Population Growth and Urbanisation in Peninsular Malaysia from 1911 to 2000

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Abstract

Urbanisation is a process of urban population growth, and it is growing rapidly in developing countries including Malaysia. In a period of 100 years, i.e. before and after Malaya achieved independence in 1957, followed by the formation of Malaysia in 1963, the process of urban population growth and development has occurred in tandem with economic and role of place development in the states in Malaysia. Introducing measures of the GetiseOrd G index or Moran's I index for spatial autocorrelation analysis, this paper will discuss the population growth process which contributed to the growth of towns in Peninsular Malaysia starting from 1911. As a whole, the function of place and economic development greatly influenced this phenomenon; starting with mining activities, agriculture, manufacturing industries and followed by services that existed in these cities.

Keywords: population growth, urbanisation, GetiseOrd General G index, Moran's I index, GIS, Peninsular Malaysia

I Introduction

Urbanisation is a process of continuous concentration of population in urban and metropolitan areas which played an important role in the development and modernization of society (United Nations 1987). The growth of the world's urban population will increase from 37.1 percent in 1970 to 60.1 percent in 2025. In the same period, urbanisation in developing countries will increase from 25.4 per cent to 56.5 per cent. In Malaysia, the process of urbanisation is growing rapidly and so far more than 60.0 percent of the population lived in urban areas. In Malaysia, population increase in area exceeding 10,000

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populations has become more apparent due to migration that has happened since the last few decades. This process of increasing urban population puts a pressure on urban areas that need more space for the construction of housing, employment, business, industry and others. This does not include various socio-economic and environment problems faced by the Local Authorities (LA) in the effort to enhance sustainability and living comfort of urban population in the future. This paper will discuss the process of population growth which contributed to the growth of towns in Peninsular Malaysia starting from 1911. Geographic Information Systems (GIS) will be used to analyze the distribution of towns in Peninsular Malaysia in nearly 100 years period.

Ⅱ　Population growth and urbanisation in Malaysia

The definition of urbanisation in Malaysia refers to gazetted area and the criteria used in Population Census 1970, 1980, 1991 and 2000 where an area is gazetted as urban area and it must has a population of 10,000 and above (Department of Statistics Malaysia 1995). Gazetted areas and the adjacent built-up areas and the combination of these two areas have a total population of 10,000 or more during the 2000 population census being carried out (Department of Statistics Malaysia 2001).

One of the issues identified is related to the lopsided urban population growth rates. The West Coast states experienced higher urban population growth. Analysis of growth rates between 1991-2000 found Malacca and Selangor recorded a high average annual population growth rate in Peninsular Malaysia with 8.09 and 7.80 per cent respectively. While, Negeri Sembilan and Johor recorded more than 5.0 percent annually. Conversely Kelantan and Terengganu recorded the lowest rate at 0.98 and 2.70 per cent respectively. Due to differences in the imbalanced rate of population growth has resulted in significant increase of total population in the West Coast cities. In 2000, the level of urbanisation in places such as Pulau Pinang, Selangor, Singapore, Johor and Perak were (79.5%), (88.3%), (67.3%), (63.9%) and (59.5%) respectively. While, on the East Coast such as Kelantan recorded the lowest urbanisation rate of 33.5 percent in 2000. This shows that the process of urbanisation in Malaysia was imbalanced where the states in the West Coast of Peninsular Malaysia which have advanced socio-economic development have higher urbanisation level (Saw 1972).

For Peninsular Malaysia alone the urbanisation rate began increasing from 10.1 percent (1911), 14.0 percent (1921), 15.1 percent (1931), 15.9 per cent (1947) and 26.5 percent (1957). For Sabah and Sarawak the urbanisation rate in 1960 was 13.4 and 12.6 percent and rise to 16.4 and 16.7 percent in 1970. This shows that both states had low urbanisation rate. This means more urban socio-economic development must be planned

and implemented to attract more people to live in the city.

One of the most significant impacts as a result from the varying trend of urbanisation growth rate as mentioned above is that the pattern of population migration to the states in the west coast has increased from year to year. This of course will continue to put ecological pressure to urban areas such as Kuala Lumpur, Shah Alam, Georgetown, Johor Baharu, Ipoh, Penang and others. The migration has also created problem of growing numbers of urban population falls into the category of urban poverty which presence is significant in major cities in Malaysia today. In other words, urbanisation process gave rise to low income problems as found among the Malays (Mohd Razali Agus 1989).

In addition, the process of urbanisation according to states, ethnic and gender is also the key component in the study of urbanisation and cities in Malaysia. It involves the difference and importance of urban population composition by ethnic in terms of socio-economic and politics. Besides, the more young migrants migrated to urban area it will gives positive impact on the development of the city itself in terms of human resource and consumer demands that are the mainstay for development and progress of a city in Malaysia today.

Thriving developing countries such as Malaysia has implemented five-years development plannings aimed at enhancing the population socio-economic status especially in the rural areas. One of the effects of implementing the development policies in Malaysia was the rise in total urban population. Since 1970, the percentage of urban population in Malaysia increased from 28.4 per cent to 61.8 per cent in 2000. In terms of the number of total urban population in Malaysia it has increased from 2,962,795 people in 1970 to 13,725,609 in 2000.

The process of urbanisation in the period of 1947-70 was very rapid. It surpassed the urban economic development where in this period the unemployment and under-employment problems were very significant (Ooi 1975). According to Ooi, the unemployment rate was very high at 10.1 percent in metropolitan cities and 9.7 percent for other urban areas. This shows that urban poverty is closely linked with employment opportunities that can be created as well as housing facilities that must be made available to them. The state of emergency period (1948-62) has also influenced the process of urbanisation. For example, urbanisation during 1947-57 in Pahang leaped from zero per cent in 1947 to 22.2 percent in 1957 (Saw 1972). In between 1957-70 also saw urbanisation level in Kedah and Penang declined. Kedah fell from 13.3 to 12.6, while Penang from 56.7 to 51.0 over the same period. This was due to population migration to other cities in Malaysia (Saw 1972). Before the World War II immigration from China has accelerated urbanisation process in Malaya (Cooper 1951). After the world war ended and the Federation of Malaya was established in 1957, the urban population growth process was

due to population migration flows from rural to urban areas. However, for the period of 1986-1991, 50.1 per cent of internal migration in Malaysia was from town to town, in fact it increased to 68.8 percent for the period 1995-2000 (Department of Statistics Malaysia 2005). While rural to urban migration has declined from 17.1 percent to 12.8 percent in the same period.

Census figures also showed that the average growth rate of urban population in Malaysia was uneven from one city to another. For example, Kuala Lumpur experienced a growth rate of 1.39 per cent between 1991 and 2000, while Penang suffered a negative growth of -2.15 percent over the same period. Other cities like Johor Bahru, Kuching and Kota Kinabalu recorded high growth of 6.23, 4.80 and 7.47 per cent. While the two major cities on the East Coast states namely Kota Bharu and Kuala Terengganu recorded the lowest growth of 0.99 and 1.25 percent over the same period. This phenomenon of population growth rate variance can also be seen in the growth trend between the years 1921-1931, 1931-1947, 1957-1970, 1970-1980 and 1980-1991. The issue was why does cities on the East Coast recorded lower growth rates and why declining growth is happening in Penang.

Ⅲ　Data, Methodology and the Study Area

This study involved the use of secondary data such as data from the Department of Statistic Malaysia which are the population and housing census information's from 1911, 1921, 1931, 1947, 1957, 1970, 1980, 1991 and 2000. The SPSS and GIS application were used to analyze the data. GIS application was used to develop urban location map as well as for analysing spatial distribution of population density concentration and urban development in the period of nearly 100 years. Analysis results from both approaches will be used to look at growth and distribution of cities in Malaysia for a period of about 100 years.

The Average Nearest Neighbour Distance, measures the distance between each feature on a map and its nearest neighbour and then calculates the average of all these distances for all the features on the map. If this average is less than the average for a random distribution, the features are thought to be clustered, while if the average is greater, then the features are thought to be dispersed. An index is thus calculated as the ratio of the observed average distance to the expected average distance, such that an index of less than 1 indicates clustering and greater than 1 indicates a trend towards dispersion.

This technique, however, was analyzed without limitations. Two of the most significant things were the difficulty of restricting the research area and analysis depends

on the characteristics in the study. The nearest neighbour analysis tends to show random, clustered or dispersed pattern depending on how many areas were included in the analysis. The GetiseOrd General G Index and the Moran's I Index are the two types of indicators for spatial autocorrelation, where it was believed originated from the Nearest Neighbour analysis indicator. In summary, spatial data is to display spatial autocorrelation when the value measured around its space is more similar rather than the measured value

Figure 1. The study area

is further from each other.

The GetiseOrd General G index and Moran's I index are both indications of spatial autocorrelation and as such are more reliable than Nearest Neighbour analysis. Put simply, spatial data are said to exhibit spatial autocorrelation when values measured nearby in space are more similar than values measured farther away from each other, and thus indexes of spatial autocorrelation like the GetiseOrd G index or Moran's I index measure the degree to which a set of spatial features and their associated data values tend to be clustered together in space (positive spatial autocorrelation) or dispersed (negative spatial autocorrelation). The Moran's I index is the more straightforward of the two and remains the standard for determining spatial autocorrelation while GetiseOrd indicates high value clustering and low-value clustering (Getis and Ord 1992; Ord and Getis 1995).

The study area includes all towns in all the states in Peninsular Malaysia according to population censuses from 1911 to 2000. In nearly 100 years period, there are approximately 151 cities throughout Peninsular Malaysia starting with 8 towns in 1911 and 140 in 2000 (Figure 1).

IV Analysis and Discussion on Distribution and Growth of Towns in Peninsular Malaysia

As a whole, the number of town centre with 10,000 populations and over has increased from 8 in 1911 to 140 in 2000. In the period of 1911 to 1921 there was no town centre in the category of 50,000 to 74.999. While beginning in 1947, town centre existed in the population category of 150,000 and above. The most significant developments in this period were the increase of town centres with population of 10,000 to 24,999 and 25,000 to 49,999 with 71 towns and 28 towns respectively. It was followed by 17 town centres with population of more than 150,000 people, 14 town centres with population of 75,000 to 149,999 and 10 town centres with population of 50,000 to 74,999.

Figure 2A, 2B and 2C show the distribution and growth of towns in Peninsular Malaysia from 1911 to 2000. From the aspect of town centre number, in 1911 there was 8 town centres throughout Peninsular Malaysia. This number continues to grow with 13 town centres in 1921, 15 town centres in 1931, 21 town centres in 1947, 33 town centres in 1957, 49 town centres in 1970, 58 town centres in 1980, 103 town centres in 1911 and followed by 140 town centres in 2000.

According to population census 1911 and 1921 the number of town centres with population of 10,000 people and above has increased from 8 towns in 1911 to 13 towns in 1921. The most significant development in this period was the increase of town centres population of 10,000 to 24,999 from 6 to 9 towns, while the remainder were towns with
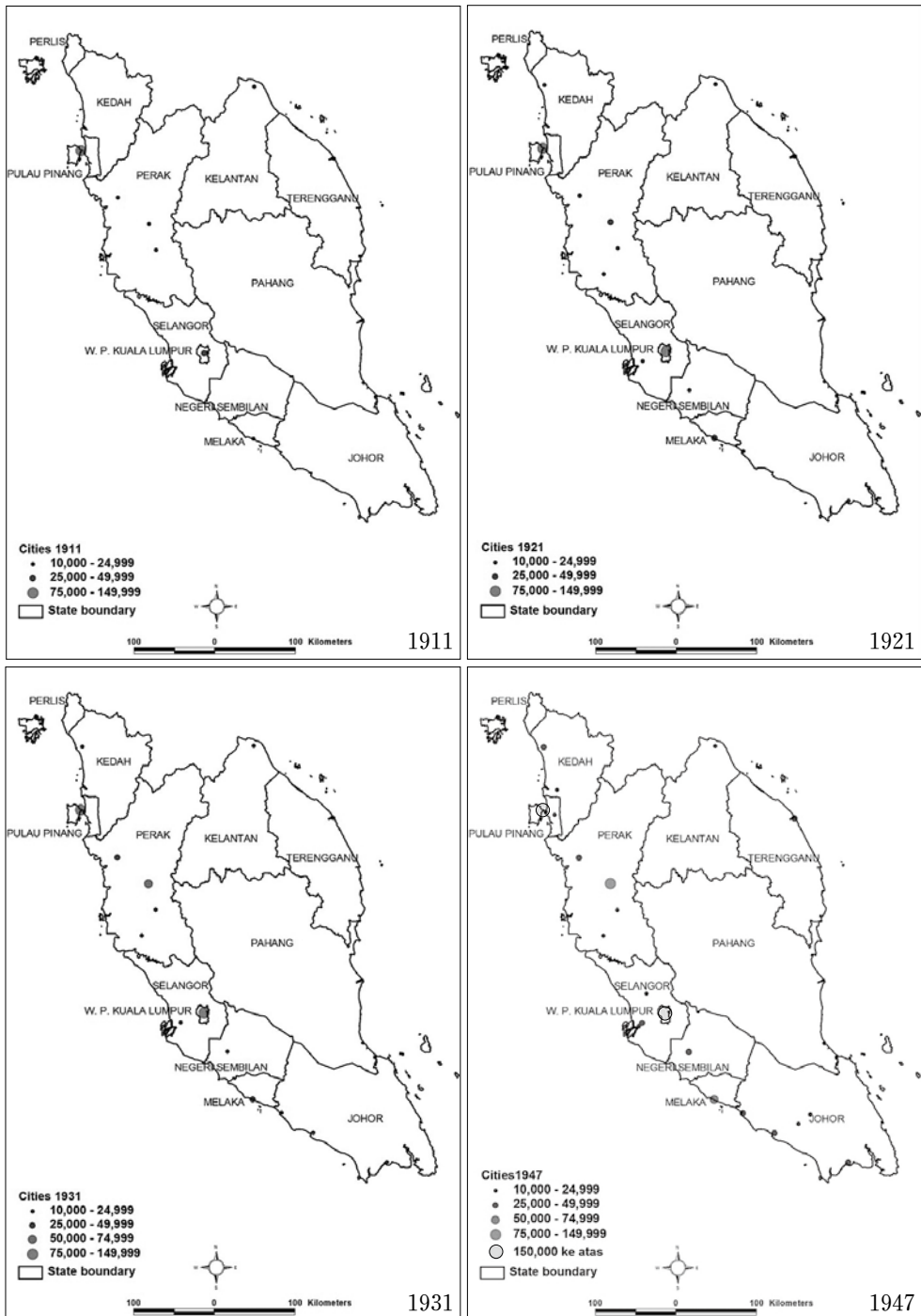
Figure 2A. The distribution and growth of towns in Peninsular Malaysia from 1911 to 1947

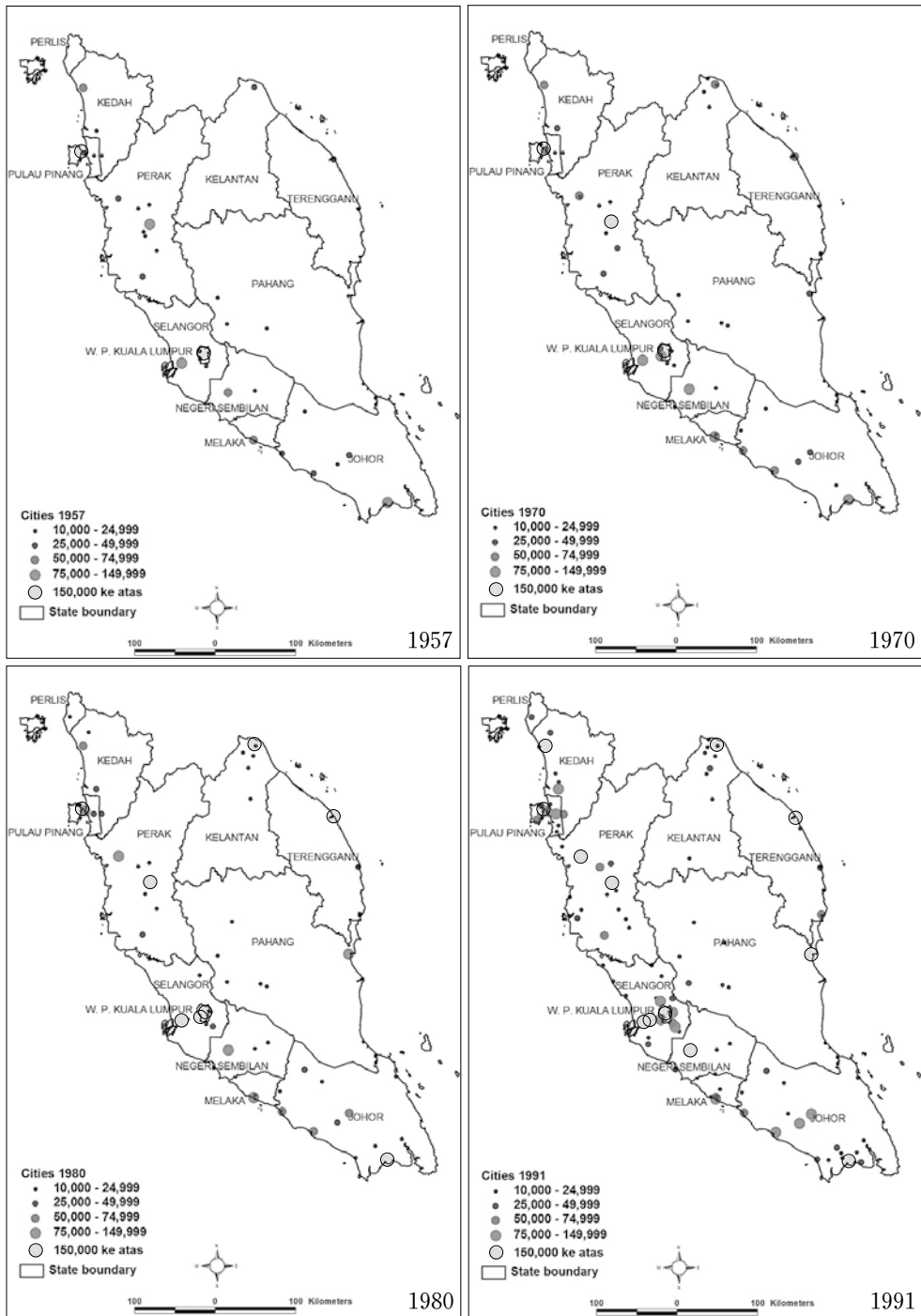Figure 2B. The distribution and growth of towns in Peninsular Malaysia from 1957 to 1991

Population Growth and Urbanisation in Peninsular Malaysia from 1911 to 2000
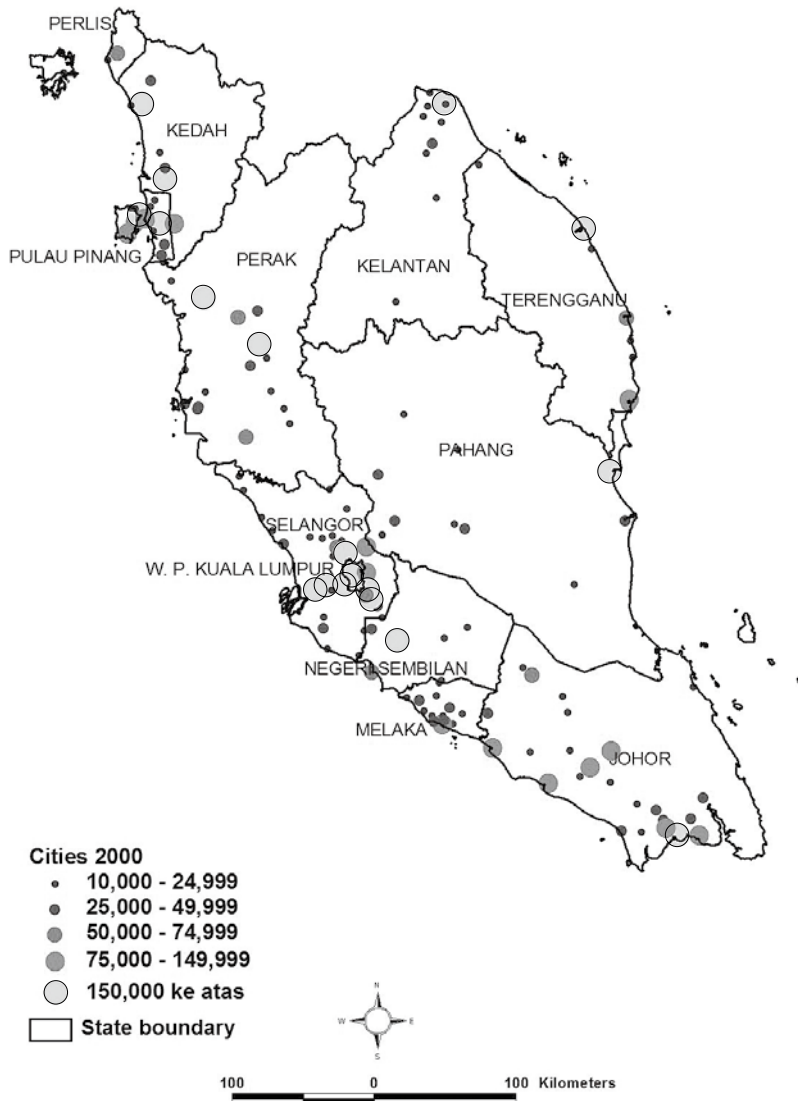

Figure 2C. The distribution and growth of towns in Peninsular Malaysia, 2000

population of 25,000 to 49,999. Colonization factors and primary economic activities especially mining activities and spice trading greatly influenced the growth of many towns such as Bandar Melaka, George Town, Kuala Lumpur, Kampar, Ipoh and Taiping.

There is a very significant improvement in terms of an urban centre before and after independence. From 1911 to 1957 there were 33 town centres in Peninsular Malaysia and

this number had increased to 107 town centres from 1957 to 2000. There are many factors that contributed towards this development, among them are better socio-economic level; this includes healthcare facilities, educational institutions, employment opportunities and other infrastructure facilities. Transition in the economic sector from agriculture and mining to industries and services was the major factor in population concentration in urban and the surrounding areas.

From the aspect of town centres spatial distribution in Peninsular Malaysia for the period of 1911 to 2000, as a whole the spatial pattern that existed was a cluster with urban growth concentration was around Kuala Lumpur and Selangor. In 1911 the distribution that existed was random pattern with centre of growth was around Ipoh, this pattern lasted until the 1931 census. In 1947 the spatial pattern that existed was still in the random pattern but the growth centre has moved to southern Perak. This spatial pattern continues until 1991, but starting from 1957, the centre of growth began to shift to towns around Kuala Lumpur and Selangor. However, in 2000 the existed spatial pattern began to change from random pattern to high cluster with concentration of urban growth areas around Kuala Lumpur.

Ⅴ Conclusion

Overall, the number of town centre with population of 10,000 and above has increased from year to year. The 2010 population census will also observe this development thereby increasing the number of town centres in Malaysia. The development of town centres in Malaysia for the past 100 years is highly related to urban economic factors that attracted migrants to move to the cities as what had happened in western and northern Europe in the 19th century. This gave an indication on the importance of economic factors that drive the two major processes of urban development which are rural migration to urban areas and economic activities that created prosperity and the modern city today. Naturally city grows and the population continues to increase. In Malaysia, the government continues with city planning to create a more balanced population distribution as well as reducing migration to urban areas to ensure continuous sustainable development and urbanisation.

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