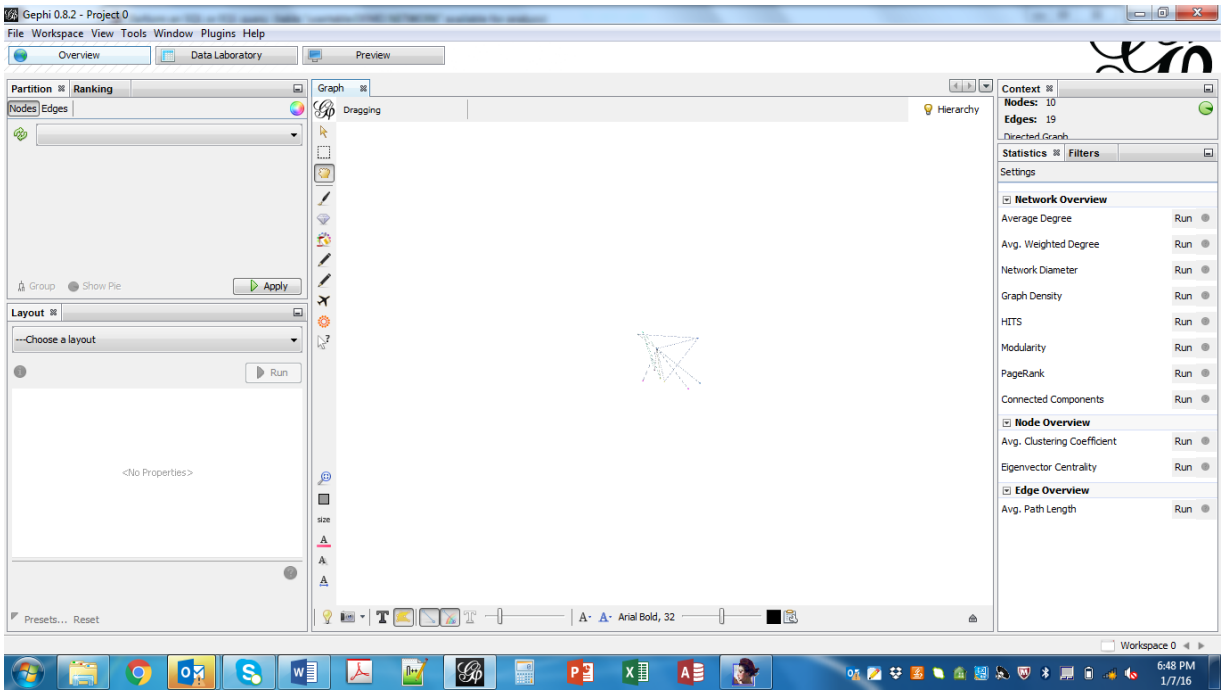
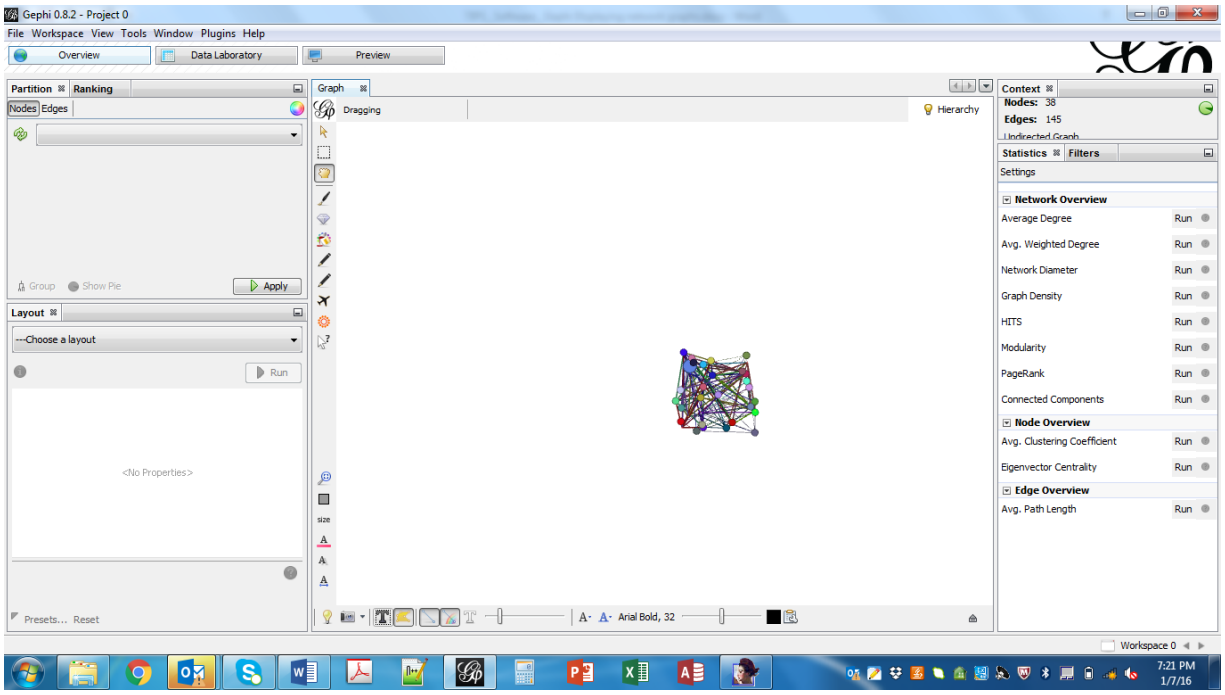
Displaying Network Graphs in Gephi

Unreadable or “crowded” graphs: How can you make things better?

Graphs can appear “unreadable” when first displayed in Gephi, too small to be of any help.



Graphs can appear not just very small, but also very “crowded” when first displayed in Gephi, with overlapping edges and node labels.

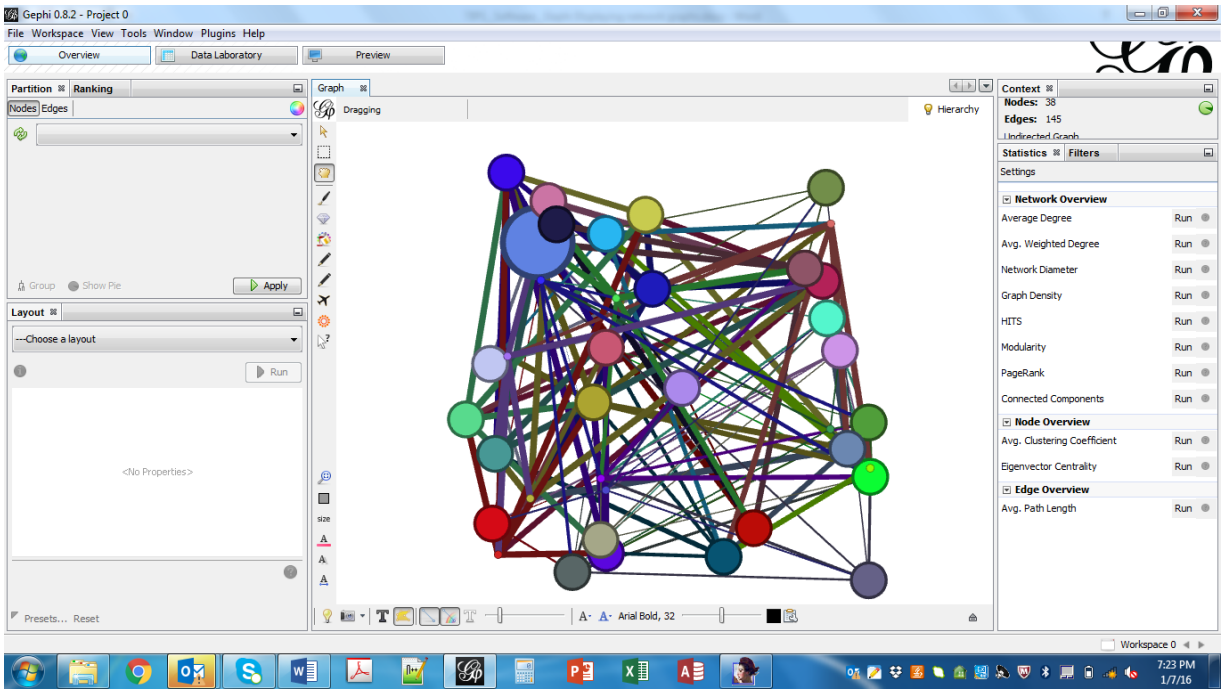


You basically have two ways: manual and automatic.

Manual options

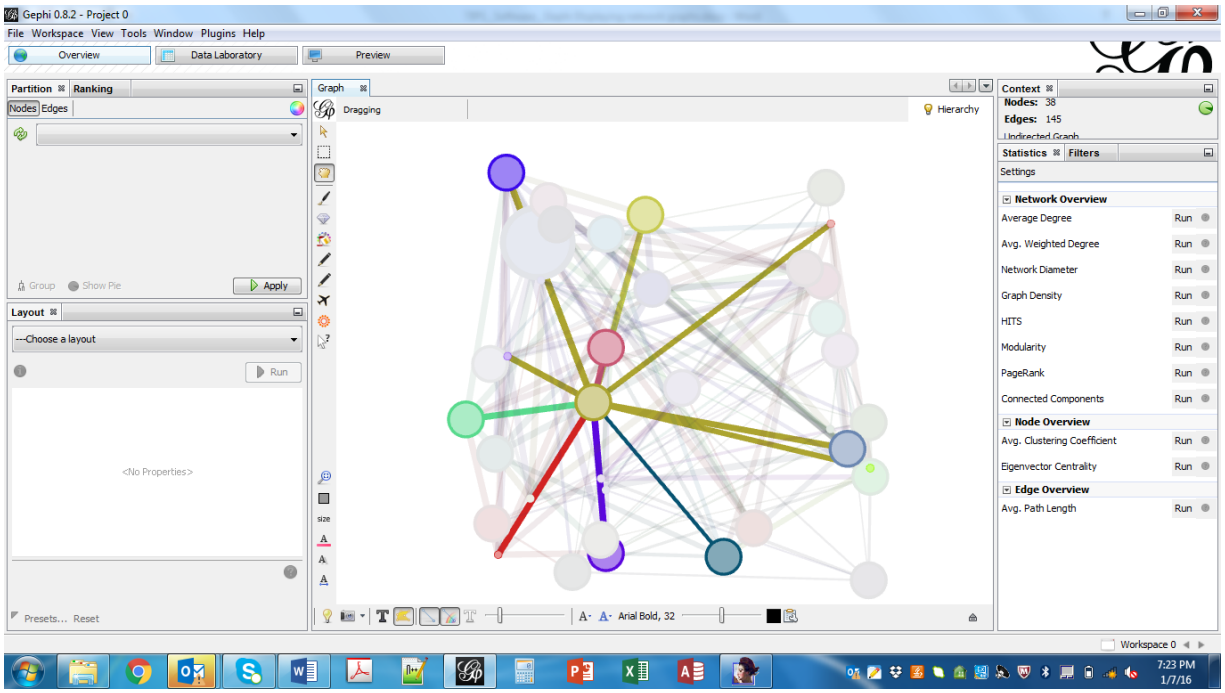
Scroll to zoom: Center the graph

For the **manual option**, place the pointer to the center of the graph and scroll to zoom in and out until the graph has expanded to a size you like.



Hover over: Highlight selected nodes

Alternatively, hover over a specific node until all other edges not involving this node are dimmed; then, hold the left mouse down and **drag the node around the screen in a preferred position**; repeat this operation for all nodes you wish to disentangle.



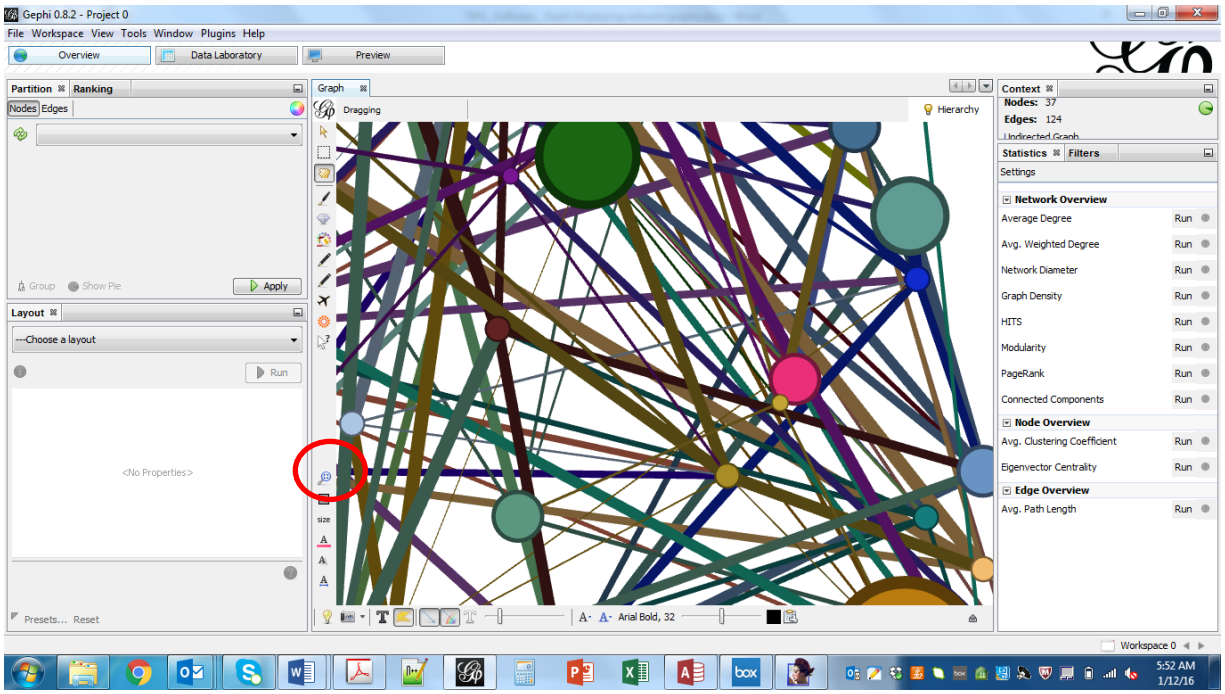
Right click: Move the graph

You can also **right-click** (holding down) on any parts of the graph and drag the graph around the display area.

Automatic options

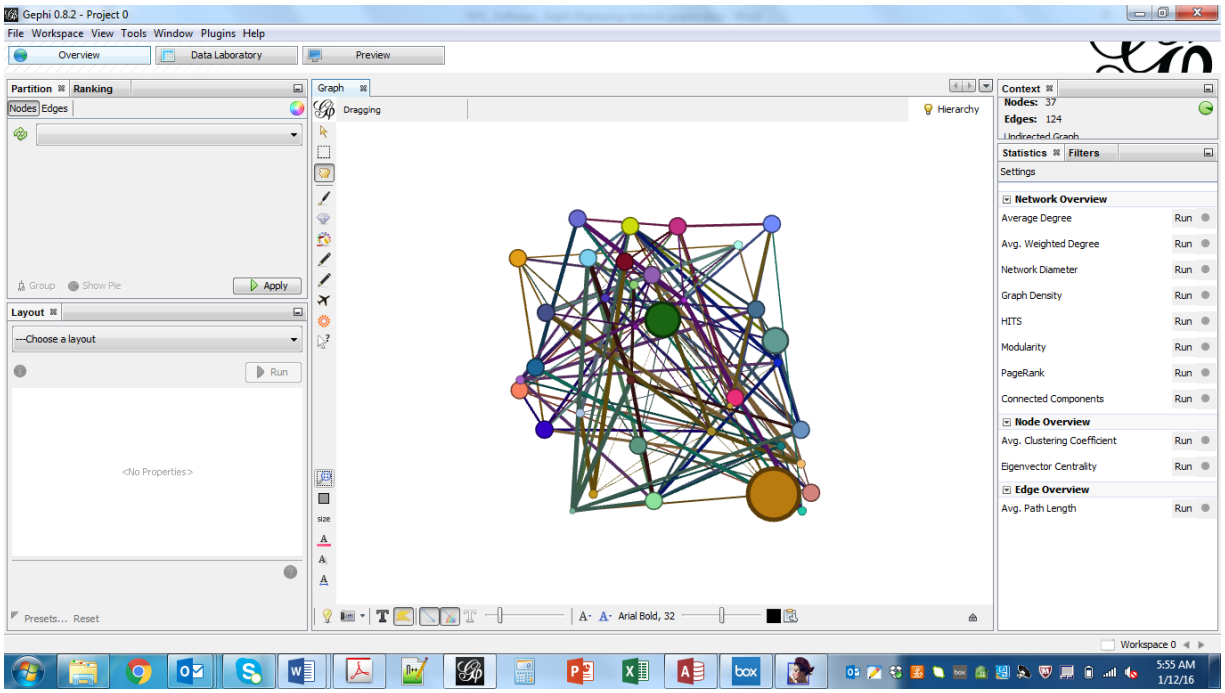
It may happen that you expand the graph beyond the display area (see below).

Re-center the graph button



Don't panic! Click on the re-center button (circled in red) to bring the graph back to the center of the display area (see below).

Besides the manual options, there are also several **automatic options** that you can use to improve the visual representation of a Gephi graph.



The layout button

The layout button allows you to change the layout of a graph. For this, click on "**Choose a layout**" (circled in mauve); select one of the following options: Force Atlas, Force Atlas 2, or Fruchterman Reingold; click "run". **Warning!** Automatic resizing of the display will go on forever! You need to click on "stop" when you are satisfied with what you see.

Force Atlas

You have several options to improve your graph.

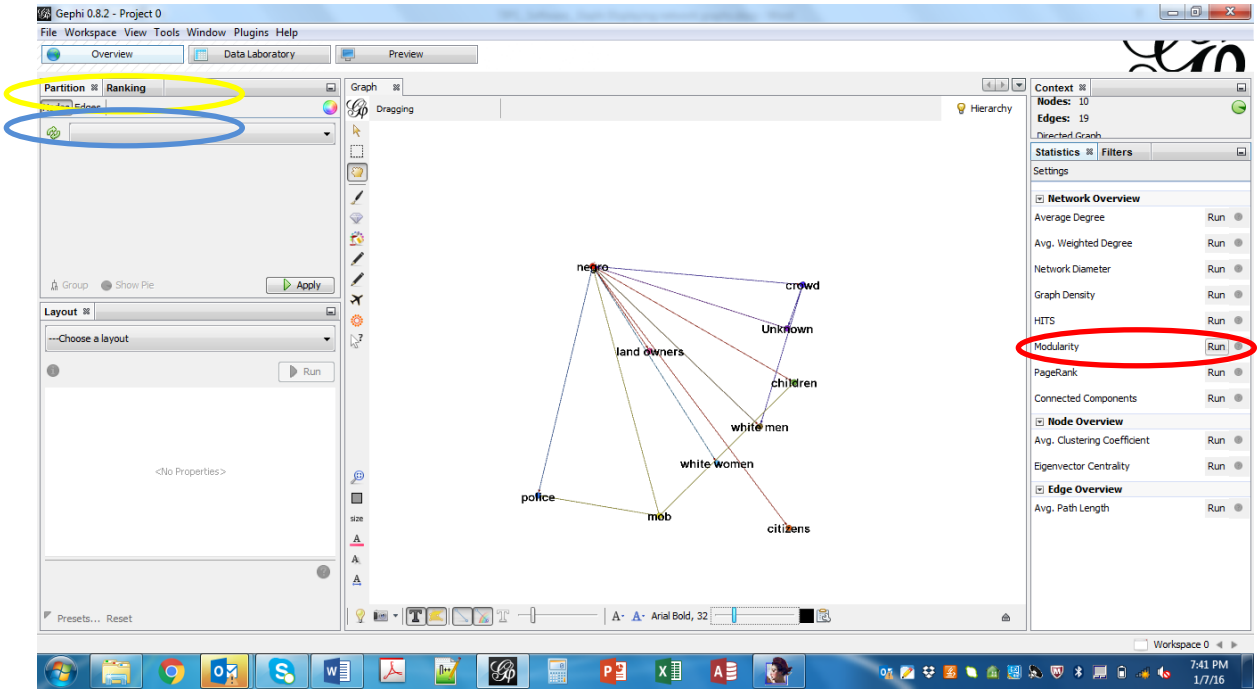
Repulsion strength The larger the value, the more spread out will be the nodes. Trial and error!
Attraction distrib. Particularly useful for larger graphs.
Adjust by sizes. Particularly useful for larger graphs.
Speed. Larger graphs will be redrawn more rapidly but… with lower precision.

Fruchterman Reingold

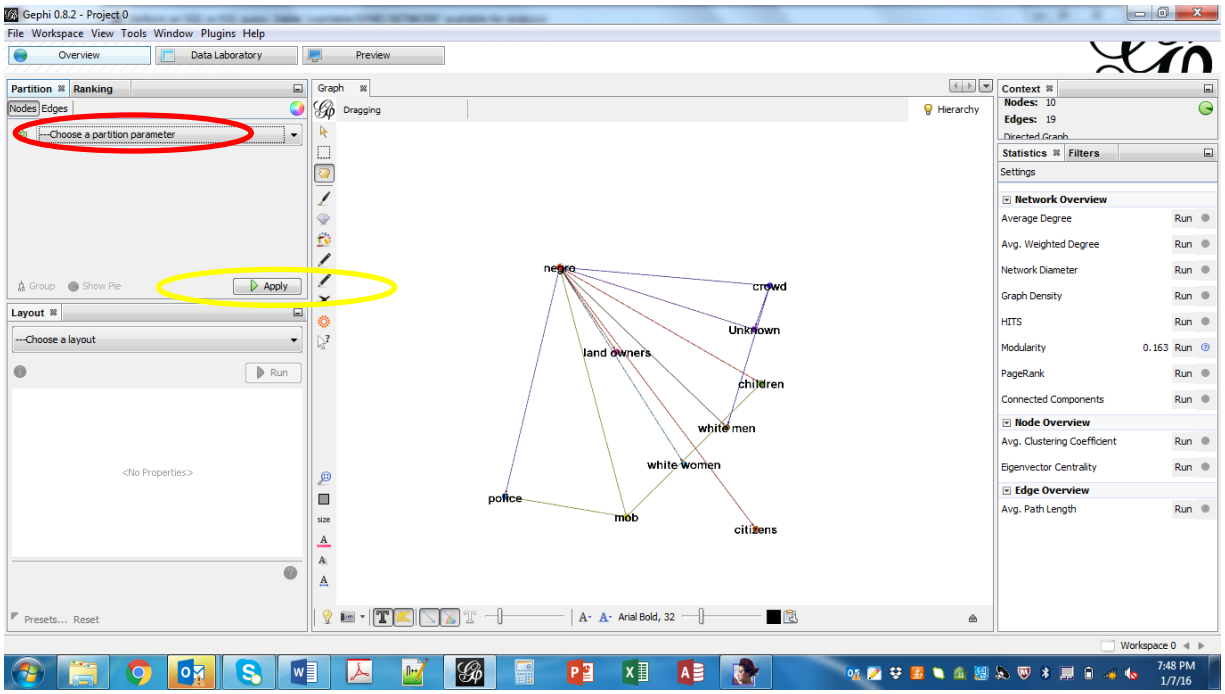
Area Increase the area value to spread out the graph.

The Layout option **Label adjust** is compatible with any of the Force Atlas, Force Atlas 2, or Fruchterman Reingold. The option will prevent labels to overlap.

A useful visualization option for network graphs is the **modularity** option. You will find it among statistics on the right-hand side.



On the right-hand side, click on RUN for modularity, OK on the Modularity settings window, then CLOSE the Modularity Report window. Then click on Partition, then Nodes on the left-hand side (circled inn yellow). Now, click on the Refresh button right below (circled in blue). The graph will be redrawn with different colors for similarly grouped nodes. Click on the option Choose a partition parameter (circled in red) which has now appeared next to the refresh button and select the Modularity class option. Click on Apply (circled in yellow). Click on Group or Show Pie to display how nodes cluster together in different groups.

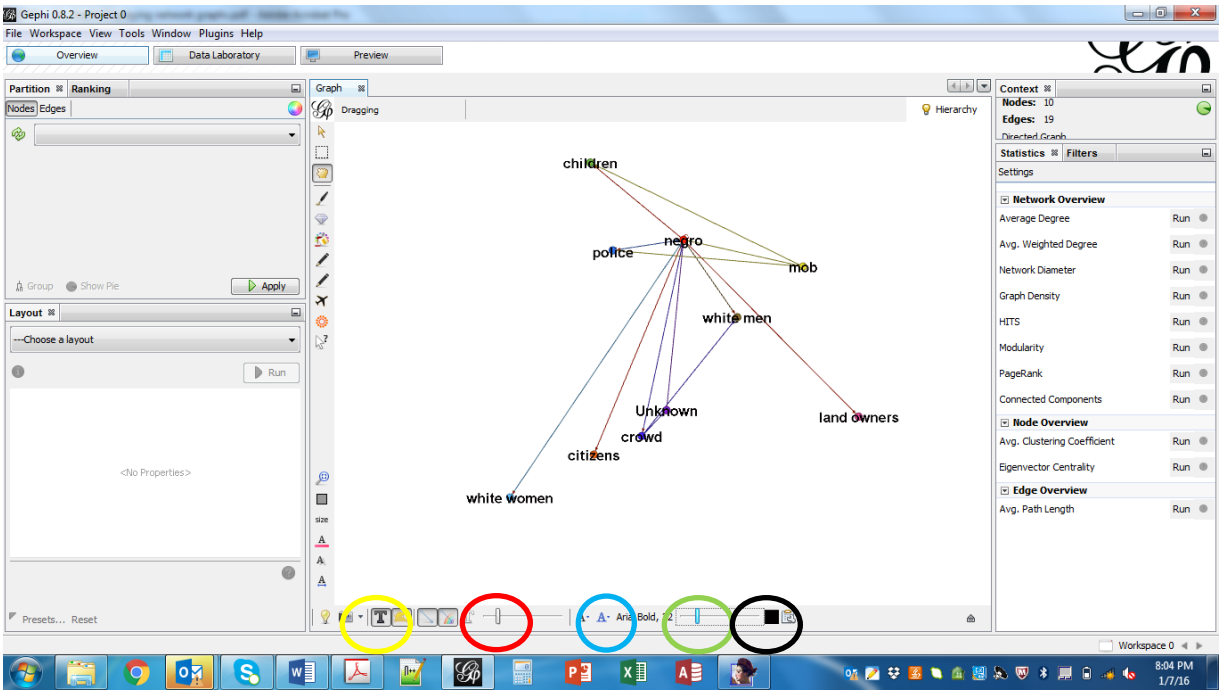


Options for nodes and edges

How can I vary the thickness of lines between nodes, change their color, add node labels, and change labels' size and color, highlight a relation between two specific nodes using a different color?

Nodes

a. To display node labels, click on the **T (**circled in yellow).
b. To vary the size of the labels, slide the bar (circled in green) to the left or right.
c. To vary the colors click on the icon circled in **black**.
d. To vary the colors, with different colors for different nodes, click on the icon circled in light blue.



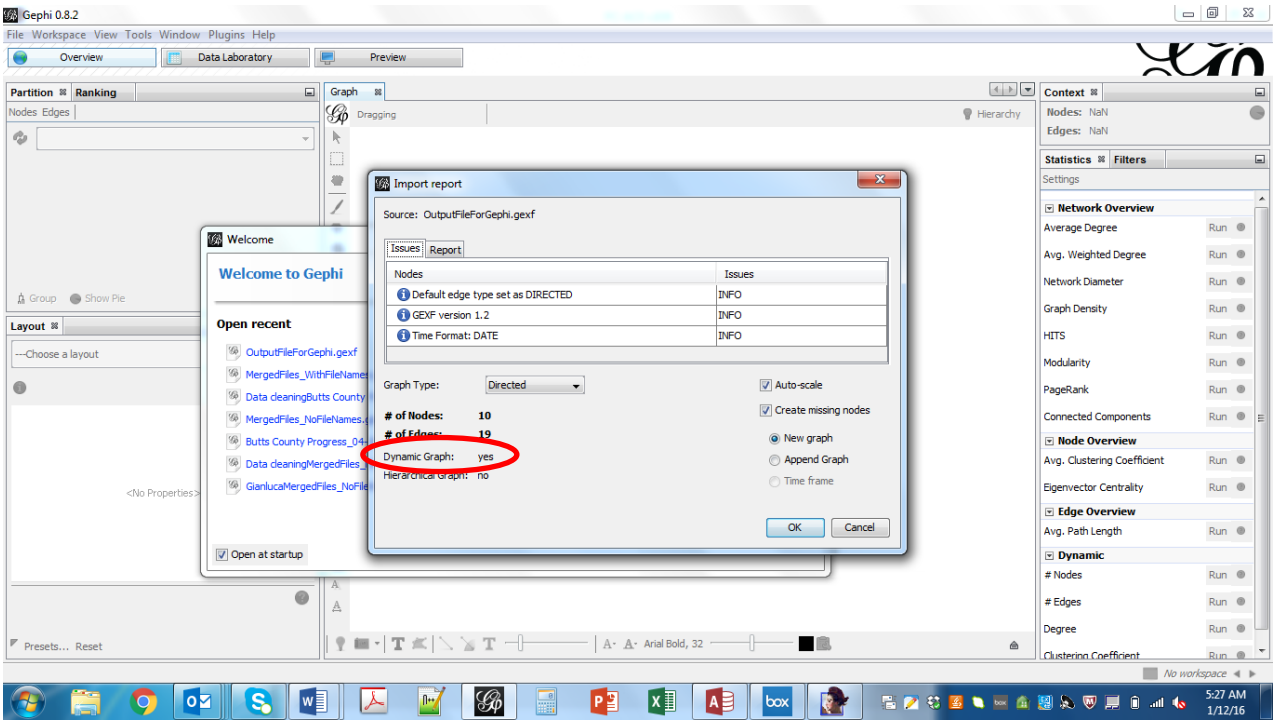
Lines/edges

e. To vary the thickness of the line (edge), slide the bar (circled in **red**) to the left or right.
f. To vary the colors click on the icons circled in blue.
g. You can even set a specific edge to a specific color to draw attention to that relation. Just click on the lower of the two icons circled in blue, choose a color, then, holding down the left mouse, click on the two nodes whose relation you want to highlight.

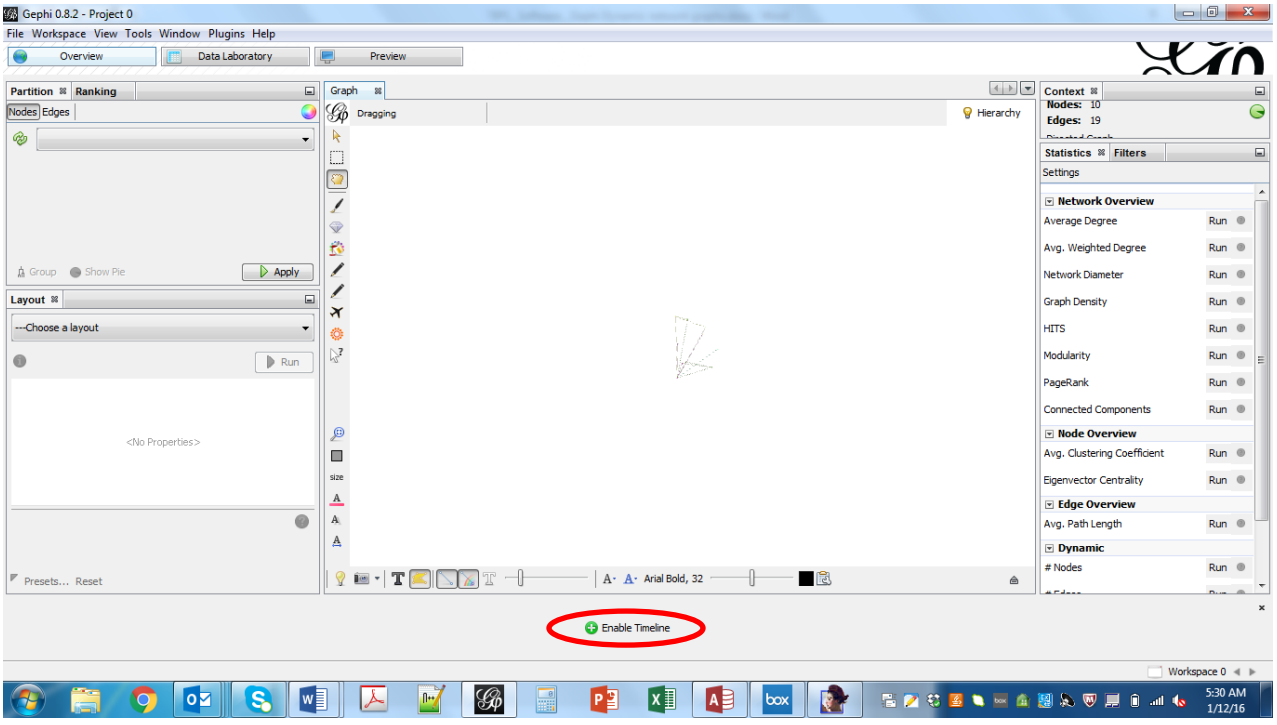
Dynamic network graphs

If your network data includes a time dimension Gephi produces dynamic network graphs, i.e., graphs that change automatically with time. Data for dynamic graphs must include a beginning and end date for each point. But time can also be approximated by sentence index as in the SVO algorithm to display SVOs with the tempo of writing.

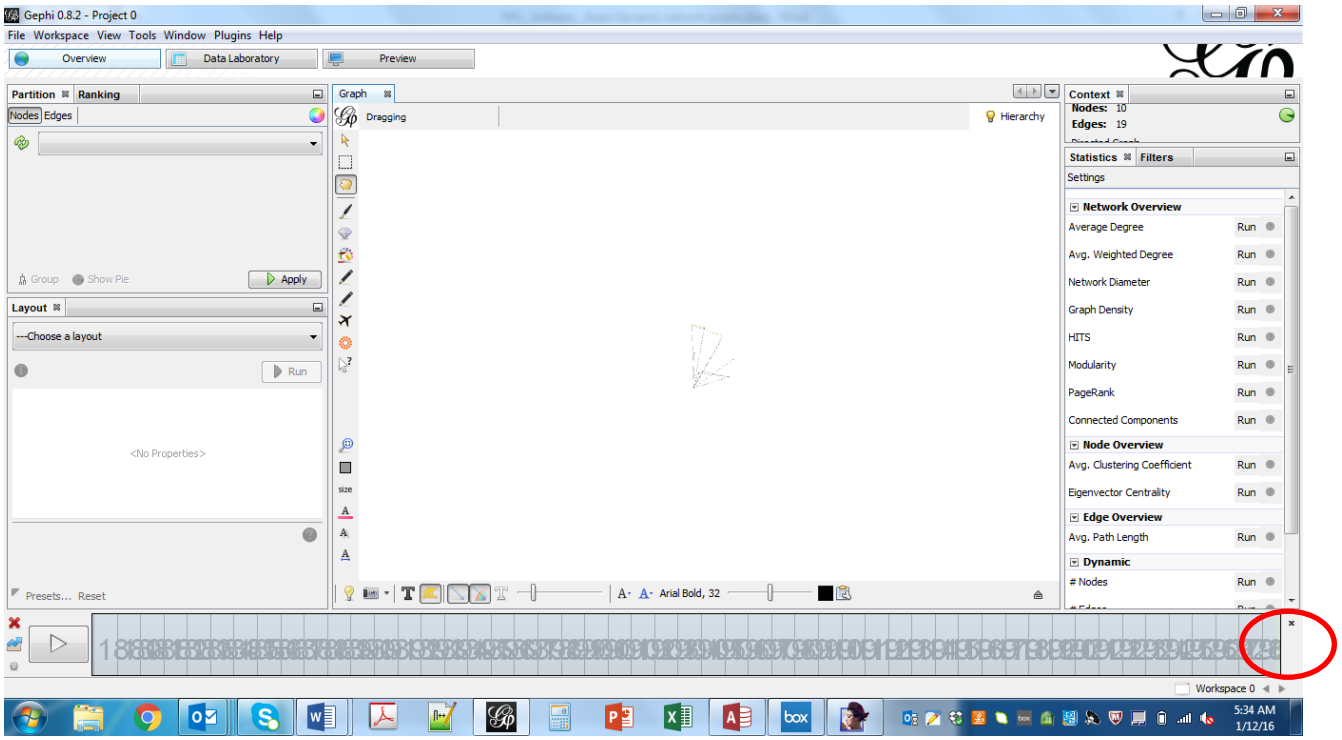
If the network data includes time Gephi will pen with the following screen, showing that it has detected a dynamic graph. Click OK.



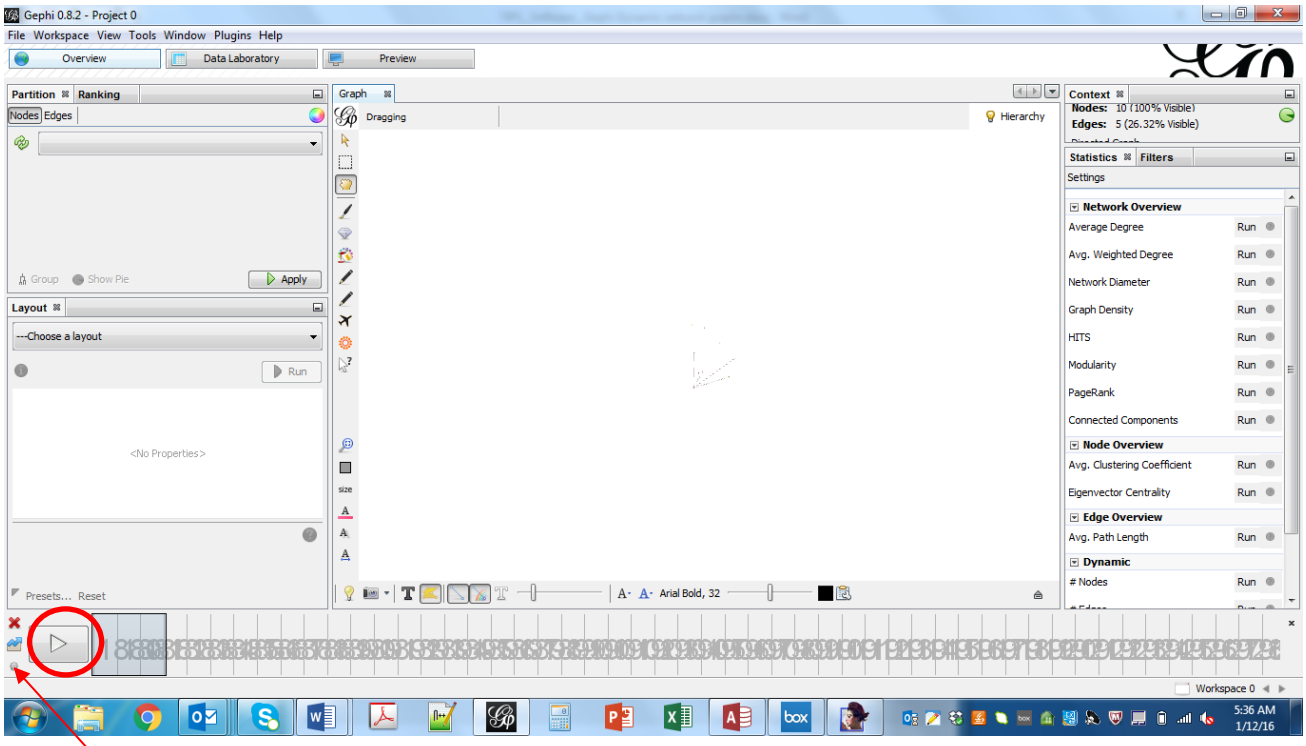
Click OK and close the next form until Gephi displays the following graph. Notice how the Enable Timeline (circled in red in figure below) will appear for dynamic graphs.



Click on Enable timeline to obtain the following display.



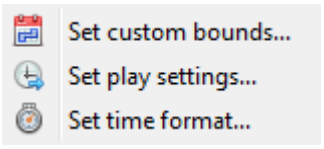
Place the mouse over the right-hand side of the time bar (circled in red) and shrink the bar dragging it to the left. **Experiment with different width of the time horizon.**



Click on the arrow on the left (circled in red) to run the model.

To change the appearance of nodes and edges read the TIPS file Gephi Displaying network graphs.

The change the visualization speed or display of dates, click on the little settings button on the lower left-hand corner (pointed to by the red arrow in the figure) then choose what you want to do.



If you want to slow the animation speed, click in Set play settings and increase the delay to a desired level.