

The purpose of this project is to investigate the relationship between human walking behavior and the physical urban environment. To achieve this goal, we create advanced simulation model of walking people in the virtual space. For this purpose, we use geographical and census data to create detailed digital replicas of two architecturally and socially distinct districts of Poznań: Wilda and Winogrady, and then populate them with an artificial population of people (agents). Wilda is characterized by tenement houses from the beginning of the 20th century. In turn, Winogrady is built-up with large housing complexes developed in accordance with the socialist utility paradigm in the 1960s and 1970s.

Research suggests that the physical urban environment may either provide incentives for walking or discourage from it. Such studies refer to the concept of walkable places or just *walkability*. *Walkability* is a measure of how physical space is human-friendly. Properly designed urban areas can support the creation of social interaction, encourage physical activity and develop social capital in cities. Consequently, an increase in walking activity can be an important factor affecting the quality of life in modern cities and the well-being of residents.

According to the OECD, in 2018, around 50% of the world population lived in metropolitan areas, and by 2050 this percentage will increase by up to 70%. Therefore, cities are the workhorses of our economy, and at the same time, cities are far from ideal. Typical urban problems include transport systems, pedestrian transit, segregation, crowd, traffic or health. Although walking can be beneficial to health, it can reduce traffic and increase the quality of social capital, most urban research is associated with other "big" city problems, such as public transport or car optimization. This problem is particularly important in Poland, where only 20% of citizens take part in regular physical activity in accordance with the standards recommended by the World Health Organization, and 33.9% admit that they never walk in their free time.

As part of the project, we want to conduct a series of experiments and modify selected parameters of the physical urban environment to examine its impact on people's walking behavior. As a result, we will be able to test and propose planning solutions that will improve the quality of life in the city and wellbeing of its inhabitants.