About «GPS data of Almaty city» project

Almaty city Department of Digitalization jointly with the International Finance Cooperation (IFC), a member of the World Bank Group, and Habidatum, international data analytical company, implemented a project on the analysis of GPS data of Almaty city. Run from May to November 2020, the project was aimed at assessing citizens' activity before and during the COVID-19 pandemic.

The project team was focused on the following milestones:

Commercial properties: shopping malls and street sales represent a special risk group during crises; therefore, they need more careful planning of visiting schedules for various target groups.

Public spaces and parks: typology of city parks was developed. Alternative strategies on working mode were proposed for each type of parks during the quarantine period.

Transport hubs: types of transport hubs were identified, where the central type corresponds to the busiest city center; centers of the second order - large transport facilities (bus and railway stations, airport), shopping malls and multi-store residential areas; semi-periphery - local centers of gravity, transitional form peripherals.

Pedestrianization of the city: a square of streets planned for closure was analyzed due to its greatest pedestrianization potential (by significance and centrality rank). It was found that this square has also the highest risk for the street system (the highest loss of city street connectivity for cars, based on simulation results).

Cycling infrastructure: analysis of cycling data provided by Almaty Bike for 2019-2020 resulted in developing trip matrix that was used for modelling the cycling routes in demand by Almaty Bike customers.

As a result of six months' work, *Almaty Mobility Monitor*, an interactive free-of-charge public interface, has been developed. The platform demonstrates historical data of changing urban mobility patterns during the 1st and the 2nd waves of COVID pandemic through March – August 2020. Such information could provide a solid baseline for mass transit flows analysis and helps identify shifting areas of high demand in Almaty social and engineering infrastructure.

Almaty Mobility Monitoring could also become a useful tool for business enterprises providing the baseline for data-driven decision-making, as well as for citizens for monitoring and analyzing the situation at the level of their district or the entire city. The sample data provided through the public Interface could also become a driver for further analytical and scientific investigations by research centers, universities and academic staff to study pandemic impacts in more details and develop adaptation measures.

The project was initiated by Akimat of Almaty in cooperation with IFC's program 'Cities in Europe and Central Asia', which is being implemented jointly

with the Swiss State Secretariat for Economic Affairs (SECO) and the Austrian Federal Ministry of Finance. The initiative is aimed at implementing sustainable infrastructure projects adapted to climate change in order to improve the quality of municipal services in the field of public transport, water supply, waste management, and smart city technologies.

About the data source

Almaty Mobility Monitor public interface is based on aggregated GPS data collected from mobile applications of citizens, who agreed to share the information about their geolocation. The data is collected by data brokers using software combining GPS signals, Wi-Fi connections and cellular signals.

GPS data has a unique level of detalization in space (accurate to geolocation) and is continuous in time. The main advantage of GPS is the global character, which makes it possible to compare cities and countries with each other. The processing of GPS data for mobility monitor adheres to all relevant privacy standards. For the public interface, only aggregated data is used, which guarantees anonymity — the data cannot be identified, even when compared with other datasets. The service provides access to aggregated data only, that ensures its security.