Review Article

Contribution of Health and Social Protection Expenditure to Human Development in Indonesia: Evidence from Sulawesi Region

Regina [1]*, Ahmad Faqhruddin Abdur Rabb [2], Shadry Andriani [3], Irwandi [4]

[1] Department of Development Economics, Faculty of Economics and Business, Universitas Negeri Makassar, Indonesia; email: regina@unm.ac.id*

[2] Department of Development Economics, Faculty of Economics and Business, Universitas Negeri Makassar, Indonesia; email: ahmad.faqhruddin@unm.ac.id

[3] Department of Development Economics, Faculty of Economics and Business, Universitas Negeri Makassar, Indonesia; email: shadry.andriani@unm.ac.id

[4] Department of Development Economics, Faculty of Economics and Business, Universitas Negeri Makassar, Indonesia; email: irwandi@unm.ac.id

* Corresponding Author : Regina

Abstract: Fiscal policy is used to increase the HDI in Indonesia.Prioritizing human development and improving human resources should be supported by adequate regional spending allocation. Public spending of a social nature (health, education and social protection) contributes to the decline in the HDI which is sourced from socio-economic inequality.This study focuses on efforts to show empirical evidence of the relationship between health spending and social protection spending on the HDI level in the Sulawesi Region throughout 2018 to 2023. The Sulawesi Region is a concern for the central government in preparing the 2025-2029 RPJMN, where the issue of human development and improving the quality of human resources is still the main focus.The type of data in the study uses Sulawesi regional panel data consisting of 6 (six) provinces during 2018-2023. Model estimation uses the STATA 14 application. The results of the analysis show that Health spending (X1) has a positive and significant effect on the Human Development Index (Y) in the Sulawesi region. In addition, social protection spending does not have a significant effect on the Human Development Index (Y) in the Sulawesi region.

Keywords: Health Expenditure; Human Development Index; Social Protection Expenditure

1. Introduction

Economic development is a process carried out by a nation in order to improve social welfare. The regional government as an extension of the central government in the fiscal decentralization system plays a key role in realizing equitable development. The Government of the Republic of Indonesia officially declared the start of the implementation of regional autonomy by issuing Law No. 22 of 1999, which was later revised by Law No. 33 of 2004 concerning the Balance of Central and Regional Finances, and finally replaced by Law No. 1 of 2022 concerning Financial Relations between the Central Government and Regional Governments. The existence of a legal basis for fiscal decentralization is intended so that regional governments can be better able to encourage the development process in their respective regions in accordance with the potential and aspirations of the local community concerned(Sjafrizal, 2023).Todaro & Smith (2015)reveals that development is a

multidimensional process that involves the reorganization and reorientation of existing social and economic systems.

The success of development can be measured from the changes that occur in various dimensions, both economic and social. At the beginning of development, the economic dimension indicated by economic growth is placed as the main goal of development, but in the advanced stage, development needs to be directed at broader aspects than just pursuing economic growth. In addition to economic growth, other indicators can rely on aspects of education, health, and people's purchasing power which tend to be more representative in showing the quality of human development.(Ezkirianto & Findi, 2013)The human development index is used for economic and social development.(Imam Hardjanto, 2013)explains that the Human Development Index (HDI) is one of the main indicators in measuring the success of development. HDI focuses on the quality of education, health and public spending. The higher the HDI value, the better the quality of human development. Referring to the classification released by the Central Statistics Agency (BPS), HDIIt is said to be low if the HDI < 60; moderate 60 ≤ HDI < 80; and ≥ 80 is very high.
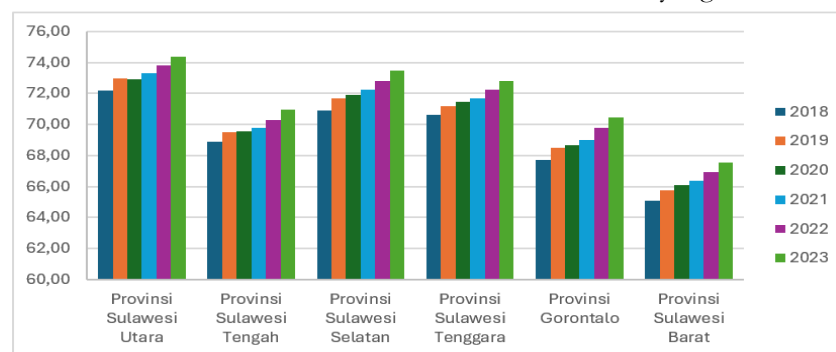

Figure 1. Sulawesi Regional Human Development Index

Source: BPS, processed data (2025)

Based on BPS data, it can be seen that the Sulawesi Regional Human Development Index (HDI) during 2018 to 2023 has simultaneously increased. The province with the highest HDI is North Sulawesi Province. This is indicated by the stability of economic growth that has developed rapidly over the past 6 years, especially in the tourism, agriculture and manufacturing sectors. In addition, North Sulawesi Province is the sixth with the highest HDI nationally. This performance is based on the provincial government's commitment to improving the development of health and education facilities and infrastructure.On the other hand, the provinces with the lowest HDI are Gorontalo Province and West Sulawesi which were categorized as moderate during 2018. The HDI of West Sulawesi Province in 2022 is still far below the national human development index, which is 72.91. In addition, the low achievement of several HDI indicators such as average length of schooling, expected length of schooling and life expectancy have consequences for the low quality of HDI in West Sulawesi Province. This condition is accompanied by government spending in the fields of education and health which is relatively low compared to other provinces in the Sulawesi region(Purwanto, 2024).

Prioritizing human development and improving human resources should be supported by sufficient regional spending allocations.Zakariya (2016)states that regional spending contributes directly to increasing human resource development capital. Mehmood (2010) and (Miranda-Lescano et al., 2024)illustrates that government spending has a major role in driving a country's economic development, including through education, health, and infrastructure. Furthermore, social public spending (health, education, and social protection) contributes to the decline in the HDI which is caused by socio-economic inequality.
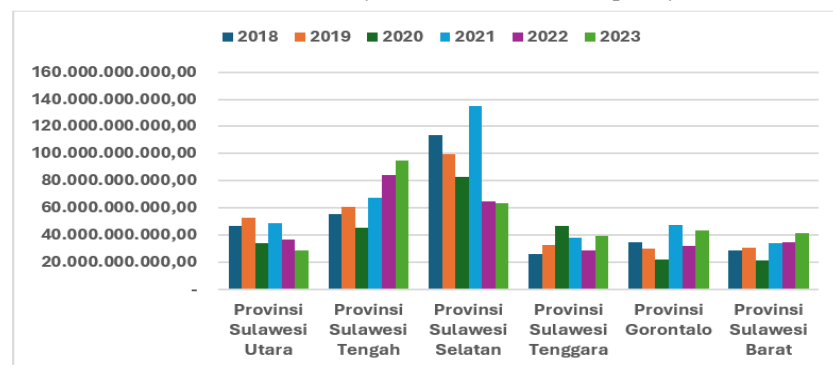

Figure 2. Sulawesi Regional Health Shopping

Referring to regional financial data, it was observed that during 2018-2023, the realization of health spending in the provinces of Gorontalo and West Sulawesi was the lowest compared to other provinces in the Sulawesi region.(Syahrini & Iwang, 2024)   low government spending in the Health sector of West Sulawesi province is due to inappropriate budget allocation and weak planning capacity. In addition, in health sector spending, the budget issued for the health sector has not been realized properly, so for the health service to go directly to improve health equipment and supplies facilities, so that the HDI level can increase better(Kahang et al., 2016)

Health is something that is very important in human life, with good quality health it will encourage an increase in productivity that is increasingly high which is owned by humans themselves which consists of the need for health facilities and infrastructure.(Maryozi et al., 2022). The health aspect is also a determinant of human development, so that the HDI places health as one of the determinants in its measurement.

Fiscal policy is used to increase the HDI in Indonesia. The government allocates the budget through fiscal policy to provide goods and services to the public sector that cannot be provided by the market or the private sector.(Syahrini & Iwang, 2024). According to (Ramzi, 2012) Fulfillment of basic human needs such as access to sufficient food (adequate nutrition) and water, provision of health and education services, housing, clothing, and non-material needs such as work, protection, and political freedom are the main focus in the provision of these public goods and services.
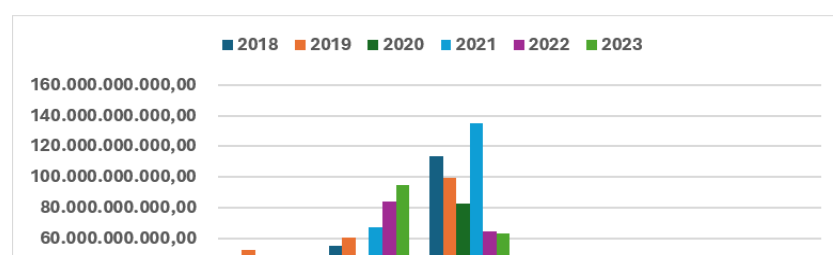
Figure 3. Sulawesi Regional Social Protection Expenditure
Source: DJPK, processed data (2025)

Based on the image above, the province with the highest realization of social protection spending over the past 5 years is South Sulawesi province, but has a trend of decreasing spending realization every year. In generalSocial protection programs essentially aim to address poverty and social vulnerability through efforts to increase and improve the capacity of the population to protect themselves from disasters and loss of income.Permata et al. (2024)states that the higher the spending in the field of social protection, the higher the human development index. The function of social protection supports the strengthening of the quality of human resources through strengthening social protection and one of the focuses of central government spending. Programs in social protection spending are accelerating poverty alleviation, increasing data accuracy and increasing distribution, synergy and synchronization between programs, and targeted subsidies.

This study focuses on efforts to show empirical evidence of the relationship between health spending and social protection spending on the HDI level in the Sulawesi Region throughout 2018 to 2023. The Sulawesi Region is a concern for the central government in preparing the 2025-2029 RPJMN, where the issue of human development and improving the quality of human resources is still the main focus. The provinces of West Sulawesi and Gorontalo, which are present as regions with relatively low HDI, allow the central government to take much more serious attention.

2. Method

In estimating the correlation between government spending in the health sector and social protection sector to the Human Development Index (HDI) in the Sulawesi Region, this study uses panel data of six provinces in the Sulawesi Region and time variations from 2018 to 2023. Provincial government spending data was obtained from the Directorate General of Fiscal Balance of the Ministry of Finance (DJPK Kemenkeu), while HDI data was obtained from the publication of survey results from the Central Statistics Agency (BPS). Furthermore, this study technically conducts an investigation in making decisions for the best panel data model using a number of tests, such as the chow test, the hausman test and the lagrange multiplier test, so that one of the three alternative panel data is selected, namely the common effect model (CEM), fixed effect model (FEM), or random effect model (REM). After that, this study also ensures the reliability of the estimated output by anticipating the potential for heteroscedasticity and autocorrelation problems through the robust standard error technique. The specifications of the basic model built in this study are as follows.

$$ipm_{it} = \beta_0 + \beta_1 log\_health_{it} + \beta_2 log\_socpro_{it} + \varepsilon_{it}$$

Whereipmis the HDI score which ranges between 0-100 and is expressed in points, shows the results of logarithmic operations of the total provincial government health expenditure, shows the results of logarithmic operations of the total provincial government social protection expenditure,log_healthlog_socproβ_0is a constant, and is the coefficient of the independent variable, is the residual, is the subscript of the provincial variation and is the subscript of the time series in years. The regression model estimation was carried out using the Stata 14 application. This study sets the level of significance or alpha () of 0.05 or 5% as the threshold for risk tolerance estimation. Thus, the estimation results are said to have a significant effect if they show a P-Value <0.05, and conversely are said to have an insignificant effect if they show a P-Value> 0.05.β_1 β_2 εitα

3. Result and Discussion

3.1 Result

In the statistical summary table, it appears that the average HDI level of all provinces in Sulawesi Island throughout 2028 to 2023 is at 70.37. This achievement indicates that human development efforts in the Sulawesi Region have quite optimal performance. The highest HDI achievement was 74.36 in North Sulawesi Province in 2023. Meanwhile, the lowest HDI achievement was in West Sulawesi Province which reached 65.1 in 2018. One of the government's efforts to support improvements in the quality of human development is to allocate regional government spending optimally in the health and social protection sectors. Based on the statistical summary, it can be observed that health spending in the Sulawesi Region shows an average of IDR 437.3 billion, with the highest spending allocation reaching IDR 991.2 billion in South Sulawesi Province in 2020, while the lowest was around IDR 131.6 billion by the Gorontalo Provincial Government in 2018. For provincial government spending in the social protection sector, the average shows around IDR 50.6 billion, where the highest social protection spending allocation is IDR 134.9 billion by the South Sulawesi Provincial Government in 2021, while the lowest value is around IDR 21.3 billion in West Sulawesi Province in 2020.

Table 1. Summary Statistics

Variable	Obs (year)	Mean	Std. Dev.	Min	Max
province	36	3.5	1,732	1	6
year	36	3.5	1,732	2018	2023
IPM	36	70,372	2,465	65.1	74.36
log_health	36	11,567	0.267	11,119	11,996
log_socpro	36	10,655	0.2010	10,327	11,129
Health spending (billion rupiah)	36	437.3	242.7	131.6	991.2
Personal shopping (billion rupiah)	36	50.6	26.9	21.3	134.9

Source: Processed Data, 2025

Before looking at the estimation output, it is first explained that the best panel data model selected is the fixed effect model (FEM). This was decided after observing the results of the chow test and the results of the hausman test. The probability value (P-Value) generated from

International Journal of Economics and Management Research2025 (april), vol. 4, no. 1, Regina, et al.

27 dari 30

the chow test used in comparing CEM and FEM is 0.0000 smaller than the critical value of 0.01, so the one selected is FEM. Furthermore, a hausman test was conducted to compare FEM and REM, where the results showed that the probability value (P-Value) from the hausman test was 0.0020 smaller than the critical value of 0.01, so the panel data model applied in this study is strongly FEM, as presented in table 2.

Based on the estimation results, it was found that health spending has a positive correlation with the increase in HDI in provinces on Sulawesi Island. This is indicated by the coefficient of the log_health variable of 3.75, which means that every one percent increase in provincial government health spending has the potential to increase the HDI score by around 3.75 points. The partial determination of the log_health variable can be categorized as relatively large, which is accompanied by a strong level of significance based on the P value (0.040) which is smaller than the critical value (0.05 or 5%). However, provincial government spending in the social protection sector does not seem to show strong empirical evidence of correlation with HDI. This is evidenced by the P value (0.891) which is greater than the critical value (0.10 or 10%). The estimated coefficient of the log_socpro variable has basically shown a direction in accordance with expectations, which is positive 0.25. This means that every one percent increase in social protection spending, the increase in HDI is predicted to occur by around 0.25 points.

$$ipm_{it} = 24,331 + (3,7505)log\_health_{it} + (0,2483)log\_socpro_{it} + e_{it}$$

Furthermore, the model estimation results show an R-squared value of 0.5490, which means that variations in health spending and social protection spending have a capacity of 54.9 percent in explaining the HDI of all provinces in Sulawesi Island, while the remaining 45.1 percent is explained by other variables not included in the research model. On the other hand, the results of Prob> F (P Value) can also be observed, which shows 0.000 <critical value of 0.01. This estimate proves that health spending and social protection spending have an effect that simultaneously affects the HDI. With a confidence level of 99 percent, this model is reliable, moreover, the estimates displayed are estimation results that avoid heteroscedasticity and autocorrelation problems through the robust standard error technique.

Table 2. Estimation Output

Dependent:ipm				
Variable	**coef**	**Std. Err.**	**t**	**P>|t|**
log_health	3,7505	1,365	2.75	0.040
log_socpro	0.2493	1,727	0.14	0.891
constant	24,331	29,952	0.81	0.454
Summary				
Observation	36			
R-squared	0.5490			
Prob>F	0.0000			
Model Data Panel				
P-Value(Chow Test)	0.0000			
P-Value(Hausman Test)	0.0020			

Discussion

The Indonesian government's commitment to spurring improvements in the quality of human resources is stated in the 2025-2029 National Medium-Term Development Plan (RPJMN) with the theme of strengthening the foundation of transformation in order to achieve Golden Indonesia 2045. This can be identified from the second pillar of the transformation strategy which is derived from the fourth national priority. The second pillar of the transformation strategy raises the importance of prioritizing human capital development throughout the life cycle in order to achieve a more prosperous, just and cohesive society. Meanwhile, the fourth national priority explains efforts in "Strengthening Human Resource Development (HRD), Science, Technology, Education, Health, Sports Achievement, Gender Equality, and Strengthening the Role of Women, Youth (Millennial Generation and Generation Z), and People with Disabilities". In implementing the fourth priority point, 31 targets and indicators were set until 2029, among which there are indicators that are components of the HDI. In the cluster of quality education that is evenly distributed, the average length of schooling indicator is targeted to reach 9.82 years in 2029, while the expected length of schooling starting from the baseline of 13.21 years in 2024 is targeted to reach 13.58 years in 2029. Meanwhile, in the cluster of realizing health for all, the Life Expectancy (UHH) indicator is targeted to reach 75.4 years in 2029, starting from the level of 72.13 years in the 2023 baseline.

Specifically, human resource development in the Sulawesi Region is a concern of the central government. In the 2025-2029 RPJMN, the issue of human resources revolves around low access to facilities and quality of education which causes less than optimal productivity and work competitiveness, thus contributing to the high TPT rate and the still low HDI in most provinces in the Sulawesi Region. This is mainly observed in West Sulawesi Province and Gorontalo Province. On the other hand, health issues are also still a serious concern. Low public access to health facilities has an impact on health measures which are still below the national average, as identified in the low UHH. This condition encourages the central government to direct human resource development policies that are concentrated on efforts to build complete quality hospitals, eliminate stunting, control infectious diseases and neglected tropical diseases, mobile health services, organize superior schools, strengthen vocational education and vocational training, and revitalize school facilities and infrastructure. In realizing this, sufficient budget allocation is certainly a determinant of achievement, especially spending in the health sector and social protection sector, so that the accumulation of a series of human resource development efforts can contribute to increasing the Human Development Index in the Sulawesi Region evenly.

This study examines the correlation of health spending and social protection spending on the Human Development Index (HDI) of all provinces in the Sulawesi Region. Based on the estimation results, it was found that an increase in health spending statistically has a positive correlation with an increase in the HDI. The high estimation coefficient with a strong level of significance confirms that health spending has been proven to be able to improve the degree of human development in the Sulawesi Region. The estimation results are consistent with research conducted by(Nurvita et al., 2022)which uses district/city data in Jambi Province and(Julistia et al., 2025)which utilizes provincial level data by taking ten provincial samples

spread across the central and eastern regions of Indonesia. Furthermore, these findings also support previous studies conducted by(Miranda-Lescano et al., 2023)which revealed that health spending in 57 developing and developed countries that it observed had a significant positive effect on the HDI at all levels of government. The study used panel data with the random effect model (REM) estimation technique. By utilizing the Generalized Method of Moment (GMM) model,(Banik et al., 2023)also proves the significant influence of increasing health sector spending on the increase in HDI in 161 countries in 2005-2019. The findings are further strengthened when several control variables related to good governance indicators are included in the model. Basically, a good political and governance ecosystem directly supports the birth of healthy public policies, so that it can guarantee that aspects of strategic program planning and budgeting, in the health sector for example, can operate optimally.

The next finding of this study revealed a positive correlation between social protection spending and HDI, but it has not been proven statistically significant. This means that government spending in organizing social assistance and providing an economic safety net to boost purchasing power in certain community groups has been in accordance with the direction of the provincial government's budget program, although it has not had a significant effect.(Kusuma & Arif, 2022)also has not found strong evidence of the influence of government spending in the field of social protection on the HDI, although the direction of the relationship between variables is positive. The study took samples from Rembang, Pati, Kudus, Blora and Jepara Regencies in 2014-2022 and used a fixed effect model (FEM). On the other hand, the findings expressed by(Mailassa'adah et al., 2019) in Central Kalimantan districts/cities in 2009-2013 showed different results. The study found strong statistical support for the correlation between social protection spending and HDI. Meanwhile,(Meričková & Halásková, 2014)found that government social spending oriented towards family protection and pensions has a positive relationship with the HDI, while spending in the employment sector actually shows a negative correlation. The findings from(Haile & Niño-Zarazua, 2018)which observed 55 low-middle income countries during 1999-2009 seems to confirm that social protection budget is a causal factor that is positively related to the HDI level. The study uses micro-scale longitudinal data so that it has high reliability in explaining welfare phenomena at the household level.

4. Conclusion

Based on the results of the panel data regression analysis, it was concluded that the health spending variable had a positive and significant effect on the human development index (HDI) in the Sulawesi region with a coefficient value of3,7505,while social protection spending has no significant effect on the human development index in the Sulawesi region. Specifically, human resource development in the Sulawesi Region is a concern of the central government. In the 2025-2029 RPJMN, the issue of human resources revolves around low access to facilities and quality of education which causes suboptimal productivity and work competitiveness, thus contributing to the high TPT rate and the still low HDI in most provinces in the Sulawesi Region. This is mainly observed in West Sulawesi Province and Gorontalo Province. On the other hand, health issues are also still a serious concern. Low public access to health facilities has an impact on health measures which are still below the

national average, as identified in the low UHH. This condition encourages the central government to direct human resource development policies that are concentrated on efforts to build complete quality hospitals, eliminate stunting, control infectious diseases and neglected tropical diseases, mobile health services, organize superior schools, strengthen vocational education and vocational training, and revitalize school facilities and infrastructure. In realizing this, sufficient budget allocation is certainly a determinant of achievement, especially spending in the health sector and social protection sector, so that the accumulation of a series of human resource development efforts can contribute to increasing the Human Development Index in the Sulawesi Region evenly.

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