

Analysis of Household Health Expenditure in Central Sulawesi: A Study Based on Susenas Data

Ni Wayan Desya Putri^{1*}, Mohamad Ichwan², Santi Yunus³

¹²³Department of Economics and Development Studies, Universitas Tadulako, Indonesia

*e-mail: desyawayan@gmail.com¹

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ABSTRACT

This study aims to determine the elasticity of household health expenditure in Central Sulawesi and to design policies for accessibility of household health services in Central Sulawesi. Using data from the National Socio-Economic Survey (SUSENAS), 2020, there were 7,399 out of 7,418 survey households with health expenditure. Utilizing elasticity, it has been found that the elasticity of health expenditure to income by group is inelastic. The smallest health expenditure elasticity was identified in the lowest income group at -0.04, the largest elasticity in the highest income group at 1.5. The design of health service accessibility policy for households in Central Sulawesi Province is in the form of health insurance provided to household groups that have low income, namely in the first to fourth household groups.

Keywords: Health Expenditure, Health Expenditure Elasticity, Household Income, Proportion of Health Expenditure

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INTRODUCTION

Health is a human right and one of the elements of welfare that must be realized in accordance with the ideals of the Indonesian nation as referred to in Pancasila and the 1945 Constitution of the Republic of Indonesia. Every activity in an effort to maintain and improve the highest level of public health is carried out based on the principles of non-discrimination, participatory, and sustainable in the context of the formation of Indonesian human resources, as well as increasing the nation's resilience and competitiveness for national development (Arruan, 2018).

Health expenditure is the total amount of household expenditure on health for one month measured in units of Rupiah (Rp). Household health expenditure in Indonesia for one month in 2017-2021 increased by 7.3%, namely in 2017 health expenditure of Rp27,006 in 2021 increased to Rp34,364. Meanwhile, household health expenditure in Central Sulawesi for one month, namely in 2017-2021, decreased by 1.2%, namely in 2017 of Rp16,062 in 2021 to Rp14,853.

Income propped from total or average household expenditure in one month consisting of average food and non-food expenditure measured in units of Rupiah (Rp). Household income in Indonesia for one month in 2017-2021 increased by 22%, in 2017 it was IDR 1,036,497 and in 2021 it increased to IDR 1,264,590. Household income in Central Sulawesi for one month in 2017-2021 increased by 13% in 2017 household income for one month was IDR 918,349.42 and in 2021 increased to IDR 1,051,705. 66.

The proportion of health expenditure is the ratio between health expenditure and total household expenditure per month. The proportion of Indonesia's health expenditure in 2017 was 0.026, in 2018 it was stable at 0.026, in 2019 it fell to 0.025, in 2020 it was 0.015 and in 2017 it increased to 0.027. As for Central Sulawesi Province, the proportion of health expenditure in 2017

was 0.017, in 2018 it fell to 0.015, in 2019 it was still the same, namely 0.015, in 2020 it fell to 0.013 and in 2021 it increased to 0.014.

Central Sulawesi Province is the largest province on the island of Sulawesi, with a land area of 61,841.29 km² and a sea area of 189,480 km² which has 13 districts/cities with a population according to the Central Statistics Agency based on the results of the Population Census (SP-2020) is 2,985,734 people. The regency/city with the highest population density is Palu City with a percentage of 1,005. With a high level of population density in Central Sulawesi Province, it results in health problems. The denser the population level in an area, the more susceptible it will be to viruses and other infectious diseases. The proportion of expenditure incurred by the community, especially on health expenditure, needs to be researched to find out whether health expenditure is the same between the able and the underprivileged.

The amount of health expenditure for each household is certainly different, these differences in factors make the difference in health expenditure in certain areas, including households in Central Sulawesi. The difference in expenditure is also influenced by the policies provided by the government that are applied to health workers, such as medical devices, facilities and infrastructure, human resource support, and others. In this regard, the researcher conducted a study entitled "Analysis of Household Health Expenditure in Central Sulawesi: A Study Based on Susenas Data".

LITERATURE REVIEW

Health economics in general can be considered as the application of theories, concepts, and techniques in economics in the health sector. Thus, it is closely related to the issue of resource allocation for various activities aimed at improving the degree of health, the amount of resources used in health services, the organization and financing of institutions that provide health services, the efficiency in the use and allocation of resources for health purposes, as well as the influence of prevention, treatment and rehabilitation programs for health services for individuals and community.

The nature of health economics can be well explained through the limitations of economics, namely: "the science of how individuals or communities make choices, with or without the use of money, to work on scarce productive resources that have various alternative uses, to produce various goods and distribute them for consumption, at this time or in the future, for people or groups in society. This science also analyzes all the costs and benefits of improving existing resource allocation patterns (Soesetyo, Tjiptoherijanto, 2018).

Health demand can basically be studied based on the marshallian demand function. Rationally, health investment is carried out with the aim of maximizing lifetime utility subject to certain limitations, based on medical offers or consumption of health inputs to improve health disorders is to seek medical treatment or consumption of health inputs such as physical activity (Ichwan, 2022).

Health demand theory is the assumption that health is a basic need and is classified as a merit good. Health can create utility in the form of happiness by living longer and more quality lives. Health demand is closely related to health spending, demand theory assumes that when demand in the market increases, the price of goods will also rise. However, if demand falls, then prices will also fall. Likewise with health expenses, if a person is sick, he will need treatment or treatment to increase his health and cause the demand for health to rise. Then to get the treatment or treatment, he spends money to obtain health which is called health expenses.

Expenditure on health in each period is determined by the amount of expenditure/costs required for health and the frequency of health visits to obtain health services. Therefore, health expenditure is inseparable from factors that affect health demand.

Grossman (1972) stated the determinants of health demand, these various factors in addition to the main factor, namely the consensus variable, the variable used by the researcher in Grossman's basic model, also display factors developed by several other researchers in an effort

to strengthen the empirical model. The determinants of health demand consist of: (1) Wage; (2) Price; (3) Education; (4) Age; (5) Lifestyle; (6) Per capita income; (7) Region; and (8) Insurance (Ichwan, 2022).

Research on Factors Affecting Household Health Consumption Expenditure has been conducted by Lestari and Emalia (2022), conducted in Penengahan Raya Village. It has been found that the average expenditure on household health consumption is IDR 335,783 or 13% of all household consumption expenditures. The amount of monthly household income, the age of the head of the family, the number of family members, the level of education of the head of the family and the family's participation in health insurance individually have a significant positive effect on the expenditure of household health consumption in Penengahan Raya Village.

Research on the Determinant Analysis of Household Health Expenditure of Smokers has been conducted by Pradana and Aldry (2021), conducted in West Sumatra Province. It has been found that the ratio of people to smoke has a negative and significant effect on the per capita health expenditure of people in West Sumatra, at the stage of testing the second hypothesis it was found that the gender ratio has no effect and is significant on the per capita health expenditure of people in West Sumatra. In the third hypothesis test, it was found that age had a positive and significant effect on the per capita health expenditure of the people in West Sumatra, while the results of the fourth hypothesis test found that education had a positive and significant effect on the per capita health expenditure of the people in West Sumatra.

Research on the Health Stock Approach in Indonesia was conducted by Ichwan, Anam, Sir, Mertosono, and Yunus (2021). It has been found that wage increases reduce the number of sick days among working-class families but not for middle-class families, and this also triggers healthy time for both middle-class families. The Low Elasticity Coefficient indicates an inelastic demand for health that requires a one-fold wage increase to increase the demand for health by one percent. This demand inelasticity can increase the price of health services in the long term and has the potential to cause disparities in health stocks for the community. To avoid this, health insurance is needed that provides protection to the community to increase public health time.

Research on Effective Urban Household Health Demand in Indonesia was conducted by Ichwan, Firmansyah, and Jokolelono (2021). It has been found that the health needs estimation model that can be used to determine the behavior of health demand in urban households is only limited to households with a formal level of elementary school education. By utilizing certain wages, age, cigarette expenses, and sports expenses, it was found that the number of sick and disturbed days in the group of households with IP was relatively greater at 5.68 days than in the group of households without IP. However, the expansion to the higher education and elderly levels is known to be 1.47 days and 1.57 days. Aging tends to decrease good health and IP tends to increase it.

Research on Socio-Economic Determinants of Household Expenditure for Preventive Health Needs conducted by Hardiani, Junaidi, and Hidayat (2017) was conducted in Jambi Province. It has been found that there is a significant difference in the probability of household expenditure for preventive health between urban and rural households. Households in Jambi City have allocated expenditure for preventive health reaching 15.05% of the total expenditure on various goods and services, while households in Sungai Panjang City have reached 12.49%.

Research on Factors Affecting Cigarette Consumption Expenditure in Poor Households conducted by Sari, Syahnur, and Seftarita (2017) was conducted in Aceh Province. It has been found that the variables of household income and non-smoking food expenditure affect cigarette consumption expenditure in poor households in Aceh in 2010. In 2015 there was an addition of variables, namely education expenditure and health expenditure which affected the expenditure on cigarette consumption in poor households.

Research on the Analysis of Factors Affecting Household Health Consumption Expenditure of the Poor was conducted by Etavianti, Syechalad, and Syahnur (2014) in Bireuen Regency. It has

been found that income, age, and education level have a positive and significant effect on poor people's household health consumption expenditures.

METHOD

The location of this research was carried out in Central Sulawesi Province. In determining the location selection is carried out deliberately (purposive). Data collection techniques by means of documentation and internet search. Using data from the results of the National Socio-Economic Survey (SUSENAS), in 2020 7,399 out of 7,418 survey households spent on health. Utilizing elasticity, it has been found that the elasticity of health expenditure to income according to the group is inelastic.

RESULTS AND DISCUSSION

Research Results

Proportion of Expenditure

The data in table 1 shows that the proportion of health expenditure to income of each group varies, the results of this study show that the smallest proportion of health expenditure is in the high-income group, which is spending Rp275,913/month or 34.8%, while the largest proportion of health expenditure is in the low-income group, which is spending Rp156,753 or 120.1% of their income on health expenditure.

Table 1. The Proportion of Health Expenditure to Income and to Food Expenditure

Groups	Proportion of Health Expenditure to Income	Proportion of Health Expenditure to Food Expenditure
1	1.202	25.440
2	0.507	24.976
3	0.461	47.088
4	0.394	54.351
5	0.412	63.779
6	0.392	63.981
7	0.349	59.947
8	0.360	64.265
9	0.358	68.894
10	0.348	73.529

Source: SUSENAS, 2020

The proportion of health expenditure to food expenditure of each group increased, the results of this study showed that the smallest proportion of health expenditure was in the second group of households spending Rp182,912 or 24.97% of their food expenditure was used for health expenditure. Meanwhile, the largest proportion of health expenditure is in the high-income group, which spends IDR 275,913 or 73.52% of its food expenditure on health expenses.

Health Expenditure 10 Income Groups

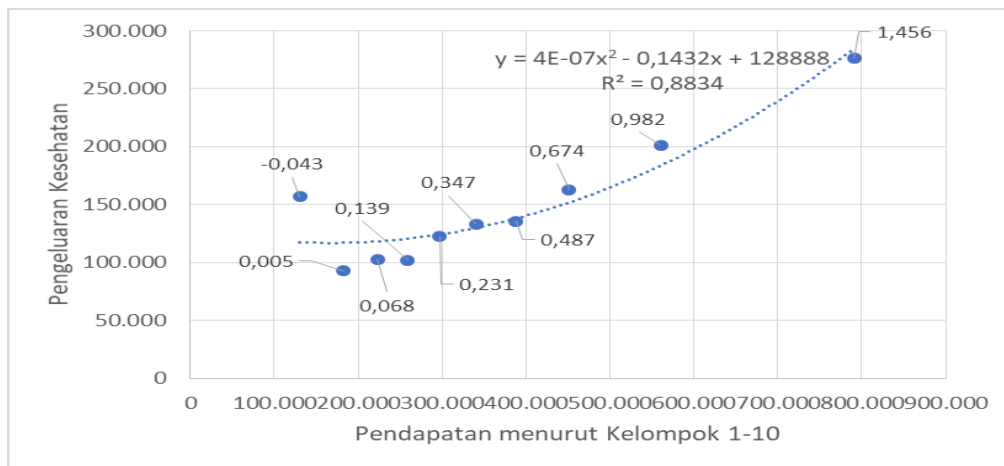
The data in table 2 below is data on household income and health expenditure carried out by households with the lowest income to the highest income.

The relationship between the income group and the health expenditure group, using the mean income and mean expenditure figures is graphically depicted in figure 2. Based on figure 2, points are found that connect the average health expenditure with the average household income from the lowest to the highest income group. An equation can be found to calculate the elasticity of health spending. Calculating the elasticity of health expenditure on household income, the following equation is used:

Table 2. Household Income and Health Expenditure Data

Group	Revenue			Health Expenses		
	Minimum	Maximum	Mean	Minimum	Maximum	Mean
1	100.017	159.736	130.461	250	3.940.083	156.753
2	159.833	202.810	182.912	333	2.670.000	92.821
3	202.820	242.134	223.244	291	2.821.666	102.926
4	242.162	276.333	258.610	250	463.333	102.138
5	276.366	316.942	297.083	333	995.416	122.531
6	316.986	363.403	339.950	401	633.666	133.381
7	363.470	416.408	388.171	166	977.500	135.623
8	416.545	494.502	451.169	583	719.250	162.850
9	494.708	642.170	560.652	500	983.833	201.140
10	462.409	998.920	790.840	183	2.139.000	275.913

Source: SUSENAS, 2020



Source: SUSENAS, 2020

Figure 1. Health Expenditure Curve

$$Y = 128.888 - 0,143 X + 0,0000004 X^2$$

To calculate the *first marginality* or derivative is as follows.

$$Y^1 = -0,143 + 2 (0,0000004) X$$

To calculate the *avarage* or average is as follows.

$$\frac{Y}{X} = \frac{128.888 - 0,143 (X) + 0,0000004 X^2}{X}$$

To calculate the elasticity is as follows.

$$E_{PK}^{ln} = \frac{Marginalitas}{Avarage}$$

Example Calculation

Known:

$$Y = 128.888 - 0,143X + 0,0000004X^2$$

$$Y^1 = -0,143 + 2 (0,0000004) X$$

$$Y^1 = 0 \rightarrow -0,143 + 0,0000008 X = 0 \rightarrow 0,0000008 X = 0,143 \rightarrow X = \frac{0,143}{0,0000008} \rightarrow X = 178.750$$

$$MPx = -0,143 + 0,0000008 (178.750) \rightarrow -0,143 + 0,143 = 0$$

If X = 130,461, then
 $MP_x = -0,143 + 0,0000008 (130.461) \rightarrow -0,143 + 0,104 = -0,039$

$$\frac{Y}{X} = \frac{128.888 - 0,143 (X) + 0,0000004 X^2}{X} \rightarrow = \frac{128.888}{130.461} - \frac{0,143 (130.461)}{130.461} + \frac{0,0000004 X^2}{130.461} \rightarrow$$

$$= 0,987 - \frac{18.655,923}{130.461} + \frac{6.808,029}{130.461} \rightarrow = 0,987 - 0,143 + 0,052 \rightarrow = 0,897$$

$$E_{PK}^{In} = \frac{Marginalitas}{Avarage} = \frac{0,039}{0,897} = -0,043$$

The elasticity of health expenditure to income in the first group was found to be inelastic, which was -0.043.

In more detail, the calculation of the elasticity of each income group is described as follows:

1. First group

$$E_{PK_1}^{In_1} = \frac{-0,039}{0,897} = -0,043$$

The elasticity of health expenditure to income in the first group was found to be inelastic. In principle, if there is an increase in income by 1%, then health expenditure will increase by -0.043.

2. Second group

$$E_{PK_2}^{In_2} = \frac{0,003}{0,635} = 0,005$$

The elasticity of health expenditure to income in the second group was found to be inelastic. In principle, if there is an increase in income by 1%, then health expenditure will increase by 0.005.

3. Third group

$$E_{PK_3}^{In_3} = \frac{0,036}{0,524} = 0,068$$

The elasticity of health expenditure to income in the third group was found to be inelastic. In principle, if there is an increase in income by 1%, then health expenditure will increase by 0.068.

4. Fourth group

$$E_{PK_4}^{In_4} = \frac{0,064}{0,459} = 0,139$$

The elasticity of health expenditure to income in the fourth group was found to be inelastic. In principle, if there is an increase in income by 1%, then health expenditure will increase by 0.139.

5. Fifth group

$$E_{PK_5}^{In_5} = \frac{0,095}{0,410} = 0,231$$

The elasticity of health expenditure to income in the fifth group was found to be inelastic. In principle, if there is an increase in income by 1%, then health expenditure will increase by 0.231.

6. Sixth group

$$E_{PK_6}^{In_6} = \frac{0,129}{0,372} = 0,347$$

The elasticity of health expenditure to income in the sixth group was found to be inelastic. In principle, if there is an increase in income by 1%, then health expenditure will increase by 0.347.

7. Seventh group

$$E_{PK_7}^{In_7} = \frac{0,168}{0,344} = 0,487$$

The elasticity of health expenditure to income in the seventh group was found to be inelastic. In principle, if there is an increase in income by 1%, then health expenditure will increase by 0.487.

8. Eighth group

$$E_{PK_8}^{In_8} = \frac{0,218}{0,323} = 0,674$$

The elasticity of health expenditure to income in the eighth group was found to be inelastic. In principle, if there is an increase in income by 1%, then health expenditure will increase by 0.674.

9. Ninth group

$$E_{PK_9}^{In_9} = \frac{0,306}{0,311} = 0,982$$

The elasticity of health expenditure to income in the ninth group was found to be inelastic. In principle, if there is an increase in income by 1%, then health expenditure will increase by 0.982.

10. Tenth group

$$E_{PK_{10}}^{In_{10}} = \frac{0,490}{0,336} = 1,5$$

The elasticity of health expenditure to income in the tenth group was found to be elastic. In principle, if there is an increase in income by 1%, then health expenditure increases by 1.5%. The results of the elasticity calculation are compiled in the following table.

Table 3. Results of Calculating the Elasticity of Health Expenditure

Groups	Revenue	Marginalization	Average	Elasticity	Remarks
1	130.461	-0.039	0.897	-0.043	Inelastic
2	182.912	0.003	0.635	0.005	Inelastic
3	223.244	0.036	0.524	0.068	Inelastic
4	258.610	0.064	0.459	0.139	Inelastic
5	297.083	0.095	0.410	0.321	Inelastic
6	339.950	0.129	0.372	0.347	Inelastic
7	388.171	0.168	0.344	0.487	Inelastic
8	451.169	0,218	0,323	0,674	Inelastic
9	560.652	0,306	0,311	0,982	Inelastic
10	790.840	0,490	0,336	1,456	elastic

Source: SUSENAS 2020 (reprocessed)

Based on the results of the analysis of the elasticity of health expenditure on income according to the group, it was found to be inelastic. The second to tenth income groups had positive results, except for the first group. Because the first income group has greater health expenditures than their income, it causes the results of the calculation to be negative. In principle, an increase of 1% of a certain income to a higher income group will drive more than 1% of his spending on health, so that his increase in income is followed at the same pace for his increase in health expenses.

Discussion

Draft Health Service Accessibility Policy

The draft policy on the accessibility of health services for households in Central Sulawesi Province, which will be made the policy is for the first to fourth group of households, because they are a low-income group of households who will need special services for their health. The first group of households has an average income of IDR 130,461 and an average food expenditure of IDR 6,161 as a proportion of health expenditure which is 25.44%, meaning that if households in the group have health problems, then financing for health will reduce their consumption by 25.44%. Suppose a person has a health problem, then they must find treatment, to finance the treatment, then a person must be willing to sacrifice 25.44% of their food expenses for health. The second group of households has an average income of IDR 182,912 and an average of IDR 3,716 in the proportion of health expenditure which is 24.97%, meaning that if households in the group have health problems, then the financing of health will reduce their consumption by 24.97%. The third group of households has an average income of IDR 223,244 and an average of IDR 2,185 in food expenditure as a proportion of health expenditure which is 47.08%, meaning that if households in the group have health problems, then the financing of health will reduce their consumption by 47.08%. The fourth group of households has an average income of IDR 258,610 and an average of IDR 1,879 in the proportion of health expenditure, which is 54.35%, meaning that if households in the group have health problems, then the financing of health will reduce their consumption by 54.35%. So, it is difficult for those in the low-income group to give up their income for health.

In accordance with the second research objective, which is to design a policy for the accessibility of household health services in Central Sulawesi, for the situation of the first group of households to the fourth group of households who have low income but have quite high health expenses. Therefore, it is necessary to draft a policy for the accessibility of health services in the form of health insurance such as BPJS Kesehatan, KIS (Healthy Indonesia Card), and other health insurance that is given to groups of households with low income but whose health financing is quite expensive, so that they are able to maintain their health when their income is not able to support the medical costs that must be carried out.

This research is supported or in line with the results of research conducted by Baros (2015), that the community needs certainty about the availability of health services and health payments. Most people are aware of the risk of getting sick in the future, therefore some people follow social security in the form of health insurance, both mandatory and voluntary.

This research is also supported or in line with the results of research conducted by Umaroh and Listiono (2023), that health shocks significantly affect the decline in household consumption, both in food and non-food consumption. Households that have health insurance are able to reduce the negative impact of health shocks.

CONCLUSIONS AND SUGGESTION

Based on the results of the discussion, the following conclusions were formulated: First, health expenditure is related to household income which is characterized by its elasticity to inelastic income. In principle, a 1% increase in a certain income to a higher income group will drive more than 1% of her health expenditures, so that her income increase is followed at the same pace as her health expenditure increases. This means that households with higher incomes will be willing to spend more on health care and take the initiative to increase spending on their health; Second, the draft health service accessibility policy is given to the first to fourth group of households, because they are low-income households who will need special services for their health. The draft policy on the accessibility of health services for households in Central Sulawesi Province is in the form of health insurance provided to low-income households.

Suggestions that can be proposed from the results of this study are: First, the author suggests to the next researcher to add further observations from this study such as the variables

of medical expenditure and traditional medicine that can directly explain what factors affect the community in financing their health expenditures so that it can complement the results of the existing research that can be used for consideration in determining policies; Second, it is recommended for the public to use health insurance, which is organized by the government. Especially for groups of households who have low income to be able to improve their health when the risk of illness occurs in the future.

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