The project's main research problem concerns identifying and defining features of changes in transport behaviours of Łódź inhabitants connected with Sunday shopping restrictions resulting from the act of 10 January 2018 on restrictions on trading on Sundays and public holidays as well as some other days (Dz.U. 2018 item 305). The research planned for the project is to show how the ban on Sunday trading affects transport behaviours of a large urban centre population which were discharged after the political transformation (the shift from centrally planned economy to free market economy). Hence it may be alleged that introducing the aforementioned act caused changes in many elements of transport behaviour of Lodz inhabitants between 2018 and 2020. Depriving the inhabitants of the possibility of shopping or undertaking different other activities available in commercial facilities (e.g. shopping centres) on Sunday may result, for instance, in a reduction in the number of travels or shifting some part of them on the remaining days of the week. This type of changes may be accompanied by, for instance, changing the means of transport (e.g. instead of travelling by bus, the customer will use a private car) or changing the moment of commencing and finishing the travel. Moreover, the consequences of restrictions on Sunday trading are likely to concern also other destinations/travel motivation and will not be restricted only to days off.

The information on the movements of people in the city space will be obtained from three different sources of data. The first one includes results of the planned questionnaire survey on transport behaviours of Łódź inhabitants (with a special focus on the issue of shopping restrictions). The questionnaire will refer to the inhabitants' profile and characteristics of their households, the influence of trading restrictions on individual elements of transport behaviours as well as questions concerning the travels which the respondent made the day before the survey. The second source comprises data from vehicle counting sensors on Lodz roads as well as automatic number-plate recognition cameras. The third source of information includes data from GPS trackers installed on bicycles of the Lodz Public Bike. Data obtained from the sensors, ANPR cameras and GPS trackers provide information on movements within the area of Lodz which is of unique precision, accuracy and comprehensiveness. The questionnaire survey, in turn, ideally bridges the gaps which can be found with reference to the databases in the field of research into transport behaviours. They are, therefore, fully complementary sources of information, the juxtaposition of which guarantees accomplishment of the adopted research aim of the project. Each of the databases will be subject to analysis in order to identify features of changes in transport behaviours which result from statutory restrictions on trading. Additionally, a computer model of Łódź land development will be elaborated accounting for, e.g. structures together with their functions, the transport network as well as all forms of land cover. The model will be supplemented by the distribution of retail facilities. The vector model of Łódź land development will be prepared in three time variants: as of the beginning of 2018, 2019 and 2020. The constructed model will represent a kind of "foundation" for analysis conducted on the aforementioned databases. The conducted questionnaire survey will allow, in turn, to construct a traffic model which will permit to obtain a full picture of how the city's transport system functions. The model prepared in this way will be juxtaposed with the results of analyses conducted on databases from sensors, cameras and GPS trackers.

The reason for undertaking this research topic is the essential role of research into transport behaviours for planning and shaping the transport system. Knowing these behaviours gives not only an objective picture of the current situation but it also allows to construct more advanced analytical tools such as traffic models. It points to the fundamental data necessary to forecast traffic. They allow to get to know the inhabitants' expectations with regard to the transport system. The accomplishment of the project will bring new knowledge in the scope of characteristics of changes in transport behaviours of big city inhabitants connected with the introduction of trading restrictions. Transport development management in a way which meets real needs of inhabitants requires getting to know their everyday transport behaviours. It seems justified to assume that these behaviours have undergone certain changes recently as a result of the introduction of statutory trading restrictions. It is necessary to supplement the set of quantitative data collected in the literature so far (including spatial and time structure of vehicle traffic volume) concerning the Lodz transport system with research using survey questionnaire. This will allow to learn about motivation for movements undertaken by individuals in time and space with the use of means of transport selected by them. Consequently, the impact of expected project results on science development should be considered on two planes. The accomplishment of the project will bring information on a phenomenon which has not been comprehensively researched yet due to its short time of occurrence. In the methodological scope, in turn, a research procedure will be elaborated allowing to use complementarily Big Data with conclusions from the questionnaire survey.