Data Article

E-scooter sharing schemes operational zones in Poland: Dataset on voivodeship capital cities

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A B S T R A C T

In this paper, we present the vector dataset of the operational zones of e-scooter shared mobility services in the voivodeship capital cities in Poland. The data were acquired manually from the applications of a single provider of e-scooters for each city. The dataset contains not only the size and the position of the geographic service areas, or geofences of e-scooter sharing schemes, but also the size and position of no-parking zones, parking zones and low-speed zones, if applicable. The data can be used for various researches which cover the topic of micro-mobility, accessibility and broader issues connected with urban development and spatial management. The dataset captures the state of the e-scooter sharing scheme in the voivodeship capital cities in Poland at the beginning of August 2020. Additionally, the data are accompanied by the table of cities with identified providers of e-scooter sharing systems.

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Specifications Table

| Subject                          | Geography, Planning and Development |
|---------------------------------|-------------------------------------|
| Specific subject area           | Geography, Urban Geography, Transport Geography, Spatial Management, Transport Planning |
| Type of data                    | Polygon vector data layer Table |
| How data were acquired          | Data were acquired by manual vectorisation from the mobile application of e-scooter sharing schemes providers. |
| Data format                     | Raw data Geodatabase Shapefile Xls. table |
| Parameters for data collection  | Data were collected for five main categories of the operational zones of e-scooter sharing schemes if applicable. |
| Description of data collection  | Manual vectorisation of the operational zones of e-scooter sharing schemes providers of voivodeship capitals in Poland. The raw data were collected from the phone application of e-scooter sharing schemes providers. |
| Data source location            | Voiwodeship capitals: Wroclaw, Bydgoszcz, Toruń, Lublin, Gorzów Wielkopolski, Łódź, Cracow, Warsaw, Opole, Rzeszów, Białystok, Gdańsk, Katowice, Kielce, Poznań, Szczecin; Poland |
| Data accessibility              | Repository name: Mendeley Data Data identification number: 10.17632/m3dx24g6bw.1 Direct URL to data: http://dx.doi.org/10.17632/m3dx24g6bw.2 |

Value of the Data

- E-scooter sharing schemes are being recently implemented in many municipalities in Poland in order to improve the transport variability and offer individual means of transport as an alternative to public transport or car to support sustainable development. However, the data on spatial coverage of operational zones of e-scooter sharing schemes is unknown. This dataset provides important insight into the size and spatial coverage of operational zones of e-scooter sharing schemes which could be used by various scientists, public authorities and policy planners to understand this new development.
- Data can be of high value for transport and urban scientists studying, e.g. transport accessibility, micro-mobility solutions, transport sharing schemes, urban planning and spatial management. Data could be also beneficial for policymakers and public authorities. The question of accessibility is crucial for the transport planning authorities to, for example, prevent from social exclusion or to understand the transport options in a given area. Currently, there are no publicly available data on the size and geographical position of e-scooter sharing schemes in Poland. This dataset could help in challenging this issue.
- The additional value of this dataset could be in exploring the relationship of new micro-mobility shared solutions with current transport options in the given transport system. It can be used to answer the questions if e-scooter sharing schemes are used to substitute or complement other means of transport (e.g. public transport).
- By knowing the geographical locations and the size of operational zones of e-scooter sharing schemes, the dataset can address the issue of fundamental aims of e-scooter sharing schemes operators. For example, are they implementing the e-scooter sharing schemes all over the city as a last-mile solution or are they instead focused on highly exposed locations at the cities like old towns, centres and similar alike?

1. Data Description

Adoption of new solutions of personalized transportation such as shared-bikes or electric shared-scooters is gaining popularity over the globe as those solutions offers a convenient alternative to public transport or car [1, 2, 3]. To understand how e-scooter shared schemes work standalone and interact with other transport options or how to manage them, it is crucial to
know not only if such an option is available in the given municipality, but also to know the geographical size and location of zones where e-scooter sharing schemes operate. The raw data presented in this dataset contain not only the information in which voivodeship capitals are e-scooter sharing schemes at disposal (Fig. 1) and which providers of e-scooter sharing scheme are in operation in voivodeship capitals in Poland (Table 1) but also the size and the position of the geographic service areas, so-called geofences of e-scooter sharing schemes in the form of GIS layers and geodatabase (Fig. 2). Additionally, the raw data in the dataset contain also the size and position of no parking zones, parking zones, low-speed zones and no go zones, if applicable, as demonstrated on Fig. 3.

The size and the position of the geographic service areas of e-scooter sharing schemes which also includes the size and position of no-parking zones, parking zones and low-speed zones are saved in the repository as shape files stored in the geodatabase (Fig. 2). The name of the shape file was created according to the key which goes as a following:

"name of the city + name of the company + type of the zone"

(example: Cracow_Bird_OZ)
Table 1
E-scooter shared schemes in voivodeship capitals, Poland 2020.

| City                  | Voivodeship          | Operator                                   | Year date accessed |
|-----------------------|----------------------|--------------------------------------------|--------------------|
| Wrocław              | Lower Silesian       | Free Now (former Hive)                     | 04/08/2020         |
| Bydgoszcz             | Kuyavian-Pomeranian  | Lime                                       | 04/08/2020         |
|                      |                      | Bolt                                       | 04/08/2020         |
| Toruń                 | Kuyavian-Pomeranian  | Lime                                       | 04/08/2020         |
|                      |                      | Volt                                       | 04/08/2020         |
| Lublin                | Lublin               | Lime                                       | 04/08/2020         |
|                      |                      | Volt                                       | 04/08/2020         |
|                      |                      | Bolt                                       | 04/08/2020         |
| Gorzów Wielkopolski  | Lubusz               | Lime                                       | 04/08/2020         |
| Zielona Gora          | Lubusz               | Volt                                       | 04/08/2020         |
| Łódź                  | Łódź                 | Volt                                       | 04/08/2020         |
|                      |                      | Slide                                      | 04/08/2020         |
| Cracow                | Lesser Poland        | Lime                                       | 04/08/2020         |
|                      |                      | Volt                                       | 04/08/2020         |
|                      |                      | Bolt                                       | 04/08/2020         |
| Warsaw                | Masovian             | Free Now (former Hive)                     | 04/08/2020         |
|                      |                      | Lime                                       | 04/08/2020         |
|                      |                      | Bolt                                       | 04/08/2020         |
|                      |                      | Dott                                       | 04/08/2020         |
|                      |                      | Lime                                       | 04/08/2020         |
| Opole                 | Opole                | –                                          | 04/08/2020         |
| Rzeszów               | Subcarpathian        | Blinkee.city                               | 04/08/2020         |
| Białystok             | Podlaskie            | Blinkee.city                               | 04/08/2020         |
| Gdańsk                | Pomeranian           | Blinkee.city                               | 04/08/2020         |
|                      |                      | Free Now (former Hive)                     | 04/08/2020         |
|                      |                      | Quick                                      | 04/08/2020         |
|                      |                      | Logo                                       | 04/08/2020         |
| Katowice              | Silesian             | Blinkee.city                               | 04/08/2020         |
|                      |                      | Free Now (former Hive)                     | 04/08/2020         |
| Kielce                | Holy Cross           | Blinkee.city                               | 04/08/2020         |
| Olsztyn               | Warmian-Masurian     | –                                          | 04/08/2020         |
| Poznań                | Greater Poland       | Blinkee.city                               | 04/08/2020         |
|                      |                      | Lime                                       | 04/08/2020         |
|                      |                      | Bolt                                       | 04/08/2020         |
| Szczecin              | West Pomeranian      | Volt                                       | 04/08/2020         |
|                      |                      | Quick                                      | 04/08/2020         |

The type of zone represents the category of the e-scooter sharing zone. In total, the dataset distinguishes five categories:

1) Operational zone (OZ)
2) No parking zone (NPZ)
3) Special parking zone (SPZ)
4) Low-speed zone (LSZ)
5) No go zone (NGZ)

Operational zone (OZ) is the area where the user could use and park the e-scooter of giving e-scooter sharing scheme. No parking zone (NPZ) is the area where it is forbidden to park the e-scooter. Special parking zone (SPZ) is the area where users are encouraged to park the e-scooter. Low-speed zone (LSZ) is the area where is required to follow speed regulations of the particular zone. No go zone (NGZ) is an area where it is forbidden to use the e-scooter. Operational zones are to be found in each city where the e-scooter sharing schemes are. The special zones are vectorised only if applicable.
2. Experimental Design, Materials and Methods

The operational zones of e-scooter shared mobility services were manually vectorised from the mobile applications of the providers of the e-scooter sharing schemes. Before the vectorisation, it was necessary to conduct research to identify providers of e-scooter sharing schemes (Fig. 1, Table 1). As mentioned in the chapter above, the dataset contains the geographical extent and locations of the e-scooter sharing schemes of those providers who at the time of the research period were in operation. All the zones were re-sketched on the base map layer the on-screen according to the zones from the mobile applications. Manual vectorisation of the e-scooter sharing schemes was based on street-by-street and feature-by-feature (lakes, parks, rivers) constructions of matching perimeters with the geofences in the mobile application. For example, after downloading and opening the mobile application of Blinkee.city, voivodeship capitals, where the Blinkee.city operates were selected and zoomed to the resolution, which allows street-to-street or feature-to-feature vectorisation (Fig. 4). This practice was applied for each voivodeship capital and e-scooter sharing scheme operator until obtaining the final dataset. The vectorised polygons of the operational zones of e-scooter sharing schemes thus represent the exact copy of the operational zones of e-scooter sharing scheme provided by the provider of the e-scooter sharing service via a mobile application which is actual for the 04.08.2020. It has to be thus noticed, that the geographical size and location of the zones might have changed from that time since the development of the sharing scheme is very dynamic.

Besides the zones of where the e-scooter sharing scheme operates (operational zone – OZ), another four categories of special zones within the e-scooter operational zones were created (Fig. 3). Those categories cover 1. no parking zones (NPZ), 2. Special parking zones (SPZ), 3.
low-speed zones (LSZ) and 4. no go zones (NGZ). At this place, it is essential to say that the additional categories are applicable only for few e-scooter sharing scheme providers.

Even though the manual vectorisation represents an exact copy of the e-scooter sharing scheme displayed at the mobile application, there might be small errors or inaccuracies in the resulting vectorised data. Such inaccuracies should not be an issue as the purpose of the vectorisation is to explore the spatial variability of the e-scooter sharing schemes (inclusion/exclusion of neighbourhoods) and to compare it within the examined settlements or e-scooter sharing schemes operators.
Fig. 4. Screenshots of Blinkee.city mobile application displaying e-scooter sharing scheme and e-scooter availability in Cracow.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships which have, or could be perceived to have, influenced the work reported in this article.

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References

[1] S.A. Shaheen, S. Guzman, H. Zhang, Bikesharing in Europe, the Americas, and Asia, Transport. Res. Rec.: J. Transport. Res. Board 2143 (2010) 159–167, doi: 10.3141/2143-20.

[2] R. Zhu, X. Zhang, D. Kondor, P. Santi, C. Ratti, Understanding spatio-temporal heterogeneity of bike-sharing and scooter-sharing mobility, Comput., Environ. Urban Syst. 81 (2020) 101483, doi: 10.1016/j.compenvurbsys.2020.101483.

[3] M.E. Moran, B. Laa, G. Emberger, Six scooter operators, six maps: spatial coverage and regulation of micromobility in Vienna, Austria, Case Stud. Transport. Policy 8 (2020), doi: 10.1016/j.cstp.2020.03.001.