



Examining the Welfare System Expenses in Vietnam: Analysis of Total Expenses and Population Trends in 2011-2018

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The welfare system is a critical aspect of any society, aimed at providing assistance and support to individuals and families in need. The main objective is to examine Vietnam's welfare system expenses and population trends between 2011 and 2018 to understand the challenges and opportunities of providing effective welfare programs. The Ratio Indicator is analysed using averages, means, growths, coefficients, and other means. The results show that the total welfare system expenses have been increasing from 2012 to 2013, with the most significant increase between 2012 and 2013 when the total Welfare System expenses increased by 10,864,663 mil. VND. The average welfare system expense growth on one citizen per year in the monitored period was 15,371 VND per year with an average growth coefficient of 1.055 per year. The analysis has limitations since it does not consider those without social security benefits; therefore, this study should be taken as a mean value. Also, Vietnam's geographical location makes it challenging to account for natural catastrophes and other factors that affect the welfare system.

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1. INTRODUCTION

The welfare system is a critical aspect of any society, aimed at providing assistance and support to individuals and families in need. In Vietnam, the government has implemented various welfare programs to address the needs of vulnerable populations, including people with low incomes, older people, and people with disabilities. In this paper, we examine the expenses of the welfare system in Vietnam from 2011 to 2018, analysing the total costs and population trends. By exploring the data, we aim to understand better the challenges and opportunities associated with providing effective welfare programs in Vietnam.

2. LITERATURE REVIEW ON SOCIAL SECURITY AND POPULATION

The most notable aspect of global population growth is that it has increased significantly in recent centuries after a long period of slow growth. In the 20th century alone, the world population increased threefold, considerably higher than any rate observed in human history before that time. This resulted in a surge from 1.5 to 6.1 billion people in just 100 years between 1900 and 2000, as OECD/FAO explained in their annual publication *Agricultural Outlook 2019-2028* [1].

This also challenges respective countries' social and welfare systems today.

As Friedl et al. [2] mentioned, when evaluating national welfare systems, one of the critical factors to consider is the degree to which they decommodify labor. This means the extent to which they reduce the dependence of individuals and families on market employment to secure their livelihoods. Also, another critical factor to consider is the level of emphasis placed on or relaxation of social stratification within the system. The same authors described the aim as ensuring that individuals are not limited by their social class and that everyone has equal access to essential resources and services. Moreover, it is also necessary to consider whether the welfare system primarily engages in social investment or income replacement during unemployment. While income replacement may provide temporary relief for individuals and families, social investment is more focused on creating long-term opportunities to improve social mobility and reduce economic inequality [2].

As is common consensus in nowadays World [3], social welfare (social system) encompasses a diverse set of policies, services, and programs that aim to enhance the quality of life and financial stability of individuals and families within a community. These initiatives include healthcare, education, housing, employment assistance, and financial aid. The fundamental objective of social welfare is to guarantee access to essential resources that enable a reasonable standard of living while minimizing social and economic disparities [3].

Social systems and the population have a connection to society. As Bellman et al. [4] say, throughout human history, individuals have willingly formed groups that serve as vehicles for a variety of social concepts, including governance, justice, and mutual aid; these groups come in different forms, sizes, and durations, but they all offer advantages to their members. These groups gradually formed a society that is a base for the population. Reznik [5] added that the social state can be considered one of the most critical societal institutions, also confirmed by authors Matzhanova and Dodaeva [6] in their recent study.

Authors Tri, Dao, and Nguyen [7] suggested in their research study that Vietnam's integration into the global community has prompted its government to prioritize social security to achieve sustainable development and maintain socio-political stability.

As Castel [8] added on Vietnam Social Security Topic, since 1947, Vietnam Social Security has offered social insurance to public servants and military personnel. By 1995, it was made mandatory for workers in the emerging private sector to be covered. The same author explained that only firms with ten or more workers were initially obligated to offer their employees social insurance. However, as of 2005, all businesses, regardless of size, must register their workers with labor contracts of three months or longer with Vietnamese Social Security. In recent times, there has been a notable increase in participation along with the expansion of the private sector [9].

3. METHODOLOGY

This research is statistical research that investigates two aspects of the Ratio Indicator, which are (A) the total Spending of the Vietnamese Social System (Welfare System) and

(B) the Total population. These two aspects make up the average Spending of the Vietnamese Welfare System on one citizen (x). For details, see the following:

Average spending on one citizen (x) = Total Spending of Social System in Vietnam (in mil.VND) (A)/ Total population (in mil. Citizens) (B)

This indicator is a Ratio Indicator That has been created according to the following equation [9]:

$$x = \frac{\text{Value of the Pointer A}}{\text{Value of the Pointer B}}$$

The result shows the average Spending of the Vietnamese Social System Per One Citizen in the given year. They were monitored and analysed over eight years, from 2011 to 2018. Newer data is not available at the moment.

Total Spending is represented by government expenses on social security (welfare system) in the given year, and the population is represented by the total number of citizens of Vietnam in the given year.

The data has been organized in a table that presents the Total Expenses on Social Security and Total Population in Vietnam from 2011 to 2018, and the average expenses for one citizen per year. The methodology involves calculating the average expenses for one citizen per year by dividing the total social security costs by the total population each year.

Results are also completed by a chart showing the coefficient of determination and polynomial equation related to the data, which presents the average social security expenses per one citizen and the year monitored.

Moreover, the methodology used in this analysis involves calculating several indicators that provide insight into the development of social security expenses in Vietnam. These indicators include the average costs of social security per year, the growth or decline between the first and last year of the period, the average absolute increase per year, and the average growth rate per year. These indicators help in planning and strategic decision-making regarding social security financing.

The Ratio Indicator is analysed using Averages, Growths, First and Second Differences, Base index, and Arithmetic averages. Necessary following equations are used to analyse the data [9]:

- *The first difference:*

$$dy_t = y_t - y_{t-1} \quad t = 2, 3, \dots, n$$

In which:

dy_t is the first difference,
 y is a series of values of a certain indicator,
 t is the natural time sequence of the indicator (the time intervals are of the same length),
 n is an expression of the number of time intervals.

- *Arithmetic average:*

$$1d(y) = \frac{y_n - y_1}{n - 1}$$

In which:

y_n is the maximum value of a values series of a particular indicator,
 y_1 is the first value of a values series of a specific indicator,
 n is the number of values of a given values series of a particular indicator.

- *Growth Coefficient:*

$$k_i(y) = \frac{y_t}{y_{t-1}}$$

In which:

$k_i(y)$ is the growth coefficient,
 y_t the value of the indicator in the given period,
 y_{t-1} is the value of the indicator in the previous period.

- *Average Growth Coefficient:*

$$k(y) = \sqrt[n-1]{\frac{y_n}{y_1}}$$

In which:

$k(y)$ is the average growth coefficient,
 $n-1$ is the total number of indicator values from which the number one is subtracted,
 y_n is the value of the y indicator at the end of the time series (the last value),
 y_1 is the first value of the y indicator at the beginning of the time series (firstvalue).

- *Ratio Indicator:*

$$x = \frac{\text{Value of the Pointer A}}{\text{Value of the Pointer B}}$$

In which:

x is a proportional indicator of quantities,
A is the first pointer,
B is the second pointer.

Moreover, much more interest, median and standard deviation is also calculated. The median is frequently used as a way to indicate the central point or average of a data set. When the data set contains extreme values or outliers, it is not affected by them in the same way as the mean. The standard deviation provides information on the degree of variation or spread of data points from the mean value.

The research design overview:

1. Research Question: What is the average Vietnam welfare system spending per citizen, and how did it change during the monitored period?
2. Literature Review: General Review of known sources on the social system (welfare), population, and similar topics.
3. Data Collection: Official resources to determine the welfare system expenditure (budget) per each monitored year and population in each monitored year.
4. Data Processing: Ratio Indicator Development (Total Social system Expenses divided by population), creating the table with collected data, summarizing, and calculating statistical measurements according to methodology (e.g., first difference, averages).
5. Presenting the results: Presenting the results, development of Average Social Security Spending on one citizen in average, explanation and results presentation.
6. Validity and Reliability: While considering the reliability, limitations shall be taken into account.
7. Limitations: Acknowledged the limitations of the study include, e.g., the fact that there may be citizens or people generally who do not get any support from the social security system (for instance, minorities in the mountains).

4. RESULTS

The following tables and figure show the development of total expenses on welfare

security in Vietnam in 2011-2018 and the growth of the total population in the monitored period 2011-2018.

The result is the ratio of the total expenses (budget) of the welfare system (in 1,000,000 VND) and the total population of Vietnam (in 1,000,000 citizens), which together makes the Average Expenses of the Welfare System for One Citizen per year (in VND).

Welfare System Total Expenses can be characterized by two cumulative periods – from 2011 to 2014 and 2014 to 2018. The total expenses on Welfare System have been increasing from 2011 to 2014. It is possible to see a significant increase between 2012 and 2013 when the total welfare system expenses increased by 10,864,663 mil. VND from 21,013,650 mils VND to 34,174,269 in 2011 mils VND in 2014. From 2014 to 2017, a sharp decrease can be witnessed in the total costs of the Vietnam Government spending on the Welfare System, namely from 34,174,269 mil. VND in 2014 till 32,016,760 mil. VND in 2017, which makes up the decrease of 2,157,509 mil. VND. In 2018 there can be noted a slow growth to 32,872,425 mil. VND.

If the total population is analysed, it can be seen that there is a steady growth in the Vietnamese population from 88.87 mil. citizens in 2011 to 95.55 mil. citizens in 2018.

The ratio indicator of Average Expenses of the Welfare System for One Citizen (per year) has increased from 236,450 VND in 2011 to 344,048 VND in 2018. Since the ratio indicator consists of both aspects, it is clear that 2013 is a significant increase in Average Expenses of the Welfare System for One Citizen (per year) as well.

From 2011 to 2013, the average expenses of one citizen increased from 236,450 VND to 351,266 VND, with the most significant difference from 2012-2013 when the costs increased from 266,145 VND to 351,266 VND. The following year 2014 was marked by another increase to 372,618 VND per Citizen per year.

From 2014 to 2017, a decrease can be noted in the Average Expenses of the Welfare System for One Citizen per year from 372,618 VND to 338,441 VND. The year 2018 was marked by an average increase of 5,607 VND to 344,048 VND.

Table 1. Average expenses of the welfare system for one citizen in Vietnam 2011-2018 (VND/year)

Year	Time Period (t)	Welfare System Expenses Total (in 1,000,000 VND)	Total Population (in 1,000,000 citizens)	Average Expenses of Welfare System on One Citizen (VND)	First Difference	Second Difference	Base Index	Growth Coefficient
2011	1	21,013,650	88.87	236,450			1.000	
2012	2	23,900,377	89.80	266,145	29,695.35		1.126	1.126
2013	3	31,878,313	90.75	351,266	85,120.66	55,425.31	1.486	1.320
2014	4	34,174,269	91.71	372,618	21,352.28	-63,768.39	1.576	1.061
2015	5	32,802,529	92.68	353,944	-18,674.05	-40,026.33	1.497	0.950
2016	6	32,531,445	93.64	347,408	-6,536.23	12,137.83	1.469	0.982
2017	7	32,016,760	94.60	338,441	-8,966.91	-2,430.68	1.431	0.974
2018	8	32,872,425	95.55	344,048	5,607.06	14,573.97	1.455	1.017

Source: author, extended, translated, and re-written, based on Vrba [10], MOLISA [11], Worldometers [12], and Cong Thong Tien Dien Tu Chinh Phu Nuoc Cong Hoa Xa Hoi Chu Nghia Viet Nam [13]

Table 2. Average summary data for the period of 2011 to 2018

Average Expenses (x 1,000,000 VND)	Average Population (x 1,000,000 citizens)	Average Expenses per 1 Citizen (VND)	Average growth (VND/year)	Average Growth Coefficient	Median Average Exp per 1 Citizen (VND)	Standard deviation (VND)
30,148,721	92.20	326,290	15,371	1.0550	345,728	44,906

Source: Calculated by the author based on Table 1 data

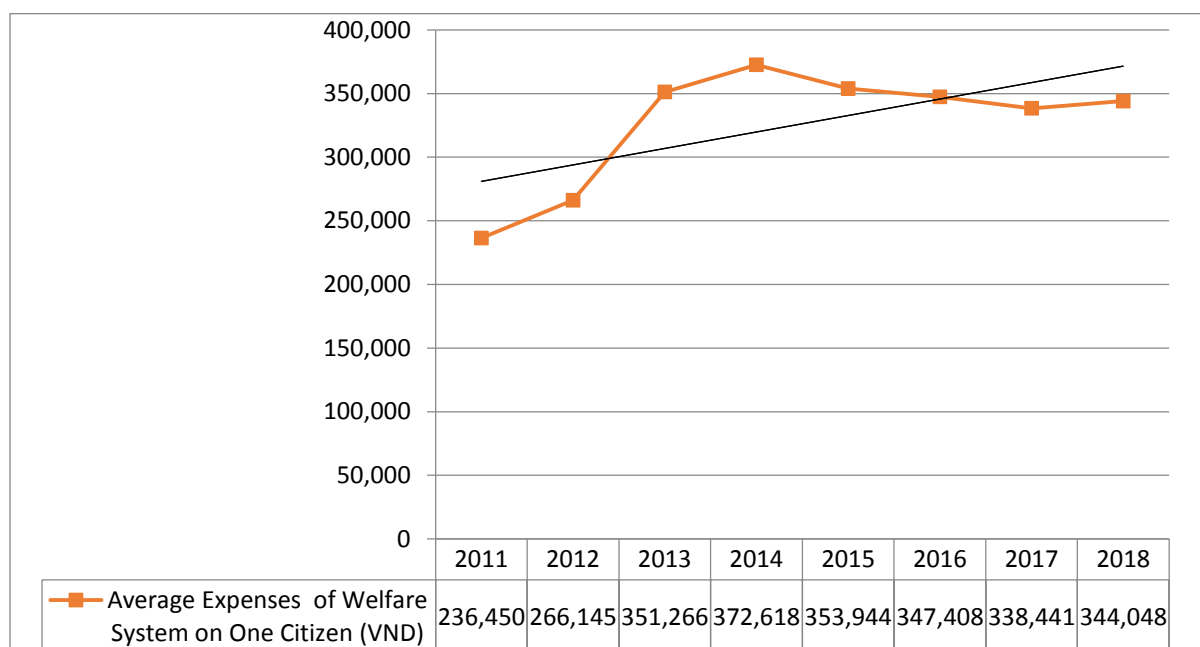


Fig. 1. Average expenses of welfare system on one citizen (VND per year)

Source: author, calculated by the author based on Table 1 data

The average expenses of the Vietnamese Welfare System in total were 30,148,721 mil.VND every monitored year while the average population was 92,2 mil. citizens.

The average expenses of the Vietnamese Welfare System for One Citizen were 326,290 VND per year from 2011 to 2018. The Average growth was 15,371 VND per Citizen per year in the monitored period, with an average growth coefficient of 1.0550 (105,5%) per year.

The median average expenses for one citizen is 345,728 VND within the monitored period, and the standard deviation is 44,906 VND.

5. LIMITATIONS OF RESEARCH AND DISCUSSION

This Statistical analysis does not consider that there may be citizens or people generally who do not get any support from the social security system. On the other hand, some citizens gain access to extraordinary support from the social security system; therefore, the analysis has to be taken as an average analysis.

Also, it is nearly impossible to consider natural disasters and other variables and aspects influencing the welfare system and its total expenses due to Vietnam's natural and geographical conditions.

The discussion is not viable at this point since the only research that concerns this data is presented by Vrba [10]. This paper investigates and expands previous research on the Vietnamese Welfare System, as shown by Vrba [10], through more in-depth statistical analysis.

6. CONCLUSION

The findings of this study include the following:

- If the base index is studied, it is clear that the year 2018 represented a 0.455 increase (1.455) compared to the base year 2011 (1.000).
- Welfare System Total Expenses and Average Expenses for one citizen (in VND per year) can be characterized by two cumulative periods – from 2011 to 2014 and from 2014 to 2018.
- The total expenses on Welfare System have been increasing from 2011 to 2014, with the most significant increase between 2012 and 2013, when the total welfare system expenses increased by 10,864,663 mil. VND from 21,013,650 mil.
- From 2014 to 2017, a decrease can be seen in the total expenses of Vietnam on the Welfare System, namely from

34,174,269 mil. VND in 2014 till 32,016,760 mil. VND in 2017, which makes up the decrease of 2,157,509 mil. VND.

- If the total population is analysed, it can be seen that there is a steady growth in the Vietnamese population from 88.87 mil. citizens in 2011 to 95.55 mil. citizens in 2018.
- The ratio indicator of Average Expenses of the Welfare System for One Citizen (per year) has increased from 236,450 VND in 2011 to 344,048 VND in 2018.
- From 2011 to 2013, the average yearly expenses for one citizen increased from 236,450 VND to 351,266 VND, with the most significant difference from 2012-2013 when expenses increased from 266,145 VND to 351,266 VND.
- The following year 2014 was marked by another increase to 372,618 VND per Citizen per year. From 2014 to 2017, a decrease can be noted in the Average Expenses of the Welfare System for One Citizen per year from 372,618 VND to 338,441 VND.

Within the monitored period, the median for one person was 345,728 VND, with a standard deviation of 44,906 VND.

Every year under review, the Vietnamese Welfare System spent an average of 30,148,721 million VND, with an average population of 92,2 million.

During the studied period from 2011 to 2018, the Vietnamese Welfare System spent an average of 326,290 VND on one Vietnamese citizen per year. In the monitored period, there is the visible average growth of average Welfare System Expenses on one citizen of 15,371 VND per year with an average growth coefficient of 1.0550 which means an average increase of 5.5% every monitored year.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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