Zoning System Analysis in New Student Admissions Based on the Availability of School Facilities in Bekasi City

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A B S T R A C T

This research was conducted to determine the availability of state junior high schools (SMP) and state senior high schools (SMA) based on the school zoning system. So that the ideal number of junior and senior high schools in each district will be obtained. To achieve the research objectives using the carrying capacity formula of service facilities. The results of this study indicate the calculation of carrying capacity obtained a value of> 1, which means that the sub-district has been able to meet the needs of the population for public high school facilities. Meanwhile, the sub-districts that have fulfilled the carrying capacity of the facilities of State Junior High Schools with a carrying capacity of> 1 are Jatiasih and East Bekasi districts, which means that these districts can meet the needs of educational service facilities. The Bekasi Selatan sub-district received a score equal to 1, which means that it is balanced between the service needs and the available educational facilities (SMPN). Whereas in the application of the zoning system for the New Student Admissions in Bekasi City, for the State Senior High School level with an area of 7 Km from schools and State Junior High Schools, it can reach 1 Km from the school.

Keywords:
Sistem Zonasi
Fasilitas Layanan Pendidikan
Ketersediaan Fasilitas Sekolah
Penerimaan Peserta Didik Baru

A B S T R A K

Penelitian ini dilakukan untuk mengetahui ketersediaanakan tingkat kecukupan Sekolah Menengah Pertama (SMP) Negeri dan Sekolah Menengah Atas (SMA) Negeri yang tersedia berdasarkan sistem zonasi sekolah. Sehingga akan diperoleh jumlah sekolah SMP dan SMA Negeri yang ideal pada setiap kecamatan. Untuk mencapai tujuan penelitian menggunakan rumus daya dukung fasilitas pelayanan. Hasil penelitian ini menunjukkan perhitungan daya dukung memperoleh nilai > 1, yang artinya kecamatan tersebut telah mampu memenuhi kebutuhan penduduk terhadap layanan fasilitas SMA Negeri. Sedangkan kecamatan yang sudah memenuhi daya dukung kebutuhan fasilitas SMP Negeri dengan nilai daya dukung > 1 yaitu Kecamatan Jatiasih dan Kecamatan Bekasi Timur, yang artinya kecamatan tersebut sudah dapat memenuhi kebutuhan fasilitas layanan pendidikan. Kecamatan Bekasi Selatan memperoleh nilai sama dengan 1, yang artinya sudah seimbang antara kebutuhan layanan dengan fasilitas pendidikan (SMPN) yang tersedia. Sedangkan dalam penerapan sistem zonasi pada Penerimaan Peserta Didik Baru di Kota Bekasi, untuk jenjang SMA Negeri dengan wilayah jangkauan 7 Km dari sekolah dan SMP Negeri dapat menjangkau wilayah 1 Km dari sekolah.

Introducing

The gap in the world of education in Indonesia is still visible, not all students get the same opportunities. The issuance of the regulation of the Minister of Education and Culture number 14 of 2018 concerning the Admission of New Students (PPDB) aims to eliminate responsibility between schools. One of the ways to eliminate these losses is by implementing a zoning system. The zoning system is used for various purposes

such as in research (Herison et al., 2018) which designed the zoning of marine ecotourism areas so that they can be used as spatial planning. Research conducted by (Safarah & Wibowo, 2018) the school zoning program is one of the effective programs of the government in realizing equitable education in Indonesia. The policies issued by the government are related to the evaluation zone system so that the program can be right on target (Purwanti et al., 2019). Policies rolled out by the government must consider various aspects such as socialization to children, academics, skills development, and social mobility (Sen, 2019). Besides, research related to equal access and quality of education was carried out by (Perdana, 2019) in Central Sulawesi Province, with the result that the distribution of students from the distance side was closer to the student's house and in terms of quality input had also spread in various schools so that it had There is no longer a dichotomy between superior and non-featured schools. Other research related to the achievement of students who register through the zoning system, was conducted by (Wulandari et al., 2018) with the result that there is a significant influence between the acceptance of new students through the zoning system on student achievement.

The results of these studies indicate that the school zoning program has met expectations in certain areas. Unlike previous studies, the implementation of the PPDB zoning system for the 2018/2019 academic year is still in polemic. It can be seen that there are still problems with the distance where prospective students live from the school, differences in regional interpretations of zoning rules (Wahyuni, 2018). The evaluation of the implementation of the New Student Admissions at SPMN 3 Pamekasan resulted in the absence of technical instructions related to the admission system and zoning system following Permendikbud number 14 of 2018, this caused the school to become difficult and confused in implementing the zoning system. Besides, from the community side, it has not been well socialized (Hasbullah & Anam, 2019). Furthermore, research conducted by (Hoerudin, 2019) six variables in observing the implementation of PPDB policies, namely the implementation of new student admission policies with the zoning system in Indonesia, in general is still running well but not yet effective. Therefore, it is necessary to evaluate for future improvements so that new students can be accepted as well as their goals. It is different from previous research which saw that policies in terms of implementation carried out by local governments, (Bakar et al., 2019) see that the implementation of PPDB policies that are currently implemented can change the perspective of the educational paradigm, especially from stakeholders. Decisions on implementing regulations can be carried out in various ways by local governments according to regional conditions from geographical, demographic and spatial aspects.

Decisions on implementing regulations can be carried out in various ways by local governments according to regional conditions from geographical, demographic and spatial aspects. If viewed based on the policies that have been implemented, the implementation of PPDB has been going well although improvements are still needed to be related to the technical implementation. The acceptance of New Students for the 2019/2020 school year is also still experiencing several problems, the national media Kompas on June 22, 2019, reported on the rejection of zoning-based PPDB. So far, not all local governments have formulated zoning with valid data. There is no data for each sub-district related to elementary school graduates, as well as the ideal capacity of SMP and SMA Negeri. Bekasi City is administratively located in the suburbs of the DKI Jakarta province, with a population in 2018 of 2.3 million people (BPS, 2018). The data on the number of schools in Bekasi City for SMP Negeri is 49, but the existence of these schools is not evenly distributed. There are still districts that only have one SMP Negeri unit, one of which is the Pondok Melati sub-district (Bekasi, 2019). The purpose of this study was to determine the

distribution of the number of state junior high schools and senior high schools in each sub-district in Bekasi City with the potential population of primary and junior high school age.

Method

This research uses quantitative methods and spatial analysis using geographic information system software. The data requirements that will be used in this research include; data on the number of SMP and SMA Negeri, population per district, population aged 12 years per district, the population aged 15 years per district, number of study groups in each school, road facilities, distribution of settlement density. These data were obtained from the Bekasi City Education Office, the Bekasi City Statistics Agency, and the Bekasi City Regional Development Planning Agency. Meanwhile, primary data were obtained from field checks to school locations that were scattered in each district. In this study, two maps will be produced, namely a school zoning map based on the availability of educational facilities, and a map of students' affordability in accessing schools. To produce a school zoning map, the required data include:

a. Data on the distribution of SMP and SMA Negeri in each district
b. Data on the distribution of the population of each district
c. Data on the number of population aged 12 years for each district
d. Study group data for each school

The data is then inputted into the geographic information system software and then analyzed using proximity analysis, one of which is the buffer, so that the distribution of schools in each sub-district that is close to the settlement will be obtained.

Meanwhile, to obtain the adequacy of educational facilities (schools) use a service adequacy level formula by comparing existing facilities (existing) with school needs which are calculated using facilities and infrastructure for SMP and SMA as contained in the Regulation of the Minister of National Education Number 24 of 2007. Data - The data is calculated by calculating facilities using the service support capacity formula (Muta'ali, 2015).

DDfi = Si / Di

Where, Di = JP / Thi

Information:

DDfi = carrying capacity i (school)

Di = Demand or facility needs i (school)

Si = Supply or collection of facilities i (school)

Jp = total population

Thi = Threshold or facility threshold i

The calculation is then interpreted as follows:

a. DDfi = 1, meaning Di = Si, which is the balance of service functions between the needs of the population and the existence of existing facilities. The value of DDfi = 1, can translate an efficient service level
b. DDfi> 1, meaning Si> Di, then the existing facilities have been able to support the needs of the population
c. DDI <1, meaning Di> Si, then the existing facilities are not able to support the needs of the population, or there has been a deficit (deficit) so there need to be additional facilities

The results of the calculation of the adequacy of service facilities (schools), then the mapping is made so that it will be seen which districts have advantages or disadvantages of school facilities. Furthermore, to determine the movement of people towards school using the sociogram method, the data required is the distribution of settlements, the distribution of schools, and the road network. This analysis will result in interaction and independence between regions (sub-districts) or residential groups to select or utilize service facilities (schools needed. Shown using arrows from origin to destination, so a map of the orientation of population movement (students) will be generated. High hierarchy generally becomes the centre of the destination (destination) for population movement in utilizing service facilities (schools) (Muta'ali, 2015).

Result and Discussion

Distribution of State Senior High Schools

Bekasi City has 12 sub-districts, each sub-district in Bekasi City has a high school. Based on the data obtained from the 2020 Basic Education Data, it shows that the distribution of SMA in Bekasi City in each sub-district is as shown in Figure 1. Senior high schools (SMA) in each sub-district in Bekasi City total 22 SMA. Bekasi Selatan sub-district has the largest number of schools compared to other sub-districts. The data in Figure 1 shows that there is still an imbalance in the number of schools in each sub-district, sub-districts that have school-age population density (SMA) only have one public school. For example in the sub-districts of Pondok Melati, Jatisampurna, Medan Satria, Rawalumbu, and West Bekasi. When compared with Bekasi Selatan Subdistrict (there are 4 schools) and West Bekasi (there are 3 schools). The existence of schools that are scattered in sub-districts with fewer than two schools needs to be considered if it is related to the number of the school-age population in these sub-districts.

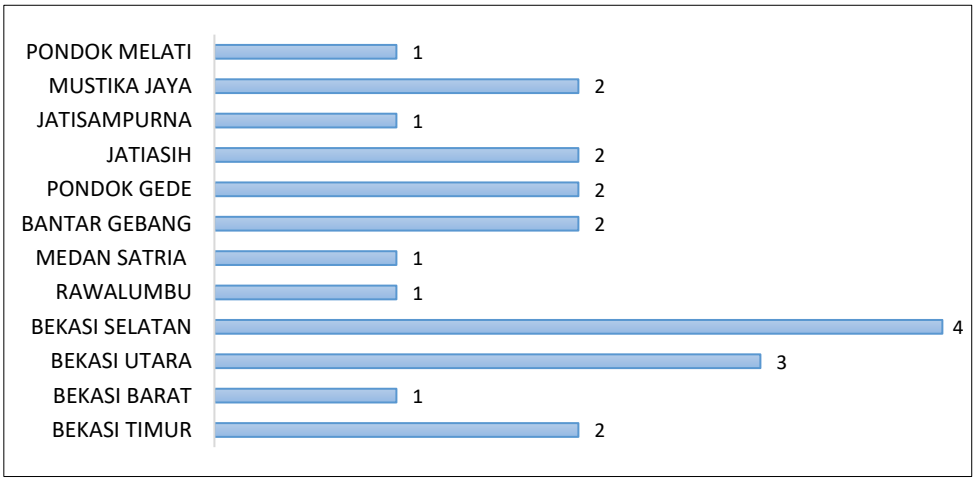

Figure 1. Number of Senior High Schools Per District (Source: Dapodik, 2020)

As previously stated, Bekasi City is a buffer zone for the capital city of DKI Jakarta. Each year there is an increase in population, data from the City of Bekasi in Figures for 2020 is 2.4 million people (BPS Kota Bekasi, 2020). The increasing population in Bekasi City must be balanced with the ease with which the population can access education. So that the quality of human resources is also getting better. The gap in the number of SMANs in Bekasi City needs to be balanced with the number of Private Senior High Schools (SMAS), with the consideration that SMAS has almost the same facilities and infrastructure as SMAN. Besides, the existence of SMAS can provide a choice, especially for people with middle to lower-income. In its management, SMA Negeri is managed by the government so that the operation is supported by the government. Meanwhile, private / community high schools are carried out by communities/foundations. The map of the distribution of schools for each sub-district in Bekasi City in Figure 2 shows that administratively there are schools that are located on the border between Bekasi City and the neighbouring City / Regency area.

The sub-districts that are in the western part of Bekasi City each have one school. In Medan Satria Subdistrict, there is one school, which borders the East Jakarta area. Likewise with the districts of West Bekasi, Pondok Gede, Pondok Melati and Jatisampurna which only have one public high school. Meanwhile, in the western part of Bekasi City, there are two or three schools in each sub-district.

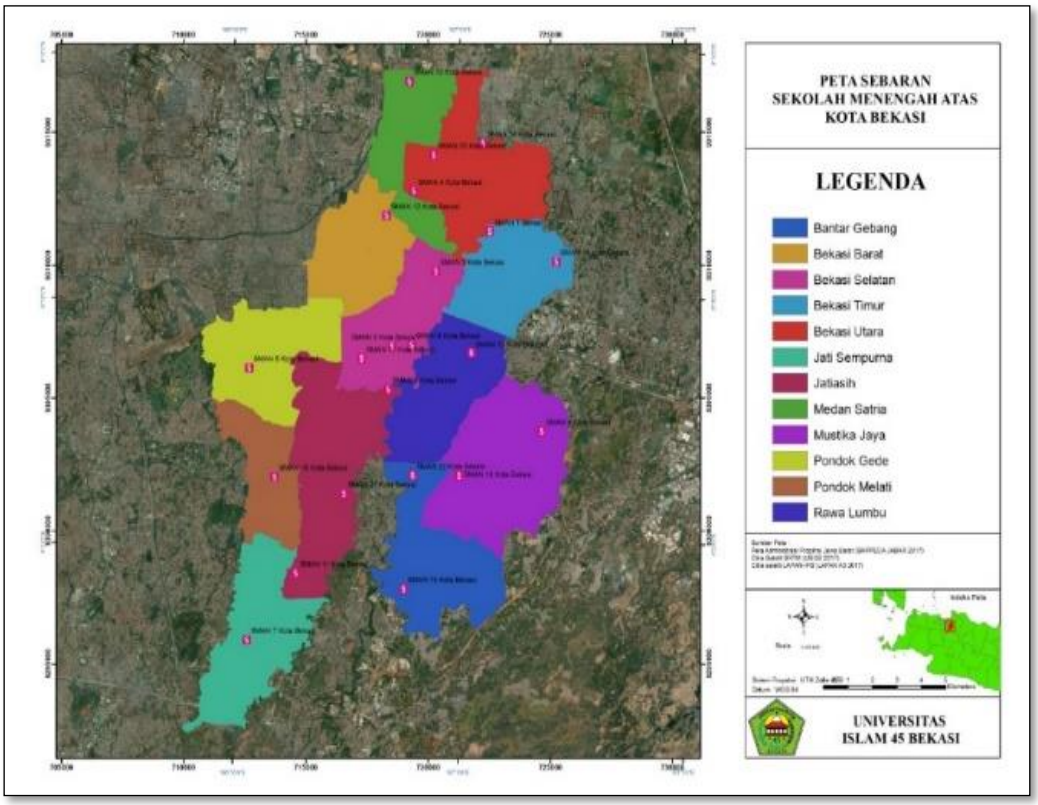

Figure 2. Distribution Sekolah Menengah Atas Negeri in Bekasi City (Source: Analysis Result, 2020)

Supporting Capacity of Public High School Facilities

The results of the calculation of the carrying capacity of public high school facilities in Bekasi City can be seen in figure 3. Based on the calculation, the results obtained from Jatisampurna and South Bekasi districts have a carrying capacity value of more than 1, which means that in these sub-districts the public high schools have met the needs of the population. The value of the carrying capacity of Jatisampurna Subdistrict facilities is 1.16 with this carrying capacity value, the need for public high school education service facilities has been met. Even though there is only one public SMA in Jatisampurna District, the population of senior high school age in this sub-district is not too large. Meanwhile, in South Bekasi District, the carrying capacity value was 1.92 higher than that of Jatisampurna District. The population of senior high school age in Bekasi Selatan Subdistrict is more than that of Jatisampurna Subdistrict, however, this is overcome by the availability of four public SMA in South Bekasi District. The results of the calculation of the carrying capacity of facilities in West Bekasi District obtained the smallest carrying capacity value with a carrying capacity value of 0.42 or below 1. The number of schools in West Bekasi District has only one school, with a total school-age population of 42,474. When compared with the capacity of the existing Public SMAs of 1,000 students, the ability of the State Senior High Schools to accommodate students in West Bekasi District is only 2 per cent of the total senior high school-age population. The carrying capacity of schools in each sub-district is different, this is because the availability of classroom facilities in each school is different. The results of the calculation of the carrying capacity of the availability of public SMA facilities in Bekasi City are shown (Figure 3). Not all sub-districts have been able to meet the availability of public high school education facilities, this can be due to the different population in each district.

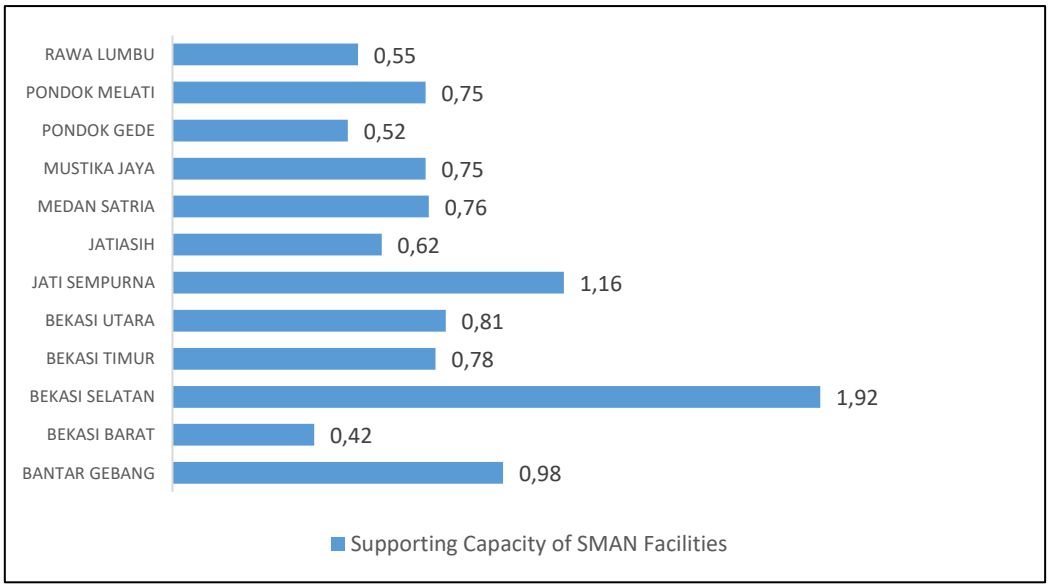

Figure 3. Supporting Capacity of SMA Negeri in Each District (Source: Analysis, 2020)

Zoning System for Public High Schools in Bekasi City

The ratio of the population of senior high school age to the carrying capacity of public senior high schools in each sub-district is different. The results of data analysis obtained from the Central Statistics Agency to obtain data on the age of the senior high school population with the capacity of school capacity obtained from the Basic Education Data for 2020 show that almost all public high schools in every district in Bekasi City cannot meet the age population. Senior High School. If based on the results of the calculation of the carrying capacity of the availability of educational service facilities, there are only two sub-districts where educational service facilities have been fulfilled. Namely, Bekasi Selatan Subdistrict and Jatisampurna Subdistrict, which can be seen that the school's capacity has been able to meet the number of the high school-age population (Figure 3).

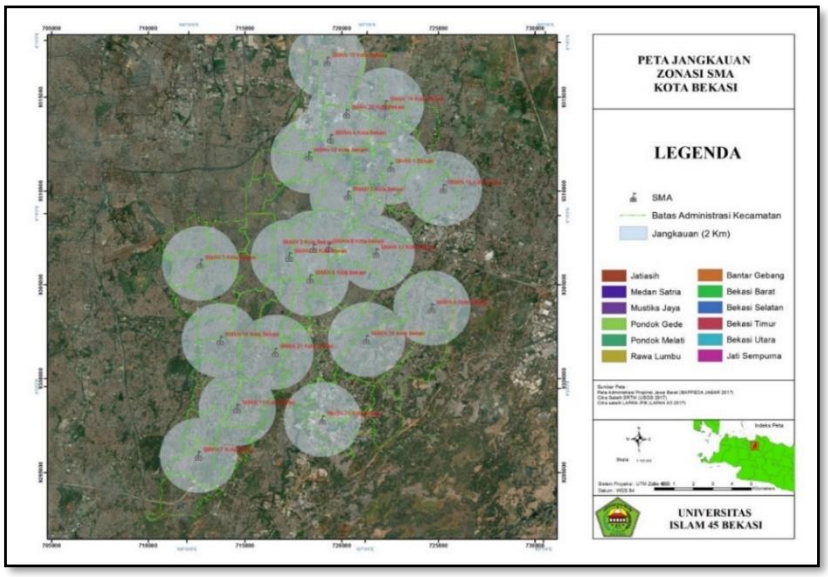

Figure 4. Zoning Coverage for Public High Schools in Bekasi City (Source: Analysis Result, 2020)

Based on Figure 4, the zoning coverage of SMANs in Bekasi City, which is in all sub-districts, shows that several sub-districts can reach schools that are outside their sub-district. This can happen because students will choose a school location that is closer to where they live than schools that are far away, even though the school is in the same sub-district where the students live. This is reinforced by the results of research conducted by (Pancarrani & Pigawati, 2014) that the location of educational facilities must be accessible to students, as well as accessibility and public transportation that makes it easier for students to get to these facilities.

The distance between the school and the place of residence is one of the factors for students or parents in determining the school. The close distance to the residence will make it easier for students to access the school either by walking or using a vehicle. The zoning determination carried out by the Indonesian government uses the maximum distance for Senior High Schools as far as 7 kilometres, with the hope that the school will be able to reach further students. Determination of school reach distances should have been planned so that it makes it easier for students to access the school. The availability of transportation facilities can be another factor for parents to send their children to school. Research conducted by (Chica-Olmo et al., 2018) found that the decision to reach school on foot is influenced by environmental variables. This study shows that a student decides to walk to school if the school has a distance of between 1,000 meters to 1,600 meters.

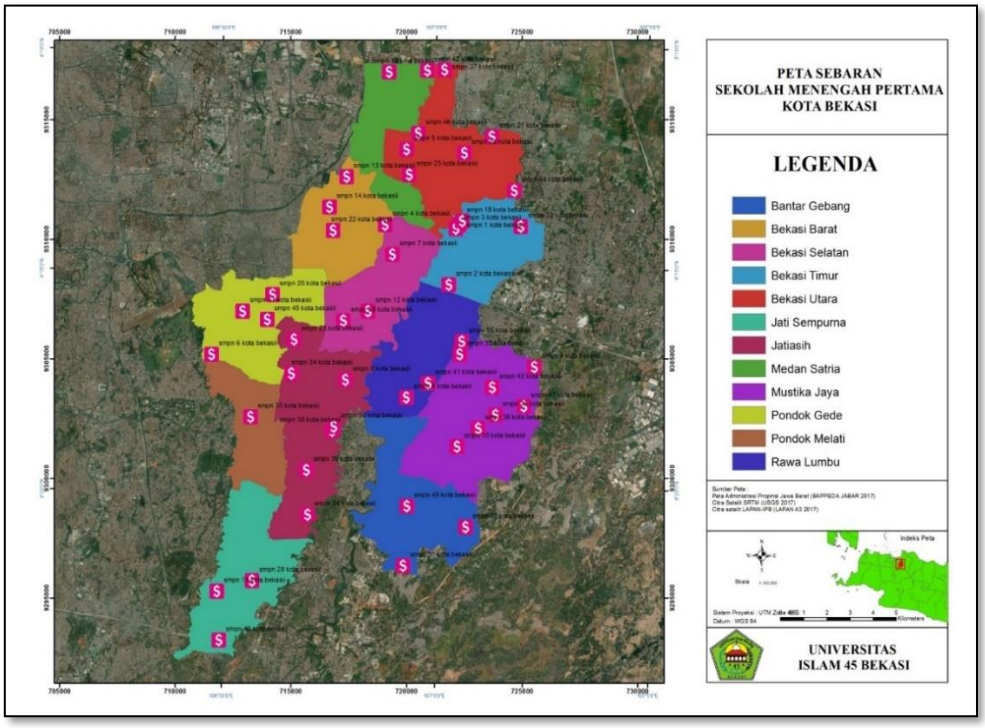

Figure 5. Distribution SMP Negeri in Bekasi City (Source: Analysis Result, 2020)

Distribution of State Junior High Schools

Figure 5 shows the distribution of Public Junior High Schools in each sub-district in Bekasi City. The number of Public Junior High Schools in Bekasi City is 46 schools, this number is higher than the number of Senior High Schools (SMA) which totalled 22 schools. The difference in the number of SMP and SMA schools should be taken into account in determining policies related to children's access to education. Currently, the government requires compulsory education for 9 years, this is one reason that the availability of SMP in each sub-district must be able to meet the needs of the population aged 14 years. Based on

data obtained from Basic Education Data issued by the Ministry of Education and Culture in 2020, the number of Public Junior High Schools (SMP) in Bekasi City is 46 schools spread across 12 sub-districts in Bekasi City. The number of State Junior High Schools is higher than Senior High Schools, this is because the population of SMP age is more than the population of SMA age. The existence of SMP in Bekasi City is quite evenly distributed in every district and is in densely populated locations.

The calculation of the analysis of the level of the need for school facilities is the availability of physical facilities as measured by the maximum capacity of the student capacity. This variable is measured in units of student carrying capacity under the conditions of the capacity of the facilities for SMP and SMA Negeri in each District in Bekasi City. The capacity of the facilities for State Junior High Schools and Public Senior High Schools (SMPN and SMAN) uses data on the population served by SMPN and SMAN facilities which are interpreted by data calculations for SMPN and SMAN study groups in each district. The level of service based on the availability of the optimal capacity of the SMPN and SMAN facilities can be interpreted by the number of study groups in each region. The need for facilities needs to take into account the number of people who enter school age in each district. According to the Standard Needs for educational and learning facilities from SNI 03-1733-2004, each unit of equivalent high school has 9-27 study groups per unit of SMPN and SMAN, where one study group contains 40 students. To obtain the number of study groups in each sub-district in Bekasi City, it can be done by knowing the average number of residents served by SMPN and SMAN facilities. After knowing the average number of people served by the facility, it can be seen the number of study groups in each district. Figure 4 shows the comparison of the age of junior high school children, wherein several sub-districts the junior high school age is greater than the carrying capacity of these sub-districts. The total population of junior high school age in Pondok Melati Subdistrict, Medan Satria, West Bekasi is greater than the capacity of schools in these sub-districts. Based on the calculation of the carrying capacity and the availability of educational service facilities (Muta'ali, 2015) the results obtained in Figure 6.

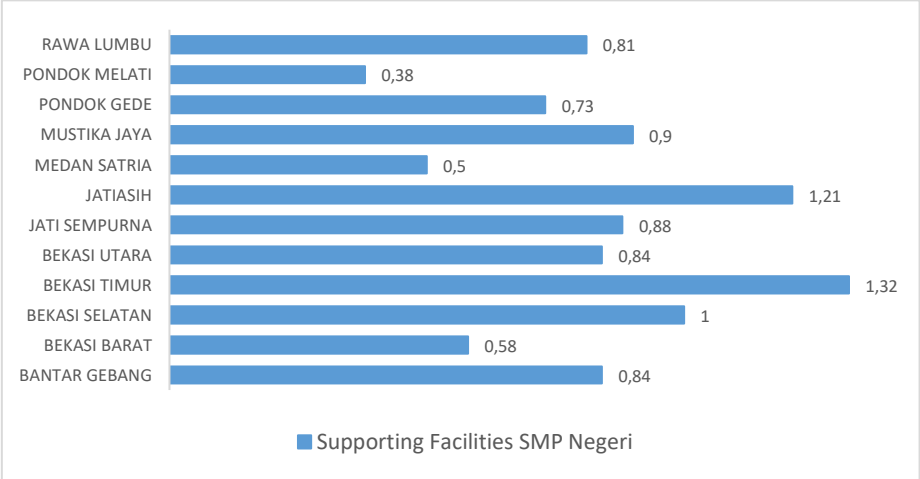

Figure 6. Calculation of the Supporting Capacity of Public Junior High Schools in Each District (Analysis Results, 2020)

The results of the calculation of the carrying capacity of the availability of public junior high school facilities in each sub-district produce different values. Pondok Melati Subdistrict received the lowest score among other sub-districts, with a score of 0.38. Sub-districts that

have a facility value of less than 1 (DDI <1) include Bantar Gebang, West Bekasi, North Bekasi, Jatisampurna, Medan Satria, Mustika Jaya, Pondok Gede, Pondok Melati, and Rawa Lumbu Districts. Meanwhile, Bekasi Selatan District has a value of 1, which means that the existence of educational service facilities in Bekasi sub-district is balanced to support the needs of the population. The value of the carrying capacity of the facilities for Jatiasih and East Bekasi Subdistricts is more than 1 so that these sub-districts have been able to support the needs of the population

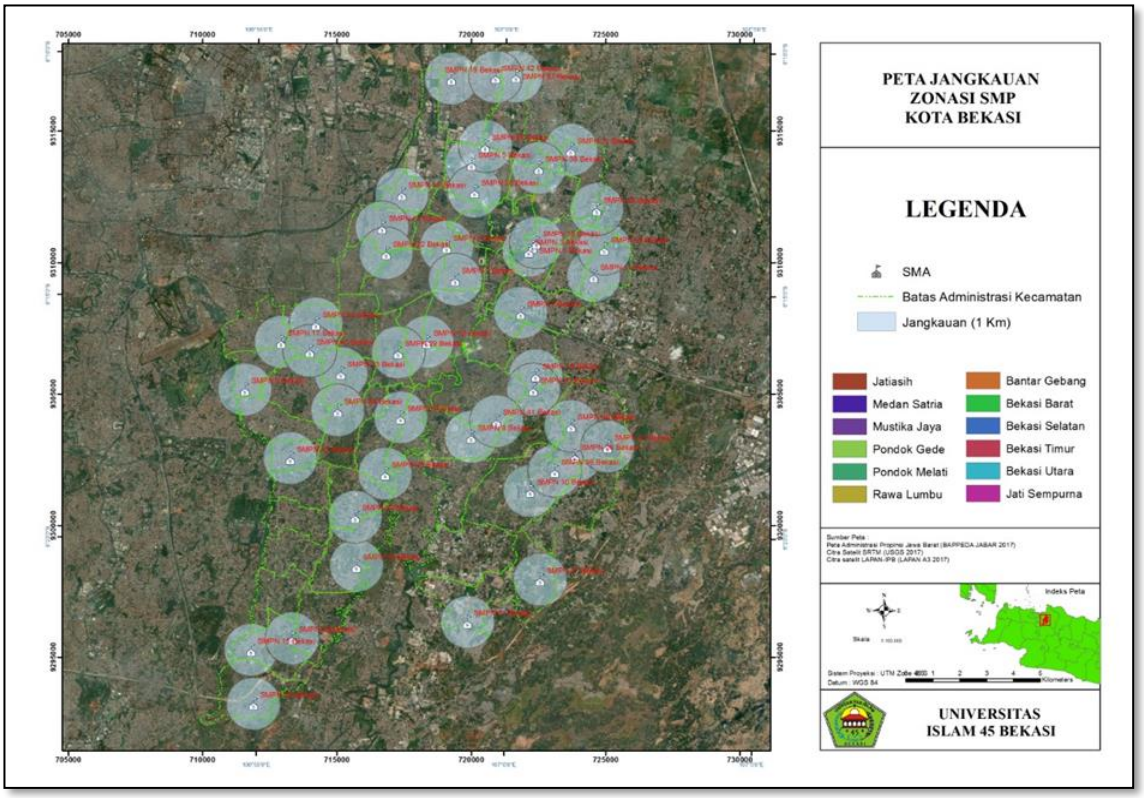

Figure 7. Zoning Public Junior High School in Bekasi City (Source: Analysis Result, 2020)

This service coverage distance is in the form of a maximum radius of coverage from the school education facilities at the SMP / SMAN levels in Bekasi City. In analyzing the range of this service, analysis tools such as buffering analysis service area can be used. Service area analysis is done by creating routes with a certain radius and forming a delineation area. The reference used is SNI 03-1733-2004 concerning the Planning Procedure for Urban Housing Environment where the reach of education facilities for SMPN is 1,000 meters, while SMAN is 2,000 meters. The reach is calculated from the point of the Education facility. This analysis requires a variable in the form of a road network, if there is no road network then the area cannot be reached by this analysis. The results of the buffering analysis service area are always circular but adapt to existing road conditions. Also, to determine accessibility in the form of the mileage and means of transportation used by students to educational facilities using several indicators. The mileage indicator for SMPN / SMAN is a maximum of 6 km (Permendiknas no.24 of 2007). Meanwhile, indicators of transportation facilities used include (walking, bicycle, public transportation). The distance between the school and the place of residence is one of the factors for students or parents in determining the school. The close distance to the residence will make it easier for students to access the school either by walking or using a vehicle. The zoning determination carried out by the Indonesian government uses the maximum distance for Senior High Schools as far as 7

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Conclusion

The results of this study indicate that ten sub-districts have not met the needs of public high schools and nine sub-districts that have not been fulfilled for public junior high schools. This is due to the different school-age population in each district. Besides, the application of the zoning system in the Admission of New Students for State Senior High Schools can only reach prospective students up to a radius of 7 kilometres and State Junior High Schools reach 1 kilometre from their residence. This has resulted in an excess number of registrants at schools that are located on the border between sub-districts. The limitation in this study is that it has not calculated the availability of senior high schools and junior high schools which are managed by the community. So that information on the availability and needs of school facilities in each district can be more detailed and objective. Besides, it is also necessary to classify schools based on the facilities they have for teaching and learning activities. So that it will be seen the capacity they have for each school, both high school and public junior high school.

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