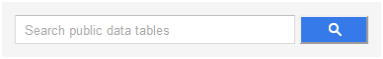
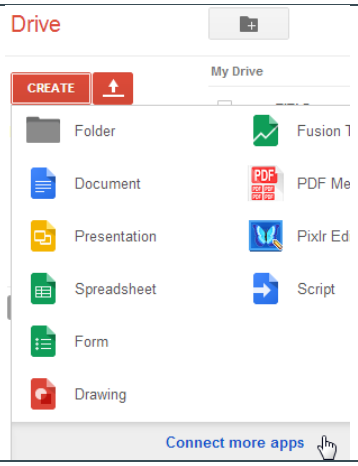
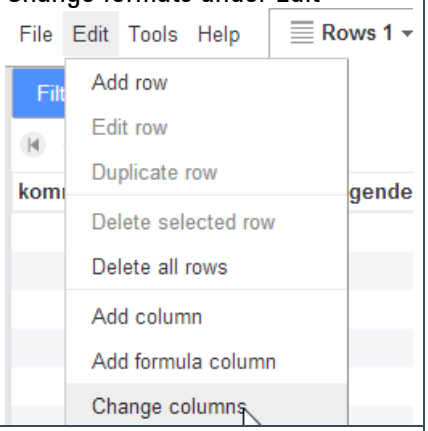
Kaas & Mulvad | 30-01-15 | Google Fusion| Import of data

MEMO

What	Why	How
	Google Fusion Tables is Googles answer to database-tables in the cloud. You can upload tables to Fusion and merge them with other table-data. You can visualize data and embed the result on a website. Google Fusion tables are placed under Google Docs/Google Drive. Go to: http://drive.google.com. Or click on the nine small quadrates in the upper right:	To find tables, others have decided to make public, go here: http://research.google.com/tables Select Fusion Tables (left) 
Who can use Google Fusion?	You must have a Google-account. Ordinary Google Fusion maps are free to use. You can't place the map behind a paywall. If you build advanced maps (with use of API) you will have to pay, if you have more than 25.000 pageviews in 90 consecutive days. If you're below that, it's free too.	
Upload a table	You can upload from Google Spreadsheet or directly from your own computer. You can upload tables from a number of different file formats (including excel and csv) (max 100 MB). Make the analysis of data before uploading, so you're sure of what you want to display in Google Fusion. Before you create the first fusion table, you must once and for all add the necessary app. Can't you choose the green icon with the zigzag after clicking Create (look right), then choose "Connect more apps". Search for Fusion and connect the app to Google Drive. Now you can create google fusion tables.	
Edit columns	Normally it's necessary to modify columns to be sure Google Fusion uses them in the right way. The data type in columns can be text, numbers, dates, locations. Location is the format for geocoding in Google Fusion, meaning this is what Google use to display dots or areas on a map. This is very important to check.	Change formats under Edit 
Choose right format	Google can easily read an address as a location. But it's important that the address is in one single cell: Name | Location Danish School of Journalism | Olof Palmes Alle 11, 8200 Århus N Do this in your spreadsheet before the import to Google Fusion.	

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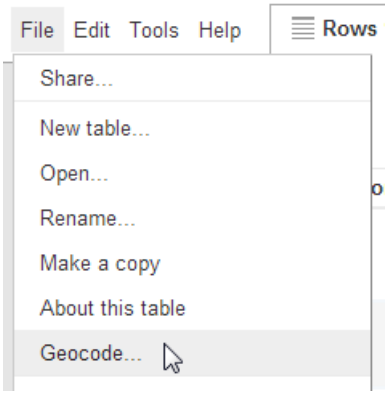
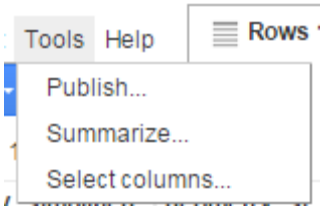
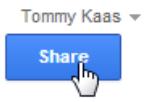
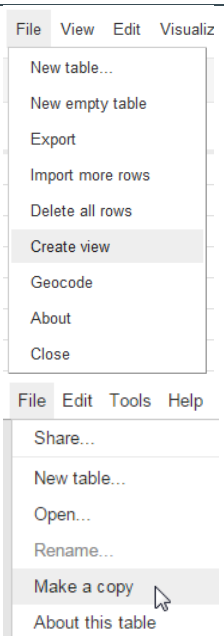
	Formula something like this: =a2&", "&b2&" "&c2 When address-data is imported, choose "Geocode" under "File" (see screenshot right). If you already have latitude and longitude in the data, you can have them in 2 columns or write them in one field with a comma in between: location 57.2562603690752, 10.4014734290558	 This is a result of the geocoding of the address:
Share table	To make public visualizations visible you need to publish and share. Choose Tools and Publish and fill it out. Then choose share, check and decide the level of visibility. If you want to make a map to send or embed on a web site you need to make it accessible.	 
Make View	The uploaded table is the basic. If you only want to give others access to part of the table, you can do it under File and Create View. (If you find a public table, you can create a view of this table and make your own visualizations.) Or you can use "Make a Copy" – only available in "New look"	

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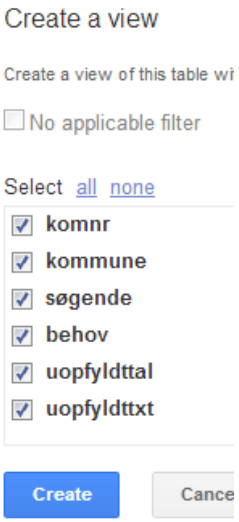
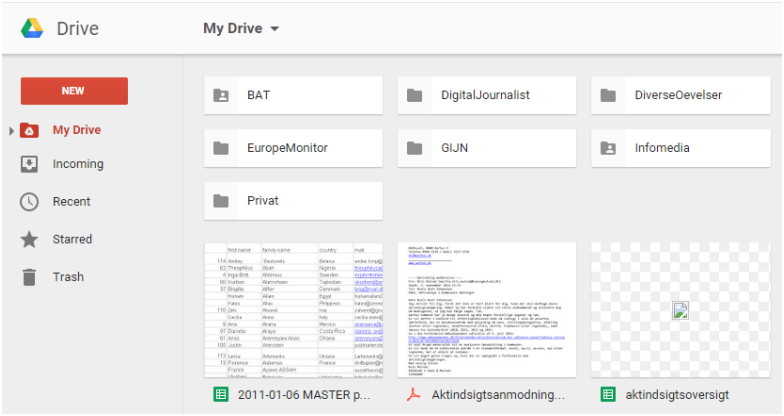
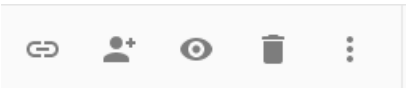
	If you want to create a view - remove the acceptance for the fields, you don't want to share, and then hide the view under a new name. You can choose to share this new view and not the original table as described above.	
Export from Fusion	Under "File" you can choose "Download" – from here you can download the data of the table and save them as a csv-file. If you find a public table on the web, you may be able to download the data as well.	
Create overview	When you upload tables you will be able to see the headlines in fusion and in Google Drive. You will also be able to see other info on the content.  You can move or delete a table, but you have to "tick" it first. When you tick a table a new toolbar, appears at the top. Be sure to name tables so it is easy by the name to identify the content. Be sure to organize your drive, so projects are saved in a folder for each project.	

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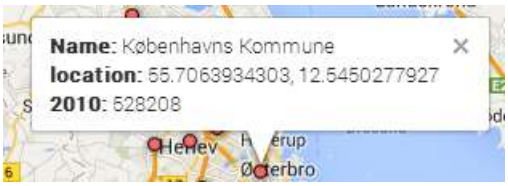
What	Why	How
Show data on a map	Often data has a geographic angle, which we first can see clearly when data is put on a map. Data can be visualized on a map as icon markers if data contain addresses or coordinates. And the data type of the specific field in the fusion table has to be "location".	Check other memos on Google Fusion too
An example	In this example our table with municipalities contains a name, a location (latitude and longitude) and one single value, the population in 2010. We want to create a map with this information. Population-2010 *Attribution unknown* - Edited at 12:01 PM File Edit Tools Help Rows 1 Cards 1 Map of location Filter No filters applied 1-98 of 98 Name | location | 2010 Københavns Kommune | 55.7063934303, 12.5450277927 | 528208 Frederiksberg Kommune | 55.6800365389, 12.5220163628 | 96718 Ballerup Kommune | 55.7327899626, 12.3646818649 | 47652 Brøndby | 55.6423152010, 12.4095025614 | 33795	
Share	We share the visualization. We'll make it visible if you know the link. Who has access Anyone who has the link can **view** Change	Click first "Share" in the upper right corner.
Choose map	We want to visualize the data as a map. Click on the "Map" tab.	rds 1 Map of location
Study the result	The map should show up now. 	
The info window	The content of the info window will default be the text from all fields in the dataset. In this case:  We want to change the info window. We don't need coordinates, and we may want a journalistic text, which explains that the number is a population. It's easy to fix.	In the "Tools" menu you'll find links to different tools, you can use, when you want to change the appearance. To change the content of the info window, press "Change info window layout"

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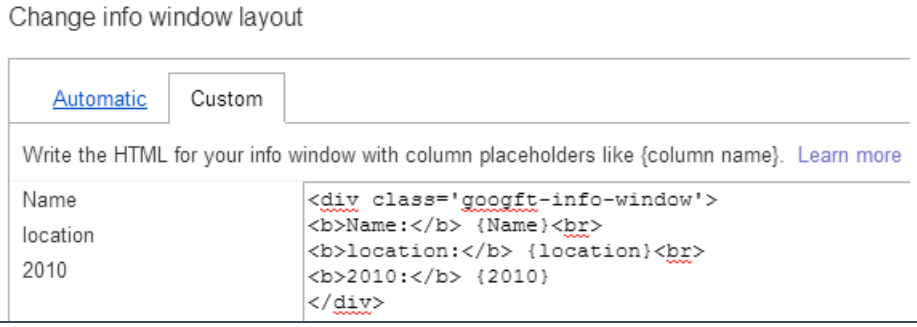
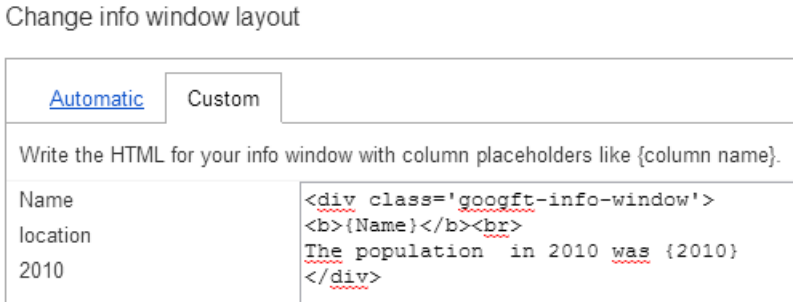
Configure info window	"Automatic" is the default showing of all content. If you want to decide what should be visible, choose "Custom". We'll do that now: 
	You can write your own text, and you can use information from the dataset. For example if you want to insert the name of the municipality, just write {Name} – the name of the field. And if you want to insert the population, just write {2010} – the header row of the population field. The curly braces are necessary if fusion is to understand that we refer to fields from the dataset. In the column at the left we are reminded of the names of the header rows – it's easy to forget… When you doubleclick on a name, it will jump into the box at the right. I only write when I want a new line. I write and to make the name of the municipality bold.  When you are done, you'll save and close this window. And you must now click on the map and check if everything is satisfactory.
	   In this case it looks fine. The text appears on two lines, because I inserted the code for linebreaks . Else all text would have appeared on one single, long line.
Size	The info window has a fixed size, but it's possible to write a code that will change the size of the window. For example: <div class="googft-info-window"; style="width:350px; height:100px; overflow:auto"> The lines has to be the first and the last line in the box. Change the numbers and you'll change the size of the info window (in pixel)

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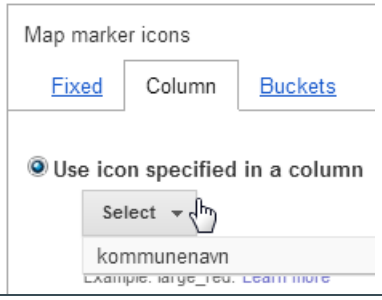
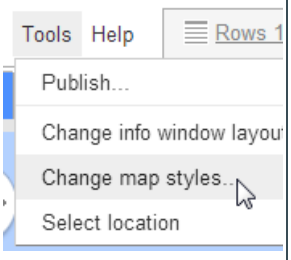
Design	Use common html code to change the design. For example: This text will be bold **bold** This text will be italic *italic*	
Insert pictures	This code will fetch and in the info window display a picture file: <img src="http://www.kaasogmulvad.dk/picture.jpg"> You can choose to replace parts of this address with a reference {} to a field in the table where the name of the picture may be placed.	
Insert links	To insert link in the info window: Click this text A blue link will appear: Click this text – which will lead to the site. Or we can in the construction of the link write a reference to a field in the table. This is useful if you for example have a company ID as one of the fields, and you want to create a link in the info window which makes a live query in a database (or perhaps even a query in Google). `<div class='googft-info-window' style='font-family: sans-serif'>` `<b>Company name:</b> {Name} ` `<a href="https://www.google.com/#hl=da&output=search&sclient=psy-ab&q={Name}">Make a query in Google</a>` `</div>`	
Change icons	Default we get red circles on the map. But we can change this. Under "Change map styles" – find it under "Tools" – it's possible to change all icons to another type. Or we can let the colors reflect a value in the dataset. It's also possible to write the name of the icon the specific address should appear as. We have a list of icons to choose from. http://www.google.com/fusiontables/DataSource?snapid=99003 (Click on the icon to read it's name. This name should be written in the dataset). If we use this solution, we must choose "Column" under "Configure styles" and tell Fusion, which column contains the name of the icons. 	

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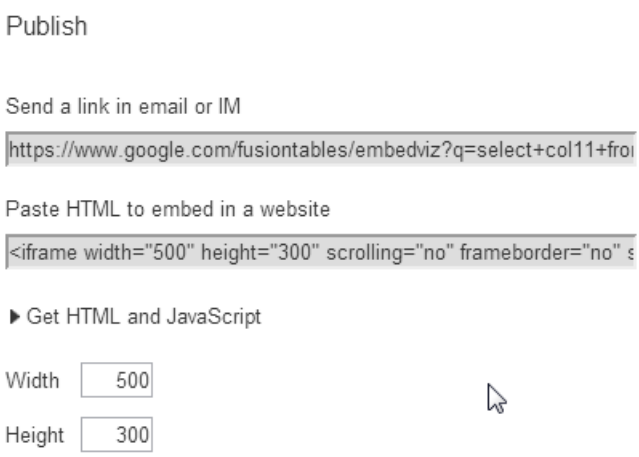
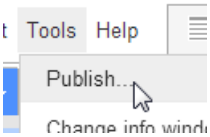
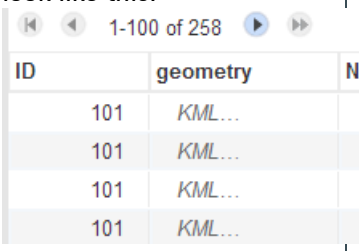
Embed	You can choose to distribute the map link to others, but maybe you want to show the map as a part of another site. In that case you need the embeddable link. Click "Publish" (find it under "Tools"):  The first link gives you a full screen version of the map – and no access to the table data. The second link is the embed code, you for example can paste into a CMS system, or when you write a blog entry etc. The two first numbers controls the size of the map on your blog page. Remember, that your own page or cms can give some limitation and you must change and adjust the code until the layout and design is satisfactory.	 Even after you have copied the embed code, you can change details – for example the centre of the map (the lat,long) and the zoom level (the number after "z=")

Kaas & Mulvad | 1.10.13 | Internet | Google | Create maps based on polygons in Google Fusion

MEMO

Hvad	Hvorfor	Hvordan
Understand polygons	Unlike points, a polygon is an area on a map - typically a postal district, a municipality, region or even a country. Different types of map applications define polygons in different ways. In Google Fusion a polygon is built up as a KML file. The KML file is a file made up of a large number of points - each defined by a longitude and latitude. The points are in fact a very long row, which together form the outline of the polygon. There may be several separate polygons that are grouped together into a single polygon - for example, a municipality that has one or more islands. Therefore do not be surprised that a table with municipal polygons may have more rows than the total number of municipalities.	In the Fusion-table you'll find the polygon in one single field. It will typically look like this: 
Get access to polygons	You can be lucky that someone already has imported the required polygons to Google Fusion and made the result public. You can try searching for the polygons in the search box. Remember to select "Fusion Tables" at the left of the screen. 	Find the search field here: research.google.com/tables
Get access to polygons via shape files	You can find the polygons on the web. National authorities may or may not have created polygons for regions, municipalities, postcodes etc. Very often they will appear as "shape files". Shapefile is a vector data format developed by the company ESRI. If an authority uses the map application ArcView, they work with shapefiles. These are easy to convert to KML and Google Fusion. Just ask authorities whether they will share their shape files with you.	Read our Memo sheet about this subject.
Convert shape files	There are several places you can convert shapefiles to KML - a site which is easy to use is http://shpescape.com You make sure that your shape file (which is actually a folder with several files) is located in a folder that is zipped. Upload it at shpescape.com. You give the site permission to access your Google Fusion account. And the converted file will appear in your list of Google documents, when it is ready. Be aware that it may take some time. Sometimes there is a queue, and if it is a very big shapefile you work with, it can also take some time to get it converted.	http://www.shpescape.com It's necessary to press "Grant access" if the conversion is going to work:
Other sources	Do you work with maps of foreign countries; this site is a good source for free shapefiles. For each country you'll typically find two to four different administrative boundaries.(Counties, municipalities etc)	http://www.diva-gis.org/gdata
Find the result	When the shape file is imported, shpescape.com will show a link you can click and you are automatically transported to your own list of Google documents, where a table with all data from the polygons now can be found.	

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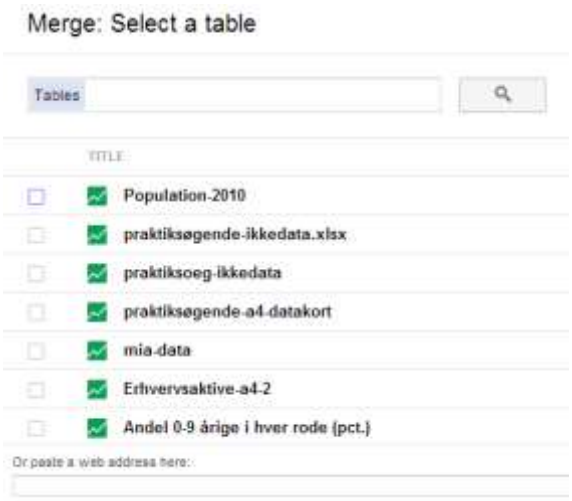
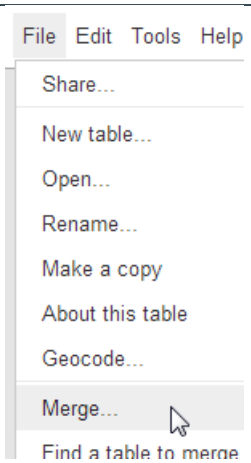
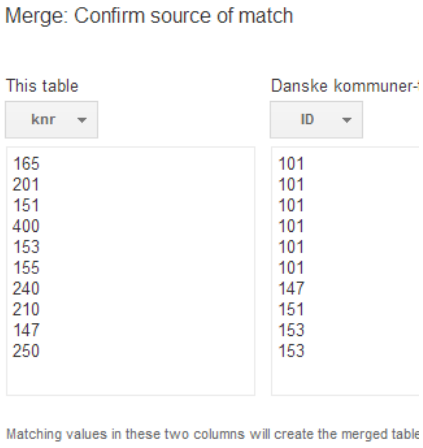
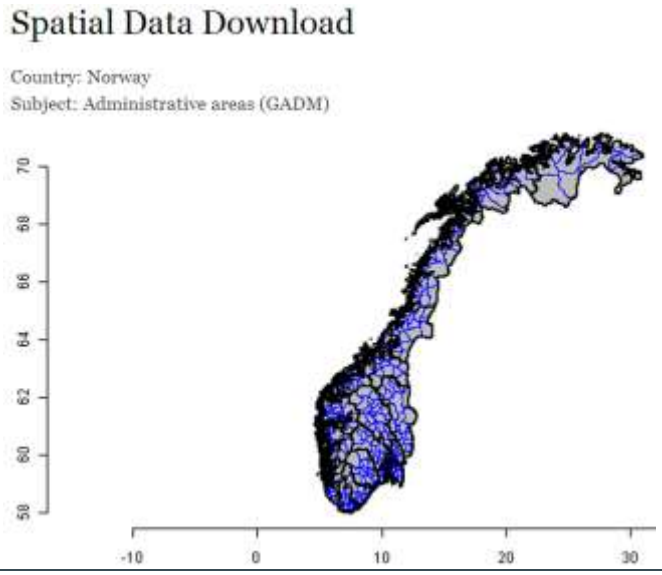
Use polygons	Polygon files can be visualized itself as a map, but it's not that interesting until you combine the map with values. One of the fields in the polygon table typically contains a code – it could be an ID of the county, municipality etc. The dataset you want to visualize must contain the same ID so you can merge the two datasets.	
Combine a data table with polygon table	Remember the name (or copy the link) of the polygon table. Typically you will have the data table open and press Merge. Find the table, which fields you want to include through a merge. The table can be on your Google Drive or perhaps it's a public table. 	
	In the window at the left hand side, you will see the fields of the table you have open at the moment. At the right you can see the fields of the polygon table you want to merge into the data table. It's important that you choose, which field the two tables have in common. In this example (Danish municipalities) the common field is an ID. The ID will be the "zipper" which will merge the two tables securely together. 	When the merger is done, you will be presented with a link to the new dataset.

Kaas & Mulvad | 1.10.13 | Internet | Google | Find and convert polygon data for use in Google Fusion Tables

MEMO

What	Why	How
	Google maps with points are easy to create. Maps with polygons are only a bit more difficult. The hardest part can be to find files with polygons, but even that is possible. The site, we will use today is diva-gis.org. It's a great site for downloading free spatial data. This memo will go through the process of converting shape files to KML, which is useable in Google Fusion Tables. From diva-gis.org you can download files with administrative boundaries for a large number of countries. In this example we will create a map with the regions in Norway. First thing is to download a file with the Norwegian data: 	http://www.diva-gis.org/gdata
	On the display on the screen it looks like we will get more than one administrative level: 	
	Anyway – we click on Download and receive a zipped folder: NOR_adm.zip When we look into the folder, we can see that we have received three different administrative levels. NOR_adm0 is the country. Next level is NOR_adm1 and the most local level – the smallest administrative units – is contained in NOR_adm2. The file format is shape files.	

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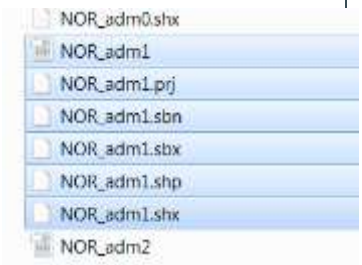
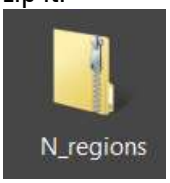
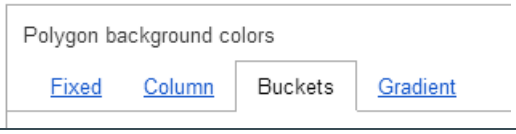
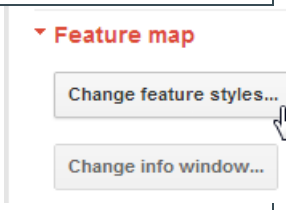
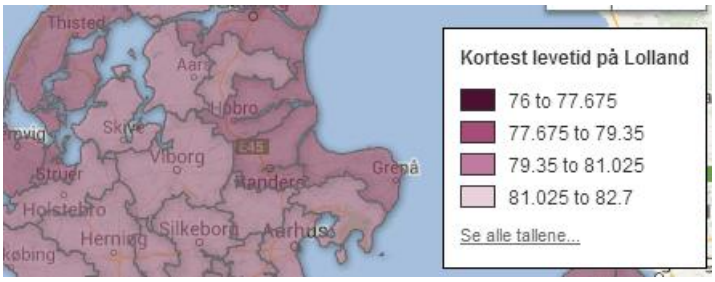
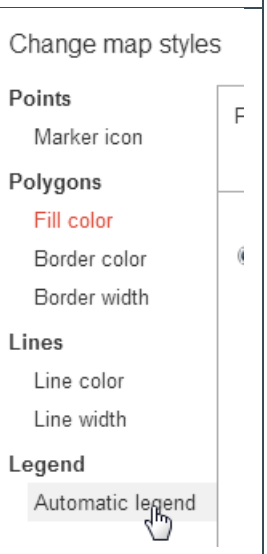
	This is the content of the zipped folder: 	
	We have data for each region (fylke in Norwegian) and we want to map those data. So we have to copy all files with NOR_adm1 in the title to a new folder N_regions, and we will zip that folder to N_regions.zip To create a Google Fusion map based on the Norwegian regions, we must upload the data to Google Fusion. And we will do that through this site: www.shpescape.com It might be slow (or even down) but it works fine most of the time. You just need patience. The service will convert the shape files to the format Google wants, KML. Go to the site in a browser. Choose: "shp2fusion tables". You will be told, that you need to authorize the site to access your Fusion Tables data on your behalf. Only if you do so, the service can connect to your Google account and upload the files. You don't have to use the advanced options. You can leave those unchecked. You will be prompted to upload a file. I'm going to upload the zipped folder I created a minute ago.	Copy all files which name includes (in this case) NOR_adm1  Paste the files into an empty folder. Close it and zip it. 
	The site might be busy and you might end up in a queue. But be patient. Eventually it'll be uploaded. You can leave the page without problems. When this appears, **n_regions_nor_adm1.shp** Status Complete Total Rows 19 Rows Processed 19 Rows Inserted 19 Fusion Table 1AXrcetuv4EVHdjdDiC3mq-KeOMB64nUcECCwQzQ click on the link, and you will see your polygon table in Google Fusion	When you visualize the polygon table in fusion, you'll see the regions:

Kaas & Mulvad | 02.02.15 | Internet | Google | Edit view of Polygons in Google Fusion

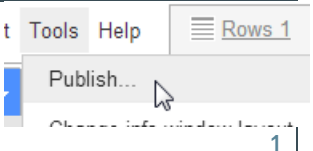
MEMO

What	Why	How
More possibilities	You may choose to color polygons in different ways. The color of the range may reflect a property /quality - for example the areas where red block or blue block won. Or values above / below a country's average. The color might also reflect the value of an underlying data set - the more bankruptcies, the darker colors.	
First: Choose journalistic angle	The most important thing is to have a journalistic angle. Then look at the possibilities on mapping afterwards.	
Know your data	Before the visualization you should also know your data. Which column must decide the color. What is the highest / lowest value in the column? Are almost all values clustered within a narrow range. Or are they spread? This could have some impact on how intervals are set.	
Visualize data	You need to be in the map view. Click "Change map". Then click "Change feature styles" to the left of the map and get started. A dialog box opens: Be sure to click under "Polygons" – else nothing happens. If you want to color the map, then start with "Fill color". There are now four options: 	
Choose method	"Fixed" allows only one color. "Column" can be used if a column of data for each record has written a color code for the color of the polygon. Color codes should be written like this: # FF0000 (which gives a red color). "Buckets" allows for you to decide intervals (remember to set the lowest and highest value), and the colors can be completely different. "Gradient" provides a sliding scale - from light to dark - in 8 colors. Again, remember to write values into the boxes - lowest and highest. In both cases, the highest value being slightly higher than the highest value in the data set. Otherwise, the top value is not on the map. Under "Buckets" you can also easily make a sliding color scale - and it is only under "Buckets" that you can decide where the interface between the scale are set. This can be important if you want to create a detailed legend for his card.	There are many lists of "hexadecimal color codes" for example, this: http://www.december.com/html/spec/colorsafe.html Colorbrewer (http://colorbrewer2.org/) provides rich color codes for scales (which is ensured to be viewed and understood by colorblinds). Colorbrewer will

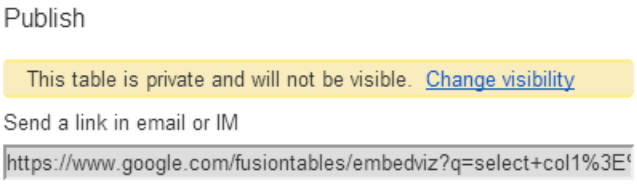
		write a color code such: 0x2CA25F Fusion write it like this: #2CA25F
Legends	If you want a legend, choose "Automatic legend" under you see "Change map styles". There are not many options, but you can select the title in the legend and also which corner of the map the legend should be placed. Finally, whether there should be a link at the bottom of the legend to the actual data table. A typical legend can look like this:  The "automatic" legend is a great achievement, but if you want to work more with it - and, for example, change the English language "to" another language, then you have to "hack" the script. See an explanation for this (in Danish): http://www.kaasogmulvad.dk/2013/03/hack-legends/	

Kaas & Mulvad | 02-02-15 | Internet | Google | TablesLayer to combine Google Fusion maps

MEMO

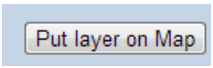
What	Why	How
Maps can be combined	If we want to show geographically information in context, we must be able to combine several different maps in one. It may be several maps with points - or maps with points and maps with polygons to be combined. We can also include search boxes next to the map. And finally, we can change the look of the map, Geographical names can be removed. For this we use a free service: Fusion TablesLayer Builder According to Googles rules for styled maps - and it is this type, we create with TablesLayer Builder - it can cost money. However, this requires that you have 25,000 map views every day for 90 days in a row. Maps produced exclusively in the standard interface (Google Docs / Drive), remains free. Read more here: http://googlegeodevelopers.blogspot.dk/2012/06/lower-pricing-and-simplified-limits.html	http://bit.ly/Jsxsoz
Example **Limits** **Oppor-tunities**	This map is built up in the Fusion TablesLayer builder. Here are a combined map of points and polygons: You can load multiple maps together in one layer using this wizard. The information windows that appear when you click on a point or polygon, will be those prepared in the respective maps. The design of each map must therefore be completed in Google Fusion. You can then divide the different information types into several maps, giving you the ability to have different information windows. You can then mix points and polygons, and have more than one map on polygons in the final map.	
Prepare	You must have your maps ready. You can still work with them later.	
Choose order	The order means something. If you combine a polygon map with a points map, start with the polygons. If you do it opposite, the polygons will make the points invisible or hard to see the colors.	
The first layer	In "Embed link" in the layer builder you can insert the written code for the first map. The code can be found by opening the map, select "Publish" under "Tools" - and then copying the top link. It normally would give a full screen display of your map. If you see this message:	

MEMO



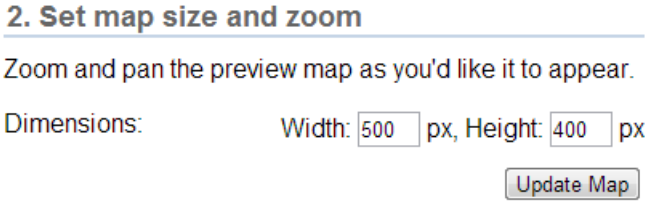
it is a reminder that you need to remember to make it possible for others to see your map. Otherwise, it can't be seen by layer builder.
Once done, you can copy the code and paste it in layer builder.
Click "Put layer on map" to update the map.

Click here:



and the map will be updated.

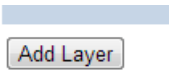
Customize map size with these buttons:



and use the mouse to drag the contents of the map to look as you like.
Click Update on the map if your size changes don't appear immediately.
Note that if you choose to make the map very large, it jumps down the page. It does not disappear ...

To add another layer - for example, a map with addresses - click on the "Add layer" - and repeat the steps above.

Click on this:



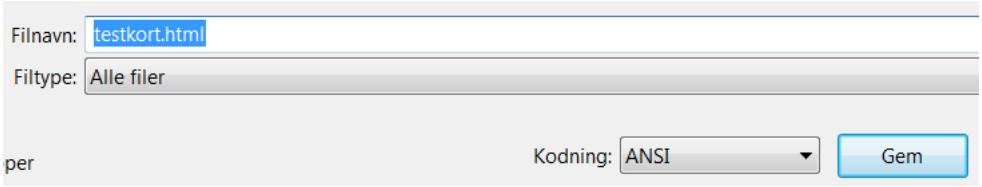
to add data from other Fusion-maps.

The possibility to "style" a map is under point 3. Here colors can be changed, and you can remove more of the information on the map.
The color can be changed by dragging with the mouse on the "Saturation"-slider.

Click on "More options" to see the information you can remove from the map.

The map updates usually by itself. Otherwise, press the "Update map".

When the map is finished, you should copy the code in the box at the bottom of the page.
The map should not be stored inside the layer builder. You need to copy all the code from the window "Your HTML". Paste this code into a word processing program that does not insert code into the document. Word is not working.

	For example, the PC program Notepad (included with windows) is ideal. If you use Mac and use TextEdit – be sure in the menu to go to "Format" and choose "Convert to ordinary format" (or something similar). If you don't have Notepad or TextEdit on your computer, you can download and install the simple and free program TextWrangler. There are also many other good and free programs.	Here you can download a simple text-editing program for mac: Her kan downloades et simpelt tekstbehandlings-program til mac: http://www.barebones.com/products/textwrangler/
	The code is inserted into a new blank document in Notepad. Then save the document - and name it with the .htm or .html suffix. And make sure that the program does not overwrite transmission with eg .txt or similar. Below I have changed from the default File type = .txt to "All Files" - that means that my naming .html is respected and not overwritten.  When the document is stored on your PC, it can be opened in a standard browser on your own computer. If you want others to see your document, it need to be stored on a web server, uploaded to a CMS like WordPress or just be in the "public folder" if you use DropBox. Right click then on the map in the "public folder" and you can copy the file's address on the web. Remember, you can always open the map file in a text editor if you want to edit it.	
Embed the map	If you want to embed the map, you must do it in two steps - first make the map and get it online at one of the above mentioned methods. And then you must make an iframe on your site and display the map in it.	
See example	Example of maps: http://www.kaasogmulvad.dk/unv/a4/mf/alle.htm Same map embedded in page: http://www.ugebreveta4.dk/2012/201241/Tirsdag/Jyderne_dominerer_Folketinget/jyder.aspx The iframe code that is used in the above example look like this: <iframe width = "680" height = "690" scrolling = "no" frameborder = "0" src = "http://www.kaasogmulvad.dk/unv/a4/mf/alle.htm"> </ frame>	