Welfare Index of Person with Disabilities in Indonesia, 2018

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Abstract. Most people with disabilities in Indonesia still live in vulnerable, backward, or poor conditions due to restrictions, obstacles, difficulties, and reduction or elimination of the rights of persons with disabilities. In realizing prosperity for all Indonesian people, it should be fair and not contain discriminatory elements, including persons with disabilities. For this reason, a measure of the achievement of the welfare of persons with disabilities is needed as evaluation support material in making plans and policies. This study aims to obtain the welfare factors of persons with disabilities and compile them into the Welfare Index of Persons with Disabilities (WIPD). The construction of the WIPD was carried out using the exploratory factor analysis method. Based on the results, 20 indicators formed five factors, namely accessibility, housing and access to information, physical and spiritual well-being, social relations and sanitation, and economic well-being. From the WIPD scores, it is known that there is a gap in WIPD achievement between the Western and the Eastern Region of Indonesia. For this reason, the government needs to prioritize inclusive development in provinces with very low and low WIPD achievements.

1. Introduction

Prosperity is a goal that is to be achieved by all countries in the world, including Indonesia. As stated in the Pembukaan UUD 1945, one of the objectives of the Indonesian state is to promote the general welfare based on social justice for all Indonesian people. General welfare in the Opening of the 1945 Constitution can be interpreted as realizing social welfare for all Indonesian people. According to Law No. 11/2009 Article 1 Paragraph 1, social welfare is a condition of meeting citizen's material, spiritual, and social needs to live decently and develop themselves to carry out their social functions. Meanwhile, social justice is a right for every citizen, including equal treatment both in the eyes of the law and in the fulfillment of fundamental rights such as the right to life, education, health, work, family building, and the right to freedom of expression and opinion. Reflecting on this, in realizing welfare for all Indonesian people should be fair and does not contain discriminatory elements, not least for people with disabilities.

Disability is a social issue that is still a problem in Indonesia. Limitations that people with disabilities often cause the group to be discriminated against and considered to have no independence and only depend on others. Therefore, people with disabilities are often considered a burden to families and communities. Suppose people with disabilities are allowed to have the same access as non-disability in terms of education, employment opportunities, politics, and other fields. In that case, people with disabilities can likely compete with non-disability. That is in line with a statement by the International Labour Organization which states that the exclusion of persons with disabilities from the workforce can result in a loss of Gross Domestic Product (GDP) of three to seven percent [8].

According to data from the Badan Pusat Statistik (BPS), based on the Inter-Census Population Survey (SUPAS) in 2015, the percentage of people with disabilities aged 10 years and over in Indonesia

amounted to 8.56 percent. The figure cannot be said to be minor, considering that if people with disabilities cannot live independently, then people with disabilities will only be a burden to the state. According to Prasetyo [13], the poverty status of people with disabilities is influenced by internal and external factors, causing the subpopulation of the population is very vulnerable to being marginalized to compete in the job market. The ILO states that in every country, people with disabilities are classified as more susceptible to poverty, measured by traditional economic indicators such as GDP and in non-monetary aspects such as living standards such as education, health, and living conditions. About 82 percent of people with disabilities live below the poverty line in developing countries and often face limited access to education, health, training, and decent work [8].

One of the considerations of the establishment of Law No. 8 of 2016 on Persons with Disabilities is the fact that most people with disabilities in Indonesia still live in vulnerable, underdeveloped, or poor conditions due to restrictions, obstacles, difficulties, and reduction or disappearance of the rights of persons with disabilities. This condition is reflected through the lack of public facilities that are friendly to people with disabilities, access to challenging education, and the lack of companies that employ people with disabilities. Based on the results of the National Socioeconomic Survey (Susenas) in March 2019, 12.26 percent of people with disabilities in the 7-12 year age group did not attend school, 30.62 percent in the age group of 13-15 years, and the largest percentage was in the 16-18-year-old group of 51.01 percent. In addition, BPS states that people with disabilities have the lowest Literacy Rate [3]. In terms of employment, according to research conducted by LPEM FEB UI [10], in Indonesia, only 56.72 percent of people with mild disabilities participate in the labor force. The labor force participation rate of people with severe disabilities is known to be even lower, which is only 20.27 percent. In contrast, the non-disability participation rate in the labor force is 70.40 percent. According to Yeo and Moore [19], the reasons that may make it difficult for people with disabilities to enter the workforce are discrimination against persons with disabilities, such as institutional discrimination, physical environmental discrimination, and social discrimination.

The improvement of disability problems is caused by socio-cultural factors, economic factors, and weak policies and law enforcement in favor of the disability community [7]. To realize equal rights and opportunities for persons with disabilities towards a prosperous, independent, and non-discrimination life, the President of the Republic of Indonesia passed Law No. 8 of 2016 on Persons with Disabilities. In-Law No. 8 of 2016 written the implementation and fulfillment of the rights of persons with disabilities based on respect for dignity; individual autonomy; without discrimination; full participation; diversity of people and humanity; equality of opportunity; equality; accessibility; the growing capacity and identity of the child; inclusive; special treatment and special protection.

As previously explained, the protection and fulfillment of rights for persons with disabilities can improve the living conditions of persons with disabilities, with the protection of the rights of persons with disabilities, can increase the participation of persons with disabilities more actively in society to be able to participate in the development of the state. In addition, the protection and fulfillment of the rights of persons with disabilities are also critical in forming people with disabilities who are independent and prosperous. A measure of the achievement of the welfare of persons with disabilities is needed that can be used as an evaluation support material in making planning and policies to improve the welfare of persons with disabilities. There has been much research conducted on people with disabilities both in the national and international scope. However, up to now there has been no research or government agency that forms a single indicator that can measure the well-being of people with disabilities. Because the welfare of persons with disabilities concerns many aspects of life, it is considered necessary for a single indicator to measure the well-being of persons with disabilities. The purposes of this study are to know the overview of welfare of person with disabilities in Indonesia, to know the well-being of persons with disabilities factors in Indonesia at 2018, to know the level of persons with disabilities by province in Indonesia, and to know the uncertainty analysis of the disability welfare index.

2. Methodology

2. 1. Persons with Disabilities

Previously disability was only viewed in the medical context, but now the view on people with disabilities has shifted to a social context [18]. In this study, the definition of persons with disabilities used refers to defining according to Law No. 8 of 2016 on persons with disabilities. In-Law No. 8 of 2016, persons with disabilities are defined as any person who experiences physical, intellectual, mental, or sensory limitations over a long period who interacts with the environment can experience obstacles and difficulties to participate fully and effectively with other citizens on equal rights.

2. 2. Welfare

Welfare is plural or multidimensional, so there are various views on welfare. Welfare is a state when the fulfillment of basic needs and the realization of the values of life, for that it can be said that welfare is another terminology of the quality of human life [5]. In its development, welfare is not only about meeting needs but also the fulfillment of rights for every citizen [15]. The rights of persons with disabilities were declared through CRPD by the United Nations (UN) in 2007 in New York, where the Indonesian state signed the convention. The rights of persons with disabilities are further regulated in Law No. 8 of 2016.

The framework used in this study refers to the research of Monsalve, Morán, Alcedo, Lombardi, Schalock, and Gómez [11] as follows.

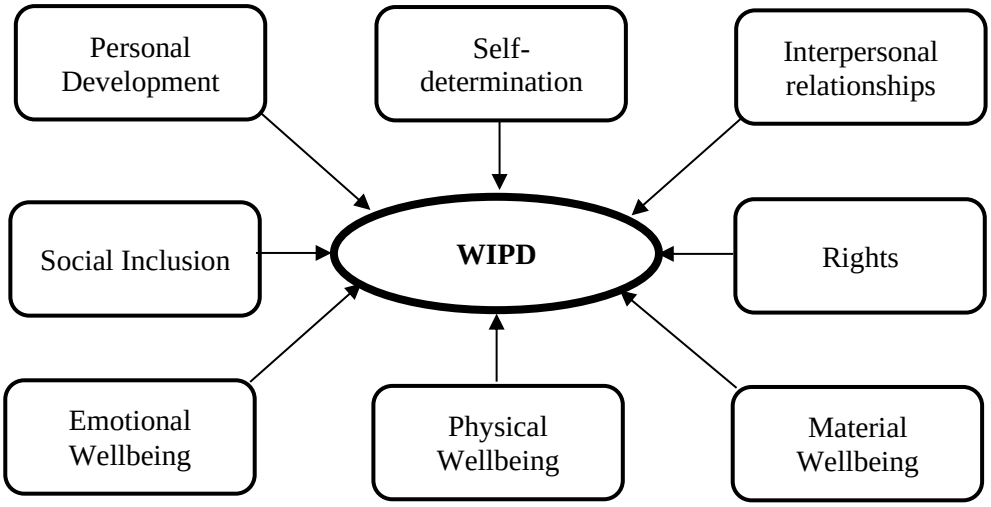


Figure 1. Framework

2. 3. Method of Collecting Data

The data used in this study includes data from 34 provinces in Indonesia which are secondary data sourced from raw data of the Village Potential Data (Podes) 2018, National Socioeconomic Survey (Susenas) Kor, and Socio-Cultural and Educational Module (MSBP) 2018.

2. 4. Analysis Method

The analytical method used in compiling the Disability Welfare Index in this study is exploratory factor analysis (EFA). Exploratory factor analysis was chosen because there is no (or unknown) standard theory that explains the well-being factors of persons with disabilities and their relation to previous indicators of disability well-being. Here are the measures on the well-being index of persons with disabilities adopted from the steps of drafting a composite index according to the OECD [12]:

1. Establishment of theoretical framework and selection of indicators
2. Normalization
   The normalization step is done to make the indicators used to be comparable. In this study, the normalization method used is the min-max method. The value of the range to be obtained ranges from 0 to 1.
   If the indicator is in line with the disability's well-being index:

$$x_{ij}{}' = \frac{x_{ij} - min_j(x_i)}{max_j(x_i) - min_j(x_i)} \tag{1}$$

   If the indicator is in the opposite direction to the disability's well-being index:

$$x_{ij}{}' = 1 - \frac{x_{ij} - min_j(x_i)}{max_j(x_i) - min_j(x_i)} \tag{2}$$

3. Multivariate analysis
   Multivariate analysis is done to know the structure of the dataset. In this study, the multivariate analysis method used is factor analysis.
4. Weighting and aggregation
   In this study, the weight counting method was equal weighting on indicators. This method can be said to be very simple in calculating the weight of indicators. The formula used in calculating equal weighting in indicators is as follows.

$$b_i = \frac{1}{p} \tag{3}$$

   After the weight for each indicator is calculated, the aggregation of each indicator is calculated with the following formula.

$$Index_j = \sum_{1}^{i} b_i x_{ij}{}' \tag{4}$$

5. Categorization and visualization
   The index produced in the previous stage will be categorized into several groups using the natural breaks method and presented in the thematic map form.
6. Uncertainty analysis
   Uncertainty analysis is done to measure the resilience of the index that has been formed. The uncertainty analysis draws on Salvati and Carlucci's [14] and Tate [16] research. Before doing uncertainty analysis, first compiled a composite index with several different scenarios. In this study, different scenarios are used based on the following weighting methods.

   Scenario 1: equal weighting on indicators
   Scenario 2: unequal weighting on indicator adapts weighting of Indeks Perilaku Ketidakpedulian Lingkungan Hidup (IPKLH) 2018
   Scenario 3: unequal weighting in indicators refers to Salvati and Carlucci's research, 2014
   Scenario 4: unequal weighting in indicator refers to the weighting of the Indeks Pembangunan Desa 2018
   Scenario 5: equal weighting on factors
   Scenario 6: unequal weighting on factors

3. Result and Discussion

3. 1. Overview of Welfare of Person with Disabilities in Indonesia

The study used 28 indicators related to the well-being of people with disabilities that were selected based on the research framework and adjusted to data availability. The overview of eight indicators that represent each dimension based on the framework will be explained below.

Table 1. Overview of Welfare of Person with Disabilities in Indonesia

Indicator	Minimum	Maximum	Mean	Standard Deviation
(1)	(2)	(3)	(4)	(5)
Percentage of persons with disabilities aged 0-17 years who have a birth certificate	46.21	100.00	82.83	13.52
Percentage of people with disabilities age 15+ working	23.48	50.14	34.66	6.49
Percentage of people with disabilities who get treatment	23.92	49.05	35.56	6.02
Percentage of people with disabilities who watch TV	28.41	88.57	65.50	12.37
Percentage of villages that have easy or very easy access to reach the hospital	16.21	94.65	60.18	21.58
Mean years of schooling with disabilities age 15+	3.56	8.30	5.03	1.04
Percentage of people with disabilities age 19+ who are married	43.42	64.51	53.18	5.41
Percentage of people with disabilities who are victims of crime	0.19	3.42	1.64	0.75

Based on Table 1, most people with disabilities under the age of 17 in Indonesia already have a birth certificate. The percentage indicator of persons with disabilities under 17 years of age represents the dimension of rights that describe the right of children with disabilities in obtaining self-identity and recognition before the law. However, the disparity in birth certificate ownership for persons with disabilities is relatively high, illustrated through a standard deviation of 13.52. Furthermore, the material welfare dimension is represented by the percentage indicator of people with disabilities over 15 years who are working. This indicator illustrates the ability of people with disabilities to meet their daily needs. On average, the percentage of people with disabilities who work can be pretty low, only 34.66 percent, with a minimum achievement of 23.48 percent. The physical well-being dimension is represented by the percentage of people with disabilities who received outpatient care during the month-before-survey period and hospitalization a year before the survey. The average percentage of people with disabilities receiving care is only 35.56, meaning most people with disabilities do not get treatment. The minimum achievement of this indicator is only 23.92 percent. The percentage indicator of people with disabilities watching TV represents a dimension of self-determination. This indicator describes access to information for people with disabilities. On average, the percentage of people with disabilities who watch TV broadcasts is only 65.50 percent. The standard deviation of people with disabilities who watch TV can be pretty high at 12.37.

One of the aspects covered in the social inclusion dimension is accessibility for people with disabilities to live independently and participate fully in all aspects of life. The dimension of social inclusion is represented by the percentage indicator of villages having easy or very easy access to hospitals. This indicator has a high disparity of 21.58. That is, the achievement of this indicator is uneven between provinces in Indonesia. The mean years of schooling (MYS) of people with disabilities represent the self-development dimension. The achievement of this indicator is very low. The average

achievement of this indicator is 5.03 years. Based on the data, it is known that most people with disabilities do not finish their education at the junior high school level. That illustrates the achievement of MYS for people with disabilities is still far from the target of the 12-year compulsory learning program stipulated in the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 19 of 2016 concerning the Smart Indonesia Program. The percentage of people with disabilities over the age of 19 who are married represents the dimension of interpersonal relationships. On average, 53.18 percent of people with disabilities over the age of 19 are married. The dimension of emotional well-being is represented by the percentage of people with disabilities who are victims of crime. This indicator illustrates a sense of freedom from various forms of crime. The maximum achievement of the crime victim indicator is 3.42 percent, while the minimum achievement is 0.19 percent.

3. 2. Well-Being of Persons with Disabilities Factors in Indonesia at 2018

Factor analysis is carried out on indicators that are suspected to affect the well-being of people with disabilities. Factor analysis reduced indicators by paying attention to the values of Kaiser-Meyer-Olkin (KMO), Bartlett's test of sphericity, Measure of Sampling Adequacy (MSA), and communalities. The process of factor analysis is carried out by the process of discarding (dropping) and entering (add) indicators until it meets the provisions of KMO values, Bartlett's Test of Sphericity, MSA, and communalities. After the process of dropping and add variables repeatedly obtained results with the acquisition of KMO value of 0.74. KMO value is an illustration of the adequacy of the sample in conducting factor analysis. Based on an assessment by Kaiser and Rice [9], a KMO value of 0.74 means that the data is sufficient to be used in factor analysis. From the results of the analysis of these factors, Bartlett's test of sphericity with a p-value of 0.00 (p-value<0.05) means that the correlation matrix between the indicative is not an identity matrix or in other words indicators are correlated. Furthermore, each indicator that has an MSA value of less than 0.5 (<0.5) is issued one by one, so that only the remaining indicators have an MSA value greater than 0.5 (>0.5). Similarly to communalities values, only indicators with communalities values above 0.5 are maintained. From the process, there are 8 indicators that are reduced so that 20 indicators of reduction results are obtained.

If the conditions in conducting factor analysis have been met, then the following factor analysis is carried out. In the process of factor analysis, it is necessary to determine the number of factors that will be formed. In this study, the number of factors was determined using the help of scree plot based on more than one eigenvalue. Based on determining the number of factors using eigenvalue, the number of factors formed is five factors. After determining the number of factors to be formed, then the next thing to note is the loading factor of each indicator. The loading factor value describes the correlation between the indicator and each factor formed. The resulting loading factor value still shows multi-interpretive results for some indicators. That is, it is still difficult to determine the indicator into the right factors. Therefore, it is necessary to rotate to facilitate the grouping of indicators to their respective factors. In this study, the type of rotation factor used is varimax rotation. The results of the rotation are then grouped into each factor based on the most considerable loading factor value.

Of the five factors formed based on the factor analysis results, the cumulative total of unexplained variance is 81.291 percent, while other factors describe the rest. Factor 1 has an eigenvalue of 7.539 and is able to account for 26.639 percent of the total variance. Factor 1 consists of the percentage of people with disabilities aged 0-17 years who have birth certificates, the percentage of people with disabilities who get treatment, the percentage of people with disabilities with decent drinking water, the percentage of people with disabilities who use electricity as the main source of lighting, the percentage of villages that have easy or very easy access to reach the police station. Based on its forming indicators, factor 1 is related to the accessibility of persons with disabilities in various aspects of life. For that, factor 1 is named the accessibility factor. Meanwhile, factor 2 is called the housing and access to information factor because factor 2 is formed from indicators that describe the feasibility of residence and access to information for people with disabilities. This factor consists of the percentage of people with disabilities living in dwellings with decent walls, the percentage of people with disabilities living in dwellings with decent floors, and the percentage of people with disabilities who watch TV. The housing and information

factor consists of three indicators that explain 15.297 percent of the total variance and have an eigenvalue of 4.830.

Furthermore, factor 3 has an eigenvalue of 1.478 and is able to explain 14.557 of the total variance. Factor 3 consists of the percentage of people with disabilities who exercise, the percentage of people with disabilities who visit the library, and the percentage of people with disabilities who watch the show. Sports indicators are related to the physical health of people with disabilities, while indicators of visits to the library and watching performances are related to the fulfillment of spiritual needs for disabled people. Therefore, factor 3 is named the physical and spiritual well-being factor. Factor 4 consists of four indicators that are able to explain 13.679 percent of the total variance and have an eigenvalue of 1,356. Factor 4 consists of the percentage of persons with disabilities aged 15 years and above who work, the percentage of persons with disabilities who have proper sanitation, the percentage of persons with disabilities aged 10 years and above who attend meetings, the percentage of persons with disabilities aged 19 years and above who are married. For that reason, factor 4 is named the social relationship and sanitation factor. Factor 5 consists of two indicators: the percentage of people with disabilities with ownership of their own residential buildings and the Mean Years of Schooling (MYS) of people with disabilities aged 15 years and above. Both indicators forming factor 5 can be attributed to the financial ability of people with disabilities. Therefore, factor 5 is named the economic well-being factor. This economic well-being factor has *an eigenvalue* of 1,055 and can account for 11,118 percent of the total variance.

3. 3. Level of Welfare of Persons with Disabilities by Province in Indonesia

After the indicators of reduction results have been grouped into five factors using factor analysis, the following process is to calculate the weight for each indicator. Calculation of indicator weights is done using the equal weighting method on the indicator. Weight count using the equal weighting method is done using equations (3). These indicators are further multiplied by their respective weights to be aggregated into the well-being index of persons with disabilities. The resulting index has a range of values from 0 to 100. Suppose the index value is getting closer to 100 means the better the level of welfare of people with disabilities in the province. Similarly, if the index value is more relative to the value of 0, it means that the worse the level of welfare of people with disabilities in the province. Here is the Index of Welfare of Persons with Disabilities results by provinces in Indonesia from highest to lowest.

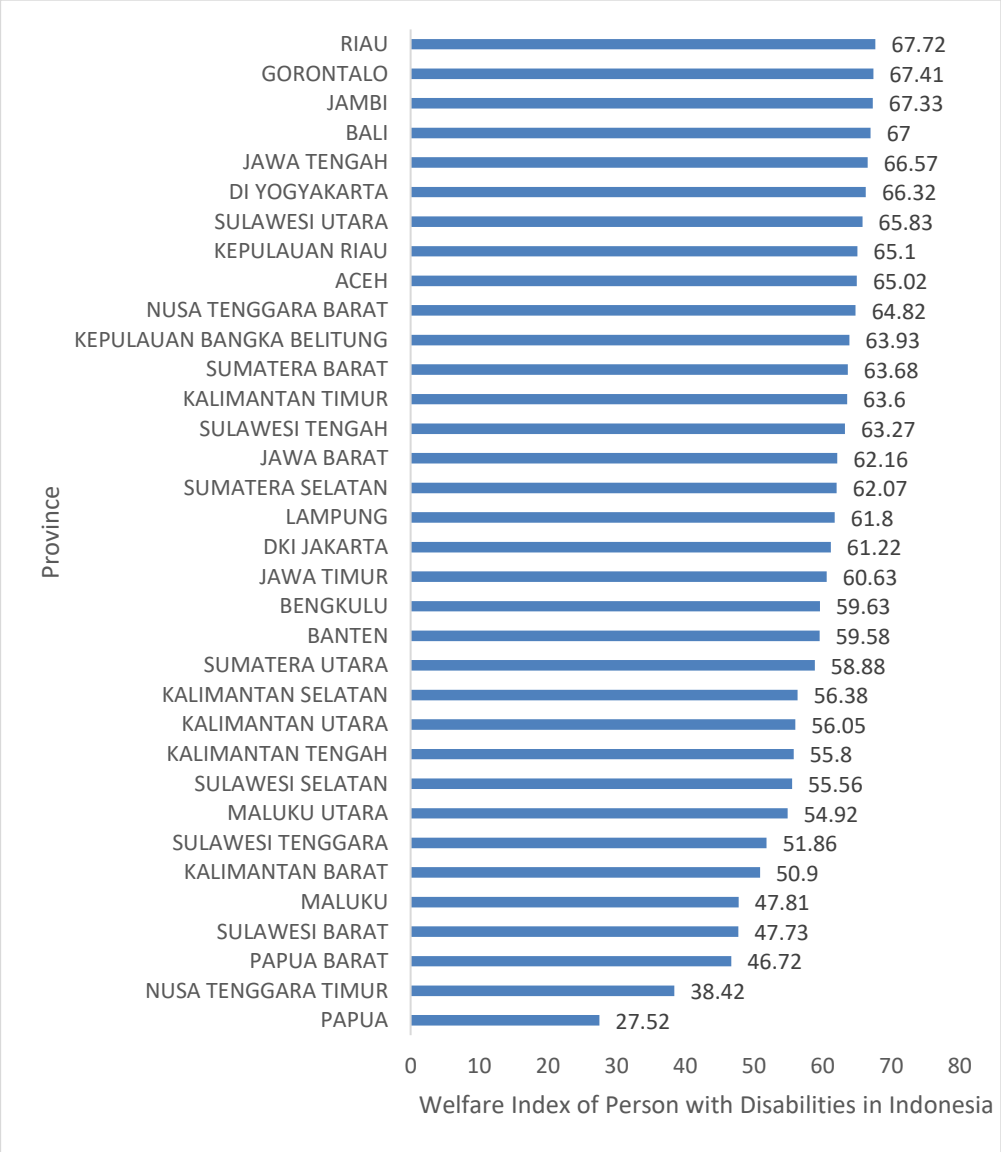


Figure 2. Welfare Index of Person with Disabilities (WIPD) by Province in Indonesia

According to Figure 2, it can be known that the ten provinces with the highest Disability Welfare Index (WIPD) scores in Indonesia include Riau Province, sGorontalo, Jambi, Bali, Central Java, DI Yogyakarta, North Sulawesi, Riau Islands, Aceh, and West Nusa Tenggara. Seven of the ten provinces with the highest disability welfare index score in Indonesia are located in Sumatra, Java, and Bali, which include the Western Region of Indonesia. Meanwhile, the ten provinces with the lowest Disability Welfare Index score in Indonesia are occupied by Papua, East Nusa Tenggara, West Papua, West Sulawesi, Maluku, West Southeast Sulawesi, North Maluku, South Sulawesi, and Central Kalimantan. From Figure 2 it can be seen that the Achievement of the Papua Province Disability Welfare Index is the lowest among all provinces in Indonesia, which is only 27.52. In contrast, the province with the highest achievement of the Disability Welfare Index was occupied by Riau Province, with an index achievement of 67.72. There is a considerable range between the acquisition of the Disability Welfare Index score obtained by Riau Province with the score obtained by Papua province, which is 40.20. That is, there is a considerable inequality in the welfare of people with disabilities in Indonesia. If the acquisition of the Disability Index score in Indonesia is presented in the form of thematic maps, the following results will be obtained.

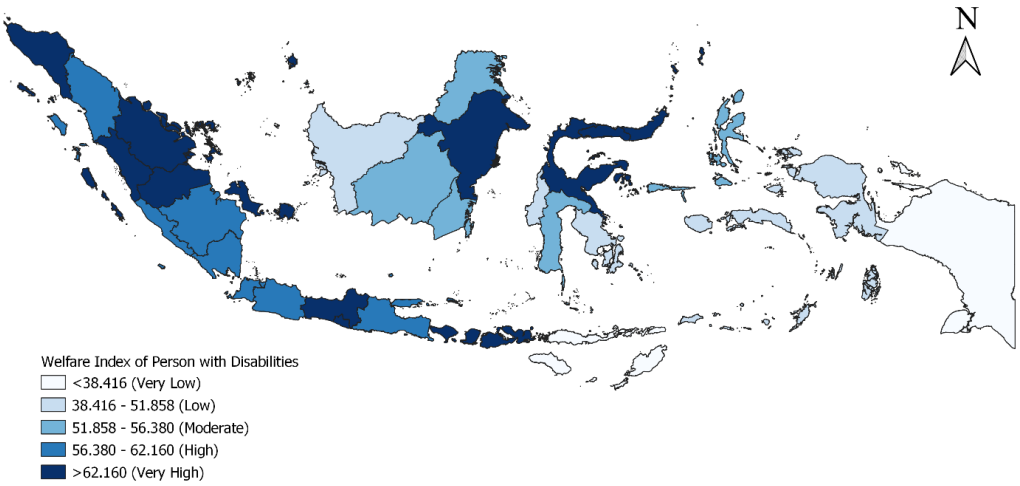


Figure 3. Distribution Map of WIPD in Indonesia

In Figure 3 each province in Indonesia is grouped into five groups using the natural *breaks* method. Based on the grouping, there are 2 provinces with very low categories of Disability Welfare Index, 5 provinces with low categories, 4 provinces with moderate categories, 8 provinces with high categories, and 15 provinces with very high categories. Papua and East Nusa Tenggara provinces became provinces with the achievement of the Disability Welfare Index which fell into the very low category with consecutive index achievements of 27.52 and 38.42. Five provinces that fall into the low category include West Papua with an index score of 38.42; West Sulawesi with an index score of 47.73; Maluku with an index score of 47.81; West Kalimantan with an index score of 50.90; and Southeast Sulawesi with an index score of 51.86.

From the thematic map, it can be seen that the Western Region of Indonesia shows a pretty good achievement of the Welfare Index of Persons with Disabilities. On the other hand, the achievement of the Disability Welfare Index tends to be low in eastern Indonesia. This can be proven through the categorization of the Disability Welfare Index, where of the seven provinces that fall into the low and very low categories all are in eastern Indonesia. This shows the inequality of the welfare of people with disabilities between eastern and western Indonesia.

3. 4. Uncertainty Analysis of The Disability Welfare Index

In the preparation of composite indexes, several stages are subjective, ranging from indicator selection, transformation methods, weight counting, to aggregation methods. For that, a measure is needed that can describe the durability of the composite index that has been formed. One method that can be used to measure the durability of a composite index is uncertainty analysis. In this study, uncertainty analysis was conducted using six scenarios (see point 2.4.) with scenario 1 as the baseline scenario. The six scenarios were created by focusing only on the weight counting method. The uncertainty analysis used in this study refers to Salvati and Carlucci's research (2014) as well as the Tate study (2013).

Table 2. Spearman correlation matrix of inter scenario rankings

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Scenario 1	**1.000**	**0.983**	**0.992**	**0.890**	**0.638**	**0.778**
Scenario 2	**0.983**	1.000	0.987	0.828	0.594	0.715
Scenario 3	**0.992**	0.987	1.000	0.879	0.594	0.747
Scenario 4	**0.890**	0.828	0.879	1.000	0.590	0.818
Scenario 5	**0.638**	0.594	0.594	0.590	1.000	0.889
Scenario 6	**0.778**	0.715	0.747	0.818	0.889	1.000

Based on Spearman correlation matrix presented in Table 2, it is known that scenario correlation coefficient 6 is always above 0.7. However, when compared again, scenario 1 has a higher correlation coefficient than scenario 6. According to Salvati and Carlucci [14], the most stable scenario is one that maximizes the correlation coefficient with other scenarios. Therefore, based on Spearman correlation analysis, Spearman found that scenario 1 is the most stable scenario.

Table 3. Average ranking changes per scenario

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Average
Scenario 1	**0.000**	**1.294**	**0.882**	**3.529**	**5.882**	**4.353**	**3.188**
Scenario 2	**1.294**	0.000	1.000	4.412	6.353	5.471	3.706
Scenario 3	**0.882**	1.000	0.000	3.824	6.353	4.941	3.400
Scenario 4	**3.529**	4.412	3.824	0.000	6.059	3.882	4.341
Scenario 5	**5.882**	6.353	6.353	6.059	0.000	2.941	5.518
Scenario 6	**4.353**	5.471	4.941	3.882	2.941	0.000	4.318

In the analysis of the average ranking changes, the most stable scenario is the scenario that is able to minimize the average ranking change between people. According to the results presented in Table 3, the scenario that has the smallest average ranking change is scenario 1. That is, the best-case scenario choice based on the average ranking change is in line with the best-case scenario choice based on Spearman correlation analysis of between scenarios rankings. To that end, the best scenario based on Spearman correlation analysis and average ranking changes is scenario 1, namely the equal weighting method on indicators.

Tate [16] also conducted uncertainty analysis in his research by utilizing coefficient of variation (CV) and median ranking of the overall scenario. CVs are used to describe ranking variability between people. For that, the value of the CV is expected to be as small as possible because the smaller the VALUE of the CV means the smaller the variation between the people and the better the resistance of the composite index compiled. Referring to ESRI [6], the accuracy of the index ranking distribution is said to be high if the CV is worth below 12 percent, moderate precision if the CV ranges from 12 percent to 40 percent, and is said to have low precision when the CV is worth above 40 percent. The CV and median ranking of the overall scenario are further presented in scatter plots as follows.

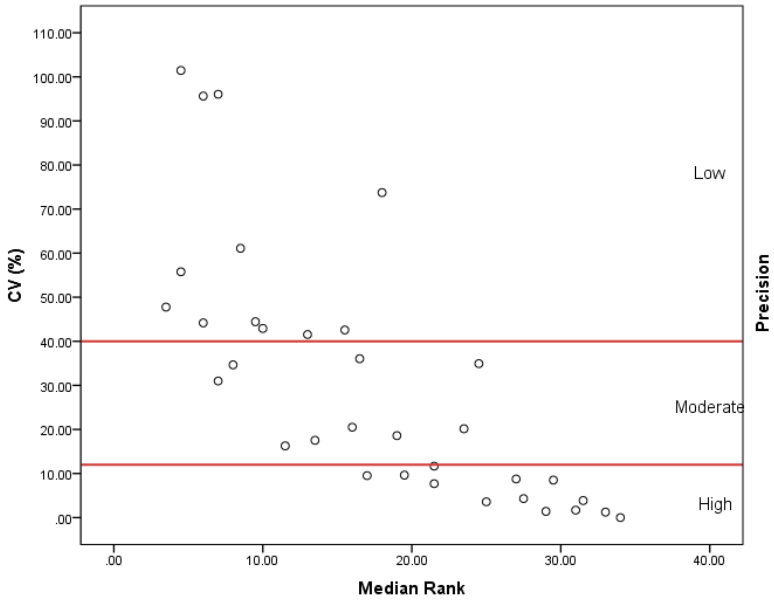


Figure 4. Scatter plot between CV and median ranking

Through the scatter plot between the CV and the median ranking in Figure 4 it can be seen that most of the median ranking falls into the category of medium and high precision. In more detail, based on the results of the calculation obtained that there is 35.29 percent of the median ranking that has a CV above 40 percent or in other words has low precision. At the same time, there are 26.47 percent of the median ranking that falls into the category of moderate precision or has a CV ranging from 12 percent to 40 percent. Furthermore, there are 38.24 percent of the median ranking that has a CV below 12 percent or in other words has high precision. Based on the results of calculating the correlation between CV and median ranking using the Pearson method obtained a correlation value of -0.806. Pearson's correlation results showed a negative relationship between index ranking and index variability. In other words, the higher the level of well-being of people with disabilities in an area, the greater the index uncertainty. Similarly, the lower the level of well-being of people with disabilities in an area, the higher the level of a precision composite index formed.

4. Conclusions and Suggestions

Several conclusions can be drawn from this study on the welfare of people with disabilities in Indonesia. Here are those conclusions.

1. The condition of provinces in Indonesia based on indicators related to the welfare of people with disabilities can be said to be less good and uneven. Three indicators with achievements that can be said to be bad include the percentage of people with disabilities aged 15 years and over who work, the percentage of people with disabilities who get treatment, and the mean years of schooling with disabilities. Meanwhile, the three indicators with the highest variability include the percentage of people with disabilities aged 0-17 years who have birth certificates, the percentage of people with disabilities who watch TV, and the percentage of villages that have easy or very easy access to reach the Hospital (RS).
2. Based on the eight dimensions of the framework of the Disability Welfare Index, 28 indicators that represent the eight dimensions are selected. Of the 28 indicators, according to the factor analysis results, 20 indicators that describe the well-being of people with disabilities make up 5 factors. The five factors are accessibility, housing and access to information, physical and spiritual well-being, social relations and sanitation, and economic well-being.
3. The highest WIPD achievement in Indonesia was occupied by Riau Province with an index achievement of 67.72, while the lowest achievement was occupied by Papua Province with an index achievement of 27.52. Based on the results of the grouping of provinces in Indonesia, 2 provinces fall into the very low category, 5 provinces fall into the low category, 4 provinces fall into the moderate category, 8 provinces fall into the high category, and 15 provinces fall into the very high category. From the results of the WIPD score, it was found that there was inequality in the achievement of the disability welfare index between the Western Region of Indonesia and the Eastern Region of Indonesia.
4. Based on the results of uncertainty analysis among the six scenarios that have been made, the scenario of calculating the welfare index of persons with disabilities with the equal weighting method in the indicator is the best scenario in this study.

According to the results of this study, the advice that can be given is as follows.

1. a. The government needs to pay more attention to indicators with low achievement, including the percentage of people with disabilities who work, get care, and the mean years of schooling. In addition to requiring supporting facilities, public awareness is also needed to help improve the quality of people with disabilities. So, efforts are required from both the government and the community in helping to improve the quality of people with disabilities either through education or training.
1. b. The government needs to prioritize development in provinces with very low and low Disability Welfare Index achievements, the majority of which are in eastern Indonesia, so that they are expected to realize the welfare of people with disabilities that are evenly distributed in Indonesia.
2. a. For further research, other indicators are expected to be added in describing the welfare of people with disabilities, such as the percentage of people with disabilities who are traveling or having vacation and the percentage of people with disabilities who are victims of crime. In addition,

future studies can also use the uncertainty analysis method with Monte Carlo simulations. It is also expected that in future research can be done index calculation at a lower level so that more appropriate decisions can be taken.

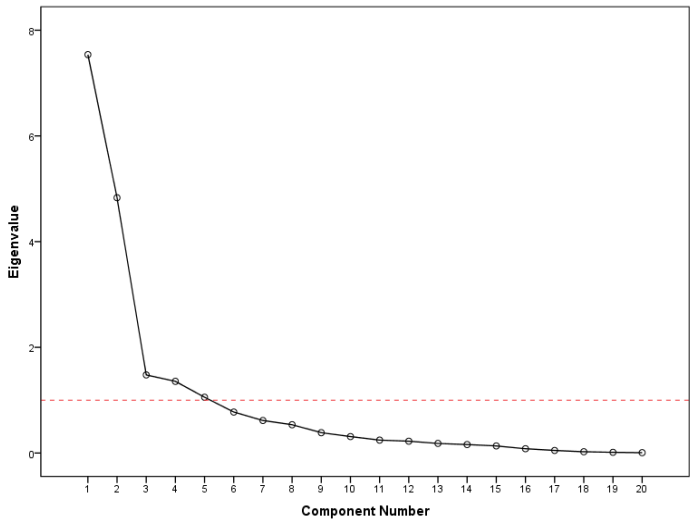
2. b. It is expected that the calculation of this WIPD can be done periodically so that it can be used to monitor the development of the welfare of people with disabilities in Indonesia.

5. Appendices

Appendix A. KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.740
Bartlett's Test of Sphericity	Approx. Chi-Square	668.135
	df	190
	Sig.	0.000

Appendix B. The graph of eigenvalue-component number



Appendix C. Factor analysis result

Total Variance Explained						
Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.539	37.693	37.693	5.328	26.639	26.639
2	4.830	24.151	61.844	3.059	15.297	41.937
3	1.478	7.390	69.233	2.911	14.557	56.494
4	1.356	6.781	76.014	2.736	13.679	70.173
5	1.055	5.277	81.291	2.224	11.118	81.291

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