

ANALYSING THE POPULATION GROWTH IN PADUKKA DIVISIONAL SECRETARIAT DIVISION

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Abstract

The study aimed to analyse the urban characteristics of the Padukka Divisional Secretariat Division (DSD) based on a suggested alternative definition; where GNDs with a minimum population of 750 persons and a population density greater than 500 persons per km², can be considered urban. Two objectives were formulated for the study; identifying urban characteristics of the study area based on population and identifying urban characteristics in the study area based on population density. Eight Grama Niladari Division (GNDs) of the Padukka DSD are selected for the study. The results of the study revealed that the Padukka DSD can be classified as urban since 2001 in terms of population and population density and the central and northern segments of the area are highest in urban character. Prediction of the population in the area shows further development of urban character with linear growth, an estimated 22,755 persons in 2040. Future studies are needed to analyse the urban characteristics of the Padukka DSD in terms of the land use pattern, domestic water usage, and domestic fuel usage.

Keywords: *Padukka DSD, Population Density, Urban Characteristics, Linear Growth*

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Introduction

As revealed by many researchers, there is no universal definition to define urban areas in the world, therefore different countries use different definitions. In Sri Lanka, Municipal Councils (MCs) Urban Councils (UCs), and Town Councils (TCs) were considered urban areas until 1987. As the changes in the administrative structure of the country in 1987, abolished TCs, and absorbed them under the Pradesheeya Sabha (PS). After that only MCs and UCs were considered urban, and the PSs are in the rural category. Weeraratne, (2016) stated that, due to this rigid administrative structure, many vibrant areas that reflect urban characteristics remain classified as rural. According to the researcher, the current administrative definition in Sri Lanka has a serious limitation due to its static nature, which does not capture the dynamism of urbanization in Sri Lanka, therefore suggesting an alternative definition including indicators that reflect ecological, economic, and social characteristics of an area. Uduporuwa (2011) identified the factors to be considered in urban as technological innovation, economic development, and socio-political development. The Padukka Divisional Secretariat Division (DSD) belongs to the PS administrative category of the country, therefore classified as rural. However, the area reflects urban characteristics. In this context, the study aimed to analyse the urban characteristics of the Padukka DSD.

Objectives of the Study

Two objectives were formulated for the study to accomplish the aim of the study.

- (i) To identify the urban characteristics of the study area based on the population.
- (ii) To identify urban characteristics in the study area based on the population density

Material and Methods

Data

Padukka DSD has been selected as the study area. Grama Niladhari Divisions (GND) wise secondary data of population and population density in the Padukka DSD from the resource profiles in the Padukka DSD office were used for the study, covering the years, 2001, 2012, 2016, and 2020. Padukka DSD consists with 46 GNDs and among them 8 GNDs were selected for the research.

Methodology

The Time series analysis method was used to identify the temporal changes in the population in the study area. Using the QGIS software, the Equal Count Quantile method was applied to measure the population density of the area. The spatial distribution patterns of the population and the population density were portrayed using the QGIS. Two alternative definitions suggested by Weeraratne (2016) have been utilised to accomplish the objectives of the study. According to the proposed definitions by Weeraratne, the GNDs with a minimum population of 750 persons are considered urban and the GNDs with greater than 500 persons per km² are as urban areas.

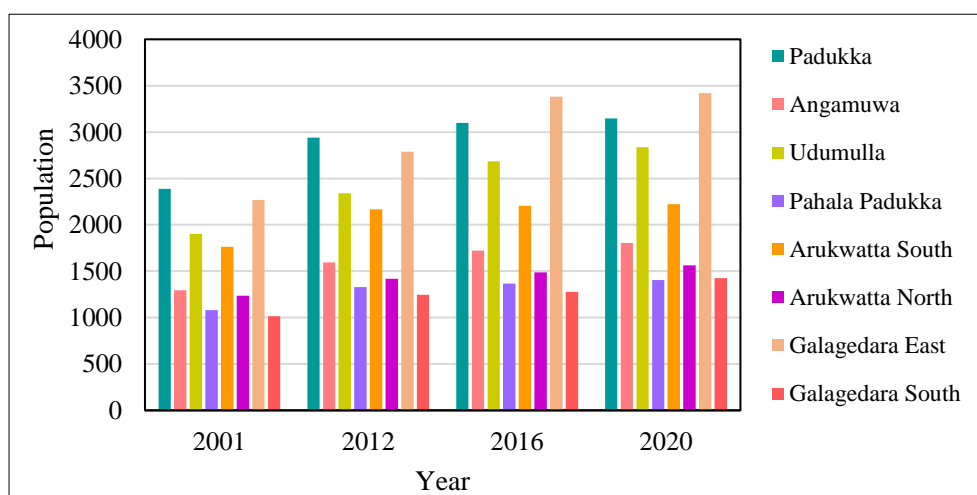
Results and Discussion

Identifying Urban Characteristics Based on the Population

According to the alternative definition suggested by Weeraratne, (2016), the GND with a minimum population of 750 persons is considered urban. Accordingly, every GND in the study area could be identified with this characteristic for the considered years 2001, 2012, 2016, and 2020 as presented in Figure 1. Looking at Figure 2 for temporal changes in the population in the study area, the population has increased as a parallel line and this shows the fact that increasing the population in the area is a slow process. This can be concluded as the increasing population in the area led to the urban development as slow progress.

Figure 1:

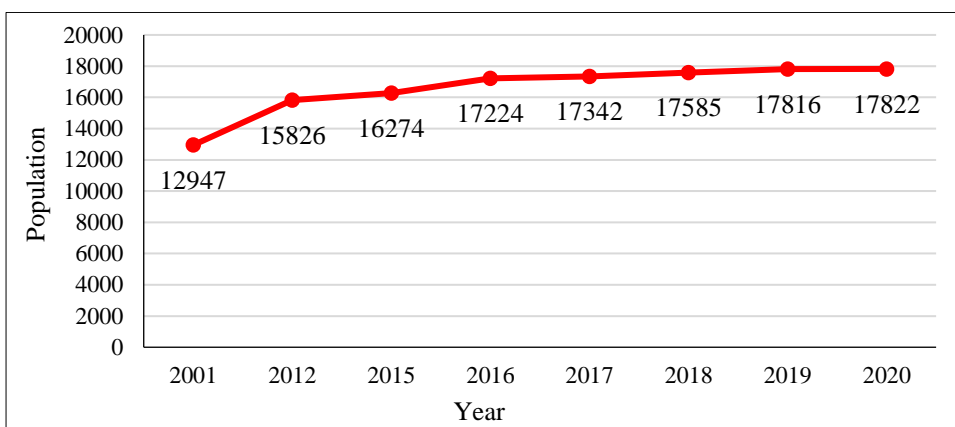
Population in the selected GNDs in the Padukka DSD



Survey Data, 2022

Figure 2:

Temporal Changes of the Population in the Padukka DSD

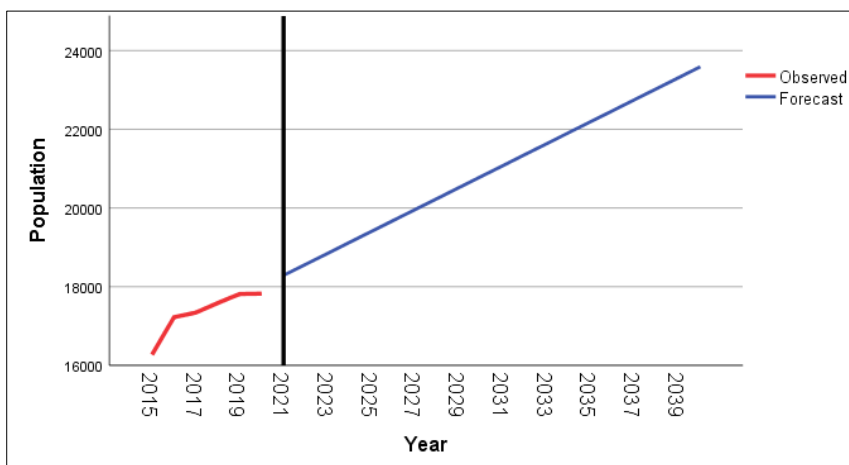


Survey Data, 2022

When looking at the future growth of the population in the study area by using time series analysis, the prediction up to 2040 and Figure 3 demonstrates a linear growth, an estimated 22,755 persons in 2040, therefore urban characteristics will be further developed in the area.

Figure 3:

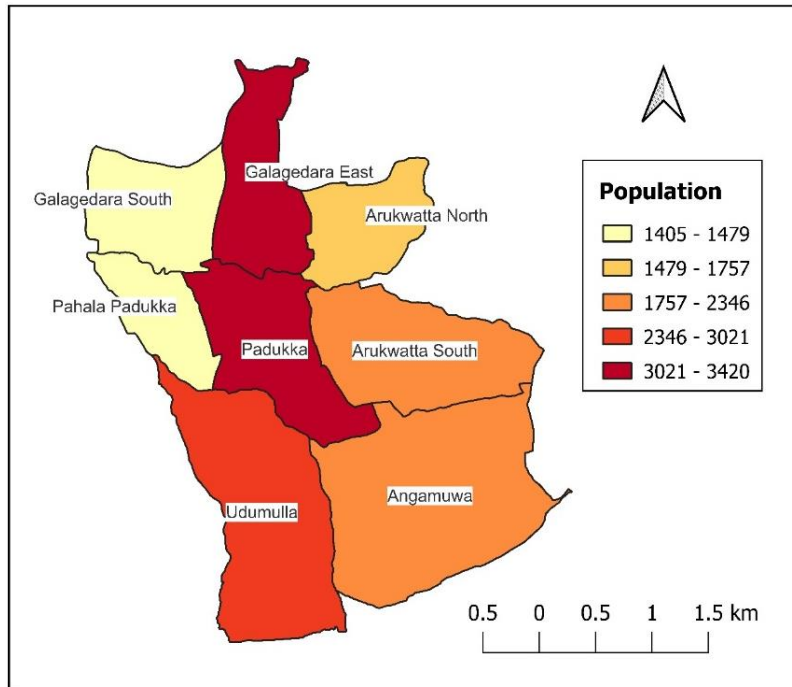
Future Growth of the Population in the selected GNDs in the Padukka DSD



Source: Survey Data, 2022

Figure 4:

Spatial Distribution of the Population in the selected GNDs in the Padukka DSD in 2020



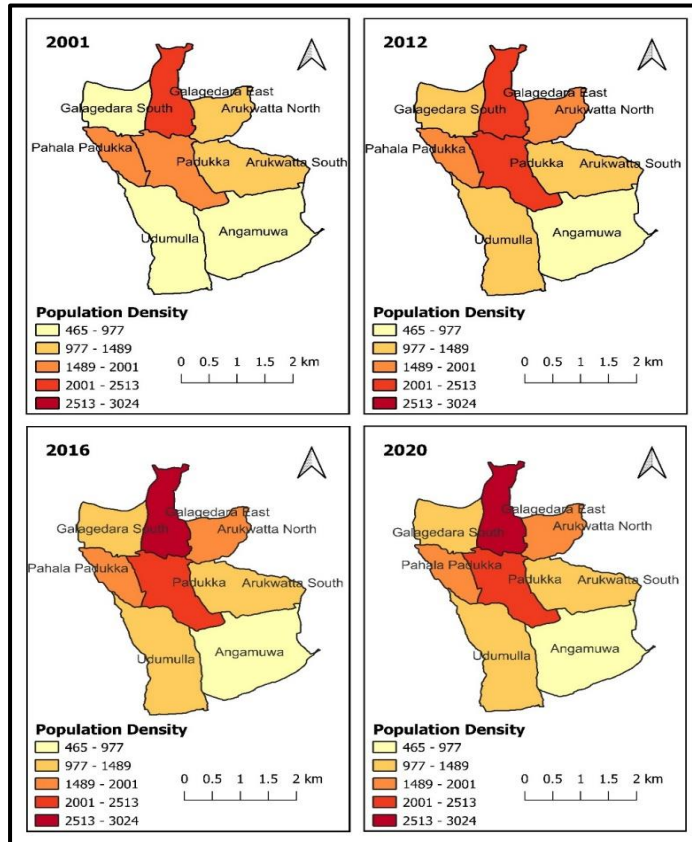
Source: Prepared by the Authors based on the Resource Profile 2020 of the DSD Office in Padukka

The spatial distribution of the population in the Padukka DSD in 2020 is seen in Figure 4 and, a relatively higher number of persons are concentrated in the GN divisions which are in the southern and northern parts of the DSD and give the idea that those areas are comparatively more urban than the rest of the areas. While comparatively less concentration could be seen in the western and northwestern parts of the DSD. However, according to the alternative definition of Weeraratne (2016), all the considered DSDs are urban.

Identifying Urban Characteristics Based on Population Density

Figure 5:

The temporal distribution pattern of the population density in the selected GNDs in the Padukka DSD



Source: Prepared by the Authors based on the Resource Profile 2020 of the DSD Office in Padukka

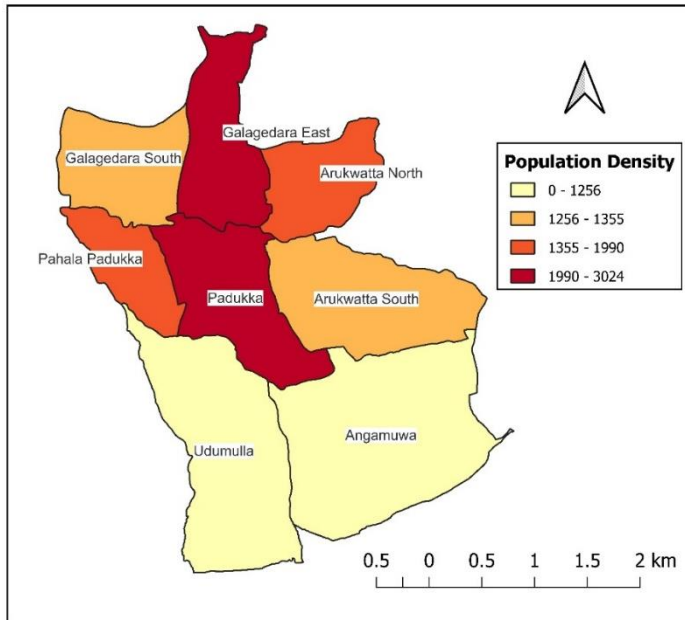
The temporal distribution pattern of the population density in the Padukka DSD is shown in Figure 5. As suggested by Weeraratne (2016) the alternative definition of population density greater than 500 persons per km² is applied in this study to identify urban characteristics in the Padukka DSD if any. According to the Figure 5, the highest population density is found in the Galagedara East GN Division for all the considered years; 2001, 2012, 2016, and 2020.

According to Figure 5, from 2001-2012, the population density in the DSD increased rapidly and after that, the growth has been slowed down. However,

according to the alternative definition considered, all the GN divisions are urban within the period considered except Angamuwa DSD in 2001.

Figure 6:

The population density in the selected GNDs in the Padukka DSD in 2020



Source: Prepared by the Authors based on the Resource Profile 2020 of the DSD Office in Padukka

When looking at the spatial distribution of the population density in the DSD in 2020, the highest concentration could be identified in the central and northern segments of the DSD, representing Padukka and Galagedara East. Relatively, the GN divisions of Udumulla and Angamuwa which are in the southern and southeastern segments of the DSD represent less population density, however, according to the alternative definition, those GN divisions also could be devoted as urban.

Conclusion and Recommendations

The study concluded that the Padukka DSD classified as urban since 2001 in terms of population and population density and the central and northern segments of the area are highest in urban character. The time series analysis that was used to the Prediction of the population in the area shows further development of urban character with linear growth, an estimated 22,755 persons in 2040. Future studies are needed to analyse the urban characteristics

of the Padukka DSD in terms of the land use pattern, domestic water usage, and domestic fuel usage.

References

- Antalyn, B., & Weerasinghe, V.P.A. (2020). Assessment of Urban Sprawl and Its Impacts on Rural Landmasses of Colombo District: A Study Based on Remote Sensing and GIS Techniques. *Asia-Pacific Journal of Rural Development*, 30(1-2), 139-154. Retrieved 6 April 2022, from <https://journals.sagepub.com/doi/full/10.1177/1018529120946245>
- Newburn, D. A., & Berck, P. (2006). *Modeling Suburban and Rural-Residential Development Beyond the Urban Fringe* (Ph.D.). University of California, Berkeley.
- Padukka Divisional Secretariat Office. *Resource Profile (2015-2020)*.
- Uduporuwa, R.J.M (2011). *An Analysis of Urban Growth and Urbanization in the Sabaragamuwa Province, Sri Lanka*. Sabaragamuwa University Journal, 9(1), 114–132. Retrieved 9 May 2022, from <http://doi.org/10.4038/suslj.v9i1.3739>
- Weeraratne, B. (2016). *Re-Defining Urban Areas in Sri Lanka* (1st ed., p. 36). Institute of Policy Studies of Sri Lanka. Retrieved 26 March 2022, from [https://www.researchgate.net/publication/314257911 Re-Defining Urban Areas in Sri Lanka](https://www.researchgate.net/publication/314257911_Re-Defining_Urban_Areas_in_Sri_Lanka)