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# Improvement of Population Data for Kuta Mbelin Village, STM Hulu District, Deliserdang Regency to Open SID Based Population Data

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**ABSTRACT**

The community service program conducted in the fostered village of LPPM USU, namely Kuta Mbelin Village, STM Hulu District, Deliserdang Regency, which already has a village information system (https://s.id/kutambelin) as a manifestation of a digital village, should convert the population data processed conventionally into population data that can be integrated with the village's needs. This includes the ability to monitor population growth, facilitate correspondence and archiving, obtain village population statistics, and more. To improve this data, the fostered village team is implementing an open-source Village Information System, commonly known as Open SID. The data processed by the village using MS Excel covers two hamlets out of the three in Kuta Mbelin village. Hamlet I has 261 residents and Hamlet II has 532 residents, while Hamlet III is still being processed by the village operator. This existing population data needs to be refined and integrated into the Open SID-based population data platform by first performing data cleaning to ensure it can be incorporated into the village information system. The data entry process is continuously carried out by the LPPM USU community service team and village operators, involving USU MBKM KKN students in the village.

**Keyword:** Population Data, Open SID, Village Information System

## 1 Introduction

Kuta Mbelin Village, located in STM Hulu District, Deliserdang Regency, North Sumatra, is one of the many villages in Indonesia that is still grappling with challenges in population data management. The manual recording system that has been used by the village government often causes various problems, ranging from data inaccuracy, duplicate data, to difficulties in accessing important information needed for planning and decision-making. In a broader context, this problem not only affects the efficiency of village administration, but also has an impact on the quality of public services and village development as a whole. In general, the population data is used for various purposes, including:

1. Public services including the issuance of driving licenses, business permits, taxpayer services, banking services, land certificate issuance services, insurance, public health insurance, and social security for workers.

2. Development planning, namely for national development planning, education planning, health planning, workforce planning, and poverty alleviation.
3. Budget allocation includes determining the General Allocation Fund (DAU) and calculating potential taxation.
4. Democracy development, namely the preparation of Population Aggregate Data per sub-district (DAK2) and the preparation of Potential Voter Population Data for the Election (DP4).
5. Law enforcement and crime prevention, among others, to facilitate the tracking of criminals, prevent human trafficking and prevent the sending of illegal workers. [1], [2]

Specifically, UU No. 24 of 2013, article 1 point 9 states that population data is individual data and/or structured aggregate data as a result of population registration and civil registration activities. In UU No. 24 of 2013 concerning Population Administration, data is grouped into:

1. Personal Data is certain individual data that is stored, maintained, and maintained as true and its confidentiality is protected (article 1 point 22).
2. Database is a collection of various types of population data that are stored systematically, structured and interconnected using software, hardware and data communication networks (article 1 point 29 of PP No. 37 of 2007).
3. Population Data is individual data or aggregate data that is structured as a result of population registration and civil registration activities. [3],[4]

There are 3 types of population data utilization, namely:

a. aggregate data, including individual data sets in the form of quantitative data and qualitative data,
b. data matching/matching,
c. population data access by name by address by NIK. [5]

OpenSID (Open Source Village Information System) is an information system developed as an open source, which is specifically designed to help villages manage population data and village administration more efficiently and in an integrated manner [6].

The concept of this free application/OpenSID was initially initiated in 2006 by the Lumbung Komunitas Combine Resource Institution, a civil society organization dedicated to developing alternative community-based information and communication technology; which is openly developed together by the SID care community. Technically, the application flow of this software includes the following stages:

1. Forming a working team with the village government
2. Discussing what databases are needed for residents
3. Collecting population data from residents from Family Cards (KK)
4. Registering the SID project and its software application
5. Installing the SID software application on the village server computer
6. Entering population data into SID
7. Modifying settings according to village needs
8. Sharing information about the village so that it can be accessed by residents [5]

The issue of inaccurate population data is a critical problem that can hinder various development programs at the village level. Invalid data can lead to misallocated funds, unequal distribution of aid, and development planning that does not align with the community's needs. Therefore, efforts to improve the population data management system in Kuta Mbelin Village are urgent and essential. One solution to address this problem is to implement a technology-based village information system. OpenSID is one platform that can be used for this purpose. By leveraging information technology, OpenSID can provide various conveniences in recording, managing, and updating population data, thereby enhancing the accuracy and accessibility of the data.

## 2 Method

In implementing this community service program, a participatory approach will be used to ensure active involvement from various parties, including the village government, the community, and other stakeholders. Through surveys, interviews, and group discussions, the needs and challenges faced in population data management will be identified. Based on the results of this needs analysis, training and workshops will be conducted to provide understanding and skills to village officials and the community regarding the use of OpenSID. The system implementation will be carried out in stages, with periodic monitoring and evaluation

to ensure the system operates as expected and delivers maximum benefits. The implementation of the community service activities involves several stages:

1. Socialization and coordination of the community service program for the fostered village by LPPM USU with the Head of Kuta Mbelin Village and the Head of STM Hulu District, Deliserdang Regency as partners.
2. Preparation of activity proposals to be carried out in Kuta Mbelin Village, STM Hulu District, Deliserdang Regency, and preparation of partner community service letters.
3. Preparation of the population data server.
4. Creation of a domain for OpenSID Kuta Mbelin Village and setting up web hosting for Kuta Mbelin Village.
5. Structuring the database based on tables used in OpenSID through data export and import.

## 3 Result and Discusssion

Population data management using MS Excel by village operators allows for easy collection, processing, and analysis of population data according to the village's needs. With the advancement of information technology, a new idea has emerged about an integrated and precise population database based on Open SID. The village head must immediately update this population data, but assistance from academicians who understand how to operate the Open SID-based population data system is needed. The LPPM USU Foster Village Team placed in Kuta Mbelin initiated assistance in using the Open SID-based population data system for village officials, ensuring they understand and can operate the system. The existing structure of the population data features in Kuta Mbelin Village is as follows:

Nama Lengkap :
No Kartu Keluarga :
NIK :
Hub. Keluarga :
Jenis Kelamin :
Tempat Lahir :
Umur :
Agama ;
Pendidikan Terakhir :
Pekerjaan ;
Status Perkawinan ;
Orang Tua (Ayah) ;
Orang Tua (Ibu) ;
Dusun ;
Suku ;
Keterangan :

**Figure 1**. Existing features in Kuta Mbelin Village's population data.

**DATA PENDUDUK DESA KUTAMBELIN DSN I**

| No Urut | Nama Lengkap | No Kartu Keluarga | NIK | Hub. Keluarga | Jenis Kelamin | Tempat Lahir | Tanggal Lahir | Umur | Agama | Pendidikan Terakhir | Pekerjaan | Status Perkawinan | Orang Tua (Ayah) | Orang Tua (Ibu) | Dusun | Suku | Keterangan |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | Aulia Anggraini | 1207201409091027 | 1207204607170001 | Anak Kandung | P | Deli Tua | 06-Juli -2017 | 6 | Islam | Tidak Sekolah | Belum / Tidak Bekerja | Belum Kawin | Aprizal | Dahliana | DUSUN I | Jawa | Baik |
| 14 | Arwan | 1207200601210002 | 1207051609680005 | Kepala Keluarga | L | Bekala | 16-Sep-1968 | 55 | Kristen | SLTP | TNI | Kawin Tercatat | Nalanken Surbakti | Bujur Br Ginting | DUSUN I | Jawa | Baik |
| 15 | Litna Br Perangin-Angin | 1207200601210002 | 1207054105830004 | Istri | P | Tiga Juhar | 01-Mei-1983 | 39 | Kristen | SLTA | Mengurus Rumah Tangga | Kawin Tercatat | Kelena Perangin -Angin | Riah Br Ginting | DUSUN I | Karo | Baik |
| 16 | Srimulyani Br surbakti | 1207200601210002 | 1207054312060003 | Anak Kandung | P | Medan | 05-Des-2006 | 16 | Kristen | Belum Tamat SD | Pelajar | Belum Kawin | Arwan | Litna Br Perangin-Angin | DUSUN I | Karo | Baik |
| 17 | Wahyu Tuah Bastanta Surbakti | 1207200601210002 | 1207051509090002 | Anak Kandung | L | Medan | 5-Sep-2008 | 15 | Kristen | Belum Tamat SD | Pelajar | Belum Kawin | Arwan | Litna Br Perangin-Angin | DUSUN I | Karo | Baik |
| 18 | Andri anus Ginting | 1207200709150002 | 1207200204030001 | Kepala Keluarga | L | Talun Kenas | 2-Apr-1993 | 31 | Islam | SLTP | Petani / Pekebun | Kawin | Ingan malem Ginting | Norma Br Tarigan | DUSUN I | Karo | Baik |
| 19 | Elisa Br Barus | 1207200709150002 | 1207066810970001 | Istri | P | Nomo Mbelin | 18- Okt-1997 | 25 | Islam | Tamat SD | Mengurus Rumah Tangga | Kawin | Japet Barus | Sumarni | DUSUN I | Karo | Baik |
| 20 | Vernanda Ginting | 1207200709150002 | 1207202805160001 | Anak Kandung | L | Nomo Rambe | 28-Juni-2015 | 7 | Islam | Tidak Sekolah | Belum / Tidak Bekerja | Belum Kawin | Andri Anus Ginting | Elisa Br Barus | DUSUN I | Karo | Baik |
| 21 | Agus Wahyudiy | 1207200211170001 | 1207200608960001 | Kepala Keluarga | L | Ujung Suka | 06-Agust-1996 | 26 | Islam | SLTP | Petani / Pekebun | Kawin | Ramlan | Suarni | DUSUN I | Jawa | Baik |
| 22 | Elina Fitrah | 1207200211170001 | 1207096503970001 | Istri | P | Greahan | 25-Mar-1997 | 27 | Islam | SLTP | Mengurus Rumah Tangga | Kawin | Wagiran | Rohani | DUSUN I | Jawa | Baik |
| 23 | MHD Rizky Pratama | 1207200211170001 | 1207200104180001 | Anak Kandung | L | Rangkit- Git | 1-Apr-2018 | 6 | Islam | Tidak Sekolah | Belum / Tidak Bekerja | Belum Kawin | Agus Wahyudiy | Elina Fitrah | DUSUN I | Jawa | Baik |
| 24 | Arisahputra | 1207200107220002 | 1207203001000001 | Kepala Keluarga | L | Ujung Suka | 31-Jan-2000 | 24 | Islam | SLTP | Petani/Pekebun | Kawin Tercatat | Ramlan | Suarni | DUSUN I | Jawa | Baik |
| 25 | Delia Utari | 1207200107220002 | 1218024308020003 | Istri | P | Tanah Merah | 03-Agust-2002 | 21 | Islam | SLTP | Mengurus Rumah Tangga | Kawin Tercatat | Salman | Dian | DUSUN I | Jawa | Baik |
| 26 | Andi Harmaja | 1207202107220001 | 1207201404970001 | Kepala Keluarga | L | Aceh | 14-Apr-1997 | 27 | Islam | SLTP | Petani/Pekebun | Kawin Tercatat | Zaharuddin | Hari Ayati | DUSUN I | Jawa | Baik |
| 27 | Rina | 1207202107220001 | 1207206706990001 | Istri | P | Rangkit- Git | 27-Jun-1999 | 25 | Islam | Tamat SD | Mengurus Rumah Tangga | Kawin Tercatat | Penno | Idawati | DUSUN I | Jawa | Baik |
| 28 | Agus Darmawan Ginting | 1207200305210002 | 1207200707970001 | Kepala Keluarga | L | Simpang Delena | 07-Agust-1997 | 25 | Islam | SLTA | Karyawan Swasta | Kawin Tercatat | Muhamat Jawi Ginting | Rukiati | DUSUN I | Karo | Baik |
| 29 | Emma Amanda Yani Purba | 1207200305210002 | 1207076911990001 | Istri | P | Biru-Biru | 28-Nov-1997 | 26 | Islam | SLTA | Mengurus Rumah Tangga | Kawin Tercatat | Andon Purba | Haribrinarty, S.Pd,M.Si | DUSUN I | Simalungun | Baik |
| 30 | Muhammad Alzam Muzakki Ginting | 1207200305210002 | 1207202412210001 | Anak Kandung | L | Deli Tua | 24-Des-2021 | 1 | Islam | Tidak Sekolah | Belum / Tidak Bekerja | Belum Kawin | Agus Darmawan Ginting | Emma Amanda Yani Purba | DUSUN I | Karo | Baik |
| 31 | Aprizal Sembiring | 1207201201210002 | 1207200511950001 | Kepala Keluarga | L | Kuta Mbelin | 5-Nov-1995 | 28 | Kristen | SLTA | Petani / Pekebun | Kawin Blm Tercatat | Kristo sembiring | Malem Pagi Br Tarigan | DUSUN I | Karo | Baik |

**Figure 2.** Current population data table in Kuta Mbelin Village.

With the available population data, village officials face difficulties in processing and analyzing data for educational, health, planning, and village development requests, among other needs. Thus, migrating to the integrated and precise Open SID-based population data system is necessary. This can be done by accessing the official website of Kuta Mbelin Village at https://s.id/kutambelin with the following display:

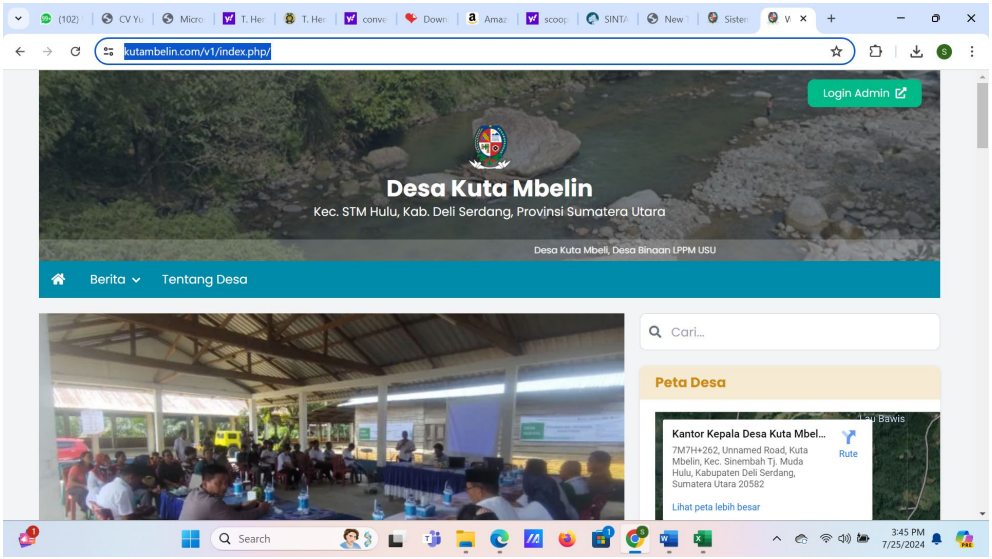



**Figure 3.** Kuta Mbelin Village website display.

Click "admin login" to go to the village administration web page with the following display:

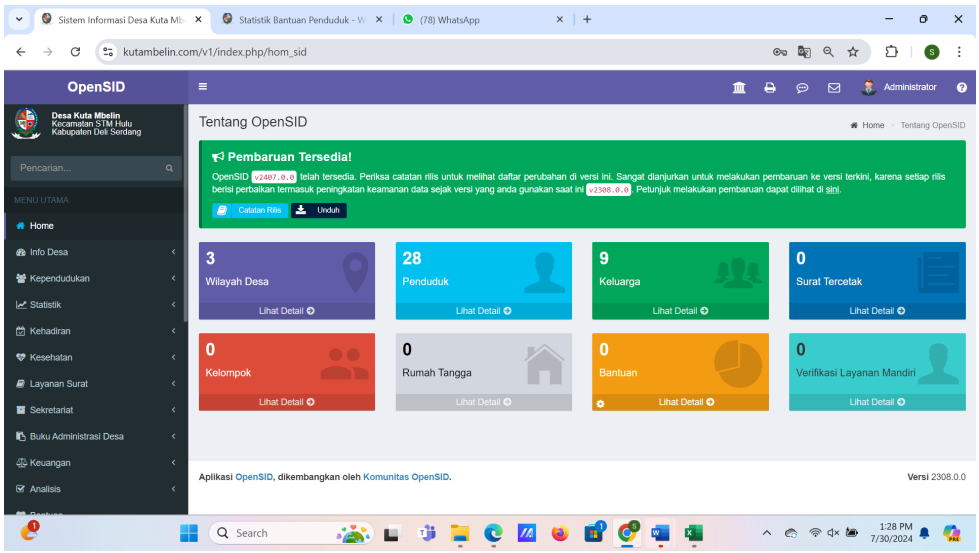



**Figure 4.** Kuta Mbelin Village administrator web display.

Click "population" to go to the population data section with the following display:

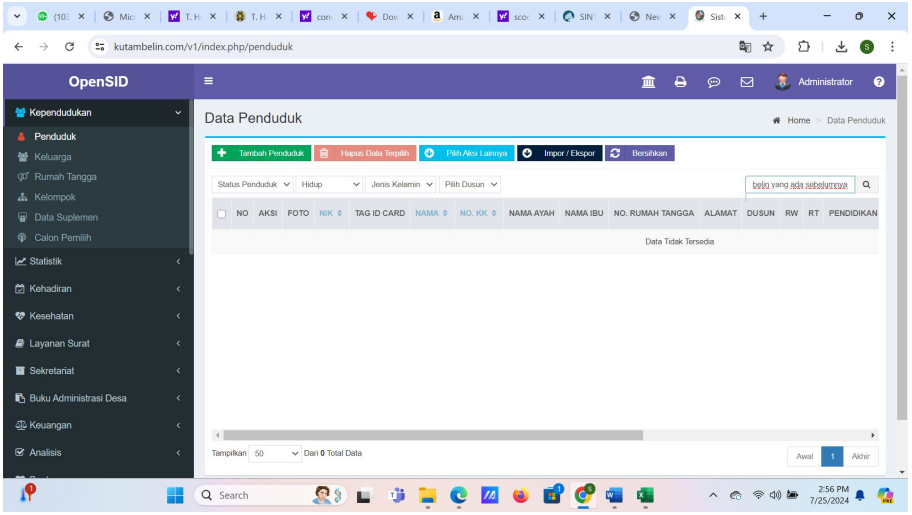



**Figure 5.** Population Data display using Open SID.

Since no population data entries have been made in the Open SID-based population data system, the MS Excel format from Open SID must be used. Click the import/export button, and Open SID will provide the data entry format in MS Excel. Then, copy the data from the previous population data and paste it into the Open SID-based population data, adjusting the features accordingly. The display for data adjustment is as follows:

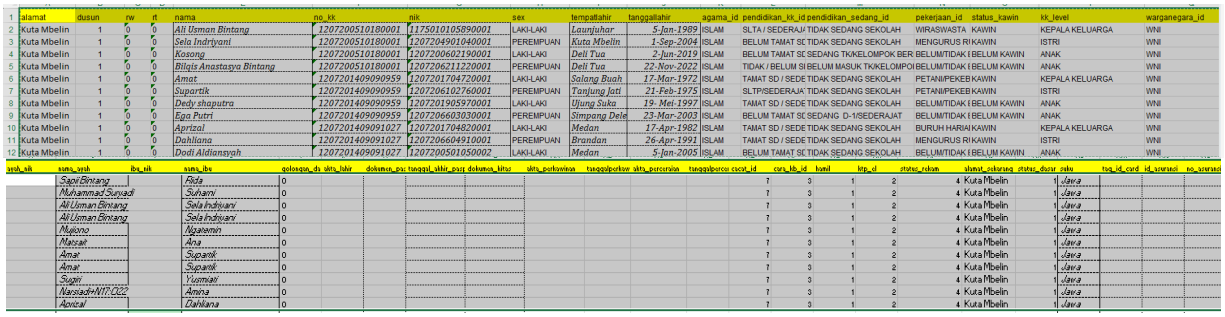


**Figure 6.** Population data table in Open SID format (MS Excel export data format).

Once the population data is correctly filled out, it can be imported into the population data system by clicking import/export and selecting import data, with the import process displayed as follows:

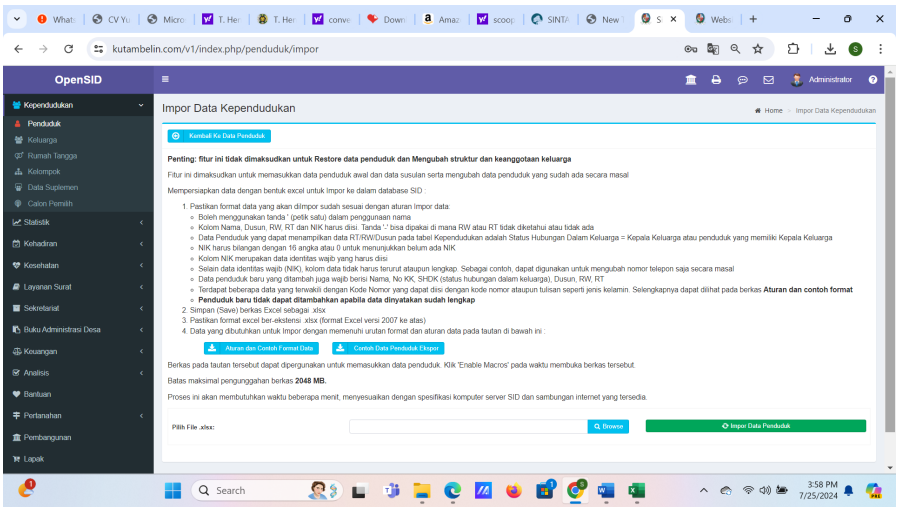



**Figure 7.** Import file display for population data in MS Excel format.

Then, import the population data by browsing to select the file datapendudukcoba.xlsx in the folder where the file is stored. With a trial of 28 cleaned data entries matching the datasheet export from Open SID, the Data Penduduk display on the Kuta Mbelin Village web administrator appears as follows, which can be updated by the Kuta Mbelin web administrator:

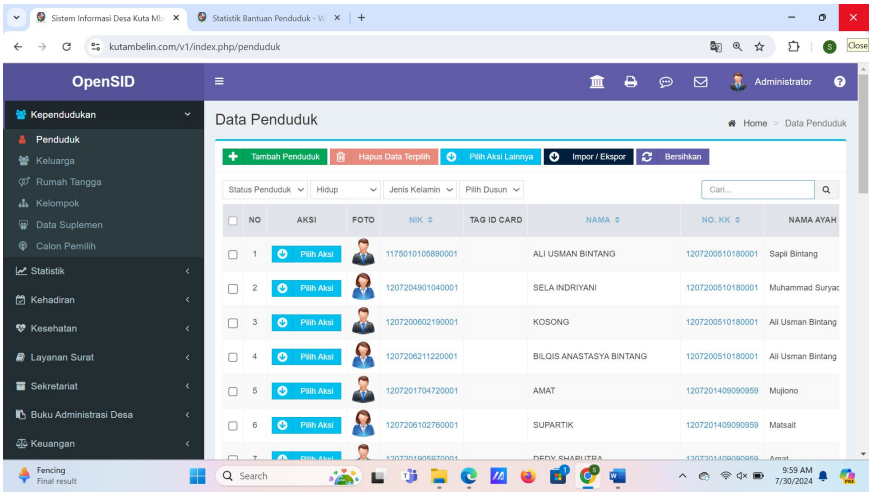
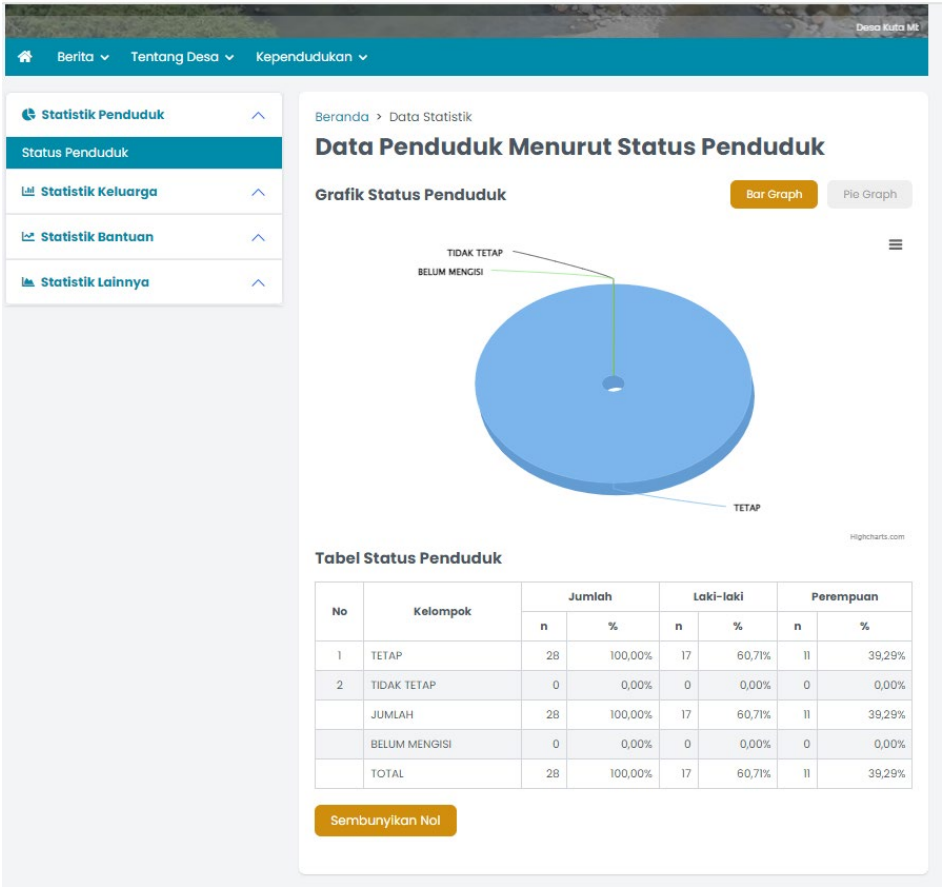



**Figure 8.** Population Data display on Kuta Mbelin Village web administrator.

The Kuta Mbelin Village website's population menu will display statistics on the population, such as Resident Status, Social Class, Population Assistance Recipients, and Family Assistance Recipients. An example display of the Population menu with resident status statistics appears as follows. More statistics can be displayed according to the population data in the Open SID system database:




| No | Kelompok | Jumlah | | Laki-laki | | Perempuan | |
|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % |
| 1 | TETAP | 28 | 100,00% | 17 | 60,71% | 11 | 39,29% |
| 2 | TIDAK TETAP | 0 | 0,00% | 0 | 0,00% | 0 | 0,00% |
| | JUMLAH | 28 | 100,00% | 17 | 60,71% | 11 | 39,29% |
| | BELUM MENGISI | 0 | 0,00% | 0 | 0,00% | 0 | 0,00% |
| | TOTAL | 28 | 100,00% | 17 | 60,71% | 11 | 39,29% |

**Figure 9.** Display of processed population data statistics through the Open SID system.

## 4 Conclusion

The OpenSID system can help improve the accuracy of population data. With more systematic and digital recording, errors that commonly occur in manual systems can be minimized. OpenSID enables easier and faster data access for village officials and the community. Information needed can be obtained quickly without going through convoluted processes. Additionally, transparency in data management will also increase. With an open and integrated system, the community can more easily monitor and access population information, thereby increasing trust in the village government.

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