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# Study of Physical Carrying Capacity of Tourism Objects in Anticipating Post-Pandemic Over-tourism in Magelang Regency (Case Study: Borobudur Temple and Mendut Temple)

**Hanafi Kholifatul Iman[1], Almira Amalia[2], Indira Shakina Ramadhani[3] & I Gusti Ayu Andani[4]**

Bandung Institute of Technology
Email: [1]hanafikholifatuliman@gmail.com; [2]almiraamalia23@gmail.com; [3]indirash09@gmail.com & [4]ayuandani@sappk.itb.ac.id

**Abstract.** Tourism sector is the country's leading sector and a significant contributor to the country's foreign exchange. However, COVID-19 pandemic resulted in declining the number of tourists visiting in 2020, only 25% from the previous year. After the post-pandemic recovery has been carried out, the planning and development of tourist areas are not accompanied by good management can cause various problems. Magelang Regency has unique characteristics due to its historical background, one of which is the site of temples from ancient kingdoms, namely Borobudur and Mendut Temple. As a tourist attraction with a high number of visitors, it has an impact on its planning. This paper aims to identify the maximum capacity of Borobudur and Mendut Temple tourism objects by applying quantitative analysis methods using time series analysis and supported by literature studies to provide objective information. The results obtained are that the number of tourists to Borobudur and Mendut Temple is slowly increasing, but the carrying capacity of the Borobudur Temple has exceeded the maximum limit, while for Mendut Temple, it is still possible to increase tourists. Some alternatives must be applied to increase attractiveness, reduce, and limit tourist visits to prevent over-tourism.

**Keywords:** *borobudur temple; mendut temple; physical carrying capacity; tourism; over-tourism.*

## 1 Introduction

Tourism is the leading sector and a significant contributor to foreign exchange, even the largest in many countries [1]. Tourism has many elements that can be developed, starting from the attractiveness of the tourist attraction, accommodation, supporting infrastructure, etc. All these elements provide significant input for regional and national income. Not only that, but tourism can also be a sector that accelerates other sectors to develop and contribute to the

 

development of facilities and infrastructure for the basic needs of the community [2].

However, starting in 2020, the COVID-19 pandemic decreased the number of tourists visiting in 2020 to only 25% from the previous year [3]. This decline had impacted the level of the economy. At the pandemic's beginning, all tourism activities stopped; many tourist objects were closed, and no tourists came. The decline in revenue from the tourism sector was also due to decreased tourist visits, the cancellation of various activities such as national and international tourism exhibitions and events, and even some of the tourism industry losses because they could not finance their operations such as hotels. As a result, the economy of the people who depend on the tourism sector is disrupted. However, in 2021, the tourism sector will begin to recover, and government efforts such as Cleanliness, Health, Safety and Environmental Sustainability (CHSE) certification are expected to accelerate the recovery of the tourism sector.

The COVID-19 pandemic has forced the tourism sector to shift its focus to sustainability [4]. After the post-pandemic recovery has been carried out, the planning and development of tourism areas are continuing to shift toward ecotourism [5]. The concept of ecotourism fulfils both the tourism development and environmental protection requirements by using carrying capacity as the essential tool [6]. Therefore, tourism planning and development strategy must also notice the carrying capacity to hampers and even stops tourism development due to a significant increase in the number of tourists [7]. The concept of carrying capacity can also be used as a barrier to prevent over-tourism conditions where the number of tourists has exceeded the maximum capacity of the tourist attraction so that further it will provide complex problems (Cifuentes, 1992; [9]; [10]; [11]; [12]. The carrying capacity of a tourist attraction provides an overview of the maximum capacity of visitors who can visit a tourist attraction within a certain period [13]. Carrying capacity can also provide a further picture of the level of visitor satisfaction with the tourist attraction so that the transmission of COVID-19 can be avoided [14].

Magelang Regency, Central Java, has unique characteristics of its historical background. With this background, various historical or cultural sites are scattered in Magelang Regency. One of these historical site complexes is the Borobudur Temple. Since 1974, Borobudur has become Indonesia's most visited tourist attraction and continues to increase yearly [15] [16]. In 2019, the number of Borobudur Temple tourists increased to 3,989,839. This large number of tourists visiting can have various positive and negative impacts and will continue to grow in the future. This phenomenon happened not only in Borobudur Temple but also in another temple three kilometres from Borobudur Temple, one of which is Mendut Temple. Mendut Temple also has enormous potential to be visited by

tourists. It shows that Mendut Temple has good potential due to the development of the number of tourists, which has increased significantly [17]. In addition, it is also said that the location of Mendut Temple is also quite strategic, coupled with easy accessibility. However, with these potentials, the lack of promotion makes the number of tourists visiting Mendut Temple relatively lower than Borobudur Temple.

In normal conditions, especially during holiday sessions, the Borobudur Temple tourist attraction will be crowded, leading to the density of the tourist attraction area [18]. The density of tourists at one time resulted in the emergence of other problems such as waste, congestion, air pollution, physical damage such as vandalism and other environmental damage, which certainly had a negative impact on the tourist attraction itself [19]. Therefore, it is necessary to assess the maximum visiting capacity that can be reached and accepted by the Borobudur Temple and Mendut Temple tourism objects to reduce the negative impact caused by the high number of visitors and to prevent the transmission of Covid-19. To answer the formulation of the problem, the purpose of writing this article is to identify the maximum capacity of the Borobudur Temple and Mendut Temple attractions, which can be answered through several stages, namely the identification of tourist projections for Borobudur Temple and the identification of the maximum capacity of Borobudur Temple and Mendut Temple to provide output planning recommendations. Tourism of Borobudur Temple and Mendut Temple provides benefits as a consideration in planning tourism.

## 2 Methods

The study cases in this article are Borobudur Temple and Mendut Temple, located in Magelang Regency, Central Java, Indonesia. Both Borobudur Temple and Mendut Temple are the famous Buddhist temple destination in Magelang Regency. Borobudur Temple has become Indonesia's leading destination for tourists domestically and abroad. Located a short distance from Borobudur, the largest Buddhist shrine in the world, there is also Mendut Temple. Borobudur Temple and Mendut Temple are within one reach and are in a straight line. For more details, see the following map.

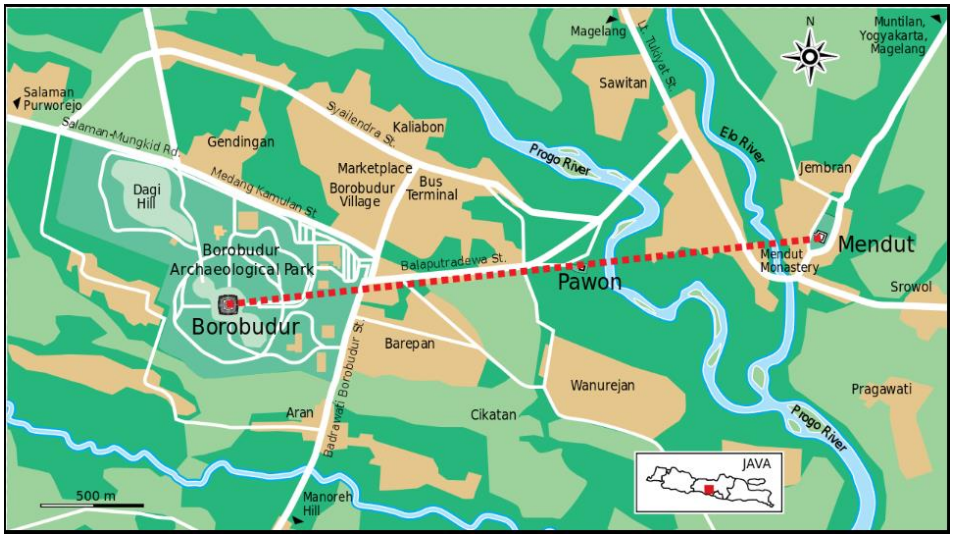


**Figure 1** Borobudur and Mendut Temple Map

To support the article writing, data was taken from Central Statistics Bureau (BPS) to collect the information about temple tourist data, as well as other data obtained from popular media, articles, laws and regulations, and others as sources to support the analysis. On the other hand, the data analysis process is carried out through quantitative analysis by using the time series method to forecast the number of tourists in the future and understand the growth and condition of tourism visitors. Furthermore, the carrying capacity analysis is also adopted as a quantitative analysis tool for this research to determine the maximum capacity of tourists that can be accommodated which will also be compared to the policy during the pandemic. From these results, recommendations for tourism planning will be discussed.

## 3 Data Analysis

### 3.1 Projected Number of Tourists for Borobudur Temple and Mendut Temple

To understand how the conditions of Borobudur Temple and Mendut Temple are in the context of planning and developing tourist destinations, it can be seen from the number of tourists who visit these tourist objects or destinations. Based on data from the Central Bureau of Statistics of Magelang Regency, the trend of growth in the number of Borobudur Temple tourists always increases every year, although not significantly. In more detail, the peak season at Borobudur Temple is December-January. Annual events such as Christmas Eve, New Year's Eve,

and school holidays have impacted higher tourism activities in those months. Aligned with this finding, the growth trend in the number of Mendut Temple tourists also tends to increase. In Mendut Temple's case, the peak season occurs around July-August, which differs from Borobudur Temple. During that mid-year period, there are also semesters or national school holidays, which allow higher

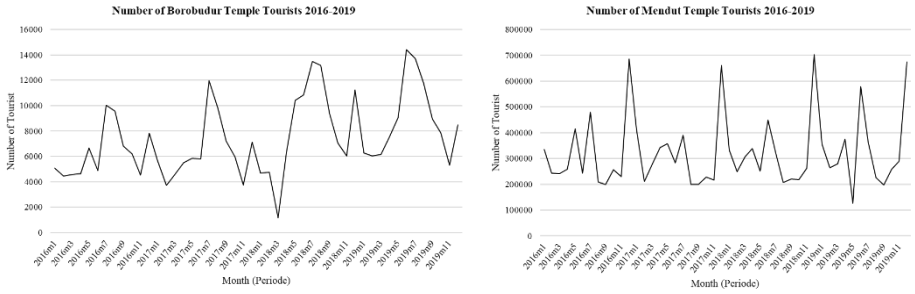


**Figure 1** Number of Tourist in Borobudur and Mendut Temple 2016-2019

tourism activities to occur in that period. More details can be seen in the following image.

Furthermore, a time series projection analysis was carried out using several methods to forecast the number of tourists at both destinations. The Triple exponential smoothing winter method was qualified as the best method for this analysis. This method has a minor error value explained by the MAPE (Mean Average Percentage Error) value. The MAPE value for the Borobudur Temple case is 0.1695, in other words, the error percentage is around 16.95% for the projection of Borobudur Temple. Meanwhile, for Mendut Temple, the MAPE value is 0.1812, in other words, the error percentage is around 18.12%. The following table presents the selection methods' results and the error values generated in forecasting (projections) for the number of tourists at Borobudur Temple and Mendut Temple.

**Table 1** Method Comparison for Projection

| Metode | Borobudur Temple | | Mendut Temple | |
|---|---|---|---|---|
| | Theil's U | MAPE | Theil's U | MAPE |
| **Smoothing Average** | | | | |
| 1. Single Moving Average Smoothing | 0.91 | 0.39 | 0.74 | 0.42 |
| 2. Double Moving Average Smoothing | 0.81 | 0.40 | 0.68 | 0.49 |
| **Exponential Smoothing** | | | | |

| Metode | Borobudur Temple | | Mendut Temple | |
|---|---|---|---|---|
| | Theil's U | MAPE | Theil's U | MAPE |
| 1. Single Exponential Smoothing | 0.81 | 0.33 | 0.58 | 0.37 |
| 2. Double Exponential Smoothing Brown | 0.87 | 0.35 | 0 .73 | 0.35 |
| 3. Double Exponential Smoothing Holt | 0.84 | 0.34 | 0 .69 | 0 .43 |
| **4. Triple Exponential Smoothing Winter** | **0.52** | **0.17** | **0 .44** | **0.18** |
| **Decomposition** | | | | |
| 1. UCM | - | - | 0.36 | 0.23 |

Based on the results of time series analysis using triple exponential smoothing winter as the best method, the results of forecasting the number of tourists who will visit Borobudur Temple and Mendut Temple can be seen in the image below. The growth rate of tourist demands for both temples, both Borobudur and Mendut temples, is expected to increase every year. At the projected growth below, it can also be seen that the peak season period is still the same as the primary data, for Borobudur Temple in December-January, while for Mendut Temple, it is in July-August.

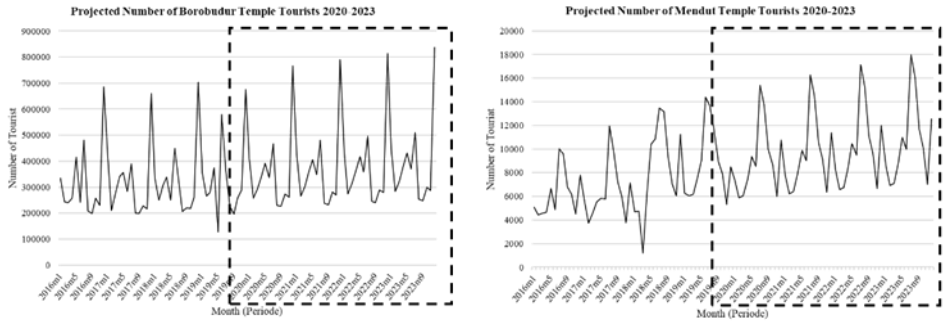


**Figure 2** Projected Number of Tourist in Borobudur and Mendut Temple 2020-2023

## 3.2 The Timeline of Planning and Development of Borobudur and Mendut Temple

### 1900-1970 Early Discovery and First Restoration

During this period, both Borobudur Temple and Mendut Temple are still in the stage of restoration after being rediscovered, and the initial stages of the

preservation process are carried out simultaneously [21]. Mendut Temple is estimated to be older than Borobudur Temple [21]. Subsequently, the Government of the Netherlands East Indies formed a commission to handle and research the discoveries of Borobudur Temple and Mendut Temple. From 1907 to 1911, the first restoration process was carried out, but there were incidents and a lack of budget, so the restoration was only carried out on a small scale to clean the existing statues and stones [21]. In the end, in the late 1960s, the Indonesian government proposed to carry out a major international restoration which was carried out to preserve the Borobudur and Mendut temples.

**1970-2000 Massive Restoration and World Heritage Site**

During this period, the Government of Indonesia collaborated with UNESCO to complete a significant and comprehensive restoration and turn it into a major project [21]. This restoration was carried out by dismantling all five square terraces and improving the drainage system by embedding waterways into the monument. After the renovation, in 1974, as many as 260,000 tourists visited Borobudur Temple, and it became the most visited tourist attraction in Indonesia and continues to increase yearly [15] [16]. At its peak/stupa, UNESCO acclaimed Borobudur Temple as one of the world heritages in 1991 [22].

**2000-2010 Internal and Disaster Planning Issues**

By the beginning of 2000, the community criticised tourism planning, especially at Borobudur Temple, because it was considered not to involve the community in the process [23]. In those years, it was planned to redesign the Borobudur Temple area, and this condition made some people who traded souvenirs, food and others (informal sector) lose their jobs. The eruption of Mount Merapi occurred in 2010, which had a considerable impact on Borobudur Temple and Mendut Temple so that a large-scale rehabilitation was again carried out with assistance from UNESCO while maintaining the preservation of Borobudur Temple and Mendut Temple and the surrounding environment by afforestation to maintain temperature stability.

**2010-present Growing Number of Tourists Until the Pandemic**

There was national restlessness due to terrorist incidents from 2009-2015. However, this did not stop the restoration activities of Borobudur Temple, which continued to be carried out on a large scale. The development of infrastructure and mobile phone networks throughout Indonesia has also begun to develop visa exemptions for several countries to attract more tourists who come to Indonesia. In 2016-2017, several priority destinations were set, including the Borobudur Temple as one of the priority destinations. The increase in the number of tourists

is significant and better than in 2018. However, in early 2020, the Covid-19 pandemic entered Indonesia and stopped all local and national activities, and Borobudur Temple and Mendut Temple were forced to close for some time to prevent the transmission of Covid-19.

## 4 Findings and Discussion

### 4.1 Carrying Capacity of Borobudur Temple and Mendut Temples

Generally, the carrying capacity analysis helps determine the maximum level an environment can support. At this point, the development and use of attraction features, facilities, and services in a tourism destination have also reached the optimum level. In this tourism context, this carrying capacity assesses the maximum limit of tourists that can be accommodated at one time; thus, the result of this carrying capacity is also beneficial in indicating whether the destination ends up in an over-tourism condition or not. Besides that, it can also be used as input to generate recommendations for tourism planning. This research will focus on assessing the Physical Carrying Capacity (PCC). This carrying capacity uses the maximum limit of tourists who can visit tourist objects in one day as the primary consideration. By using the formula developed by Cifuentes (1992) with modifications by Fandeli and Muhammad (2009), the formula for PCC is obtained as follows [8] [7]:

$$PCC = A\, x \frac{1}{B}\, x\, Rf \quad (1)$$

Where, A is the area of the tourist attraction, B is the minimum space requirement required by tourists (assuming 65 $m^2$ per visitor) and Rf is the rotation factor obtained from the duration of open time divided by the average time spent by tourists (assuming 3 hours). From these provisions, the results obtained are as in the table below:

**Table 2** Physical Carrying Capacity Calculation of Borobudur and Mendut Temple

| Tourism Object | Area ($m^2$) | Opening Hour | Closing Hour | Duration* | Average Spending Time** | Rf | Tourist Space Needs ($m^2$) | PCC |
|---|---|---|---|---|---|---|---|---|
| Candi Borobudur | 220000 | 8 am | 15 pm | 7 | 3 | 2.33 | 65 | 7897.44 |
| Candi Mendut | 13800 | 7 am | 19 pm | 12 | 3 | 4 | 65 | 849.23 |

Based on the calculation of carrying capacity using the PCC formula above, the maximum limit of visitors per day that Borobudur Temple can accommodate is

around 7.898 per day (rounded up). Meanwhile, in Medut Temple, the maximum limit of visitors per day that can be accommodated is around 850 visitors per day (rounded up). The amount of PCC in Borobudur Temple and Medut Temple is used as a benchmark to assess whether those temple destinations are surplus or deficit. The calculation of tourists number from the projections is generated by calculating the average number of tourists per day. The following figure is a breakdown number of tourists per day for each month and the status of their carrying capacity:

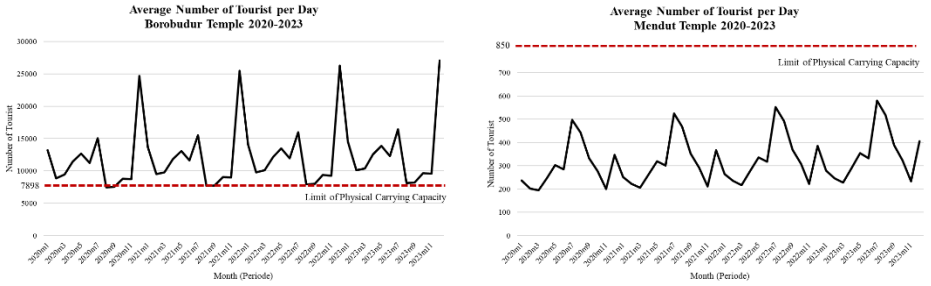


**Figure 3** Physical Carrying Capacity of Borobudur and Mendut Temple

Based on the results in the tables above, Borobudur Temple is in a deficit condition from 2020 to 2023, which means that the number of projected tourists exceeds the maximum capacity that Borobudur Temple destination can accommodate. This condition may cause damage to facilities and the environment at Borobudur Temple, as well as the impact of the over-tourism phenomenon. Therefore, a strategy to prevent the adverse effects of over-tourism is needed. However, in 2020, the COVID-19 pandemic resulted in the cessation of tourist activities, with zero visitors in the first few months of the first outbreak. Thus the forecast result in 2020 will be different from the existing conditions and need some adjustments. Besides that, the limit on the maximum number of tourists also needs to be adjusted for the pandemic conditions. In this sense, the maximum limit per se day that has been obtained from the calculation becomes less relevant and needs to change lower than the calculation results. However, in 2021, the Indonesian government has issued a vaccine policy that will cause the number of tourists to bounce back to normal and reach the maximum limit of visitors to the destination.

Furthermore, by taking one of the forecasted month periods, January 2022, the number of visitors is predicted to reach 14081 tourists with a maximum capacity of only 7898 tourists. From this, the condition of carrying capacity in Borobudur Temple has been in a deficit stage. Thus it is necessary to set the limit on tourist arrival in Borobudur Temple.

On the other hand, at Mendut Temple, the carrying capacity is in a surplus condition during the entire month from 2020 to 2023, which means that the number of projected tourists can grow until the maximum level (850 tourists per day). This number of tourists can still be increased twice to three times by 2023. However, in the existing conditions in 2020, the number of tourists in several months became zero due to the closure of tourist destinations and activities limitations, so the forecast result is different from the existing conditions and needs to be adjusted.

Borobudur Temple has not applied visitor restrictions before the pandemic because the number of tourists and income for the region will be significant and increase GRDP and regional revenue, mainly for Magelang Regency. However, this causes an over-tourism condition which will substantially impact the tourist attraction itself. On the other hand, the number of tourists at Mendut Temple is not as large as the number of tourists at Borobudur Temple, which causes a lack of interest in visiting Mendut Temple even though the distance between the two temples is only about 3 kilometers. The Magelang Regency Government needs to make a policy regarding the distribution of the number of tourists by limiting tourists at Borobudur Temple and maximizing the potential and attractiveness of Mendut Temple.

## 4.2 Relevance of Tourism Planning to Borobudur Temple and Mendut Temple in Preventing Over-tourism

Based on the stages in Butler, we can say that Borobudur and Mendut Temple have passed, this tourist attraction has passed the exploration, involvement, development, and consolidation stages [24]. Currently, Borobudur Temple and Mendut Temple have entered a stagnation phase, where the next phase is the rejuvenation phase (increase) or the decline phase (decreased). This is exacerbated by the Covid-19 pandemic, which caused the cessation of tourism activities at Borobudur Temple and Mendut Temple in 2020. Despite the restoration and the existence of a national policy regarding health protocols, the number of tourists and the development of Borobudur and Mendut Temples may increase or decrease according to the tourism area life cycle diagram. Moreover, based on the analysis that has been carried out, it is known that the maximum number of tourists per day in Borobudur Temple that can be accommodated is 7898 visitors per day. Then, based on the forecasting result, the number of tourists will exceed the maximum number or limit, so over-tourism events will occur post-pandemic and reach 2 to 4 times the maximum limit at Borobudur Temple. However, it does not apply to Mendut Temple, where the condition is still in surplus and has no potential for over-tourism. During the pandemic, the number of tourists visiting was limited to only a few visitors who could enter the Borobudur Temple and Mendut Temple attractions.

Over-tourism condition, if not addressed, will significantly impact Borobudur Temple itself in the future. UNESCO identified the primary and most crucial problems in efforts to preserve Borobudur Temple, such as vandalism or damage done by visitors, soil erosion in the southeastern part of the temple site, and disasters that occurred around Borobudur Temple. Problems also originate from visitors, such as vandalism crossing out rocks and supporting facilities. Those problems happened in 2009 when there was no system to limit the number of tourists allowed to visit per day. Because of that, visitors had to be accompanied by a guide, so they were constantly under surveillance [25].

With the over-tourism condition, there is a need to limit the number of tourists who come to Borobudur Temple, in addition to preventing physical and environmental damage, as well as avoiding the transmission of Covid-19 that is still happening. Blazquez-Salom explain that over-tourism occurs in Spain by looking at three existing spatial locations, Barcelona, Valencia, and the Island of Mallorca [26]. With the same conditions as the Borobudur Temple, which has a solid cultural background, this area and the Borobudur Temple both become a unique attraction as a tourist attractions. This spatial area is planned to have growth restraint or degrowth to avoid further damage to the area with several existing instruments. One of the instruments used to control tourism growth is PEUAT (Special Urban Plan for Tourist Accommodation in Barcelona). This instrument is regulated by dividing zones with accommodation distribution throughout the region. In addition, restrictions on the number of beds provided were also enforced so that the number of tourists who came was detained. From here, policies like PEUAT that aim to reduce over-tourism can be applied to the Borobudur Temple area, where in Magelang Regency and its surroundings, there are other tourist objects with the same characteristics and types of tourism, namely temples. With the precise handling in Barcelona, Spain, growth restraint or degrowth for tourism can be carried out, and growth can be more controlled, especially during a pandemic. The development of lodging accommodations also needs to be controlled so that there are no more inns like Airbnb (turning a residence into an inn).

The restriction policies in the surrounding area of Magelang Regency also need to be carried out because there are a lot of cultural heritages, not only Borobudur Temple but also Prambanan Temple and other Hinduism and Buddhism Temples, so there needs to be cooperation between local governments. In addition to controlling the area outside the Borobudur Temple and its surroundings, restrictions also need to be carried out from within or internally of tourist objects, such as limiting the number of tourists per day. If it reaches the maximum limit, the tourist attraction is closed (at one time), limiting the number of tourists who come in a day. A certain period with restrictions on the length of the duration (for

example, based on peak time, 11.00 WIB is the peak time at Borobudur Temple, so there is a need for restrictions on tourists entering the tourist attraction), providing attractions in each time (every hour) to distribute tourists who enter the tourist attraction. Visiting (minimizing the possibility of peak times), the implementation of health protocols also needs to be tightened. These alternatives are expected to be a tool to restrain the growth of tourism or over-tourism so that there is no physical or environmental damage, as well as to prevent the transmission of COVID-19.

In contrast to the condition of Borobudur Temple, which has exceeded its maximum capacity during the peak season and exacerbates over-tourism conditions, Mendut Temple does not indicate over-tourism. This condition will be an excellent benefit for Mendut Temple. Mendut Temple can increase its tourism attractiveness to attract more tourists while maintaining control and monitoring. The number of visitors can increase twice to three times from the number of tourists visiting Mendut Temple. However, due to the existence of Borobudur Temple, which has already become a world-known heritage site, Mendut Temple is considered less attractive enough to engage tourists. The situation is getting worse because of the imbalanced distribution of the number of tourists between Mendut Temple and Borobudur Temple. This will also result in a different concentration of activities and visitor density so that the impact is different. However, at Mendut Temple, physical and environmental conditions are still within normal limits. From here, several steps or alternatives can be taken to increase the number of tourists to Mendut Temple and maximize its potential to reach the maximum number that Mendut Temple can accommodate. Some of these alternatives include providing additional attractions and special tourism packages on certain days or times so that visitors will be interested in visiting Mendut Temple. Massive promotions can also be done through online media or online platforms provided by the Magelang Regency government to attract and engage more tourists. However, on the other hand, because of the short distance between Borobudur Temple and Mendut Temple, it is also possible that a surge in tourists' arrival at Borobudur Temple will also affect Mendut Temple. In this sense, it is necessary to set a limit if the capacity will reach the maximum level.

On a regional scale, in the context of Magelang Regency, other possible impacts on Borobudur Temple and Mendut Temple surroundings could be the growth of Airbnb and other accommodations, which need to be controlled because they can cause changes in spatial activities and changes in the zoning area which was originally residential to trade and services or other possible zones. These zoning changes or spatial designations also affect the spatial plans that have been planned for those areas. Spatial control due to the massive development of the tourism sector must be firmly implemented to avoid environmental and other impacts that cannot be predicted. By looking at the same incident and happening in other areas,

it is necessary to have inter-regional cooperation to overcome uncontrolled regional growth. Moreover, Magelang Regency and Yogyakarta Province are relatively close to having quite similar tourist destinations (temples). Thus, enabling growth will be very high and strong because of the attractiveness of the two regions in developing tourist destinations. Therefore, it is necessary to have good cooperation to prevent a surge in the number of tourists and uncontrolled regional growth in the context of recovering the tourism sector after the pandemic.

## 5 Conclusion and Recommendations

Based on the results of the analysis that has been done, it is found that the number of tourists to Borobudur Temple and Mendut Temple has increased slowly and with the same peak time conditions in December-January (the highest increase) every year. This condition is influenced by school and national holidays as well as holidays and religious celebrations. The carrying capacity of the Borobudur Temple tourism object based on the analysis was found that the number of tourists that can be accommodated is 7898, and in 2020-2021 the number of visitors has reached and exceeded the maximum limit, resulting in a deficit. Moreover, from 2022 to 2023, all months of the year are in a deficit. However, the carrying capacity for the Mendut Temple tourist attraction is still in surplus, so it is still possible to increase the number of tourists while observing health protocols. With these conditions, increasing tourists by promoting and adding attractions is necessary so that visits to Mendut Temple can reach the maximum number.

Currently, Borobudur Temple and Mendut Temple have entered a stagnation phase, where the next phase is the rejuvenation phase (increase) or the decline phase (decreased). However, the condition is that the number of tourists visiting Borobudur Temple has reached the maximum limit. It will cause some damage if the number of tourists is not controlled, and the damage will get worse so that there is a need for handling so that the growth of Borobudur Temple can lead to the rejuvenation phase even with tourist restrictions. Several alternatives must be applied to reduce and limit the number of tourist visits to prevent over-tourism. Some of these alternatives are the need to limit the number of tourists visiting Borobudur Temple, the distribution of attractions at certain times to avoid peak times or peak seasons, the implementation of strict health protocols to prevent the transmission of Covid-19, as well as cooperation with the local government to prevent the spread of COVID-19. Support tourism containment and degrowth. As for Mendut Temple, where there is no indication of the over-tourism phenomenon, it is still possible to develop and attract more tourists, but its implementation still requires strict health protocols. Increasing the number of tourists at Mendut Temple can be done by promoting through various tourism

platforms and providing unique attractions on certain days or certain times so that it can attract more tourists and an even distribution of tourists with Borobudur Temple. in a broader context, Magelang Regency, it is necessary to limit activities and control spatial planning to prevent unwanted space growth so that spatial planning deviations occur as planned. The Magelang Regency Government needs to collaborate with the surrounding regional governments to control growth, especially with Yogyakarta, where the area also has the same attractiveness as Magelang Regency. It needs to be controlled to allow for a relatively massive regional growth and not cause environmental impacts or impacts. Other impacts that may occur in Magelang Regency.

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