Journal of Economics, Finance and Accounting Studies
ISSN: 2709-0809
DOI: 10.32996/jefas
Journal Homepage: www.al-kindipublisher.com/index.php/jefas

JEFAS
AL-KINDI CENTER FOR RESEARCH AND DEVELOPMENT

| RESEARCH ARTICLE

A Time Series Analysis on the Economic Determinants of Public Health Expenditure in the Philippines

Patdu, Penelope R.[1], Peñalosa, Jillian Mae S.[2] ✉ and Canto, Danielle Mellesse A.[3]
[123]UST Faculty of Arts and Letters, Department of Economics, University of Santo Tomas, Manila, Philippines
Corresponding Author: Peñalosa, Jillian Mae S., **E-mail**: jillianmae.penalosa.ab@ust.edu.ph

| ABSTRACT
This study determines the significant relationships between the variables observed in the public health expenditure in the Philippines from 1990 until 2019. The dependent variable in the study is public health expenditure, while the independent variables are income, unemployment, and urbanization. The multivariate Ordinary Least Squares (OLS) regression is employed in the study, and the results indicate that income and urbanization are positive and significant determinants. On the other hand, unemployment is negative and a significant determinant affecting public health expenditure in the Philippines. Moreover, the researchers also utilize Microsoft Excel and EViews to run the necessary econometric tests to ensure the model's efficiency. The results suggest that the overall model is robust. The tests applied indicate that issues in serial correlation, multicollinearity, heteroskedasticity, misspecification, and normality of the model are not detected.

| KEYWORDS
Public Health Expenditure, Income, Unemployment, Urbanization

| ARTICLE DOI: 10.32996/jefas.2022.4.1.43

1. Introduction

1.1 Background of the Study

Public spending is essentially used to cover the development of the country and the welfare of its citizens. The funds for such are taken from taxes paid by the citizens of a country. A budget deficit occurs when the government decides to spend more than the taxes received in a year. On the other hand, when the collected taxes surpass the government's spending in a year, a government surplus occurs. The ideal scenario is a budget balance where government spending and taxes are equal. According to Salazar Jr. (2017), there are still several concerns regarding public expenditure in the Philippines, such as those given by the tax reform bill. This bill states that an individual should not pay taxes when these funds are used for wasteful projects or unnecessary projects of the government. Such spending is a policy through which the government uses its expenditure programs to achieve desired outcomes such as the development of infrastructures, poverty alleviation, the establishment of schools and health centers, and job creation while minimizing undesirable outcomes such as poverty, inadequate health care, poor education, poor housing, unhealthy food, and low income and unemployment (Mba et al., 2020).

According to the World Bank (2014), health expenditure includes providing health care, family planning programs, nutrition programs, and health-related emergency assistance but excludes water and sanitation. However, The World Health Organization WHO (2015) describes health spending as the amount of final consumption of health goods and services and investment in healthcare infrastructure. The Organization for Economic Co-operation and Development (OECD) refers to public health expenditure as health care that is paid for by public funds. All expenditures for medical treatment, prevention, promotion, rehabilitation, community health programs, health administration and control, and capital formation with the primary goal of improving health are included in health spending. It is funded in various ways, including government spending and universal health benefits, as well as health insurance and private funds such as out-of-pocket contributions from families, non-governmental organizations (NGOs), and private businesses (OECD, 2021). The health budget focuses on ensuring that public sector services are

channeled more efficiently to the social sectors, with the primary purpose of enhancing the health of children, women, and other vulnerable members of the community. In an analysis by Khan et al. (2020), they examined the variables constituting healthcare capacity, including health expenditure, population density, and demographics, to determine their relationship with case fatalities. It was concluded that the allocation and spending of hospital funds in order to improve healthcare capacity was significantly associated with deaths. Therefore, a rise in future mortality rates can be prevented through the maximization of health expenditures.

Health is considered to be a form of capital. WHO considers governments to be the primary providers of public health services. It is given that governments have a role to play in providing public health, especially among vulnerable communities. Since the government is solely responsible for a country's health system, the competent and efficient management of public health is the foundation of an effective government. Expenditure on healthcare is one of the significant factors to consider in an economy, making it a vital indicator of a country's health and development (Raghupathi and Raghupathi, 2020). As a result, expenditures in health can contribute to higher labor productivity, higher incomes, and improved well-being of the entire population. People are more willing to work and learn new skills when provided with adequate health care because they intend to obtain long-term benefits. Moreover, Piabuo and Tieguhong (2017) stated that poor health conditions in the labor force would negatively impact productivity, which explains why there are differences in countries in terms of growth. Large-scale health conditions are due to the scarcity of accessible health Infrastructure and services, particularly in developing countries. In order to improve health, adequate and consistent health spending is necessary.

The Universal Health Coverage (2020) explained that health is a foundational investment of both human capital and economic growth. It is essential to ensure good health so that children will attend school and adults will function and earn to support their families. The World Bank stated that good health lowers economic loss, which means that the well-being of the people is taken care of. It allows for the use of natural resources that were partially inaccessible due to disease, and good health will help children participate in school and have a healthier educational environment. The state of an individual's wellbeing is influenced by the economy's health spending, and expenditure on health care causes the formation of human capital, which then contributes significantly to the growth of our economy.

1.1.1 Health Care System in the Philippines

Health services in the Philippines are primarily inaccessible due to insufficient resources and inadequate health facilities, especially in Rural Health Units. The Ministry of Health (MOH) has conducted an important reorientation of health policy since the late 1970s, aiming to expand and strengthen the existing Rural Health Practices Program, which aimed to mandate new medical and nursing graduates to work in rural areas for six months and raise the number of Rural Health Units in the country.

In September of 1981, Primary Health Care (PHC) was established as the national health policy. The MOH was given the legal authority to develop and establish community-level development programs, especially in rural areas, under Letter of Instruction No. 949, issued in October 1979. These programs aimed to build a strong foundation for PHC by engaging local communities, enhancing existing family planning nutrition, and reorganizing all expenditures to ensure resources were allocated according to these priorities. Health care would no longer be viewed as a privilege reserved for the wealthy but directly include the general public. To guarantee the effectiveness and efficiency of PHC activities, the authorities should be involved in the planning, management, and evaluation of all operations and investments. The effectiveness of community engagement and the authority's responsiveness is the most significant determining factors (MOH, 2000).

The use of a National Health Insurance (NHI) became the foundation for a proper transition to universality. It was one way of shifting to fair and sustainable health care spending in the Philippines. With the establishment of PhilHealth in 1995, the Philippines launched an ambitious NHI program after having provided 'Medicare' health insurance since 1969. The Philippines' House of Representatives passed the Universal Health Coverage bill 5784 in September 2017, providing substantial political support. In terms of UHC, the bill specifies that all Filipinos are fully enrolled in and entitled to all the National Health Security Program benefits. The bill addresses various healthcare concerns, including governance, regulation, human resources, healthcare services, hospital income retention, and a health-information system (Jowett et al., 2018). Improvements in population health have a beneficial effect on individuals and societies by producing social returns. This explains why enhanced human capital enables individuals to participate more extensively in economic activities, productivity improvements, and, as a result, better standards of living (Edeme et al., 2017).

In recent years, government spending has been prioritizing human capital development in the Philippines. One of the main objectives of government spending has been human capital development, given the growth of the young population. Investing in human capital would benefit the lives of Filipino people as it would allow the establishment of social programs. The social services

sector, which includes education, health care, social protection, received the most considerable portion of the budget proposed in 2018. The government continued to maintain it at this level to boost the country's standard of living (Salazar, 2017).

1.2 Significance of the Study

Public health expenditure is one of the factors that could contribute to the economic growth of a country. Hence, it is critical to identify the determinants that affect public health expenditure in order to know which variables benefit the economy and citizens. This study utilizes the independent variables to determine which factors could still be improved on to further boost the economy of the country. Hence, this research poses the following questions:

1. What are the different economic factors and the magnitude of their impact on public health expenditure in the Philippines?
2. Is there a statistically significant relationship between the economic factors (income, unemployment, and urbanization) with public health expenditure?

1.3 Statement of the Problem

The paper aims to determine the relationship of economic factors, specifically income, unemployment, and urbanization, that affects public health expenditure in the Philippines. Understanding health expenditure and the various sources that contribute to the health system's finances can provide valuable data for policymakers in the health sector. Through these independent variables, the researcher will:

1. To effectively define and recognize the relationship of the variables;
2. To have an improved understanding and identify what causes public health expenditure to increase or decrease;
3. To determine the magnitude of the relationship between independent variables and the dependent;

1.4 Hypothesis of the Study

Ho1: There is no significant relationship between income and public health expenditure.
Ho2: There is no significant relationship between unemployment and public health expenditure.
Ho3: There is no significant relationship between urbanization and public health expenditure.

1.5 Scope and Limitations

There are a significant number of factors that could contribute to the increase or decrease of the public health expenditure of a country. Still, given the different conditions each country faces, this study will only cover how income, unemployment, and urbanization affect public health expenditure in the Philippines. Given the study's limitations, the researchers decided to work on this study to see any significant relationships between the variables observed in the public health expenditure in the Philippines using a multivariate Ordinary Least Squares regression model. The use of OLS will also allow the representation of the relationships of the independent variables to the dependent variable and show which contributes the most to the public health expenditure. Moreover, the researchers utilized Microsoft Excel and EViews to run the necessary econometric tests to ensure the model's efficiency. The tests that were applied in the regression model were used to detect issues such as serial correlation, multicollinearity, heteroskedasticity, misspecification, and normality of the model.

The annual time series data for this study were collected from the Department of Health (DOH) and World Bank Open Data starting from 1990 until 2019 (30 observations). The regression will be done through a time-series model to analyze the trends of how these economic factors affect public health expenditure in the Philippines. The dependent variable in the study would be public health expenditure which will be used to analyze the effect of such on the economy. Furthermore, there will be three (3) independent variables, specifically income, unemployment, and urbanization, where these variables will be analyzed to identify how it all contributes to the public health expenditure of the Philippines. The researchers did not include in the framework other determinants that have been employed in prior existing studies.

2. Review of Related Literature

2.1.1 Income

In some countries, as income rises, health expenditure also increases because governments tend to invest in the healthcare of the state. However, in some poorer countries, as income increases, public health expenditure for the rich decreases; It is because individuals tend to have the buying power to pay for private insurance still, public health expenditure rises because the poor cannot pay for private insurances. In a study conducted by Musgrove et al. (2002), it was stated that the total health spending in poor countries is extremely low, and health insurance is only accessible to the privileged and others with employment. Only with government assistance could the poor acquire significant health insurance.

As income increases in selected twelve Asian countries (e.g., Cambodia, China, Indonesia, Japan, Laos, Malaysia, Mongolia, the Philippines, South Korea, Singapore, Thailand, and Vietnam), health expenditure also increases. Using the pooled OLS model, the model incurred a positive relationship between income and health expenditure, stating that as income grows, people tend to spend more on healthcare. The two-way random effects model also supports this model (Furuoka et al., n.d.).
According to Abbas and Hiemenz (2011), income is a strong determinant of national health spending. However, the variables urbanization and unemployment negatively impact healthcare spending, indicating that providing health care to citizens of Pakistan's remote rural areas is costly, and unemployment will result in reduced national and individual income. A study conducted by Mele and Megazzino (2012) stated that income has a positive effect on health expenditure in Italy, assuming there is no price effect. As the income rises, it gives a share in the GDP of Italy. It shows that aggregate Income and health expenditure is positively related, with an of R=98.

In the study by Boussalem et al. (2014), the findings revealed that public health expenditure and income indicate a significant relation. In Algeria, it is found that income is one of the relevant factors across developing countries in the growth of public spending in health in the long run. It also supports a relationship between GDP and public health spending. This was further supported by a study conducted by Dumrul et al. (2015), stating that in low-income countries, public expenditure affects economic growth positively. Under economic growth, it includes the income of individuals. As economic growth increases through healthy labor means more productivity, health expenditure through investment increases. It concludes that an increase in investment will affect income/economic growth in the long run. The impact of health spending on economic growth suggests an intervention from the government to implement policies that will benefit individuals in the long run. Implementing policies will help build a healthy labor force that will provide Income, and through economic growth, there will be an increase in investment in health.

Using various socio-economic variables, Shamsi and Waqas (2016) investigated the determinants of public health expenditure in Pakistan. The research was carried out using time series data from 1980 to 2009. The findings of the OLS revealed that income, primary school enrollment, and the urban population had a positive impact on public health expenditure, whereas the unemployment rate had a negative impact. This study concludes that the government should enact policies to increase public health expenditure and expand access to health care, especially in rural areas. They have also stated that the government should also formulate a plan to increase primary school enrollment and reduce unemployment.

Standards of living and social classes matter even in terms of public health expenditure. Malhotra and Do (2016) examined the relationship between public health expenditure and total health expenditure with responsiveness among low-income earner individuals. As a result, it is implied that public health expenditures and health system responsiveness have a direct relationship. This means that allowing the public health sector to increase the spending of funds will bridge to a more efficient medical response to the poorest individuals, and it will also decrease the gap between the health services offered among the socioeconomic classes.

Piabuo and Tieguhong (2017) used time-series data from 1995 to 2015 from the word bank to meet the research objectives of their paper. The findings of their study suggest that there is a high possibility of a long-run relationship between GDP and health spending and that these factors are anticipated to be co-integrated.

Aboubacar and Xu (2017) examined the relationship between healthcare expenditure and economic growth in Sub-Saharan Africa from 1995 to 2014. To estimate the outcomes, they employed the system General Method of Moments (GMM) methodology. The results show that there is a positive and statistically significant relationship between the two variables, indicating that health expenditure has a major impact on the region's economic growth. To stimulate economic growth in Sub-Saharan Africa, it is needed to construct effective and efficient health care programs, raise health expenditure, make effective use of the younger generations, and improve the environment for foreign direct investment.

A study by Kraipornsak (2017) investigated the macro-determinants of health expenditure per person in 15 Asian countries (consist of Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, India, Indonesia, Korea, Rep, Lao PDR, Malaysia, Mongolia, Nepal, Philippines, Thailand, and Vietnam), excluding Japan because it is at a different stage of development than the others. For the Asian samples, the study discovered a negative but statistically insignificant link between the cost of health services and their expenditures. Moreover, the study discovered that income has a positive effect on health expenditure. Since Asian countries are relatively less populated than developed countries, urbanization or urban population density was found to have no significant effect on health expenditure per person. Furthermore, the results show that health expenditure per person in Asian nations would continue to rise in the future. It indicates that the income variable is the most significant of all since it has the greatest impact and the most rapid change.

In another study, the relationship between government health spending and health outcomes was re-examined by Boachie et al. (2018) to see whether government intervention in the health sector improves outcomes. They used annual data from the World

Bank's World Development Indicators, which covered the period 1980 to 2014. Using the ordinary least squares (OLS) and two-stage least squares (2SLS) estimators, it was discovered that public health expenditure led to significant changes in health outcomes in Ghana.

According to Rana et al. (2019), health care is a necessity, and governments should be held more accountable for providing essential health care services and accessible facilities. They used a large panel data set for 161 countries over a 20-year period to empirically examine the causal relationship involving GDP growth and health expenditure. The findings of their study revealed that in low-income countries, an increase in health expenditure could also lead to an increase in GDP. As a result, as the percentage of GDP spent on health care increases, middle-income countries can ensure that their people benefit equally from the growing expenditure in health by implementing sustainable health-financing systems. The results of the Granger causality test indicate that the causal relationship will shift as income levels change over time. Estimates indicate that GDP explains further differences in health expenditure, most especially in high-income countries. It is implied that national income fuels health expenditures as well as health expenditures fueling national income growth (Connelly and Nghiem, 2017).

A study by Afzali et al. (2019) examined the impact of macroeconomic variables on total health expenditure and found that GDP has a significant, positive, and bilateral impact on health expenditure in Iran. They have concluded that the main and most important determining factor of health expenditure in Iran is GDP. As countries become wealthier, the overall expenditure in the health sector rises. In order to provide basic health care in low-income countries, innovative finance methods and productivity improvements are needed to meet the increase in resources. These findings are consistent with those of Bloom et al. (2019), who claimed that health expenditure has a statistically significant positive impact on income. As a result, income is an important factor in explaining health care expenditure, and a rise in overall income will lead to an increase in health expenditure as well.

According to Yetim et al. (2021), the most significant factors influencing health spending in the OECD are income and education. However, the unemployment rate and dependency ratio had no statistically significant impact on health spending.

2.1.2 Unemployment

Unemployment is one of the problems that every government is trying to address. It doesn't only affect the welfare of a certain individual, but it can affect a family and even a country. In the US, the unemployed are also at risk for higher medical expenditures (e.g., out-of-pocket expenses), which adds additional financial pressures to their families (Huang and Brikenmaier, 2014). In developing countries like the Philippines, the effects of unemployment strain the economy and the health of an individual; Mental health problems and suicide rise when the county is experiencing high unemployment (Atun et al. 2014).

Pirim et al. (2014) studied the effects of investing in education funding and health spending in relation to unemployment rates in the long run. Their data examined 50 states in America within a time span of 25 years. Despite its foreign background, it is important to note that unemployment is a global issue and is also impacting countries aside from the US. The study was able to determine that focusing on human capital through quality education and efficient health expenditures will surely be key factors in reducing the unemployment rate.

One aspect of the labor force -- employed or unemployed, significantly affects mental well-being and physical health, wherein the former improves it while the latter deteriorates it. In 2015, Goodman studied the scope of the effect that employment causes on the health status and health care costs of disabled working-age people. Employment and health status are impactful in either way: when one is employed, one is able to maintain a healthy status; on the other hand, health impacts how one can maintain a job position. It can be concluded that working improves health and can therefore reduce needing to avail healthcare services. A decline in income, as well as socioeconomic conditions, may lead to poor health. Maintaining a job and a healthy status, then, is necessary for healthcare cost savings. A healthy person not only performs more consistently but also has more time to commit to economic activities.

A study investigated the relationship between unemployment and health in Iran. The findings of this study revealed that unemployment and health have a two-way causal relationship. In addition, a 1% rise in unemployment reduces health by 6.84 %, and a 1% increase in private health expenditure resulted in a 0.14% drop in unemployment. It is suggested in this study that investments in the health sector, such as health insurance and hospitals, be provided, particularly in poor communities, in order to provide workforce health and prevent unemployment, as well as community health with effective programs to reduce unemployment and improve income (Aleemran and Panahi, 2016).

Clair et al. (2017) investigated in their study if being unemployed at the time of the Great Recession has had any impact on the risk of Unmet Medical Need (UMN) and whether the out-of-pocket payments for health care and income replacement for the unemployed affected the relationship. They conducted a pseudo-panel (n = 135 529) across 25 countries using the European

Survey on Income and Living Conditions (EU-SILC) to measure the correlation between unemployment and UMN. The results show that job loss raised the risk of UMN (β= 0.027), and financial difficulty amplified the impact. The findings indicate that unemployment does not imply that access to health care is compromised. Instead, access is affected as financial resources decrease as a result of job loss. They have concluded that policy solutions must ensure financial support so that resources are not diverted from health.

According to the causal hypothesis study of Benitez et al. (2018), unemployment is a health risk factor. The findings show that long-term unemployment is associated with poor health, and it is laborers' poor health that keeps them out of the labor market. Most cases of long-term unemployment raise the chances of having poor health by 22% to 67% as compared to working people, while very long-term unemployment (24 to 48 months) raises the chances by 54% to 132%. Unemployment lowers national income because it employs only a fraction of the total population and increases the dependency burden. It is believed that an increase in jobs would raise national income, placing the government in a stronger position to invest in the health sector. Most of those studies investigated the developed countries, and the general finding was that income-elasticity estimates exceeded unity, implying that healthcare was a luxury good to those who are earning more or the rich afford to pay insurance payments, while there are people who cannot depend on state insurances. Unemployment is one of the reasons why the state increases spending on healthcare; some people cannot afford to pay for insurance.

Bloom et al. (2019) discovered that people who are healthier will work harder and for longer periods of time, as well as increase self-awareness. By estimating the macroeconomic effects of health to infer the implications for aggregate income, a study they conducted addressed the macroeconomic effect's scale. It was said that much of Britain's economic growth (roughly 33% per year) between 1780 and 1980 was attributed to rises in successful labor productivity as a result of workers' improved well-being and health. They used an aggregate production function to measure the impact of health on productivity using microeconomic wage regressions. The researchers have used a range of health indicators to evaluate income, including anemia, height, age at menarche, and the adult survival rate. According to the findings of the study, health is a valuable form of human capital. Public health policies may be an effective tool for promoting economic growth. Health programs such as vaccination, antibiotic delivery, and micronutrient supplementation are examples of potential initiatives, both of which result in significant changes in health outcomes at relatively low expenditures.

In a study by Bíró and Elek (2020), the influence of job loss or unemployment on disability benefits and health spending was investigated. They first determined the most common root of unemployment, and in their case, it was mass layoffs. Then, they compared the differences in labor forces between people without jobs and those who are employed, considering that their health backgrounds are similar. It was shown that there is an evident three-fold increase in health expenditures as unemployed patients avail their benefits. The surge in health expenditure may also be due to the diagnosis of chronic diseases or mental health issues.

2.1.3 Urbanization

The study conducted by Fahatti (2015) is tested through an OLS estimator that an increase in air pollution due to urbanization will result in an increase in public health expenditure. There is a range of urban health hazards and associated health risks in an urban setting: substandard housing, crowding, air pollution, insufficient or contaminated drinking water, inadequate sanitation, and solid waste disposal services, vector-borne diseases, industrial waste, increased motor vehicle traffic, the stress associated with poverty and unemployment (Moore et al., 2006). Urbanization has a positive correlation with health expenditure. With formal hypothesis testing, it garnered a result of R=71, which states a strong correlation between health expenditure and urbanization. Moreover, Chaabouni and Saidi (2017) have also investigated the impact of CO2 emissions and other pollutant emissions on health expenditure. Their estimates indicate a causal relationship between CO2 emissions and economic growth, as well as between GDP per capita and health expenditure. The result recommends that these countries should implement environmental protection measures and policies to minimize health diseases since the quality of the environment has become a key factor in the rise in health expenditure.

Tajudeen et al. (2018) used a structural time series model (STSM) to re-examine and measure the impacts of the primary key drivers of health expenditure. They have discovered that macroeconomic variables such as urbanization, economic growth, current account, and fiscal balance, official development assistance, oil revenue, and crude birth rate all play a significant role in public health expenditure.

Research conducted by Bakirtas and Cetin (2019) examined the potential effect of urbanization on health expenditures in 89 developing countries from 2006 to 2015. The results of the Fixed Effects (FE) estimator revealed that health expenditures per capita are positively related to income per capita, the share of government expenditures, out-of-pocket costs per capita, and the percentage of people aged 65 and over. Findings revealed that an increase in urbanization would also have an increase in healthcare expenditures in developing countries. As a result, policymakers in developing countries should reconsider their urban

planning strategies in order to avoid the negative externalities of rapid population growth in urban areas. Numerous problems occur with the urbanization trend continuously growing. Social security and universal health coverages should be addressed to properly allocate wealth and eliminate disparities among residents of urban cities. Health services and facilities, such as clinics, must be implemented and made readily accessible to everyone, especially to those who are living in urban slums (Kuddus et al., 2020).

In the study by Shao et al. (2022), urbanization in eastern and central regions of China states that it has a significant increase in public health expenditure. In using the panel threshold regression model, the results incurred a positive relationship between urbanization and public health expenditure consider when there is a growth in population in the Eastern and Central region of China. However, public health spending has a lesser impact on the western region of China, which reflects low economic development. Therefore, urbanization, as present as population increases, has a significant relationship with public health expenditure.

2.2 Synthesis

Most studies also show a gap between economic growth and health investment that causes poor individuals to be left behind. While urbanization has widely remained synonymous with development, recent studies have revealed that urban environments can also result in significant deprivation and health issues.

Furthermore, studies also conclude that economic stability affects investments in the healthcare system. As economic growth increases through healthy labor means more productivity, health expenditure through investment increases. It concludes that an increase in investment will affect income/economic growth in the long run. The impact of health spending on economic growth suggests an intervention from the government to implement policies that will benefit individuals in the long run. Implementing policies will help build a healthy labor force that will provide income, and through economic growth, there will be an increase in investment in health.

2.3 Theoretical Framework

In this chapter, relevant economic theories will be identified that deal with the determinants of public health expenditure and have served a significant role in the development of this study.

2.3.1 Wagner Hypothesis

Wagner's theory suggests that activities and government expenditure are significantly related to each other. According to Adolf Wagner (1980), an increase in the income of an individual and output would cause an increase in the size of the public sector, which is reflected in the percentage of government spending against the gross national product. This is brought about by social problems, the functions traditionally performed by the government, population growth, urbanization, and an increase in both prices and national income. A study conducted by Tsaurai (2014) revealed that Wagner's theory is significantly related to health expenditure. Among the findings are; as health expenditure arises, health infrastructure also increases, which promotes the economy, and which supports the assumption of Wagner's theory. Despite this, this hypothesis has received criticisms such as:

1. Under Wagner's hypothesis, the effect and impact of war is not taken into account in government spending activities;
2. There is a lack of a cohesive and comprehensive framework brought about by the lack of historical facts;
3. Under this hypothesis, economic activities funded by the government in the long
run trends are examined and;
4. This theory includes the *"interdisciplinary"* phenomenon even if it is not essential in the analytical framework.

2.3.2 Peacock-Wiseman Hypothesis

The Peacock-Wiseman Hypothesis focuses on the different trends reflected by government spending and argues that when government expenditure increases, it does not follow a continuous or smooth trend. Under this hypothesis, there are more aspects of the development of government spending, namely the patterns found in the growth of government spending. This hypothesis has the following assumptions:

a. Decisions on public health expenditure and how plans can be influenced by a variety of factors;
b. How resources are utilized depends on political choices and;
c. The citizens of the country are allowed to voice out their opinions on how Public health expenditure should be used.

2.3.3 Keynesian theory

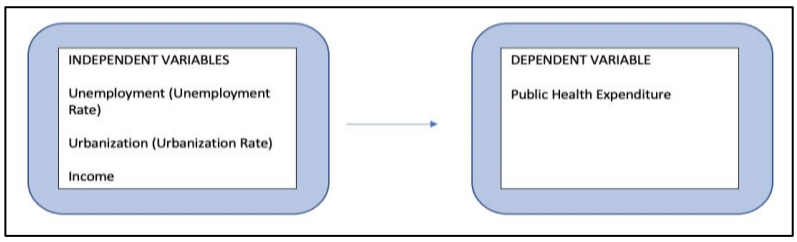
The Keynesian theory of employment will also be used in this study as most empirical evidence shows that government involvement is inevitable in economies all over the world today. According to Nurudeen and Usman (2010), the Keynesian model shows that increasing government spending results in higher economic growth.

The basic principle of Keynesian economics is if a country's investment rate is greater than its savings rate, economic and business growth will occur. If the savings rate is larger than the investment rate, then the economy will slow down and finally enter a recession. This is the foundation of Keynes' theory that increasing government expenditure will reduce unemployment and aid economic recovery. It states that economies are strengthened when a sufficient level of output is produced by economic expenditures. Keynes argued that unemployment was caused by a decline in aggregate demand given the lack of expenditures in an economy. Constant declines in expenditure during a recession lead to more reductions in demand, which leads to increased unemployment rates, and thus leads to even less spending as the number of unemployed individuals rises (Chen, 2021).

Sangkuhl (2015) stated that the Keynesian theory of employment claims that total spending in the economy has a significant impact on economic growth through full employment in the short run. Accordingly, the economy is seen as intrinsically unstable, requiring active government intervention in the form of spending in order to reach full employment. It also argues that public expenditure can stimulate economic growth by increasing government consumption through increased employment, profitability, and investment. With this idea, active government engagement in the market through government spending is the only way to guarantee full employment by assuring sustainable consumption and production patterns and market regulation.

2.4 Conceptual Framework

Figure 2.4.1 shows a Criterion-Predictor (CP) model that the independent variables, namely unemployment, urbanization, and income, have an effect on the dependent variable, which is the Public Health Expenditure. This kind of model is being used when the researcher aims to identify whether the variables influence each other. According to Cristobal and Cristobal (2013), it assesses the effect of two or more variables, and it studies the different variables used.



3. Methodology

This chapter presents the research design, data sources, statistical tools, procedures, and statistical treatments of the research.

3.1 Research Design

The aim of this paper is to study the relationship between various determinants of health expenditure. A correlational quantitative method was used in this study. The relationship between the dependent variable, public health expenditure, and the independent variables, income, unemployment, and urbanization, is highlighted using this method.

Correlational research is a research design that is used to measure the correlation of two or more variables. This indicates that the researcher is searching for two or more variables that correlate with one another (Fitria, 2019). In this case, the researchers wanted to find out the levels of correlation between the variables in this study by using correlational quantitative methods.

3.2 Data Sources

The World Bank open data was used to collect time-series data for gross domestic product per capita, unemployment rate, and urban population growth rate, while the Department of Health (DOH) website was used to collect time-series data for the public health expenditure. Both sets of data covered the years 1990 to 2019.

3.3 Variables

3.3.1 Dependent Variable

- Public health expenditure (real public health expenditure)

3.3.2 Independent Variables

- Income (real GDP per capita)
- Unemployment (unemployment rate)
- Urbanization (urban population growth rate)

Variable List

Independent Variable	Expected Sign	
Income	+	When there is an increase in income, there will also be an increase in public health expenditure and vice versa.
Unemployment	+	When there is an increase in unemployment, there will also be an increase in public health expenditure and vice versa.
Urbanization	+	When there is an increase in urbanization, there will also be an increase in public health expenditure and vice versa.

table 3.3.1

3.4 Economic Model

PHE = $\beta_0 + \beta_1 Y + \beta_2 UN + \beta_3 UR + \varepsilon$

Whereas,

PHE = Public Health Expenditure

Y = Income

UN = Unemployment

UR = Urbanization

The econometric model is formulated with the consideration of the a priori expectations mentioned above. These expectations will be analyzed and proven using software called EViews (Econometric Views). Thus, the parameters of the model will allow its readers to see how public health expenditure is affected by income, unemployment, and urbanization.

3.5 Statistical Treatment of Data

3.5.1 Goodness of Fit / Coefficient of Determination

The goodness of fit is used to determine if the sample made available can represent the data that is expected from the actual population. In general, the goodness of fit test measures if the data is well observed, and it normally implies as an instrument to measure the accuracy of the econometric model. When the given is close to one, at least greater than 80%, it implies a robust econometric model.

The R2 is computed using this formula,

$$\boldsymbol{R^2 = 1 - \frac{RSS}{TSS} = 1 - \frac{\sum e_i^2}{\sum (Y_i - \bar{Y})^2}}$$

Where TSS is identified as the total sum of squares, and RSS is the residual sum of squares.

3.5.2 Individual Significance

The p-value is a method of determining the significance of each variable. The probability under the assumption of no effect or difference is specified as the P-value (null hypothesis) (Dahiru, 2008). Most econometric or statistical software calculates this

automatically. If the p-value is less than the 5% level of significance, the null hypothesis is rejected. When a regression coefficient has a p-value of less than 0.05, then it is considered a significant predictor of the dependent variable (Burton, 2021).

3.5.3 Overall Significance

The p-value and F-statistic are assessed to determine whether the overall regression model is significant. The results can be immediately produced in the econometric software. A significant F-statistic indicates that the entire model, with all independent variables included, is a considerable fit for the data. It also implies that the model has at least one regression slope that is statistically different from zero (Burton, 2021). The p-value must also be less than the 5% level of significance to further validate the significance. This test is used to determine the model's overall significance. Various tests were also applied in the study to prove the significance of the model.

3.5.4 Test of Multicollinearity

Multicollinearity is where two or more explanatory variables are linearly related in a multiple regression model. According to Gujarati & Porter, multicollinearity now includes perfect multicollinearity. Moreover, multicollinearity is said to be caused by several factors, namely what data collection method was used, the population being sampled or its constraints, model specification, and an overdetermined model. Aside from this, in time-series data, it is noticeable that the regressors have a common trend where increases or decreases are observed. It makes the model biased. Using the VIF or the Variance Inflation Factor and the TOL or the Tolerance statistics, it will identify if there is a multicollinearity issue in the model. The VIF determines the increase in the variance of the estimated regression coefficient when the variables are correlated. If the variables are not correlated, the result of the VIF will be equal to one. On the other hand, if the VIF is greater than one, the variables can be moderately correlated. Given a VIF that is between five and ten may mean that the variables are highly correlated but can also be a problem, while a VIF above ten would mean that the coefficients of the regression are not estimated well because of multicollinearity.

The VIF is computed using this formula,

$$VIF = \frac{1}{1 - R^2}$$

Fernando (2020) said that R-squared (R^2) is a statistical measure that represents the proportion of the variance for a dependent variable that is explained by an independent variable or variables in a regression model. It identifies the correlation strength of the dependent and independent variables. The computed value of VIF must not be greater than 10 to assume that model did not violate the test of multicollinearity.

3.5.5 Test of Serial Correlation / Autocorrelation

Durbin-Watson

In general, autocorrelation may exist when there are error terms associated with independent variables and are also correlated. This statistical problem may lead to the OLS regression not being able to obtain all assumptions that fall under the Gauss Markov Theorem. Moreover, autocorrelation is an essential tool to be utilized because it allows the determination of the correlation between and among variables. To test if there is autocorrelation present in the model, the Durbin-Watson and Breusch-Godfrey tests will be utilized. In this test, we observe the p-values of the independent variables of the study and verify if all these values are greater than the 5% level of significance.

The Durbin Watson test is a test for autocorrelation in the residuals from a statistical regression analysis. The Durbin-Watson statistic will yield a result ranging between 0 and 4. Values from 0 to less than 1.5 indicate that positive autocorrelation is present, and results ranging from more than 2.5 to 4 indicate there is negative autocorrelation present.

It is computed using this formula,

$$\boldsymbol{d} = \frac{\sum_{t=2}^{T}(\boldsymbol{e_t} - \boldsymbol{e_{t-1}})^2}{\sum_{t=1}^{T}\boldsymbol{e_t^2}}$$

Breusch-Godfrey

It is also called the LM Statistical Test. It detects autocorrelation up to any predesignated order *p*. It also supports a broader class of regressors (e.g., models of the form $y_i = ax_i + by_{i-1} + c$). To assume that there is no autocorrelation present up to more than 1 lag, the chi-square probability product observation and r-squared and p-values of the regressors should be greater than the level of significance. Using this formula:

$$\boldsymbol{u\ t = \alpha 1 + \alpha 2 X t + p\ 1 u\ t - 1 + \ldots + p\ pu\ t - p + \varepsilon}$$

The r-squared from the original regression are the values used to regress the original regressors and the lagged values of the regressors.

3.5.6 Test of Heteroscedasticity

Testing if heteroscedasticity is present in the model is important because this test allows the researcher to determine the omitted variables in the econometric model. Heteroscedasticity is more common in cross-sectional data than in time series data. If heteroscedasticity is observed, the variance obtained is less than the value of the variance of the best linear unbiased estimator (BLUE). This test verifies whether heteroscedasticity is present if the variance of the error term is not constant to a fixed, which also violates one of the assumptions in CLRM.

White Test

According to Roberto Pedace (2019), White's test is a common test for detecting heteroscedasticity in an econometric model. It allows heteroscedasticity to be a function of one or more independent variables. This also checks specification errors when cross-product terms are used. The chi-square probability of the regression's product of observation and r-squared and the p-value of the regressors are greater than the level of significance.

3.5.7 Test of Misspecification

The test of the model specification is important because it determines which independent variables should or should not be included in the regression. It occurs when the model has violated the CLRM assumption by having irrelevant variables or the wrong functional form. In other words, the Ramsey Regression Equation Specification Test (RESET test) determines whether the combinations of the explanatory variable are non-linear or not.

3.5.8 Test for Normality

This assumption is not necessary for ordinary least squares (OLS), but it is useful when it comes to hypothesis testing. The t-statistic and F-statistic become ineffective if the residuals do not have a normal distribution. If the histogram of residuals is a bell-shaped curve, Jarque Bera test of residuals result is above 0.05, and probability is also above 5% significance; therefore, we can conclude that residuals are normally distributed.

4. Findings and Analysis

4.1 Trends of the Variables

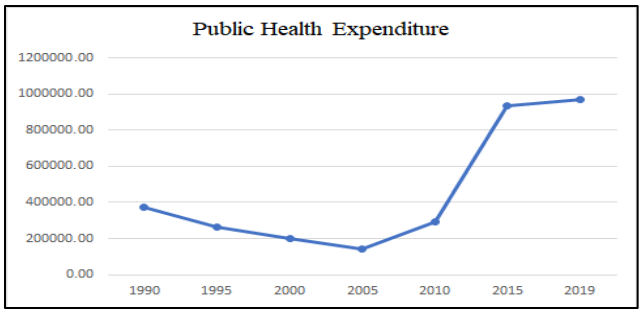


Figure 4.1.1 Philippine Public Health Expenditure

The trend line in Figure 1 shows that the annual public health expenditure of the Philippines indicates a downtrend of values from 1990-2005, and from 2005 to 2019, it shows an uptrend of values in the health expenditure through the years. It is also shown that from 2010-2019, there was a substantial increase in health expenditure. Between 2015-2019, the highest growth in public health expenditure in the Philippines was recorded, amounting to between 800,000 to 1,000,000.

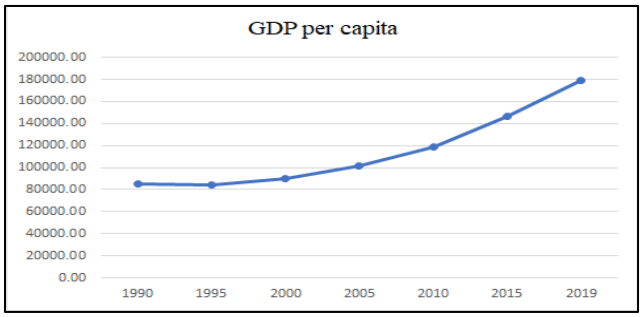


Figure 4.1.2 Philippine Gross Domestic Product per Capita

As shown on the graph in figure 2, from 1990-2019, there was an increasing trend for Gross Domestic Product (GDP) per capita in the Philippines. From 1990-2010 the GDP per capita is in between PHP 800 and PHP 1000. From 2010 until 2019, the GDP per capita of the Philippines is above PHP 1000.

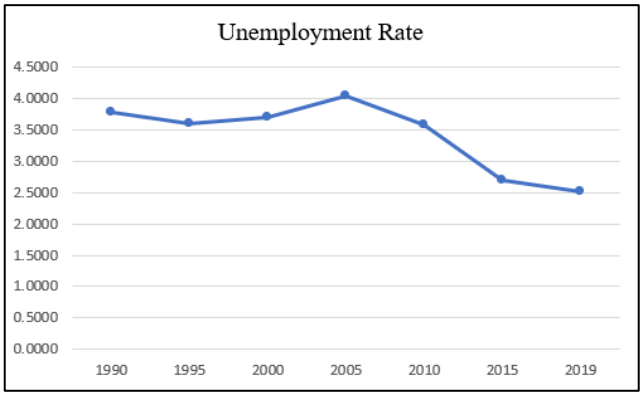


Figure 4.1.3 Philippine Unemployment Rate

From the graph in Figure 3, from 1990-2000, the unemployment rate in the Philippines is between 3 and 4. In around 2005, it was recorded that it had the highest rate of unemployment. From the succeeding years, there was a declining trend in the unemployment rate. In 2019, it recorded the lowest unemployment rate from 1990-2019. This is further supported by the PSA's data stating that as of July 2019, there was an employment rate of 94.6%, which is similar to the employment rate in July 2018.

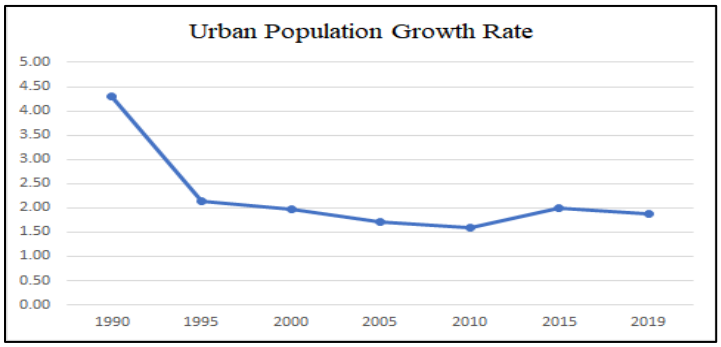


Figure 4.1.4 Philippine Urban Population Growth Rate

Based on the graph in figure 4, the Urban Population growth rate has decreased from 1990-2010. From 2010-2019, the urban population growth rate rose again. It was recorded that 1990 had the highest urban population growth rate with a 4.50% rate. In 2010, it had the lowest growth rate, with only 1.5%.

4.2 Regression Results

Table 4.2.1: OLS Regression Results of the PHE Model

Variables	Coefficients	Standard Errors
Intercept	951257.5	460019.4
Income	459.8081	139.9026
Unemployment	-382466.0	83767.76
Urbanization	136727.0	43142.40

Table 4.2.1 shows the OLS regression results of the PHE model used in Chapter 3. It can be presented as follows:

PHE= 951257.5 + 459.8081*income* - 382466.0*unemployment* + 136727.0*urbanization* + ε

The negative sign for the unemployment variable is indicated since unemployment reduces the capacity of human resources by decreasing the number of individuals employed, which affects national and individual income—resulting in less income allocated for food and expenses for other necessities, making health care the least priority (Abbas and Hiemenz, 2011). This was further supported by Shamsi and Waqas (2016), stating that unemployment has a negative impact on health expenditure. They concluded that the government should enact policies to increase public health expenditure and expand access to health care. They also stated that the government should formulate a plan to increase primary school enrollment and reduce the unemployment rate.

Table 4.2.2: Coefficient of Determination/Goodness of fit

R-squared	Adjusted r-squared
0.898694	0.887005

The goodness of fit is used to determine if the sample made available can represent the data that is expected from the actual population. The R^2 is used to determine how well the independent variables could explain the dependent variable. Table 4.2.2 shows that the value of the r-squared is greater than 80%, indicating that 89.87% variations in public health expenditure in the Philippines can be explained by the variations in the explanatory variables (GDP per capita, unemployment rate, and urban population growth rate) which is closer to 1. Thus, the overall model is robust.

Furthermore, the adjusted r-squared value shows that 88.70% of the variations in public health expenditure in the Philippines can be explained by the variations in GDP per capita, unemployment rate, and urban population growth rate, given the difference between r-squared and adjusted r-squared, which is the degree of freedom.

Table 4.2.3: Individual Significance

Variables	P-values
Intercept	0.0487
Income	0.0029
Unemployment	0.0001
Urbanization	0.0039

Looking at the initial regression results in table 4.2.3, income, unemployment, and urbanization yielded p-values below 0.05, which is less than the 5% level of significance. It indicates that they are all statistically significant. The Wagner Hypothesis supports the significant relationship between income and PHE as it suggests that activities and government expenditure are positively related. Goodman (2015) concluded that being employed improves health and can therefore reduce needing to avail healthcare services necessary for healthcare cost savings. Furthermore, Tajudeen et al. (2018) discovered that urbanization is among the macroeconomic variables that play a significant role in public health expenditure, which was further supported by Bakirtas and Cetin (2019), indicating that an increase in urbanization will also have an increase in healthcare expenditures in developing countries.

Table 4.2.4: Overall Significance

F-statistic	Probability
76.88298	0.0000

H0: $R^2 = 0$

H1: $R^2 \neq 0$

Implication: To reject null, *F-statistic* must be greater than the 5% significance level, while *p-value* must be less than the 5% significance level.

The results in table 4.2.4 indicate that the regression model obtained an *F-statistic* of 76.88298 and a *p-value* of 0.0000. This result implies that R^2 is significantly different from zero; thus, there is strong evidence that the null hypothesis would be rejected.

4.3 Test for Multicollinearity

Table 4.3.1: Variance Inflation Factor

Variables	VIF
Income	4.271347
Unemployment	4.044655
Urbanization	1.123271

H0: There is no multicollinearity in the model.
H1: Otherwise.
Implication: To reject null, VIF must be greater than 10.
The variance inflation factor (VIF) of the independent variables indicated in table 4.3.1 are 4.271347, 4.044655, and 1.123271. Looking at the result, it is seen that all the independent variables have a VIF lower than 10 (following the general principle that the VIF of each regressor must be below 10), which shows that multicollinearity will not be violated given the strong evidence. Thus, we do not reject the null hypothesis.

4.4 Test for Serial Correlation

Table 4.4.1: Durbin-Watson Test

1.319422

H0: There is no serial correlation at 1 lag.
H1: Otherwise.

Table 4.4.2: Breusch-Godfrey Test

Lags	Prob Chi-square
2	0.1282
3	0.2484

H0: There is no serial correlation at 3 lags.
H1: Otherwise.
Implication: To reject null, p-value must be less than the 5% level of significance.
The Durbin-Watson test in table 4.4.1 yielded a value of 1.319422, which is far from two, indicating that the disturbances are serially correlated. However, the Breusch-Godfrey test in table 4.4.2 shows that the prob Chi-square of each lag is 0.1282 and 0.2484, which is higher than the 5% level of significance; thus, there is no evidence of serial correlation up to 3 lags.

4.5 Test for Heteroskedasticity

Table 4.5.1: White Test

Obs*R^2	Prob Chi-square
6.868719	0.6508
Variables	**Prob Chi-square**
Y^2	0.4287
Y*UN	0.6023
Y*UR	0.8578
Y	0.5353
UN^2	0.4900
UN*UR	0.7414

UN	0.6480
UR^2	0.8227
UR	0.8761

H0: The residuals are homoscedastic.
H1: Otherwise.
Implication: To reject null, prob chi-square, r-squared, and regressors must be less than 0.05.
Heteroskedasticity is tested through the white test. The residuals of the regression model are heteroscedastic if the prob chi-square, r-squared, and regressors are less than the 5% level of significance. As shown in Table 4.5.1, the prob chi-square of the obs*r-squared and the regressors are more than the 5% level of significance. Given this result, the model rejects the null hypothesis. Thus, the regression model is not heteroscedastic.

4.6 Test for Misspecification

Table 4.6.1: Ramsey RESET Test

F-statistic	Probability
0.002867	0.9577

H0: R2= 0
H1: R2≠ 0
Implication: To reject null, p-value should be less than the level of significance.
As seen in Table 4.6.1, the result incurred a *p-value* of 0.9577, which is greater than the 5% level of significance. Therefore, R2 is normally distributed, and no violation was made under this test. We do not reject the null hypothesis; there is no misspecification error.

4.7 Test for Normality
Histogram of Residuals

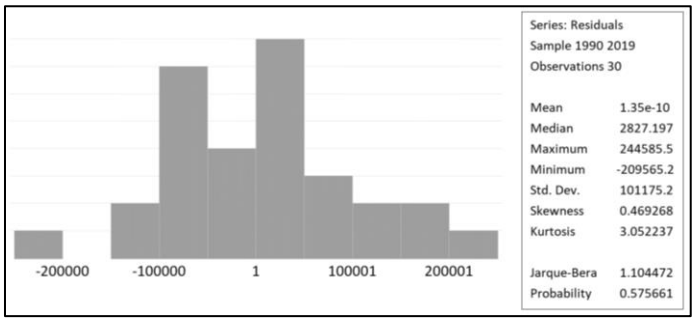


Figure 4.7.1

H0: Residuals are normally distributed.
H1: Residuals are not normally distributed.

As seen in figure 4.7.1, the result incurred a p-value of 0.575661 and 1.104472 on the Jarque-Bera test, both of which are greater than the 5% level of significance. The histogram of residuals exhibits a bell-shaped curve. It indicates that the model fits this assumption and that the data set is well-modeled by a normal distribution. Since the residuals are normally distributed, we conclude that the null hypothesis is true; therefore, the researchers reject the alternative hypothesis, it becomes valuable for hypothesis testing and the overall regression model making its results accurate and not misleading.

5. Summary, Conclusion, and Recommendation

5.1 Summary

This study aims to determine the relationship of economic factors, precisely income, unemployment, and urbanization, that affect public health expenditure in the Philippines to provide valuable data for policymakers in the health sector. The study used annual time series data from 1990 until 2019 (30 observations). The study's objective is achieved using multivariate Ordinary Least Squares (OLS) regression, with annual public health expenditure as the regressand, and annual real GDP per capita, unemployment rate, and urban population growth rate as the regressors. To determine the significance of the parameters, the t-test and f-test of the hypothesis testing were used. Several diagnostic tests, such as the VIF for multicollinearity, Durbin-Watson and Breusch-Godfrey

test for serial correlation, white test for heteroscedasticity, Ramsey RESET test for misspecification, and the histogram of residuals for normality, were also employed to detect issues in the regression model.

5.2 Conclusion

The findings of the study are as follows: (1) Income is significant and is positively related to public health expenditure. If there will be an increase in income, there will be an increase in public health expenditure in the government. The Wagner Hypothesis supports the significant relationship between income and PHE as it suggests that activities and government expenditure are positively related and was further supported by the study concluded by Bloom et al. (2019), stating that income is an important factor in explaining health care expenditure, and a rise in overall income will lead to an increase in health expenditure as well; national income fuels health expenditures as well as health expenditures fueling national income growth (Connelly and Nghiem, 2017).

(2) Unemployment rate is significant and negatively related to public health expenditure; an increase in the unemployment rate means a decrease in public health expenditure of the government. It was further explained in the study by Benitez et al. (2018) since unemployment sustains only a small portion of the population, it reduces national income and raises the dependency burden. Increased employment is believed to increase national income, placing the government in a better position to invest in the health sector. Unemployment is among the reasons the government increases health expenditure, as some people cannot afford to pay for healthcare/insurance.

Lastly, (3) Urbanization is significant and is positively related to public health expenditure. It supports the idea of Kuddus et al. (2020) that urbanization has a positive correlation with health expenditure; numerous problems occur with the urbanization trend continuously growing. Social security and universal health coverages should be addressed to properly allocate wealth and eliminate disparities among residents of urban cities. Health services and facilities, such as clinics, must be implemented and made readily accessible to everyone, especially to those who are living in urban slums. Bakirtas and Cetin (2019) further explained that an increase in urbanization would also have an increase in healthcare expenditures in developing countries, being said that the Philippines is a developing country. Moreover, the entire model is significant, normally distributed, and exhibits no signs of serial correlation, multicollinearity, heteroscedasticity, or misspecification, as revealed by the F test and the full diagnostic test applied.

5.3 Recommendation

The researchers concluded this study is significant and came up with the following recommendations:

- Due to the limitations of this study, the researchers recommend that future analyses look into a wider set of data that covers the years that were not included in this study, investigate other variables that affect public health expenditure and use other estimation methods to further analyze the study. Given the difficulty in obtaining data, it would be more efficient to contact the Department of Health directly. We believe that following these suggestions will aid in the discovery of a more consistent set of findings.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

References

[1] Aboubacar, B. & Xu, D. (2017). The Impact of Health Expenditure on the Economic Growth in Sub-Saharan Africa. *Theoretical Economics Letters*, *7*(03), 615. DOI: 10.4236/tel.2017.73046

[2] Afzali, H. R. & Askari, R., Askarishahi, M., Geravandi, S., & Pakdaman, M. (2019). The Effect of Microeconomic Indicators on Health-care Expenditure in Iran. *Journal of education and health promotion, 8*. https://doi.org/10.4103/jehp.jehp_453_18

[3] Agbede, M. & Onuoha, F. (2019). Impact of Disagregated Public Expenditure on Unemployment Rate of Selected African Countries: A Panel Dynamic Analysis. *Journal of Economics, Management, and Trade, 24*(5): 1-14; Article No. JEMT.50599.

[4] Alba, K. C., De Castro, L., Gundayao, J. C., Hamoy, G., & Lopez, A. A. (2020). A fair allocation approach to the ethics of scarce resources in the context of a pandemic: The need to prioritize the worst-off in the Philippines. *Developing world bioethics*, *21*(4), 153-172. https://doi.org/10.1111/dewb.12293.

[5] Aleemran, S. & Panahi, H. (2016). Study of the Causality between Unemployment and Health. *Iran occupational health journal, 13*(3), 81-89.

[6] Atun, R., Da Zhou, C., Maruthappu, M., Williams, C., & Zeltner, T. (2015). Unemployment, public-sector health care expenditure and HIV mortality: An analysis of 74 countries, 1981-2009. *Journal of global health, 5*(1), 010403. https://doi.org/10.7189/jogh.05.010403

[7] Bakırtaş, I. & Çetin, M. A. (2019). Does Urbanization Induce the Health Expenditures? A Dynamic Macro-Panel Analysis for Developing Countries. Dumlupınar *Üniversitesi Sosyal Bilimler Dergisi, (61),* 208-222.

[8] Benitez, V., Gonzalez, M., & Martin, J. (2018). Long Term Unemployment, Income, Poverty, and Social Public Expenditure, and their Relationship with Self-perceived Health in Spain (2007-2011). *BMC Public Health 18*(1),1-14. https://doi.org/10.1186/s12889-017-5004-2

[9] Bíró, A., & Elek, P. (2020). Job loss, disability insurance, and health expenditure. *Labour Economics, Volume 65,* 101856. https://doi.org/10.1016/j.labeco.2020.101856

[10] Bloom, D., Canning, D., Kotschy, R., Prettner, K., & Schunemann, J. (2019). *Health and Economic Growth: Reconciling the Micro and Macro Evidence (No. w26003)*. National Bureau of Economic Research.

[11] Boachie, M., Ramu, K., & Polajeva, T. (2018). Public Health Expenditures and Health Outcomes: New Evidence from Ghana. *Economies, 6*(4), 58. https://doi.org/10.3390/economies6040058

[12] Boussalem, F., Boussalem, Z., & Taiba, Z. (2014). The Relationship between Public Sending on Health and Economic Growth in Algeria: Testing for cointegration and causality. *International Journal of Business and Management Vol. II* (3), 25.

[13] Burton, A. L. (2021) OLS (Linear) Regression. *The Encyclopedia of Research Methods in Criminology and Criminal Justice, 2,* 509-514. DOI: 10.1002/9781119111931.ch104

[14] CDC Foundation. (n.d.). What is Public Health? Public Health Connects Us All. https://www.cdcfoundation.org/what-public-health

[15] CFI Education Inc. (2020, October 8). What is Unemployment? https://corporatefinanceinstitute.com/resources/knowledge/economics/unemployment/

[16] CFI Education Inc. (2020, October 8). What is Capital Expenditure? https://corporatefinanceinstitute.com/resources/knowledge/economics/unemployment/

[17] Chaabouni, S., & Saidi, K. (2017). The dynamic links between carbon dioxide (CO2) emissions, health spending and GDP growth: A case study for 51 countries. *Environmental Research*, *158*, 137–144. DOI: 10.1016/j.envres.2017.05.041

[18] Chen, J. (2021). Principles of Keynesian Economics. Https://www.investopedia.com/teerms/j/john_maynard_keynes.asp

[19] Clair, A., Madureira-Lima, J., Reeves, A., & Stuckler, D. (2017, September 18). The Great Recession and Inequalities in Access to Health Care: A Study of Unemployment and Unmet Medical Need in Europe in the Economics Crisis. *International Journal of Epidemiology, Volume 47*, Issue 1, Pages 58-68, https://doi.org/10.1093/ije/dyx193

[20] Connelly, L. & Nghiem, S. (2017). Convergence and Determinants of Health Expenditures in OECD Countries. *Health Econ Rev* 7, 29. https://doi.org/10.1186/s13561-017-0164-4

[21] Dahiru, T. (2008). P-value, a true test of statistical significance? A cautionary note. *Annals of Ibadan postgraduate medicine, 6*(1), 21-26. https://doi.org/10.4314/aipm.v6il.64038

[22] Department of Health. (1993). CHALLENGES AND OPPORTUNITIES: HEALTH, ENVIRONMENT, AND DEVELOPMENT. https://doh.gov.ph/sites/default/files/publications/Department%20of%20Health%20Annual%20report%201993_1.pdf

[23] Dumrul, C., Halıcı-Tülüce, N. & Doğan, İ. (2015). Is income relevant for health expenditure and economic growth nexus? *International Journal of Health Economics and Management, 16*(1), 23–49. https://doi.org/10.1007/s10754-015-9179-8

[24] Edeme, R., Emecheta, C., & Omeje, M. (2017, October 18). Public Health Expenditure and Health Outcomes in Nigeria. *American Journal of Biomedical and Life Sciences. Vol. 5*, No. 5, 2017, pp.96-102. Doi: 10.11648/j.ajbls.20170505.13

[25] Fattahi, M. (2015). The Role of Urbanization Rate in the Relationship between Air Pollution and Health Expenditures: A Dynamic Panel Data Approach. *International Letters of Social and Humanistic Sciences, 53*, 68-72. https://www.learntechlib.org/p/176932/.

[26] [26] Fitria, W. (2019). Reading Interest and Reading Comprehension: A Correlational Study. *JURNAL EDUCATIVE: Journal of Educational Studies Vol. 4* No. 1. https://core.ac.uk/download/pdf/267903547.pdf

[27] Fortin-Rittberger, J. (2014). Time-series cross-section. In Best, H., & Wolf, C. (Eds.), *The SAGE handbook of regression analysis and causal inference* (pp. 387-408). SAGE Publications Ltd, https://dx.doi.org/10.4135/9781446288146

[28] Furuoka, F., Lim, B. F. Y., Kok, E., Hoque, M. Z., & Munir, Q. (n.d.). What are the determinants of Health Care Expenditure? empirical results from Asian countries. CORE. https://core.ac.uk/display/148366622?utm_source=pdf&utm_medium=banner&utm_campaign=pdf-decoration-v1

[29] Goodman, N. (2015). The Impact of Employment on the Health Status and Health Care Costs of Working-age People with Disabilities. Lead Center. http://www.leadcenter.org/system/files/resource/downloadable_version/impact_of_employment_health_status_health_care_costs_0.pdf.

[30] Huang, J., Birkenmaier, J., & Kim, Y. (2014). Job loss and unmet health care needs in the economic recession: different associations by family income. *American journal of public health, 104*(11), e178–e183. https://doi.org/10.2105/AJPH.2014.301998

[31] Jowett, M., Kwon, S., & Obermann, K. (2018). The Role of National Health Insurance for Achieving UHC in The Philippines: A Mixed Method Analysis. *Global Health Action, 11*:1, 1483638, https://doi.org/10.1080/16549716.2018.1483638

[32] Keele, L., & Kelly, N. J. (2005). Dynamic Models for Dynamic Theories: The Ins and Outs of Lagged Dependent Variables. *Political Analysis, 14*(02), 186–205. doi:10.1093/pan/mpj006

[33] Khan, J. R., Awan, N., Islam, M. M., & Muurlink, O. (2020). Healthcare Capacity, Health Expenditure, and Civil Society as Predictors of COVID-19 Case Fatalities: A Global Analysis. *Frontiers in public health*, *8*, 347. https://doi.org/10.3389/fpubh.2020.00347

[34] Kraipornsak, P. (2017). Factors Determining Health Expenditure in the Asian and the OECD Countries. *Economics World, Sep.-Oct. 2017, Vol. 5*, No. 5, 407-417 doi: 10.17265/2328-7144/2017.05.003

[35] Kuddus, M. A., Tynan, E., & McBryde, E. (2020). Urbanization: A Problem for the Rich and the Poor? *Public Health Reviews, 41*(1). doi: 10.1186/s40985-019-0116-0

[36] Magazzino, C., & Mele, M. (2012). The Determinants of Health Expenditure in Italian Regions. *International Journal of Economics and Finance, 4*(3). https://doi.org/10.5539/ijef.v4n3p61

[37] Magsambol, B. (2020). Low pay, high risk: The reality of nurses in the Philippines. Rappler. https://www.rappler.com/newsbreak/iq/salary-nurses-philippines.

[38] Malhotra, C., & Do, Y. K. (2016). Public health expenditure and health system responsiveness for low-income individuals: results from 63 countries. *Health Policy and Planning*, *32*(3), April 2017, Pages 314–319, https://doi.org/10.1093/heapol/czw127.

[39] Mba, S., Obisike, N., Okoli, U., & Onwuka, I. (2020). Impact of Government Expenditure on Unemployment in Nigeria: Evidence from Social Expenditure. *International Journal of Social Sciences and Management Research*, *6*(1), 65-76.

[40] Ministry of Health. (January 2000). Policy on Primary Health Care (PHC). https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/lao_peoples_democratic_republic/policy_on_primary_health_care-eng.pdf
[41] Moore, M., Gould, P., & Keary, B. (2003). Global Urbanization and Impact on Health. *International journal of hygiene and environmental health*, *206*(4-5), 269-278. doi: 10.1078/1438-4639-00223.
[42] Musgrove, P., Zeramdini, R., & Carrin, G. (2002). *Bulletin of the World Health Organization*, *80*, 134-146.
[43] National Geographic Society. (2019, October 22). Urbanization. https://www.nationalgeographic.org/encyclopedia/urbanization/
[44] Nurudeen, A., & Usman, A. (2010). Government expenditure and economic growth in Nigeria, 1970-2008: A disaggregated analysis. *Business and economics journal*, *4*(1), 1-11.
[45] Patinio, F. (2020). Proposed healthcare workers' salary hike 'timely': groups. Philippine News Agency. https://www.pna.gov.ph/articles/1116263.
[46] Pharr, J. R., Moonie, S., & Bungum, T. J. (2012). The Impact of Unemployment on Mental and Physical Health, Access to Health Care and Health Risk Behaviors. *ISRN Public Health, 2012, 1–7*. https://doi.org/10.5402/2012/483432
[47] Piabuo, S. & Tieguhong, J. (2017). Health Expenditure and Economic Growth- A Review of the Literature and an Analysis Between the Economic Community for Central African States (CEMAC) and Selected African Countries. *Health economics review*, *7*(1), 1-13.
[48] Pirim, Z., Owings, W.A., & Kaplan, L. S. (2014). The Long-Term Impact of Educational and Health Spending in Unemployment Rates. *European Journal of Economic and Political Studies*, *7*(1).
[49] Raghupathi, V. & Raghupathi, W. (2020). Healthcare Expenditure and Economic Performance: Insights from the United States Data. *Frontiers in public health*, *8*, 156.
[50] Rana, R. H., Alam, K., & Gow, J. (2020). Health Expenditure and Gross Domestic Product: Causality Analysis by Income Level. *International journal of health economics and management*, *20*(1), 55-77.
[51] Salazar, M. (2017). Concerns on Government Spending. https://news.mb.com.ph/2017/09/03/concerns-on-governmentspending/?
[52] Sangkuhl, E. (2015). "How the Macroeconomic Theories of Keynes Influenced the Development of Government Economic Finance Policy After the Great Depression of the 1930's: Using Australia as the Example". *Athens Journal of Law, 1*(1).
[53] Shamsi, N. & Waqas, M. (2016). What Determines the Public Health Expenditure in Pakistan? Urbanization, Income and Unemployment. *World Journal of Medical Sciences 13* (2): 157-164, 2016 ISSN 1817-3055DOI: 10.5829/idosi.wjms.2016.13.2.102182
[54] Shao, Q., Tao, R., & Luca, M. M. (2022). The effect of urbanization on Health Care Expenditure: Evidence from China. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.850872
[55] Tajudeen, O. S., Tajudeen, I. A., & Dauda, R. O. (2018). Quantifying Impacts of Macroeconomic and Non-economic Factors on Public Health Expenditure: A Structural Time Series Model. *African Development Review, 30*(2), 200–218. doi:10.1111/1467-8268.12326
[56] The World Bank, Health Economics in Development. http://documents1.worldbank.org/curated/en/840211468779068549/pdf/279270PAPER0Health0economics.pdf
[57] The World Bank, World Development Indicators. https://data.worldbank.org/country/philippines?view=chart
[58] Tsaurai, K. (2014). Is Wagner's Theory Relevant in Explaining Health Expenditure Dynamics in Botswana? *Journal of Governance and Regulation, 3*(4), 107-115. https://doi.org/10.22495/jgr_v3_i4_cl_p3
[59] United Nations Department of Economics and Social Affairs. (2018). 68% of the World population Projected to Live in Urban Areas by 2050, says UN. https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html
[60] Wilson, S. E., & Butler, D. M. (2007). A Lot More to Do: The Sensitivity of Time-Series Cross-Section Analyses to Simple Alternative Specifications. *Political Analysis, 15*(02), 101-123. doi:10.1093/pan/mpl012
[61] Wilson, S. H., & Walker, G. M. (1993). Unemployment and health: A review. *Public Health, 107*(3), 153–162. https://doi.org/10.1016/s0033-3506(05)80436-6
[62] World Bank. (2020). Universal Health Coverage. https://worldbank.org/en/topic/universalhealthcoverage
[63] World Health Organization. The World Health Report; Health Systems: Improving Performance. Geneve: World Health Organization; 2000.
[64] Yetim, B., İlgün, G., Çilhoroz, Y., Demirci, S. & Konca, M. (2021). The Socioeconomic Determinants of Health Expenditure in OECD: An Examination on Panel Data. *International Journal of Healthcare Management*, *14*(4), 1265-1269