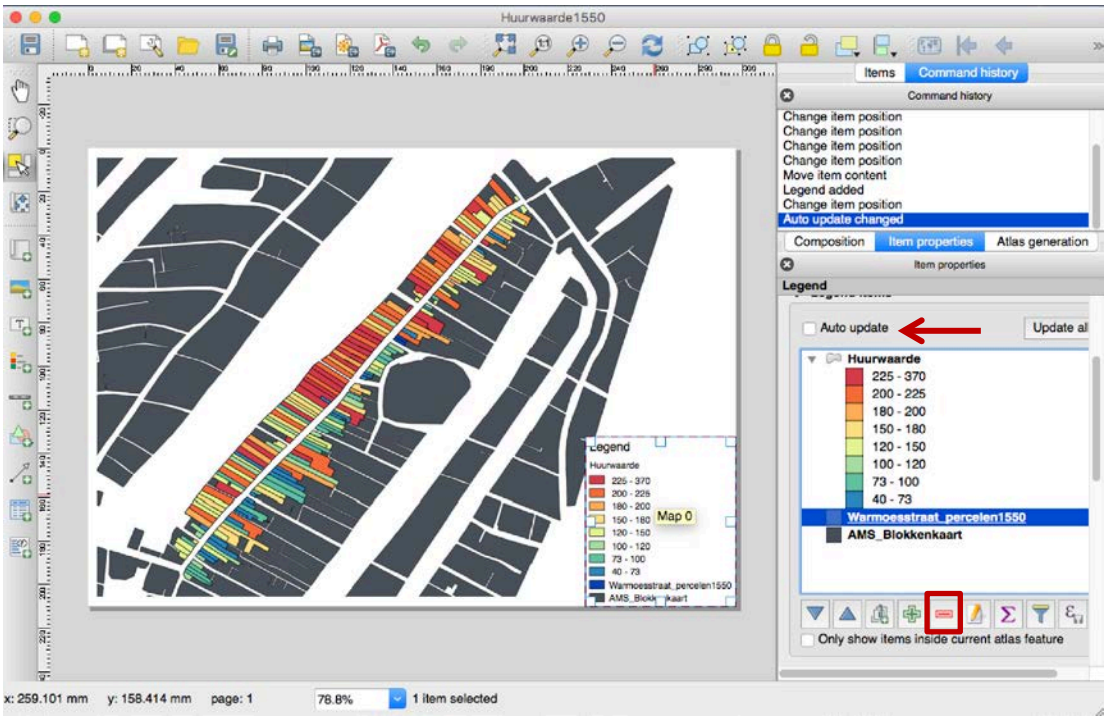


[Tip] After you have found the right place for an item, you can lock the item position within the Print Composer canvas. Select the map item and use the toolbar Lock Selected Items (on the top of this Map Composer window). A locked item can only be selected using the **[Item properties]** tab. Once selected, you can use the **[Items]** tab to unlock individual items. The Unlock All Items icon will unlock all locked composer items. With the map selected, you can now adapt more properties in the map **[Item properties]** tab.

Task 3: Add a Legend

To add a map legend, click the Add new legend icon, place the element with the left mouse button on the Print Composer canvas and drag to position. To customize the appearance in the legend use the **[Item properties]** tab on the right side of the window.

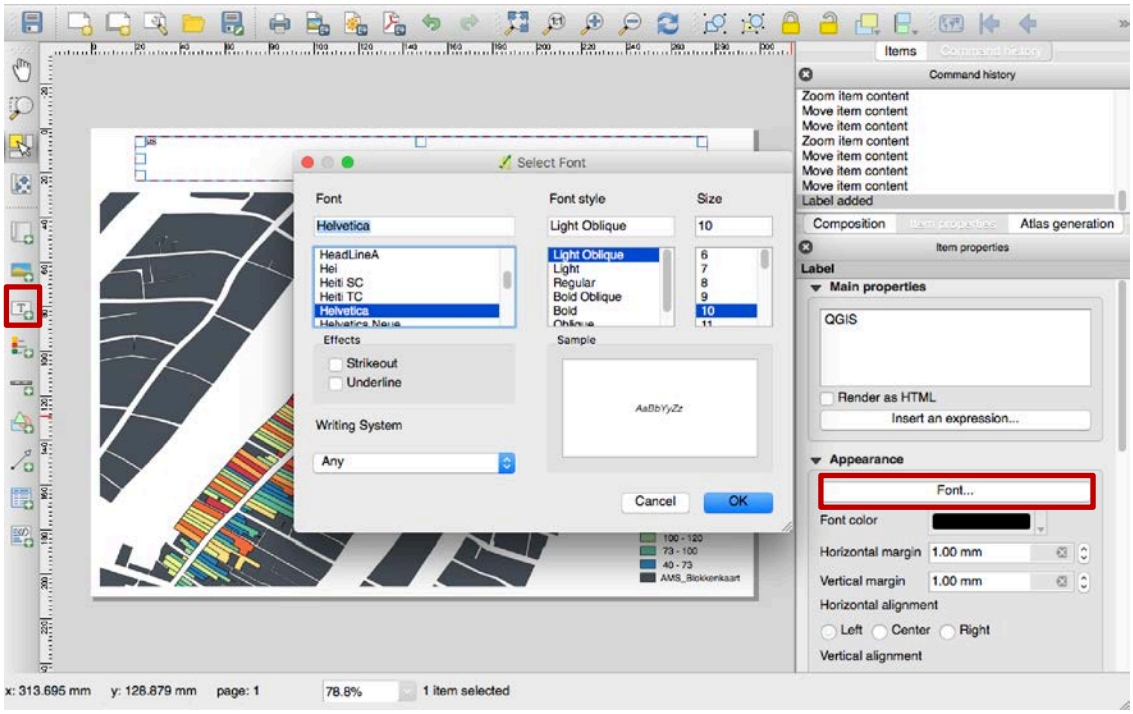
Because we are only showing the rental values in this map, we can uncheck the **[Auto Update]** box, and use the **[minus]** button to remove the other layers you do not want to list in the legend. This change only applies to the legend of the output. If you want to change the visibility of your layer, you have to go back to the main map.



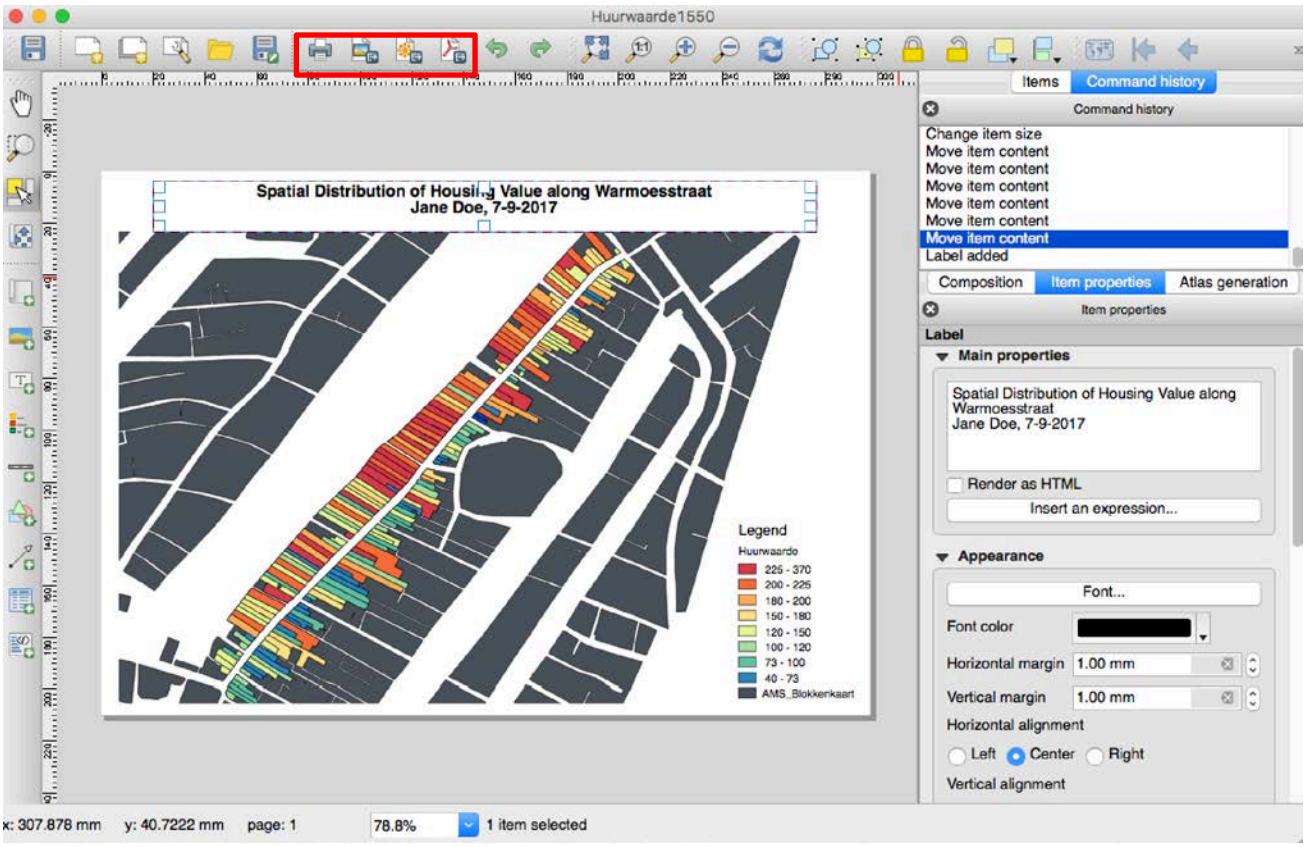
Task 4: Add a Title

It is like adding a text box in a PowerPoint.

- Click on add text in the sidebar
- Type in: Title of your map, your name and the date into the box on the right
- You can also change the font size by clicking on the **[Font…]** button on the right



Task 5: Export Your Map



- Select the type for export:

The  Print icon allows you to print the layout to a connected printer or a PostScript file, depending on installed printer drivers.

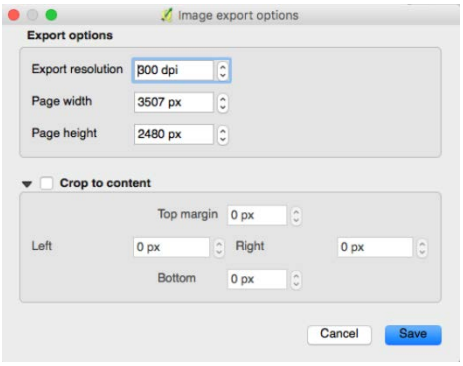
The  Export as image icon exports the Composer canvas in several image formats, such as PNG, BPM, TIF, JPG,...

The  Export as SVG icon saves the Print Composer canvas as an SVG (Scalable Vector Graphic).

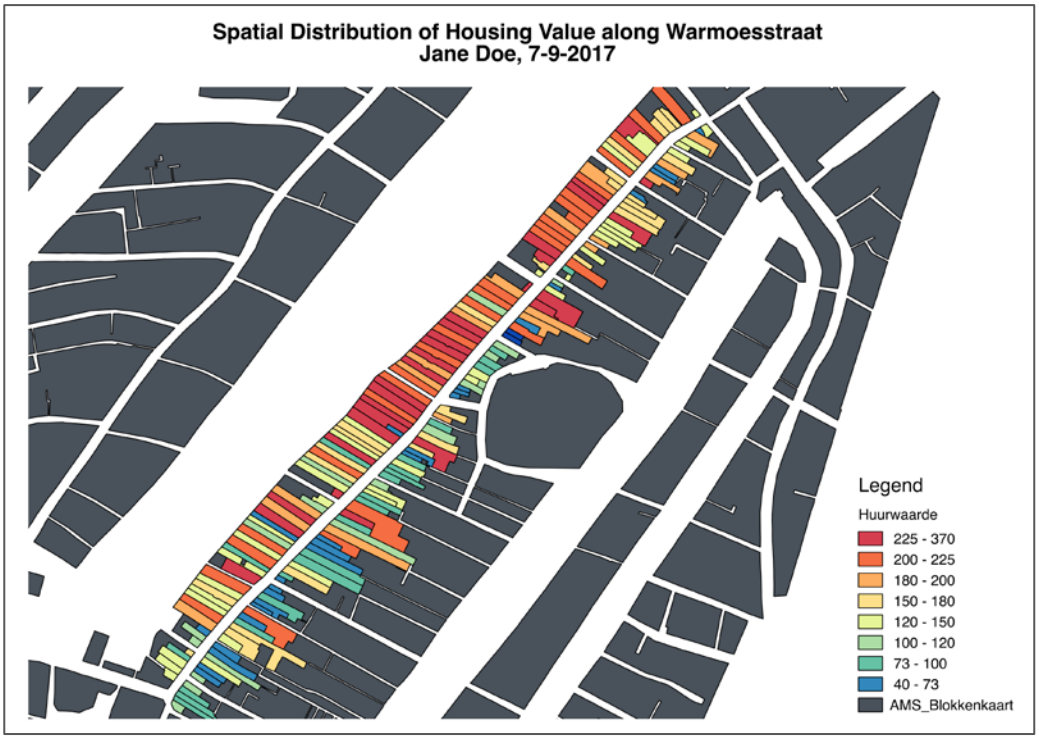
The  Export as PDF icon saves the defined Print Composer canvas directly as a PDF.

(**NOTE:** the  Save Project icon can only save the features of your design in QGIS, but cannot be used to export a map.)

- Enter the name of your map. You can also select your desired file type (.jpg, .png, etc.)
- Click **[Save]**, then in the pop up window you can change other options, the default is usually preferred. Then click on **[Save]** to finish export.



Your final map may look like the following:



Task 6: Your Own Question and Solution

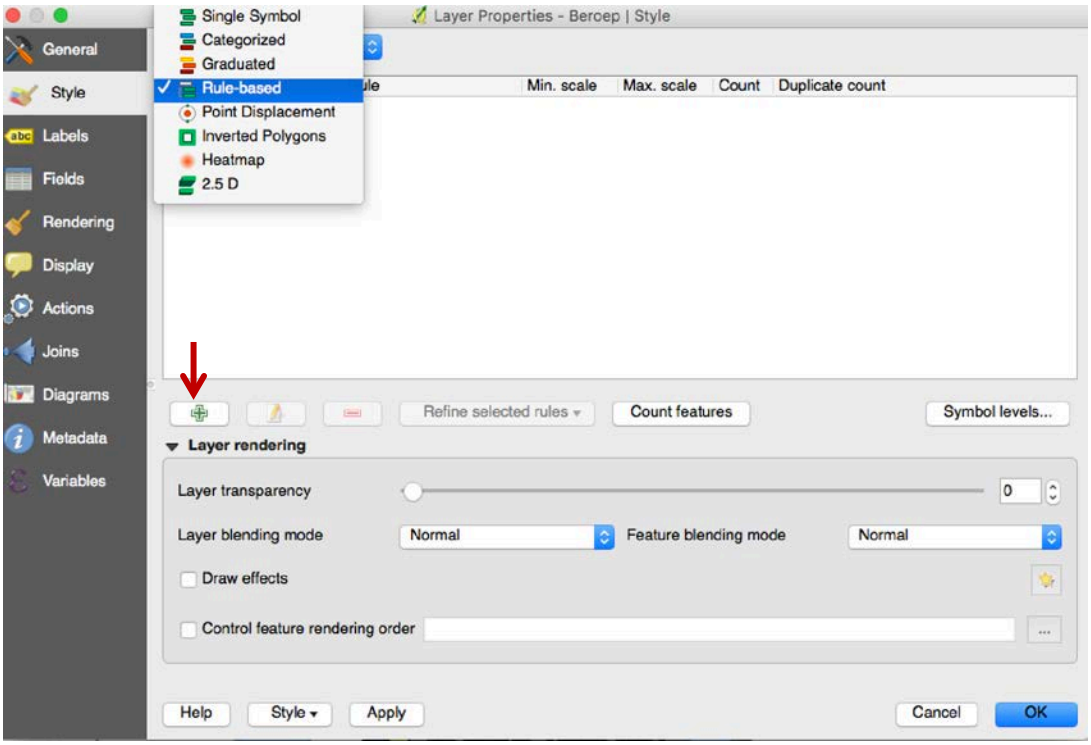
With all the tools you have learned (color-code the housing value based on the information you want to present) what question(s) are you interested in? Can you use the tools to answer your own question? Think freely about the data you would need and the way in which to answer the question.

PART V: To own, or to rent, that is the question (Week 2)

With the house ownership information available, we are curious which houses were owned by the resident and which were rented. We would need your help to create a map showing the spatial distribution of ownership.

Based on the value from the attribute table, we have 4 types: eig/huur, and eig?/huur?, when we are not sure. To visualize them on the map, we need to mark the parcel differently.

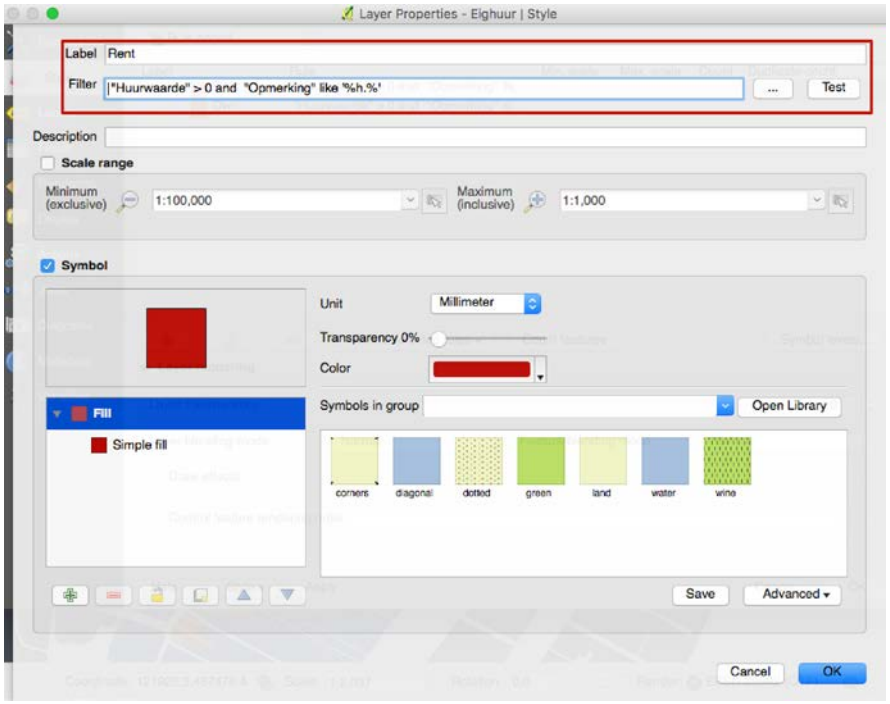
1. Make a copy of *Warmoesstraat_percelen1550* layer (Hint: right click the layer -> [Duplicate])
2. Change the layer name into *Eighuur* (Hint: right click the layer -> [Rename])
3. Move *Eighuur* layer to the top of the layers menu
4. Go to **[Properties]**
    - In the top drop down menu, selected **[Rule-based]**
    - Click the green plus button  to add a filter



5. In the pop-up window, we can create our own filter. We want to select the parcels of which the value in 'Opmerking' column includes *h. van XXX*
    - In **[Lable]:** type in *Rent*
    - In **[Filter]:** type in *"Huurwaarde" > 0 AND "Opmerking" Like '%h.%'*, meaning "select the parcels of which the value in column *Huurwaarde* is greater than 0 (meaning we have the

information in the other columns) and column *Opmerking* includes '*h.*' (or click  for more options).

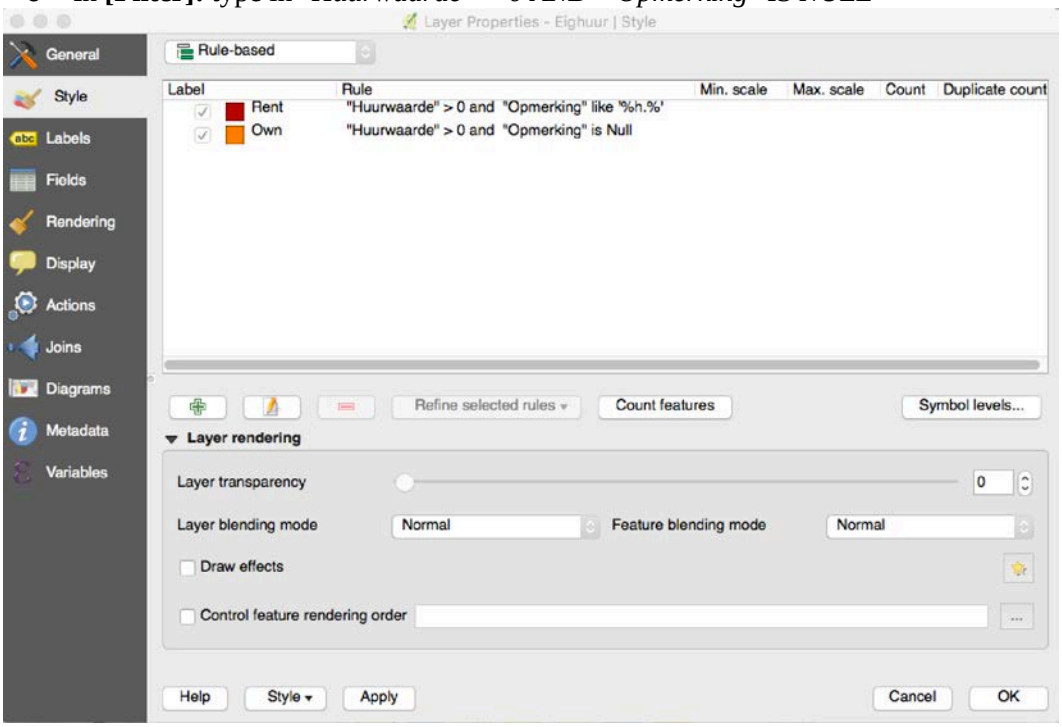
- [*LIKE*] is an operator that returns 1 if the string matches the supplied pattern.



- (You can change the color composition in the [Color] menu)
- Once you finish editing, click **[OK]**

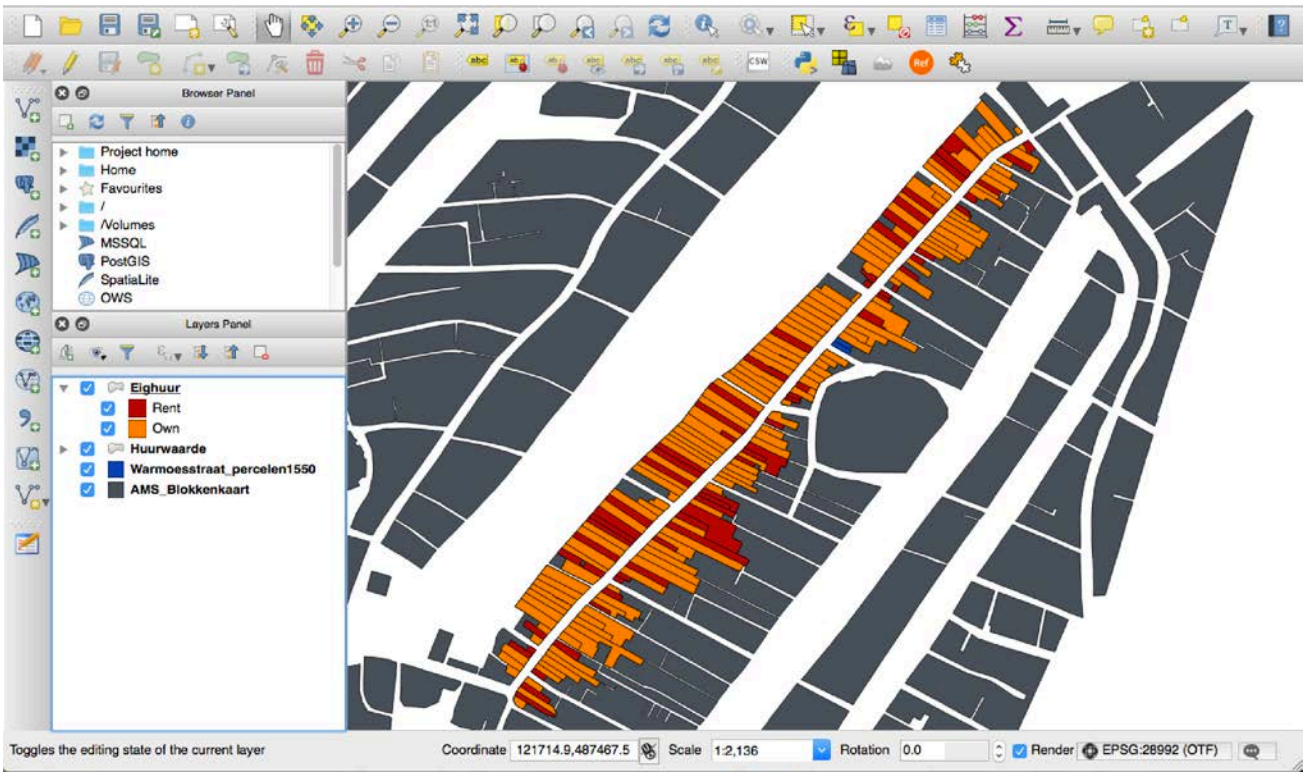
Then repeat the same steps to create a filter for owner:

- In **[Lable]:** type in *Own*
- In **[Filter]:** type in *"Huurwaarde" > 0 AND "Opmerking" IS NULL*



- Once you finish editing, click **[OK]**

Then you will see your map colored based in the ownership, like the following example:



6. Export your map as *Eigendomkaart* [Review Part IV for instructions]

Question: Comparing the ***Huurwaardekaart*** (from Task 3) and the ***Eigendomkaart*** you have just generated, is there a relationship between the estimated house value and the ownership situation?

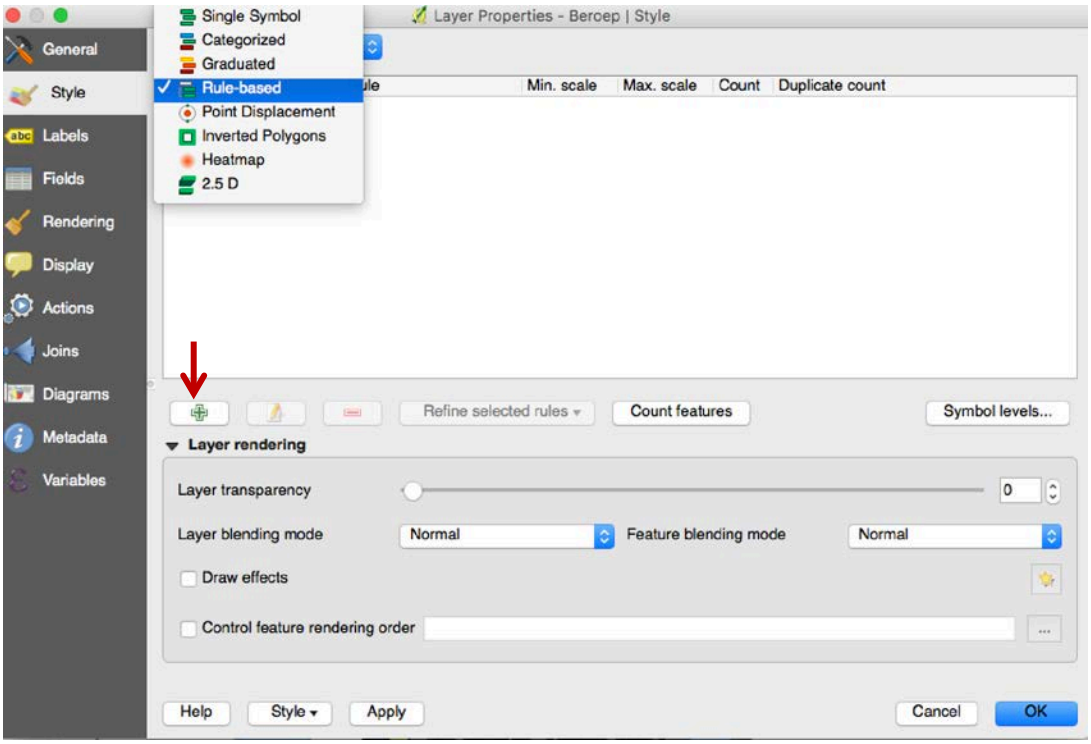
PART VI: You are what you do: Occupation (Week 2)

From the attribute table, we also know the occupation of the resident of each house. Can we visualize the spatial distribution of occupation on the map? Of course, we can filter the whole street by certain occupation. Let's use merchants (*koopman*) as an example:

1. Make a copy of *Warmoesstraat_percelen1550* layer (Hint: right click the layer -> [Duplicate])
2. Change the layer name into *Beroep* (Hint: right click the layer -> [Rename])
3. Turn off all the layers we generated earlier by unclick box before the layer's name

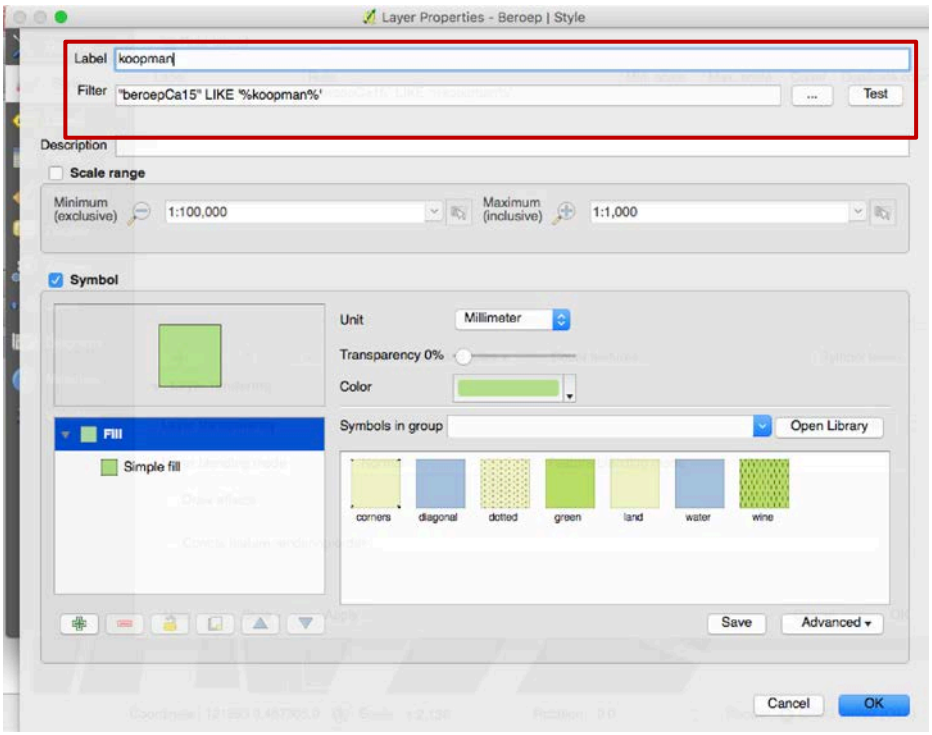
4. Right click *Beroep* layer -> **[Properties]**
    - In the top drop down menu, selected **[Rule-based]**

- Click the green plus button to add a filter



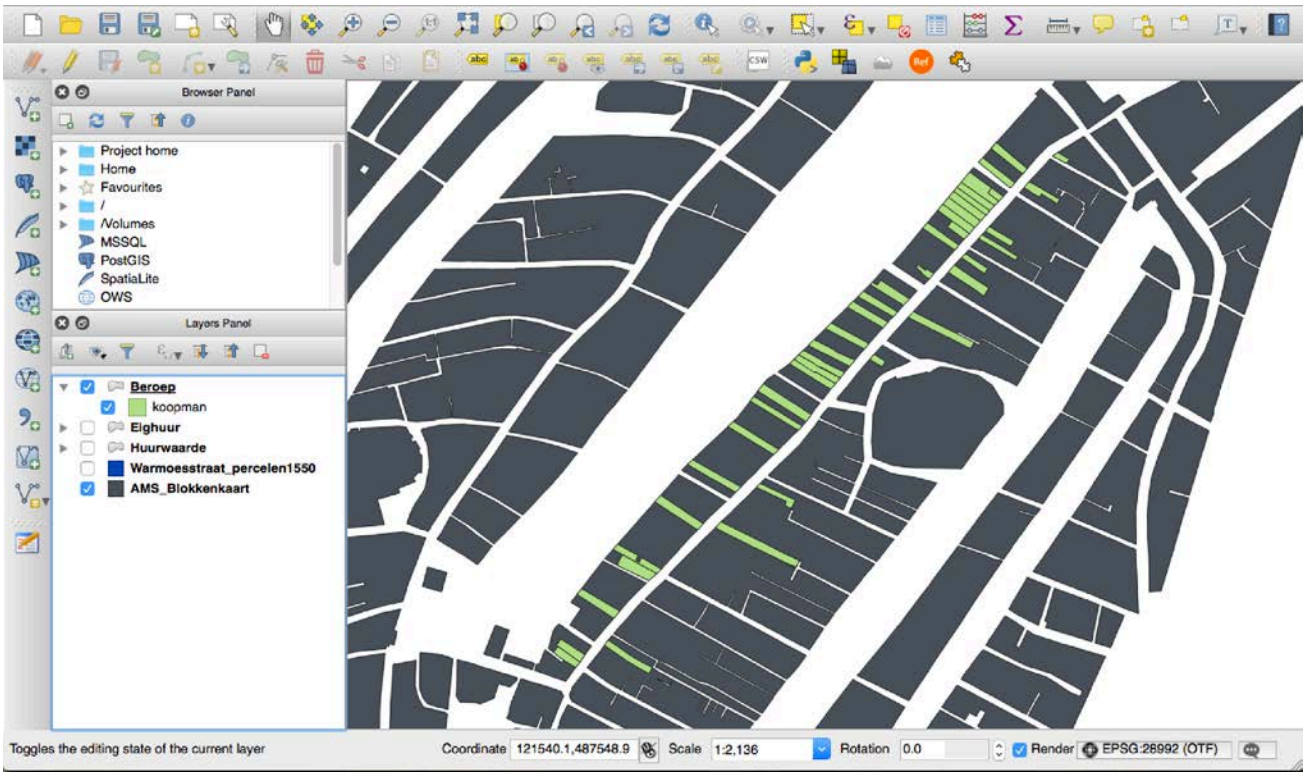
5. In the pop-up window, we can create our own filter. We want to select the parcels that the value in 'beroep' column includes *koopman*
   - In **[Lable]:** type in *koopman*
   - In **[Filter]:** type in *"beroepCa15" LIKE '%koopman%'*, meaning "select the parcels of which the value in column *beroep* looks like *koopman* (or click ... for more options).

* [*LIKE*] is an operator that returns 1 if the string matches the supplied pattern



- (You can change the color composition in the [Color] menu)
- Once you finish editing, click **[OK]**

In the steps above, we only create one filter to show the houses of the merchants, therefore only the parcels that the residents' occupation registered as *koopman* are marked in the map.



Questions:

1) Can you create another filter for a profession (or set of professions) of your choice?
2) What can you learn from the spatial distribution of the houses of *koopman*?
3) Do you think "koopman" is a good category for professions? Please explain your answer.
4) How would you like to group the professions of residents? Can you come up with a guideline to group the professions into categories?