Public Map of Mobility Changes Monitoring in Almaty during the Pandemic, Part 2

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In our last post, we introduced the interactive map: discussed the project, data and technical features of the map.

This time, we will tell about the views that the map can provide and how the downloaded data can be used.

Mobility layer

Let us recall that mobility in a node with 800 meter side is measured on the basis of the number of users of GPS active mobile applications. The higher the number of users in a node is, the higher the value is (minimum 0, highest 100). Mobility is measured every day and averaged over a week. This metric allows researching how people activity changed from March through August 2020, see for specific week (e.g. during the lockdown) in which locations of the city there were more people, or fewer people.

Value of the metric does not directly represent number of people; rather it is a relative indicator showing the level of activity in a node of a week in comparison with activity levels in each of the other nodes during the same week.

How to use the map for practical benefit

Let us give an example of using the interactive map in analysis of population mobility during COVID-19 from March through May 2020 in Almaty.

Using the submenu, you can switch between different dates each of which represents start of a week covered by the data:
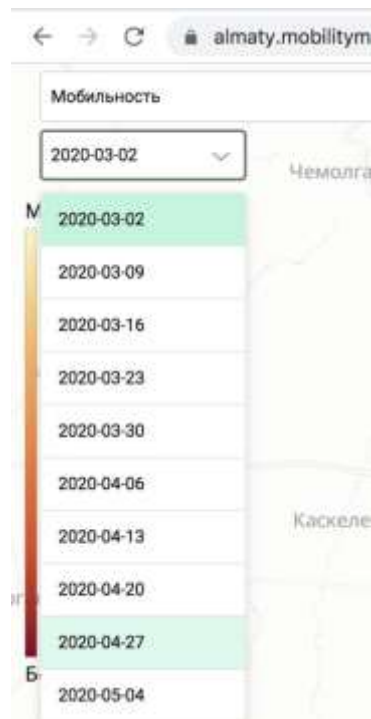
You may switch dates one after another, but then the changes may not be very visible. Significant changes in levels of citizens' activity are most noticeable in month-to-month comparisons. For instance, you can compare three dates – March 2 (2020-03-02), April 27 (2020-04-27) and May 25 (2020-05-25).
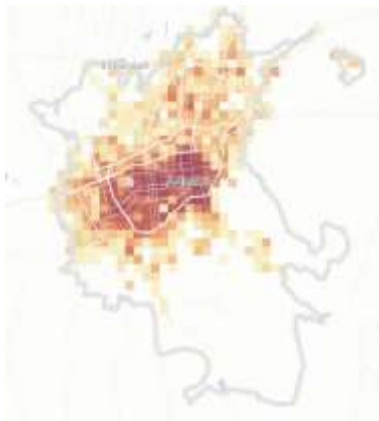
By switching between these dates, you can see that on April 27 average mobility in the city dropped, especially outside the city center, and did not return to March level by May 25.
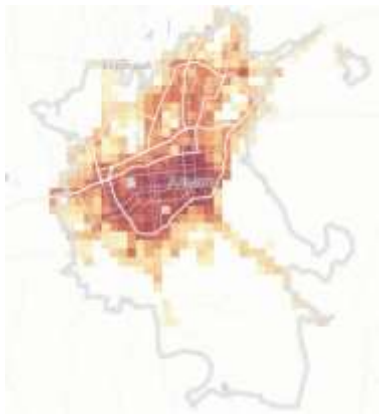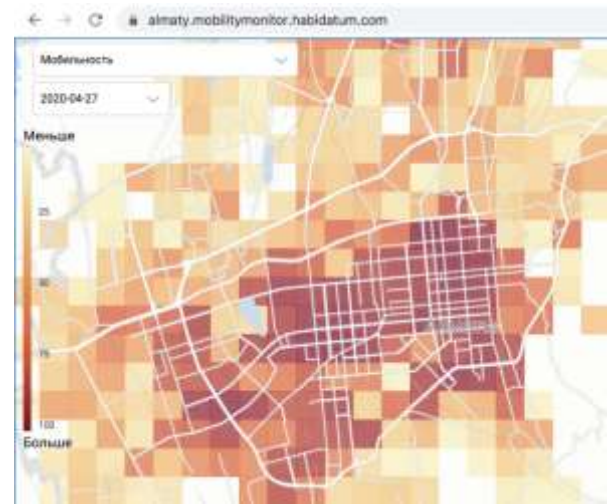

March 2
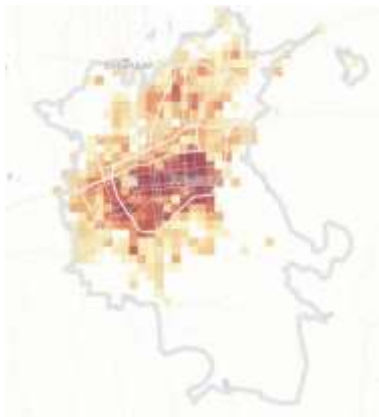
April 27

May 25

You can also zoom in the map and see changes in specific locations in the city. Let us look at the city center.
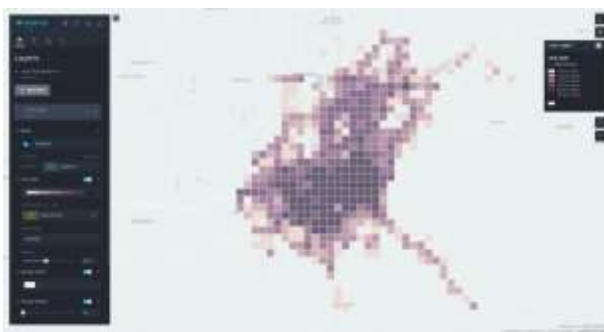
On March 2, you can see dark nodes (maximum activity level) throughout the center – this means high activity level in many locations:

On April 27, activity remained high only in the city center, while activity in periphery locations declined:

After these actions, we get the following map (you may choose other colors as well):

To see the values of nodes in different period of time, adjust fields that appear when you point mouse over the node. To do so, on the upper toolbar, select mouse icon with a circle. Then add all fields (columns) with dates. Having done so, when you point to a node, you will see how activity value changed in the node week over week.

This is how it looks:

This way you can see how a specific city location behaved from March through June. For advanced users, the table can be slightly modified, for example with *python*, and then by transferring to *kepler.gl* you can use time filters and produce animation of changes.

In addition, the dataset can be crossed with other layers in *QGIS, Python, javascript* and any other available methods, for example, by studying the dependence between nature of development and activity, density of points of attraction and activity and other types of research.