

**EFFECT OF HEALTHCARE BUDGET ALLOCATION ON  
COUNTY GOVERNMENT ECONOMIC GROWTH IN KENYA**

**BY**

**VIRGINIAH WANJUHI WARUINGI**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL  
FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF  
THE DEGREE OF MASTERS OF BUSINESS ADMINISTRATION,  
SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI**

**NOVEMBER 2020**

## DECLARATION


I declare that this is my work and has not been presented to any institution or university other than the University of Nairobi for examination.

Signed:  Date: 20.11.2020

**Waruingi Virginia**

**D61/5890/2017**

This research project has been presented for examination with my approval as the University Supervisor.

Signed:  Date: 20.11.2020

**Dr. Duncan Elly Ochieng (PhD, CIFA)**

Lecturer, Department of Finance and Accounting

School of Business, University of Nairobi

## **ACKNOWLEDGEMENTS**

I thank and honour the Almighty God for his grace and wisdom to complete this project despite demands in my profession and personal life.

I sincerely thank my supervisor, Dr. Duncan Elly for his steadfast support, positive and challenging contributions and above all his patience throughout the entire process. His advice and guidance greatly assisted in successful completion of this project.

I wish to thank my moderator Dr. Kennedy Okiro whose incisive reading and constructive critique of the project in progression has been valuable. I thank all my colleagues in the University for their support.

## **DEDICATION**

I wish to dedicate this project to my parents Mr. and Mrs. John Waruingi who have taught me the value of education and supported me in every way.

Special dedication to my husband Fredrick, son Austyn and my siblings for their encouragement, thoughts, and prayers throughout the course. They hold a dear place in my heart and I thank God for their love and support.

Finally, I would wish to dedicate this project to the Late Lydiah Wairimu for her encouragement and prayers.

# TABLE OF CONTENTS

<b>DECLARATION.....</b>	<b>ii</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>ii</b>
<b>DEDICATION.....</b>	<b>iv</b>
<b>TABLE OF CONTENTS .....</b>	<b>v</b>
<b>LIST OF TABLES .....</b>	<b>viii</b>
<b>LIST OF FIGURES .....</b>	<b>ix</b>
<b>ABBREVIATIONS .....</b>	<b>x</b>
<b>ABSTRACT.....</b>	<b>xi</b>
<b>CHAPTER ONE: INTRODUCTION .....</b>	<b>1</b>
1.1 Background of the Study.....	1
1.1.1 Healthcare Budget Allocation .....	2
1.1.2 Economic Growth.....	3
1.1.3 Healthcare Budget Allocation and Economic Growth .....	4
1.1.4 County Governments in Kenya .....	4
1.2 Research Problem.....	5
1.3 Research Objectives .....	7
1.4 Value of the Study.....	7
<b>CHAPTER TWO: LITERATURE REVIEW.....</b>	<b>8</b>
2.1 Introduction .....	8
2.2 Theoretical Review .....	8
2.2.1 Solow-Swan Theory of Growth.....	8
2.2.2 Wagner Theory of Increasing State Spending.....	9
2.2.3 Theory of Budgetary Allocation.....	9
2.2.4 Buchanan's Theory of Healthcare Spending.....	10

2.3 Determinants of County Economic Growth.....	11
2.4 Empirical Studies .....	13
2.5 Conceptual Framework .....	16
2.6 Summary of the Literature Review and Research Gap .....	17
<b>CHAPTER THREE: METHODOLOGY .....</b>	<b>20</b>
3.1 Introduction .....	20
3.2 Research Design.....	20
3.3 Population of Study.....	20
3.4 Data Collection.....	20
3.5. Diagnostic Tests .....	21
3.6 Data Analysis .....	22
3.6.1 Regression Model.....	22
3.6.2 Test of Significance .....	23
3.5.3 Measurement of Variables.....	23
<b>CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION</b>	<b>24</b>
4.1 Introduction .....	24
4.2 Descriptive Statistical Analysis.....	24
4.3 Exploratory Data Analysis .....	25
4.4 Diagnostic Tests .....	29
4.5 Correlation Analysis.....	33
4.6 Regression Analysis .....	35
4.7 Interpretation of the Findings .....	37
<b>CHAPTER FIVE: SUMMARY, CONCLUSIONS AND</b>	
<b>RECOMMENDATIONS.....</b>	<b>39</b>
5.1 Introduction .....	39

5.2 Summary .....	39
5.3 Conclusions .....	40
5.4 Recommendations .....	41
5.5 Limitations of the Study .....	41
5.6 Suggestions for Further Research .....	42
<b>REFERENCES.....</b>	<b>44</b>
<b>APPENDICES .....</b>	<b>48</b>
Appendix I: Data Sheet .....	48
Appendix II: Raw Data .....	49

## LIST OF TABLES

Table 2.1: Summary of Literature and Research Gap.....	17
Table 3.1: Measurement of the Variables .....	23
Table 4.1: Descriptive Statistical Analysis .....	24
Table 4.2: Normality Test.....	30
Table 4.3: Multicollinearity Tests.....	31
Table 4.4: Heteroscedasticity Test.....	32
Table 4.5: Autocorrelation Test .....	32
Table 4.6: Unit Root Test.....	33
Table 4.7: Correlation Analysis Matrix .....	34
Table 4.8: Prais-Winsten Regression.....	35



## LIST OF FIGURES

Figure 2.1 Conceptual Framework .....	17
Figure 4.1: Panel Plots for GCP.....	26
Figure 4.2: Panel Plots for Healthcare Budgetary Allocation.....	27
Figure 4.3: Panel Plots for National Allocation Share.....	28
Figure 4.4: Panel Plots for Internal Appropriations.....	29

## **ABBREVIATIONS**

<b>CRA</b>	Commission of Revenue Allocation
<b>GCP</b>	- Gross County Product
<b>GDP</b>	- Gross Domestic Product
<b>GNP</b>	- Gross National Product
<b>HIV/AIDS</b>	- Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome
<b>MOH</b>	- Ministry of Health
<b>WHO</b>	- World Health Organisation

## ABSTRACT

It is generally believed that economic growth and development happens only when a nation or state ensures that the available resources are properly allocated to various productive economic units. The health of a nation is the backbone for economic growth and as a matter of concern every nation must invest in the healthcare of her citizens who are the human capital and drivers of economic growth. A sick population is an unproductive population. In Kenya, health care budgetary allocation by Kenyan government continue to fall short of the basic minimum despite having global commitments such as the Abuja declaration where it is expected to allocate at least 15 percent the total allocation to healthcare. There however has been an increase in terms of the amount the government has been spending on healthcare from approximately KSh 271 billion (6.7 % of GDP) in 2012/13 to 346 billion (5.2% of GDP). In 2017/18, MoH allocated KSh. 155 Billion to healthcare. Thus, the research sought to establish the effect of health budget allocation on economic growth of the devolved county governments in Kenya. The study was guided by the Solow-Swan theory of growth, Wagner Theory of increasing state spending, Theory of budgetary allocation and Buchanan's theory of healthcare spending. The study used a descriptive research design and conducted a census of the 47 Counties in Kenya. The research data was gathered for a four years between 2015 and 2018. Descriptive statistical tools and the panel regression analysis used to scrutinize using the STATA statistical analysis software. The correlation analysis results revealed that healthcare budgetary allocation, national allocation share and internal appropriations had a positive correlation with the county's gross product respectively. The regression results revealed that healthcare budgetary allocation had a positive and significant relationship with Counties economic growth whereas the national allocation share had a positive and significant relationship with economic growth whilst internal appropriations (own revenue generation) had a positive and significant relationship with economic growth of Kenyan Counties. The study concluded that healthcare budgetary allocation, national allocation share and internal appropriations had a statistically significant and positive relationship with economic growth of Counties in Kenya. The study recommended that the administration of county governments in Kenya should allocate more monetary resources in health care functions so to enhance the counties growth economically since poor investment in healthcare is a serious constraint hindering improvement of healthcare provision as well enhanced economic development. The study recommended an additional research on how healthcare budgetary allocations affects counties economic growth under which the qualitative views and opinions of county administrators, policy makers and citizens will be incorporated.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

Health is wealth so is said. How health affects the growth of the economy of nation continues to attract attention from across the fields of research and economic growth policy formulation institutes. There have been lots of discussions and studies on how investment in the healthcare of a nation affects the economic growth of that nation or state in terms of Gross Domestic Product. Bloom and Canning (2000) argue that healthy citizens are more effective at incorporating knowledge which consequently makes them more productive. According to World Bank (2004), high income countries spend on average 7 percent of their gross domestic product on healthcare whereas low income countries spend only 4.2 percent on average on healthcare. Changes in healthcare expenditure are determined by modification in growth and expansion of an economy, which is the best indicator of resources a country can apportion to health sector.

The relationship between healthcare budget allocation and expenditure can be explained by various theories. These include Solow-Swan Theory of Growth by Solow (1956) who argues that countries which save more increase their per capita income. Theory of Budgetary Allocation by Fozzard (2001) asserts that resources should be allocated to their most productive use and that all sectors of the economy must be given a chance to participate in budget allocation process to ensure it is done properly for maximum realization of benefits. Buchanan's theory of healthcare developed by Buchanan (1965) argues that decisions concerning investment in the healthcare of a nation should be made independent of demand.

Kenya is among countries whose huge percentage of workforce is individuals engaged in manual labour and Jua Kali activities. This workforce depends solely on the physical strength of the worker and therefore the health of such a worker need to be good for him/her to be productive. According to Bloom, Canning and Weston (2004), Workers that are healthier are by default more economically productive. According to the World Bank (2018), Kenyan economy faces various challenges which interfere with its maximum growth and development. Among the challenges are poor healthcare which has been killing human capital, poverty, inequality, poor governance and climate change, mismatch in education curriculum and job market requirements and low investments.

### **1.1.1 Healthcare Budget Allocation**

There is no universally accepted definition of budget allocation. In this study, the most applicable definition will be that of the World health organization which describes budget allocation to comprise of all the financial resources that are directed towards healthcare provision activities including curing and prevention of diseases, family planning, nutrition and emergency aid (WHO, 2012).

Health care is a key economic growth pillar development aspect and nations across the world have in the recent past started to embrace the idea of developing the economy by investing in the health sector. In Africa, there have been reforms across the continent aimed at increasing investments in health. These include the Declarations of Abuja (2001), Addis-Ababa (2006) and Ouagadougou (2008).

Poor investment in healthcare among African states has been cited as a serious constraint hindering improvement of healthcare provision. The continent where Kenya

sits continues to register the highest share in maternal and infant mortalities globally. It is also the continent with highest number of HIV/AIDS infections. Healthcare suffers from inefficiencies and disparity that characterizes allocation of resources and provision of services. In this study, healthcare budget allocation will be measured as the natural logarithm of the annual amount of money budgeted for health by the county governments.

### **1.1.2 Economic Growth**

International Monetary Fund (2012) associates the growth of the economy with the expansion in the value of goods and services after adjustment of inflation over a specified duration. The conventional method of measuring economic expansion is the use of real Gross Domestic Product (GDP). Bakang (2015) relates economic growth with an expansion in the state capacity in producing goods and services as time goes by. Key indicators of economic growth are GDP, capita income, economic value of goods and services, foreign trade balance, life expectancy, personal consumption and literacy.

Before and after devolution, the government of Kenya has been working had towards promotion of rapid economic growth and different the years have had different tastes of economic growth. Since 2012 to 2017, the government of Kenya has had fluctuating growth figures as expressed as Gross County Product (GCP).

There are two main measures of economic growth: Gross Domestic Product (GDP) and Gross National Product (GNP). GDP measures the total value of goods or services that are produced locally over a specified period while GNP assess the total value of goods

or services produced by a country both within and outside the boundaries over a period (Surbhi, 2015). In this study, economic growth will be measured using GDP.

### **1.1.3 Healthcare Budget Allocation and Economic Growth**

Healthcare expenditure and growth of the economy continue to win the attention of different interest parties from all over the world. Various literatures that exist from investigations have shown a lack of general conclusion. For instance, Hashmati (2001) investigated this relationship using the Solow model and concluded that expenditure on health and expansion of the economy are positively related.

Kar and Taban (2003) concluded that the Turkish healthcare expenditure and economic expansion are inversely related. Yumuşak and Yildirim (2009) also found similar results as did Kar and Taban (2003). Arisoy (2010) who used the same methodology but over a longer period (1960–2005) and found out that the two are positively related. Rono (2013) analysed the impact that healthcare investment has on the expansion of the economy and found that the two variables are positively related. According to Nyamwange (2012), economic growth leads to more expenditure on health by the government.

### **1.1.4 County Governments in Kenya**

The process of allocating resources to different sectors of the economy in Kenya changed significantly with devolution as there are forty-seven (47) devolved units instead of one. Most of healthcare services were devolved alongside other economic development sectors. County Allocation Revenue Act of 2014 was enacted to ensure national revenue allocation to counties is done in an equitable manner (Kenya Gazette,

2014). In addition to the equitable allocation, there is also the revenue equalization fund for marginalized counties.

According to Mutai (2015), County governments have numerous needs against the limited resources available and hence more often have failed to achieve most of their goals due to inadequate funds. In Kenya, county economic growth varies from county to county. Different counties are faced with different challenges. Geographically some are arid and semi-arid hence hunger and drought are prevalent among their inhabitants, some face challenges of insecurity where their inhabitants fight occasionally because of the evil of cattle rustling and fighting over pastoralism land (GoK, 2018).

## **1.2 Research Problem**

It is generally believed that economic growth and development happens only when a nation or state ensures that the available resources are properly allocated to various productive economic units. The health of a nation is the backbone for economic growth and as a matter of concern every nation must invest in the healthcare of her citizens who are the human capital and drivers of economic growth. A sick population is an unproductive population (Kelley, 1988); Bloom et al., 2004 and Webber, 2002).

According to MOH (2019), health care budgetary allocation by Kenyan government continue to fall short of the basic minimum despite having global commitments such as the Abuja declaration where it is expected to allocate at least 15 percent the total allocation to healthcare. There however has been an increase in terms of the amount the government has been spending on healthcare from approximately KSh 271 billion (6.7 % of GDP) in 2012/13 to 346 billion (5.2% of GDP). In 2017/18, MoH allocated KSh. 155 Billion to healthcare.



At international level, Hashmati (2001) investigated this relationship between the health of a nation and its economic expansion and found that they are positively related. Kar and Taban (2003) on the contrary ascertained an inverse relationship between investing in healthcare and economic growth. Yumuşak and Yildirim (2009) also found similar results as did Kar and Taban (2003). Arısoy (2010) also observed that expenditure on healthcare has a direct influence on the expansion of economy.

Regionally, Mandiefe and Tieguhong (2015) investigated the contribution of national budget allocation towards public health care on the growth of Cameroonian economy and established a positive relation between budget allocation on economic and health growth. Ogundipe and Lawal (2011) looked into how healthcare expenditure influences the growth of Nigerian economy and established that budget allocation on healthcare expenditure influences economic growth negatively. Bakare and Sanmi (2011) did the same study as Ogundipe and Lawal (2011) in the same country and established that investing in health had a direct positive effect on economic expansion and growth. These studies show conflicting conclusions.

Locally, Nyamwange (2012) concluded that economic expansion led to more expenditure on health, this study confirms the growth of the economy determines investing in healthcare and not the other way around. Rono (2013) sought to analyse the impact of healthcare on expansion of the economy and found a positive relationship. Simiyu (2015) looked into public expenditure and how it is related to the growth of the economy and found lack of any association between them. Oloo (2009) carried a study on development of human resource capital and Kenyan economic expansion between 1981 and 2011 and found a positive relationship.

It is evident how divergent the conclusions made by different scholars on how health care expenditure affects economic growth are. There is also a noticeable difference of results from developing and developed states. It is due to these valid reasons that the study will be conducted fill the research gap answering the question: What is the impact of county health budget allocation on the county economic growth?

### **1.3 Research Objectives**

To determine the effect of health budget allocation on economic growth of the devolved county governments in Kenya.

### **1.4 Value of the Study**

Both national and county governments who are major stakeholders in the healthcare sector could utilize study findings in formulation and implementation of healthcare policies. The result and conclusion of this research could form a basis for decision making of how to optimize healthcare expenditure in order to realize maximum benefits of economic growth.

The ministry of Health and other stakeholders in both public and private health industry could benefit from this study's findings in planning and formulation of intervention and support mechanisms and in negotiating for enough funding towards healthcare sector.

Further, this research could add to the expanding pool of literature available on the topic of study and act as a guide to further studies. It will also be used for reference purposes by future researchers.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

The chapter reviews available theoretical and empirical literature concerning how the national health influences country's wealth. It is divided into hypothetical review, determinants of county economic growth, empirical studies, theoretical framework, and existing gaps.

### **2.2 Theoretical Review**

Three theories relevant to this study are discussed with a focus on what they state, their limitations, and reasons for their relevance to this study.

#### **2.2.1 Solow-Swan Theory of Growth**

Put forward by Solow Robert and Swan Trevor in 1956, this is an exogenous Neo-classical theory of economic expansion which strives to explain in the long-term how the economic growth is influenced by accumulation of capital, growth of population and labour and improvement in productivity. This model asserts that enhancement of human capital results to improvement in economic growth as better skilled and healthy people are more productive. Among important public goods are education, infrastructure and healthcare which are all basic in shaping the growth of a nation (Romer, 1996).

Being a neo-classical economic model, this theory is criticized for normative biasness as it explains an almost "utopia" kind of economy which is not real. It explains social optimality that could exist if the world as it is now were to resemble the model (Romer, 1996). The theory also assumes that individuals in the economy are fully rational in acting which is again not realistic. The model however is relevant to this study since it

relates economic growth with investment in education and healthcare, which are elements of human resources.

### **2.2.2 Wagner Theory of Increasing State Spending**

Adolph Wagner (1890) advanced this model which alludes that public expenditure increases constantly with expansion in economic growth irrespective of the type and level of the economy. It is founded on the believe that a state of welfare is brought forth from the state of capitalism present in the free market since the population never stops going for better social amenities and services as their income level grows. Wagner viewed allocation of funds towards economic investment to be depended on economic growth, that as the economy expands, allocation and expenditure of funds also expands.

This hypothesis attempts to establish either a positive relationship between allocation of government funds and increase in productivity and / or a unidirectional causality relationship between budget allocation and expansion of the economy. This model is criticized on the basis that it is a model for the era of industrialization and as a result, most of the assumptions made cannot be applied in the 21<sup>st</sup> century which is a post-industrialization era (Likierman, 1988). Wagner's theory of Organic state is relevant to this study since it ventures into describing the relationship between national budget allocation expenditure and economic expansion.

### **2.2.3 Theory of Budgetary Allocation**

Penned by Fozzard (2001), this theory states that resources should be allocated to their most productive use and that all sectors of the economy must be given a chance to participate in budget allocation process to ensure it is done properly for maximum

realization of benefits and that resources are channelled to most productive sectors of the economy.

As Khan (2002) puts it, budgetary allocation model assumes that governments select investment portfolios, which maximize utility subject to the combination of return on risk. The relevance of Fozzard's theory of budget allocation to the study at hand is anchored on the fact that Healthcare is a key department that cannot be ignored during the budgeting process (Fozzard, 2001).

#### **2.2.4 Buchanan's Theory of Healthcare Spending**

This theory was formulated by Buchanan in 1965 and states that decisions involving healthcare expenditure should not be guided by demand side of health services so as to avoid inefficiency caused by inadequate supply. The theory asserts that inefficiencies in healthcare provision should rather stem from reduced quality in terms of hospital congestions, infrastructure, and inadequate staff among others.

This theory is criticized on grounds that it does not put into consideration the role that private healthcare providers play. It ignores the fact that in most countries and economies, best healthcare institutions are privately owned and managed and as a result, the government has no full control over supply and demand of health services. This theory is relevant to this research because the per capita income of a nation determines its expenditure on healthcare (Leu, 1986) and because a healthy nation is a wealthy nation as posited by Bloom and Canning (2000).

## **2.3 Determinants of County Economic Growth**

This section discusses factors influencing county economic development. The factors discussed in this section include budget allocation on health, interest rates, inflation rate and foreign exchange rate.

### **2.3.1 Budget Allocation on Health**

Rosen (2002) alternatively defines budget allocation as the process of taxing, spending and management of public debts which defines the process of resource allocation and distribution of income. For this study, the most applicable definition will be that by the WHO which describes budget allocation to comprise of all the financial resources that are directed towards healthcare provision activities including curing and prevention of diseases, family planning, nutrition and emergency aid (World Health Organization, 2012).

Nyamwange (2012) examined the influence of economic enlargement on healthcare and in his findings stated that economic growth leads to more expenditure by government on health, this study confirms that it is economic growth that determines healthcare expenditure and not the other way around. Oloo (2009) studied development of human resource and the growth of the Kenyan economy (1981-2011) and established a direct relationship. His study concentrated with how combined expenditure on healthcare and education affects economic growth.

### **2.3.2 Budget Utilisation**

Budget utilisation specifies the means by which all planned activities will be delivered and within the set timeline. Budget utilisation in County governments is plagued by a myriad of challenges such as complicated procurement processes brought by legal

frameworks which makes it almost impossible for counties to utilise the budgets within the set period. Therefore, the unutilised funds end up being returned to the National treasury (Kathungu, 2016). In Kenya, County governments get their financing from the National government which in turn gets the money from various sources such as direct and indirect taxes, fines and penalties, revenues from state corporations, fees from services offered, donations and foreign aid from development partners as well as external and internal borrowing (Kirimi, 2012).

Various scholars have studied the concept of budget utilisation. For instance, Kathungu (2016) studied the how budget utilization influences the performance of Kenya's county governments. The researcher concluded that budget utilization influences county financial performance positively. Kirimi (2020) sought to understand the factors affecting budget utilization by government ministries in Kenya and found that that the key factors that influence budget utilization in the ministries are structural and cultural.

### **2.3.3 National Budget Allocation**

National budget allocation refers to the process of taxing, spending and management of public debts which defines the process of resource allocation and distribution of income (Rosen, 2002). Several scholars have researched the outcome of national budget allocation on economic expansion on internationally, regionally, and locally. However, these researchers have yielded contradicting findings and conclusions.

Benos (2009) using generalized method of moments concluded infrastructural development and human resource capital as being the influencers of economic growth among 14 EU states over a long period. In contrast, Gregoriou and Ghosh (2008) using

generalized method of moments opined that expenditure had a substantially significant positive impact on economic expansion among 14 EU states in the long run.

### **2.3.4 Internal Appropriations**

Internal appropriations or internally generated revenue is the income that a local, county, or state government collects in their respective areas of responsibility. The internal appropriations for a devolved governments is also described as income that comes from various sources within the devolved area such as land rates, market levies, fines, parking fees amongst others (Omodero, Ekwe & Ihendinihu, 2018). The sustainability and economic growth of various government entities and devolved units depends on the capacity of these units to produce income internally in order to complement the distribution of income from the central government (Ogbeifun & Tokunbo., 2019).

## **2.4 Empirical Studies**

This section discusses previous studies related to the association between budgetary allocation on health and economic growth. Specifically, the section is broken down into international studies, regional studies and local studies.

### **2.4.1 International Studies**

Soukiazis and Cravo (2007) based their study on panel data approach sampling 77 countries to be used to scrutinize the link between health and economic growth between 1980 and 2000. They found out that infant mortality rate was inversely related to income level. They used regression to observe a significant effect between infant mortality and income level where a 1% decrease in the mortality rate of infants led to a 0.13%-0.20% increase in per capita income in all the 77 nations sampled.



Lahirushan and Gunasekara (2015) investigated how public resource expenditure influences growth and expansion of the economy in Asia found out a positive connection in the long run. The study was carried out in the Asian economies including Singapore, Thailand, Malaysia, Bhutan, South Korea, China, Japan, Sri Lanka and India and data used was observed between 1970 and 2013. The study while concluding stated that a causality relationship that is unidirectional existed and that public expenditure plays an important function in expanding the economy

Kurt (2015) observed the influence of health care on the development of Turkish economy between 2006 and 2013. Using the Feder-Ram model to determine the existing relationship, he found out that healthcare budget allocation had an affirmative impact of economic expansion and concluded that the government should invest in health to enhance productivity and aggregate demand of economic goods and services.

#### **2.4.2 Regional Studies**

Bakare and Sanmi (2011) examined the association between expenditure on health and how it influences the growth and expansion of Nigerian economy. They employed multiple regression analysis and ordinary least square, and their findings indicated that a significantly positive connection exists between healthcare expenditure and economy development. Thus, they recommended to the policy formulators and implementers to continuously expand the percentage of funds allocated towards healthcare during every financial budgeting year.

Mandiefe and Tieguhong (2015) investigated the contribution of national budget allocation towards public health care on the growth of Cameroonian economy. They implemented the Vector Error Correction Model for estimations and time series data

arranged annually between 1988 and 2013. Their findings showed that investing in public healthcare significantly influences the growth of economy positively in the long run. They stated in their recommendations that the government should increase healthcare expenditure to 10 or 15% of its GDP as stated in Abuja declaration and enhance and encourage efficiency in private healthcare provision.

Benin et.al (2009) analyzed public expenditure and increase in productivity of the agricultural sector in Ghanaian agro-ecological zones. Their findings revealed that investment by the government into provision of communal goods and services that enhance agriculture, education, health, and infrastructure in rural areas have substantial effect on agricultural productivity, which in turn leads to a better economy.

#### **2.4.3 Local Studies**

Simiyu (2015) researched the influence that public expenditure causes on the growth of Kenyan economy. Data used was secondary sourced for a period between 1963 and 2012. He concluded that both economic expansion and expenditure by the government tend to move to an equilibrium state in the long run. The results also revealed non-existence of causal relationship between spending by the government and how that spending shapes the economy.

Manyalla (2000) examined the relationship that links education and health expenditure to economic expansion. His argument was that investing in healthcare and education leads to improved status of health and that per capita income was highly linked to the level of mortality among the citizens. He noted that majority of problems affecting health sector are associated with inadequate spending on health both socially and financially.

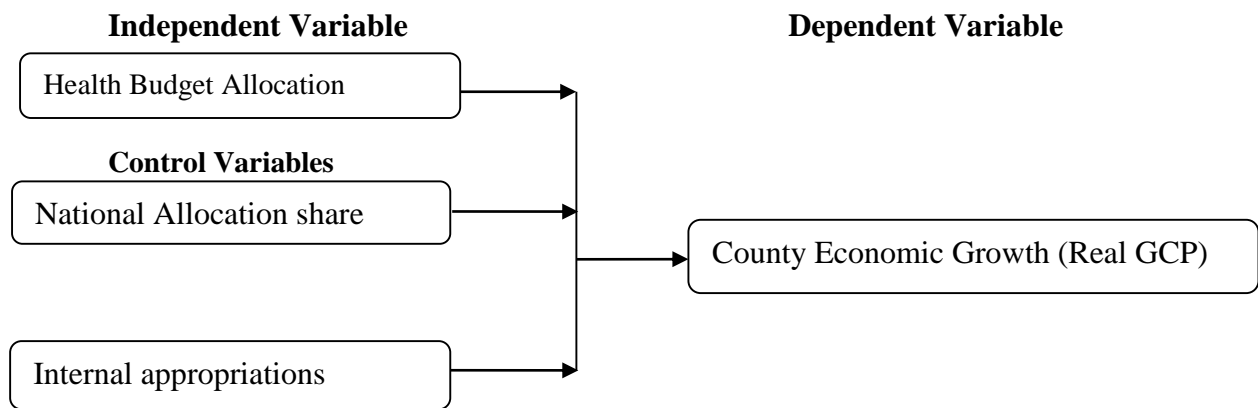
Muturi and Kosen (2013) looked into the influence of sectorial budgetary allocation on economic growth using log-linear form model in Kenya. This study concentrated on defence, health, education, transport, communication, agriculture and manufacturing sectors. They discovered existence of a long-run association between investing in educational sector and agriculture, and GDP. Defence, Health, transport and communication showed an insignificant positive relationship

Ochieng (2010) analysed investment in the health of the nation and its outcome in terms of improved living standards of Kenyan citizens. He alludes in his findings that health care expenditure does not improve economic activity and productivity when it is done in generalization. He noted that for expenditure on health to be effective, the government should direct attention on specific factors namely: healthcare professionals, female literacy, increase of percentage of GDP allocated to health and immunization coverage.

## **2.5 Conceptual Framework**

This study examines how Healthcare budget allocation and economic growth are related. The independent variable will be Healthcare Budget Allocation. National allocation share and internal appropriation (internal revenue generation) acted as control variables while the dependent variable is the economic growth assessed through real GCP as indicated in Figure 2.1.

**Figure 2.1 Conceptual Framework**



**Source: Author (2020)**

**2.6 Summary of the Literature Review and Research Gap**

The literature reviewed indicates mixed results on the matter being investigated. None of these studies have examined this relationship at a county level in Kenya. This study will thus seek to occupy the gap of knowledge by probing the impact of healthcare budget allocation on Kenyan economic development at county level.

**Table 2.1: Summary of Literature and Research Gap**

<b>Author</b>	<b>Focus</b>	<b>Methodology</b>	<b>Findings</b>	<b>Knowledge Gaps</b>	<b>Focus of current Study</b>
Bakare and Sanmi (2011)	Relationship between expenditure on health care and the growth of Nigerian economy.	Multiple regression analysis	A significant positive relationship	Conducted in a foreign state and at a national level	Determining the consequence of health care budget allocation on county economic growth

Ogundipe and Lawal (2011)	Healthcare expenditure and economic growth	Multiple regression	Healthcare impacts economic growth negatively	Study conducted in a foreign state and at a national level	Determining the outcome of health care budget allocation on county economic growth
Mandiefe and Tieguhong (2015)	Public health care and the growth of Cameroonian economy	Vector Error Correction Model (VECM)	Healthcare has a noteworthy positive influence on the economic growth	Conducted in a foreign nation at a national level	Determining the result of health care budget allocation on county economic growth
Soukiazis and Cravo (2007)	The link between economic growth and health	Regression analysis	They found out that infant mortality rate was inversely related to income level.	Conducted at a national level during a pre-devolution era	Determining the cause of health care budget allocation on county economic growth
Kosen and Muturi (2013)	Impact of sectorial budgetary allocation on Kenya's economic development	Descriptive Analysis	Expenditure on education, agriculture affects the economy positively while expenditure on Defence, Health, transport, and communication has no significant effect on the economy.	Focused on national government sectorial units	Determining the end product of health care budget allocation on county economic growth

Simiyu (2015)	Public expenditure and economic growth in Kenya	Descriptive Analysis	No causal relationship	Conducted at a national government level	Determining the effect of health care budget allocation on county economic growth
Lahirushan & Gunasekara (2015)	Public expenditure and growth of economy in Asia	Descriptive analysis	A positive impact of government budget expenditure on economic growth	Conducted on a different continent at an international level	Determining the effect of health care budget allocation on county economic growth
Manyalla (2000)	Relationship linking education and health expenditure to economic growth in Kenya.	Descriptive Analysis	Improved healthcare and education affects the economy positively	Study combined education and health variables.	Determining the effect of health care budget allocation on county economic growth
Ochieng (2010)	Relationship between government expenditure on health	Descriptive Analysis	Health care expenditure does not improve economic activity and productivity female literacy.	Conducted during pre-devolution era and at a national level.	Determining the effect of health care budget allocation on county economic growth

**Source: Researcher (2020)**

## **CHAPTER THREE: METHODOLOGY**

### **3.1 Introduction**

Chapter 3 describes the methodology deployed to determine the effect of healthcare budget allotment on county economic development. The chapter was divided into design, population targeted, collection of data, diagnostic tests, and data evaluation.

### **3.2 Research Design**

Lavrakas (2008) defines study design as a strategy followed by the researcher to investigate particular questions of interest in research. The study used a descriptive research design method. Descriptive design assesses the behaviour of the variables being examined over the period of study as well as the relation between the variables. Specifically, the design will describe the behavioural patterns among the county economic growth, health budget allocation, national budget allocation and internal appropriation between 2015 and 2018. The design was also used to describe the relationship of variables examined.

### **3.3 Population of Study**

Mugenda and Mugenda (2003) define study target population as the whole group of objects, people, or events with common elements. The researcher carried out a census since the size of the target population was small at only 47 Counties.

### **3.4 Data Collection**

Secondary data available from the websites of the Commission of Revenue Allocation (CRA) and Kenya National Bureau of Statistics (KNBS) was used. Data that was obtained from KNBS included data on county economic growth while data on health

budget allocation, internal appropriation and national allocation share was source from the CRA. Data was collected between 2015 and 2018.

### **3.5. Diagnostic Tests**

#### **3.5.1 Normality Test**

Normality means that the distribution of the residuals of the regression follows a normal distribution. The normality hypothesis establishes the likelihood of the data set to be distributed normally. Normality test was measured through Shapiro-Wilk normality test.

#### **3.5.2 Multicollinearity Test**

Multicollinearity shows that at least two descriptive variables in a study model are greatly interrelated (Allison, 2009). Multicollinearity leads to large covariances and variances which affects t statistics which are significant and reduces data information reliability leading to biased results (Wooldridge, 2015). Multicollinearity was measured through the correlation matrix and variance inflation factors (VIF) where a VIF of more than ten correlation coefficient of more than 0.7 indicated multicollinearity.

#### **3.5.3 Heteroscedasticity Test**

The homoscedasticity assumption recommends similar disturbance term errors for independent variables values. If the errors variances are not similar, it leads to heteroscedasticity (Wooldridge, 2015). To gauge for homoscedasticity the Breusch-Pagan/Cook-Weisberg test was utilized where a significant P value showed heteroscedasticity but the presence of heteroscedasticity was corrected using robust standard errors.



### **3.5.4 Autocorrelation Test**

Autocorrelation (serial correlation) refers to data characteristic where the correlation between same variable's value is based on associated objects. It contravenes the independence assumption where a modification in a single independent variable influences the other independent variable. The Woolridge test for serial correlation was used for autocorrelation testing and the presence of autocorrelation was corrected using robust standard errors.

### **3.5.5 Unit Root Test**

The collected data was tested for stationarity so as to confirm if the data being used is stationary and avoid ending up with a spurious regression caused by using non-stationary data. The Levin-Lin-Chu unit-root test was utilized to establish the variables stationarity.

## **3.6 Data Analysis**

Collected data was evaluated using descriptive and inferential statistical tools through the STATA statistical analysis software version 15. Descriptive statistics tools included standard deviation and mean used to analyze the data. Inferential statistical tools included the panel regression analysis.

### **3.6.1 Regression Model**

Regression analysis in this case helped with determining the relationship between county economic growth and county health budget allocation as well as the control variables. The equation took the following form

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon$$

Where,

$Y_{it}$  = County Economic Growth (CGP)

$X_{1it}$  = Health Budget Allocation  
 $X_{2it}$  = National Allocation Share  
 $X_{3it}$  = Internal appropriations (own revenue generation)  
 $\beta_0$  = Constant term of the model  
 $\beta_1$ - $\beta_3$  = Co-efficients

$\varepsilon$  = error term estimate

### 3.6.2 Test of Significance

Statistical significance of the correlation between county economic growth and health budget allocation was tested using a p-value of 5% (computations will be done using CI 0.95). The goodness of fit for the analytical model was measured using Analysis of Variance (ANOVA) with the Wald Chi Square significance level of 5%.

### 3.5.3 Measurement of Variables

The dependent variable in the research was county economic expansion measured using real GCP. The independent variable was Healthcare Budgetary Allocation while national allocation share and internal appropriation (own revenue generation) acted as control variables. The analytical model's variables were measured as described in table 3.1.

**Table 3.1: Measurement of the Variables**

No.	Variable	Measurement
Y	County Economic Growth	Measured as the annual natural logarithm (log) real Gross County Product
X <sub>1</sub>	Health budget allocation	Measured as the natural logarithm (log) of the annual amount of money budgeted for health by the county governments
X <sub>2</sub>	National allocation share	Measured as the natural logarithm(log) of the annual amount of money disbursed to the Counties
X <sub>3</sub>	Internal appropriations	Measured as the natural logarithm (log) of the annual amount of own revenue generated by the Counties

# CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

## 4.1 Introduction

The fourth chapter presents the findings and results of the analysed data. It comprises of results for descriptive statistical analysis, correlation analysis results and the test of assumption under diagnostic tests. The chapter further presents the results for regression analysis and finally an interpretation of the research results.

## 4.2 Descriptive Statistical Analysis

The descriptive statistical analysis section shows descriptive statistics' summary of the data collected. The section summarizes the variables data through the standard deviation, mean, minimum and maximum values. Table 4.1 shows the summary statistics for gross county product (GCP), healthcare expenditure, national allocation share and internal appropriations (own revenue generation).

**Table 4.1: Descriptive Statistical Analysis**

Variable	Obs	Mean	Std. Dev.	Min	Max
GCP	188	4.93822	.3628818	4.066848	6.173863
Healthcare~n	188	9.122829	.2644448	8.149527	9.735204
Nationalal~e	188	9.791804	.1533165	9.341005	10.21812
Internalap~s	188	8.491726	.4871364	7.43802	10.06856

**Source: Research Data (2020)**

The results on table 4.1 illustrates that the county gross product (CGP) had a mean value of 4.93822(SD=0.3628818) with a minimum rate of 4.066848 and a maximum value of 6.172863 thus indicating that the average CGP for the 4 years was 4.93822. Healthcare

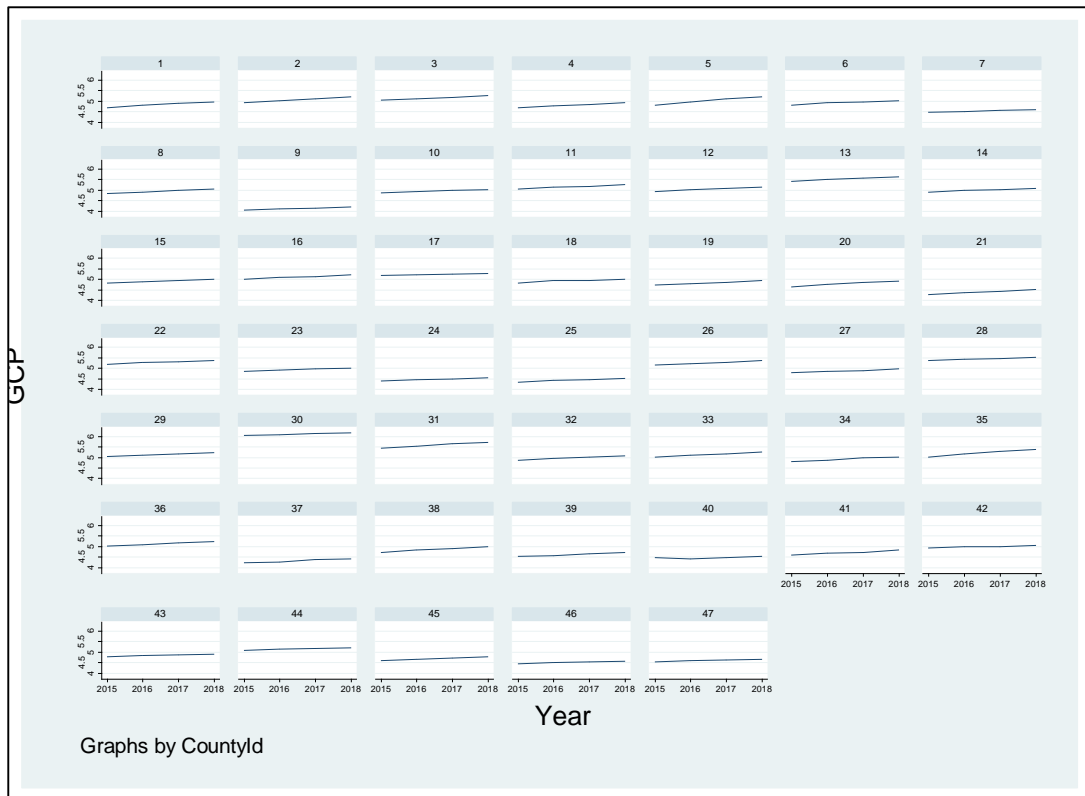
budgetary allocation had an average value of 9.122829(SD=0.264448) with a minimum value of 8.149527 and a maximum value of 9.735204 respectively. National allocation share had a mean value of 9.791804 (SD=0.1533165) with a minimum value of 9.341005 and a maximum value of 10.21812 respectively. Lastly, internal appropriations (own revenue generation) had an average value of 8.491726(SD=0.4871364) with a minimum value of 7.43802 and a maximum value of 10.06856 respectively.

### **4.3 Exploratory Data Analysis**

The study undertook exploratory analysis of data for the study variables to recognize the trend and if it had time related fixed factors. Exploratory statistics are critical since they create a good basis on decision-making on whether to implement pooled regression analysis or panel data analysis. The results were as follows

#### **4.3.1 Panel Plots for GCP**

Figure 4.1 shows the panel plots for the gross county product (GCP) over the 4 years period between 2015 and 2018.



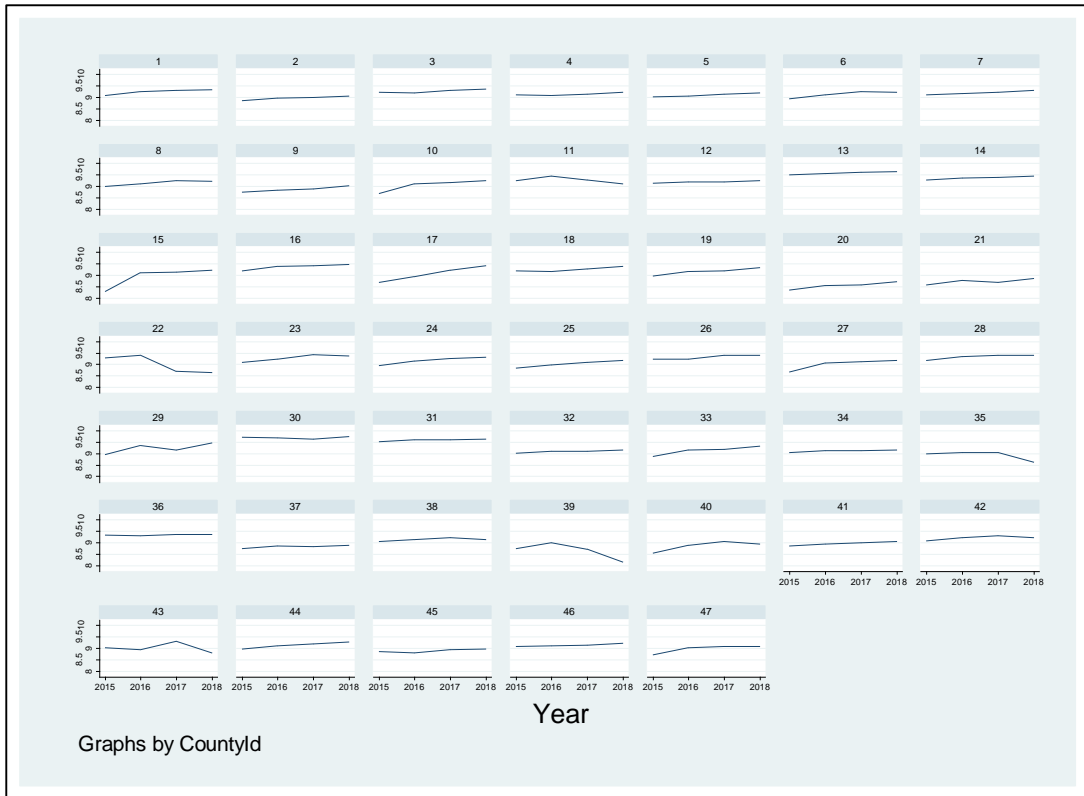
**Figure 4.1: Panel Plots for GCP**

**Source: Research Data (2020)**

Figure 4.1 indicates panel plots for county gross product (GCP) of the 47 counties. The results indicate that the 47 counties exhibited a similar GCP trend over the four years period apart from county 7 and 47 which had varying trends. A similar trend indicates that the data is normally distributed as well as linear hence indicating the data was suitable for panel data analysis.

#### **4.3.2 Panel Plots for Healthcare Budgetary Allocation**

Figure 4.2 shows the panel plots for the healthcare budgetary allocation over the 4 years by Kenyan county governments.



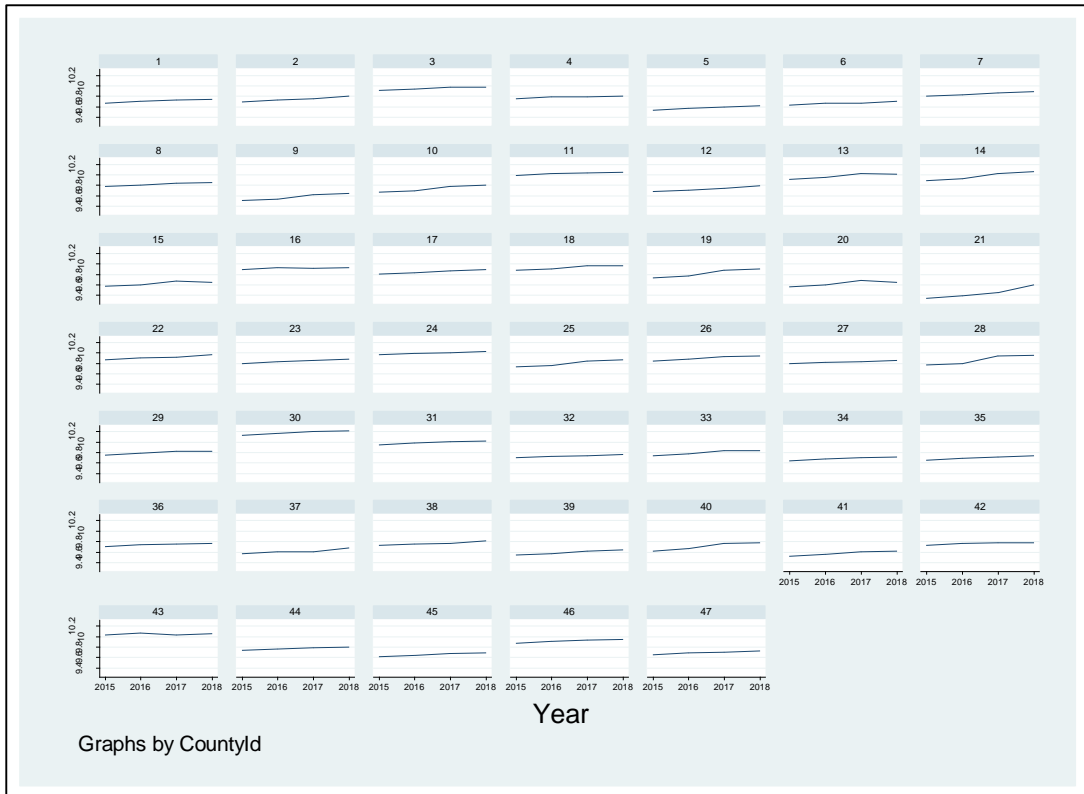
**Figure 4.2: Panel Plots for Healthcare Budgetary Allocation**

**Source: Research Data (2020)**

Figure 4.2 shows that data from the 47 counties exhibited a similar healthcare budgetary allocation trend over the four years period with exception to county 20 and 30 which had a decreasing health care budget as well as county 40 whose budgetary allocation decreased in 2017. The single outlier however may not have any effect on use of panel data analysis as the counties or any other entities may increase or decrease their budgetary allocation on a particular vote (budgetary item) based on the provided annual estimates.

### **4.3.3 Panel Plots for National Allocation Share**

Figure 4.3 indicates the national allocation share plots for the 47 Counties in Kenya between 2015 and 2018.



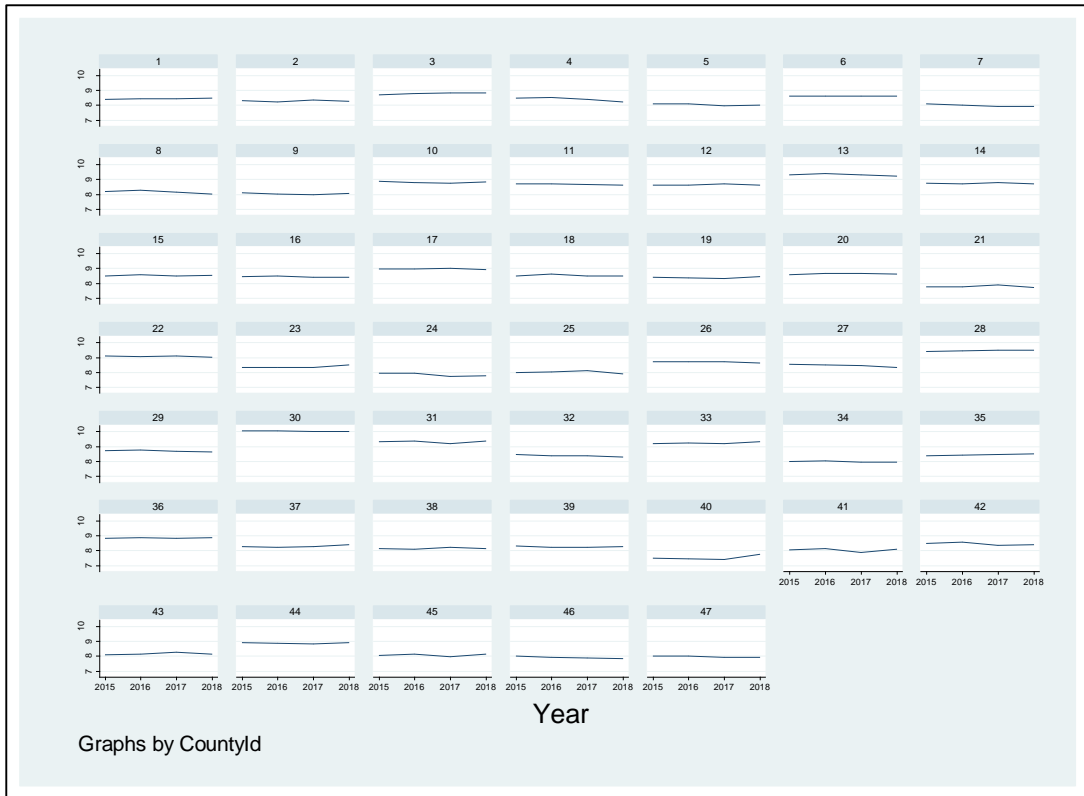
**Figure 4.3: Panel Plots for National Allocation Share**

**Source: Research Data (2020)**

The national allocation shares panel plots on figure 4.3 indicate that the amounts allocated to county governments by the national government had been increasing gradually across all the 47 counties in Kenya over the four years period. Thus, the plots shows a significant increase in the national allocation share to the counties over the considered study period.

#### **4.3.4 Panel Plots for Internal Appropriations (Own Revenue Generation)**

Figure 4.4 shows the trend of internal appropriations (own revenue generation) over a period of four years for individual counties in Kenya.



**Figure 4.4: Panel Plots for Internal Appropriations**

**Source: Research Data (2020)**

The findings on figure 4.4 shows that internal appropriations (own revenue generation) data from the 47 counties exhibited a similar trend over the four years period with exception to counties 4, 30, 41 and 42 which experienced a decline in own revenue generation in some years. Majority of the counties showed an increase in internal revenues generation over the considered study period.

#### **4.4 Diagnostic Tests**

Several diagnostic tests were implemented to show whether the linear regression modelling assumptions were contravened. The study thus undertook normality, multicollinearity, heteroscedasticity, autocorrelation and the unit root (stationarity) test.



#### 4.4.1 Normality Test

Normality was assessed through the Shapiro Wilk test for residuals normality. Table 4.2 show the normality test outcomes

**Table 4.2: Normality Test**

Shapiro-Wilk W test for normal data					
Variable	Obs	W	V	z	Prob>z
residuals	188	0.99416	0.826	-0.438	0.66930

**Source: Research Data (2020)**

The normality test of residuals on table 4.2 shows that the p value was  $0.66930 > 0.05$  and the Z value of  $-0.438$  was also less than the critical Z value of  $1.96$  respectively. The finding leads to the elimination of the null hypothesis that the data was not normally distributed since the p value was greater than  $0.05$  thus the alternative hypothesis adoption that the data is distributed normally and is suitable for the study.

#### 4.4.2 Multicollinearity Test

Multicollinearity happens when two or more independent variables are correlated in a regression model. Thus, multicollinearity test examines if the regression model has a high correlation between the explanatory variables. The multicollinearity test was conducted using the variance inflation factors (VIF) whose cut off value is  $10$  as shown by table 4.3.

**Table 4.3: Multicollinearity Tests**

Variable	VIF	1/VIF
Healthcare~n	1.94	0.515366
Nationalal~e	1.92	0.521404
Internalap~s	1.40	0.715901
Mean VIF	1.75	

**Source: Research Data (2020)**

The multicollinearity test on table 4.3 shows that healthcare budgetary allocation had a VIF value of 1.94 while national allocation share had a VIF value of 1.92 both of which were less than the VIF threshold of 10. Further, internal appropriations (own revenue generation) had a VIF value of 1.40 which was also less than 10 whereas the overall mean VIF was  $1.75 < 10$ . The results indicate all the VIF values were below the cut off VIF value of 10 hence an indication that the independent variables were not highly correlated with the dependent variable thus the assumption of multicollinearity was not violated.

#### **4.4.3 Heteroscedasticity Test**

The heteroscedasticity test was conducted to determine the variability in variables through analyzing the error terms. Thus, the Breusch-Pagan/Cook-Weisberg test was utilized to measure for heteroscedasticity. Table 4.4 has the obtained results.

**Table 4.4: Heteroscedasticity Test**

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity			
Ho: Constant variance			
Variables: fitted values of GCP			
chi2(1)	=	20.74	
Prob > chi2	=	0.0000	

**Source: Research Data (2020)**

The Breusch-Pagan test outcomes in table 4.4 shows the chi square value of 20.74 had a P value of  $0.0000 < 0.05$  respectively. Hence, the rejection of alternative hypothesis since the data is not homoscedastic. The findings thus show the data is was heteroscedastic. To take care of the heteroscedasticity problem the study adopted the Prais-Winsten regression which incorporates the AR (1) disturbances.

#### **4.4.4 Autocorrelation Test**

The autocorrelation test was conducted to show the characteristics of the error term in succeeding years. For autocorrelation in panel data, the Wooldridge test was used to review for serial correlation in the study model as indicated by table 4.5.

**Table 4.5: Autocorrelation Test**

Wooldridge test for autocorrelation in panel data			
H0: no first-order autocorrelation			
F( 1, 46)	=	42.302	
Prob > F	=	0.0000	

**Source: Research Data (2020)**

The Wooldridge test for autocorrelation in table 4.5 shows that F value was 42.302 whose P value was  $0.000 < 0.05$  respectively, leading to the rejection of the alternative

hypothesis that the data was serially correlated hence indication of the presence of autocorrelation in the data set. To take care of the autocorrelation problem the study adopted the Prais-Winsten regression with panel corrected standard errors.

#### 4.4.5 Unit Root Test

The Unit root (stationarity test) was conducted to ascertain whether time series were stationary prior to analysis of the collected data. The Levin-Lin-Chu unit-root test was used to determine the variables stationarity. Table 4.6 illustrates the results.

**Table 4.6: Unit Root Test**

		Statistic	P-value
GCP	Unadjusted t	-27.2069	0.0000
	Adjusted t*	-28.9089	0.0000
Healthcare budgetary allocation	Unadjusted t	-6.4789	0.0000
	Adjusted t*	-6.1772	0.0000
National allocation share	Unadjusted t	-12.5278	0.0000
	Adjusted t*	-12.7465	0.0000
Internal appropriations	Unadjusted t	-5.7469	0.0000
	Adjusted t*	-5.5234	0.0000

**Source: Research Data (2020)**

Table 4.7 illustrates the unit root test outcomes on all the p values for the unadjusted t and adjusted t were significant due to the p values  $0.000 < 0.05$ . Thus, the finding shows that the study's data was stationary, hence no violation of stationarity assumption.

#### 4.5 Correlation Analysis

Correlation describes linear relationship's strength between two random variables with respect to a unit with a lower value (referred to as r; correlation coefficient) of -1 to 1. Thus, the study undertook correlation analysis to assess the direction (positive or

negative) and the strength (weak or strong) of the relationships between the variables in the study. Table 4.7 confirms the results.

**Table 4.7: Correlation Analysis Matrix**

	GCP	Healthcare	National allocation	Internal appropriation
GCP	1.0000			
Healthcare	0.6216	1.0000		
National allocation	0.5834	0.6690	1.0000	
Internal appropriation	0.4067	0.3149	0.4708	1.0000
	0.0000	0.0000	0.0000	0.0000

**Source: Research Data (2020)**

The correlation results on table 4.7 shows that the correlation between healthcare budgetary allocation and the county’s gross product (GCP) was strong and positive ( $r=0.6216$ ) as well as significant ( $P \text{ value} = 0.000 < 0.05$ ) respectively. National allocation share had a strong positive ( $r=0.5834$ ) and significant ( $P \text{ value}=0.0000 < 0.05$ ) correlation with GCP. Internal appropriation had a weak positive ( $r=0.4067$ ) and significant ( $P \text{ value}=0.000 < 0.05$ ) correlation with the county’s gross product (GCP) respectively. The table shows that all the correlation coefficients were less than 0.7 hence a suggestion that no multicollinearity exists among the research variables.

## 4.6 Regression Analysis

A regression model was obtained to ascertain the relationship between the variables. The study adopted the panel data methodology to assess how independent variables were related with the dependent variable. Due to autocorrelation and heteroscedasticity problems in the study's data set, the study adopted the Prais-Winsten regression. The Prais-Winsten estimate takes into account the AR (1) series correlation of errors in the regression model. The method recursively estimates the coefficients and the autocorrelation of the errors of the given model until a sufficient convergence of the AR coefficient (1) is achieved. In addition, the Prais-Winsten estimate uses panel corrected standard errors, which addresses the heteroscedasticity problem. Table 4.8 show the Prais-Winsten regression analysis.

**Table 4.8: Prais-Winsten Regression**

Prais-Winsten regression, correlated panels corrected standard errors (PCSEs)						
Group variable:	CountyId	Number of obs	=	188		
Time variable:	Year	Number of groups	=	47		
Panels:	correlated (balanced)	Obs per group: min	=	4		
Autocorrelation:	common AR(1)	avg	=	4		
		max	=	4		
Estimated covariances	=	1128	R-squared	=	0.9868	
Estimated autocorrelations	=	1	Wald chi2(3)	=	2602.16	
Estimated coefficients	=	4	Prob > chi2	=	0.0000	
	GCP	Panel-corrected				
		Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Healthcarebudgetaryallocation		.1438835	.0487359	2.95	0.003	.0483629 .2394041
Nationalallocationshare		.6490659	.1883817	3.45	0.001	.2798445 1.018287
Internalappropriations		.450904	.0408786	11.03	0.000	.3707834 .5310246
_cons		-6.557044	1.26825	-5.17	0.000	-9.042768 -4.071319
	rho	.6827136				

**Source: Research Data (2020)**

The regression analysis findings on table 4.8 indicates an overall R-square (coefficient of determination) was 0.9868 thus showing that the independent variables (healthcare

budgetary allocation, national allocation share and internal appropriations) explained 98.68% of the variation in economic growth (GCP) of counties in Kenya. The Wald Chi Square value of 2602.16 was also significant as indicated by a p value of  $0.0000 < 0.05$  thus an indication that the overall model was suitable to explain the relationship between the explanatory variables and the dependent variable.

From the results, the following regression model was developed

$$Y_{it} = -6.557044 + 0.1438835X_{1it} + 0.6490659X_{2it} + 0.450904X_{3it}$$

Thus, the results interpretation based on equation indicate that if healthcare budgetary allocation, national allocation share and internal appropriations of the counties remain unchanged or has the value of 0, economic growth (GCP) of the Counties would be -6.557044 respectively. In addition, if budgetary allocation increases by 1 unit and national allocation share and internal appropriations remain constant the GCP of the Counties would increase by 0.1438835 units respectively. The results also show that healthcare budgetary allocation had a statistically significant (P values=0.003<0.005) effect on economic growth of Counties in Kenya. Further, if national allocation share of the counties increase by 1 unit and budgetary allocation and internal appropriations remain constant the Counties GCP would increase by 0.6490659 units respectively. The results also show that national allocation share had a statistically significant (P values=0.003<0.005) effect on economic growth of Counties in Kenya. Lastly, if internal appropriations increase by 1 unit and budgetary allocation and national allocation share remain constant the Counties GCP would increase by 0.450904 units correspondingly. The results also show that internal appropriations had a statistically significant (P values=0.003<0.005) effect on economic growth of Counties in Kenya.

#### **4.7 Interpretation of the Findings**

The study results found that healthcare budgetary allocation had a positive ( $B=0.1438835$ ) and significant relationship with ( $PV=0.003<0.05$ ) economic growth (GCP) of Kenyan Counties. This indicates that a unit increase in healthcare budgetary allocation significantly increases the counties economic growth (GCP) by 0.1438835 units' thus healthcare budget allocation positively and significantly affects Counties economic growth. These findings conform to past studies among them Lahirushan and Gunasekara (2015) who showed that public expenditure plays an important function in expanding the economy. Kurt (2015) also found out that healthcare budget allocation had a positive direct impact of economic growth and concluded that the government should invest in health to enhance productivity and aggregate demand of economic goods and services. Bakare and Sanmi (2011) indicated that a significantly positive relationship exists between healthcare expenditure and growth of the economy. Mandiefe and Tieguhong (2015) showed that investing in public healthcare significantly influences the growth of economy positively in the long run. However, Simiyu (2015) revealed non-existence of causal relationship between spending by the government and how that spending shapes the economy

Secondly, the study findings documented that national allocation share had a positive ( $B=0.6490659$ ) had a significant ( $PV=0.002<0.05$ ) with economic growth (GCP) of Kenyan Counties. Therefore, the finding means that a unit increase in the national allocation share significantly increases the counties economic growth (GCP) by 0.6490659 units' hence national allocation share positively and significantly affects Counties economic growth. These findings conform to past studies among them Benos (2009) who concluded that government allocations on various economic sectors were



influencers of economic growth among 14 EU states. Gregoriou and Ghosh (2008) also documented that government expenditure had a substantially significant positive impact on economic expansion.

Finally, the study results found that internal appropriations (own revenue generation) had a positive ( $B=0.450904$ ) and significant relationship with ( $PV=0.000<0.05$ ) economic growth (GCP) of Kenyan Counties. The finding thus indicates that a unit increase in internal appropriations (own revenue generation) increases the counties economic growth (GCP) by 0.450904 units' thus internal appropriations (own revenue generation) positively and significantly affects Counties economic growth. These findings conform to past studies among them Omodero, Ekwe and Ihendinihu (2018) who found a significant and positive link between internally generated revenue and economic growth in Nigeria. However, Ogbeifun and Tokunbo (2019) found a significant negative link between internally generated revenue and economic growth.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This section summarizes the findings of the research and gives the conclusions and recommendations. The chapter also outlines the research limitations and suggestions for future research.

### **5.2 Summary**

The research sought to determine the effect of health budget allocation on economic growth of the devolved county governments in Kenya. It was guided by the Solow-Swan theory of growth, Wagner Theory of increasing state spending, Theory of budgetary allocation and Buchanan's theory of healthcare spending. The study used a descriptive research design and conducted a census of the 47 Counties in Kenya. The study's data was gathered for a four years period between 2015 and 2018 and descriptive statistical tools and panel regression analysis used to analyse using the STATA statistical analysis software.

The descriptive statistical analysis results that the average county gross product (CGP) for the 4 years was 4.93822 while the average value for healthcare budgetary allocation was 9.122829 respectively. Further, the average value for the national allocation share was 9.791804 while internal appropriations (own revenue generation) had a standard value of 8.491726.

The correlation outcomes showed that healthcare budgetary allocation had a strong and positive correlation with the county's gross product while the national allocation share had a strong positive correlation with GCP. Further, the studies ascertained that internal

appropriations had weak positive relationship with the county's gross product respectively.

The regression results revealed that healthcare budgetary allocation had a significant and an optimistic relationship with counties' economic development whereas the national allocation share had an affirmative and a significant with economic growth (GCP) of counties. Further, it was found internal appropriations (own revenue generation) had a positive connection with economic growth of Kenyan Counties.

### **5.3 Conclusions**

The study results documented a positive and significant association between healthcare budgetary allocation and economic development (GCP) of Kenyan Counties. The study based on this finding thus concludes that healthcare budgetary allocation has a statistically significant and constructive association on Kenya's county economic growth.

Further, the study findings ascertained that a positive relationship is present between national allocation share and economic development (GCP) of Kenyan Counties. As per this discovery, the study wraps up that national allocation share has a statistically significant and positive association on Kenya's county economic development.

Lastly, the findings of the study showed internal appropriations (own revenue generation) had a constructive and significant relationship with economic growth (GCP) of Kenyan Counties. Thus, the study concludes internal appropriations (own revenue generation) has a statistically significant and positive connection with county economic expansion in Kenya.

#### **5.4 Recommendations**

The study's first conclusion was that healthcare budgetary allocation positively and significantly affected the Kenyan counties economic growth. The study thus recommends that the administration of county governments in Kenya should allocate more monetary resources in health care functions so to enhance the counties growth economically since poor investment in healthcare is a serious constraint hindering improvement of healthcare provision as well enhanced economic development.

Secondly, the study concluded that the national allocation share positively and significantly influences the economic development of counties in Kenya. The study thus based on this conclusion recommend that the central government should increase the budgetary allocations to the counties as this will enhance the counties' economic development which then enhance the country's overall economic growth.

The study's conclusion was that internal appropriations (own revenue generation) positively and significantly affects the economic growth (GCP) of Kenyan counties. The study thus recommend that county governments should develop appropriate policies to enhance internal revenue collection and generation as such would supplement the amount allocated to the county by the national government which will assist the county to meet its budgetary expenditures thus enhancing the counties economic growth.

#### **5.5 Limitations of the Study**

The study focused on healthcare budgetary allocation and its effects of counties economic growth. Thus, the study was limited to healthcare budgetary allocations by counties and did not incorporate other County government allocations. The study was

also limited to the employed measures of the study variables. In addition to healthcare budgetary allocation, the study incorporated national allocation share and internal appropriations as control variables hence the study is limited to the considered variables.

Additionally, this study was conducted among all County governments in Kenya. Thus, the conclusions are not specific to a particular county but based on all the counties in Kenya. The findings may thus not be generalized to a single county within Kenya. The study was also carried out in Kenya hence the results may not be generalized to other countries with administrative counties.

Lastly, this study relied on secondary data which was obtained for a period of 4 years between 2015 and 2018. However, secondary data is historic and does not capture the present situation or county's administrator's views. In addition, secondary data does not incorporate the views of the counties inhabitants on whether improved health care and budgetary allocation enhance counties economic growth.

## **5.6 Suggestions for Further Research**

This study majorly focused on healthcare budgetary allocations and its relationship with Kenyan counties economic growth. The study thus did not incorporate major budgetary allocations by county governments in Kenya such as transport and infrastructure, education, sports, culture & arts, housing & urban development as well as water & irrigation that usually take a huge portion of county government expenditures. The study thus, recommends an additional research which focuses on the effect of other budgetary allocations on the counties economic growth.

This study majorly relied on secondary data on healthcare budgetary allocations, national allocation share, internal revenues generated and county gross product. Secondary data however fails to incorporate the views and opinions of administrators, policy makers as well as citizens. The study thus recommends a similar research on how healthcare budgetary allocations have an effect on counties economic growth under which the qualitative views and opinions of county administrators, policy makers and citizens will be incorporated.

The study also undertook a census of all counties in Kenya. Thus, the findings were generalised to all counties and could not be attributed to a specific county since each county has unique healthcare budgetary allocations. The study thus recommends a case study of specific or individual counties in Kenya to assess the effect of budgetary allocation on the selected counties economic development.

## REFERENCES

- Abbasa, Q., & Foreman-Peck, J. (2007). *Human capital and economic growth: Pakistan, 1960-2003*. Cardiff Economics Working Paper E2007/22. Cardiff, UK: Cardiff University.
- Amaresh, D., & Frank, M. (2010). *An Econometric Analysis of the US Health Care Expenditure*, Longman: New York.
- Bakare, A.S & Olubokun S. (2011). Health care expenditure and economic growth in Nigeria: An empirical study, *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)* 2(2), 83-87
- Barro, R. J. (1996). *Three models of health and economic growth*. Unpublished Manuscript. Cambridge, MA: Harvard University
- Behrman, J. R., & Taubman, P. (1990). The integrational co-relation between children's adult earnings and their parent's incomes: Results from the Michigan panel survey of income dynamics. *Review of income and wealth*. 36: 115-127.
- Bloom, D., & Sachs, J. (1998). *Geography, demography, and economic growth in Africa*. Brookings Papers on Economic Activity, 207-73.
- Bloom, D.E, Canning, D., & Sevilla, J. (2001). *The effect of health on economic growth: Theory and evidence*. (National Bureau of Economic Research) Cambridge.
- Bloom, D.E., Canning, D., & Sevilla, .I. (2003). *The effect of health on economic growth: A production function approach*. World Development.
- Buchanan, J. M. (1965). The Inconsistencies of the National Health Service', *Institute of Economic affairs*, London.
- Case, A. (2001). *Health, Income and Economic Growth*. ABCDE Conference, World Bank (May).

- Chang, C., & Ying, Y. (2006). Economic growth, human capital investment, and health expenditure: A study of OECD countries. *Hitotsubashi Journal of Economics*, 47(1), 1-16.
- Dickey, D. A. (1984). *Testing for Unit Roots in Autoregressive-Moving Average Models of Unknown Order*, *Biometrika* 71, 599–607.
- Gerald, F. D., & Arthur, L. S. (2000). *Improved Estimates of Capital Formation in the National Health Expenditure Accounts*, *Health care financing review/Fall 2006/Volume 28*.
- Government of Kenya (GOK) (2019). *Economic surveys. Nairobi, KNBS*. Retrieved from: <https://www.knbs.or.ke/download/economic-survey-2019/>
- Granger, C.W. (1988). Causality, Co-integration and Control, *Journal of Economic Dynamics and Control* 12:551-559.
- Hamoudi, A.A., & Sachs, J. (1999). *Economic consequences of health status: A review of the evidence*. CID Working Papers Series No. 30.
- Kelley, A. C. (1988). Economic consequences of population change in the third world. *Journal of Economic Literature*, 26:1685.1728.
- Kenya National Bureau of Statistics, (2019). Gross County Product of Kenya
- Knowles, S., & Owen, P. D. (1997). *Education and health in an elective-labour empirical growth model*. *Economic Record*, 73(223):314.328.
- Kurt, S. (2015). Government health expenditures and economic growth: A Feder-Ram Approach for the case of Turkey. *International Journal of Economics and Financial issues*, 5(2), 441-447.
- Lavrakas, P.J., (2008): *Encyclopedia of survey research methods*. Sage publications
- Lorentzen, P., McMillan, J., & Wacziarg, R. (2005). *Death and development. Presented to the Econometric Society World Conference*, pages 1.71.



- Mandiefe, S.P., & Tieguhong, J.C. (2015). *Contribution of Public Health Investments to the Economic Growth of Cameroon.*
- Mooney, G. (1996). And Now for Vertical Equity? Some Concerns Arising from Aboriginal Health in Australia. *Health Econ* 5 (2), 99 - 103.
- Mooney, G. (2000). Vertical Equity in Health Care Resource Allocation. *Health Care Anal* 8 (3), 203 - 215.
- Nyamwange, M. (2012). Economic growth and public healthcare expenditure in Kenya (1982 - 2012). *MPRA Paper No. 43 707.*
- Ogbeifun, I. E., & Tokunbo, A. P. (2019). Revenue generation and economic growth of Nigeria. *International Journal of Current Research*, 11, 5786-5792
- Ogundipe, M.A & Lawal, N.A. (2011). *Health Expenditure and Nigerian Economic Growth.*
- Oloo, D. (203). *Human capital development and economic growth in Kenya.* Retrieved from: <https://www.researchgate.net/publication/257555850>
- Omodero, C. O., Ekwe, C. M., & Ihendinihu, J. (2018). The Impact of Internally Generated Revenue on Economic Development in Nigeria. *Accounting and Finance Research*, 7(2), 103-114.
- Oni, L. B. (2014). Analysis of the growth impact of health expenditure in Nigeria. *IOSR Journal of Economics and Finance*, 3(1), 77-84.
- Sachs, J. D. & Warner, A. M. (1997). *Fundamental sources of long-run growth. AEA Papers and Proceedings*, 87(2):184.188.
- Solow, R. (1956). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics* 70 (1): 65-94.
- Soukiazis, E., & Cravo, T. (2007). *The interaction between Health, Human Capital and economic growth: Empirical Evidence.*

Strauss, J., & Thomas, D. (1998). Health, Nutrition and Economic Development. *Journal of Economic Literature* 36 (2): 766-817.

Swan, T. (1956). Economic Growth and Capital Accumulation. *Economic Record* (November): 334-61.

Wagner, R. (2007). *Fiscal Sociology and Theory of Public finance, an explanatory essay*. Cheltenham, Edward Elgar Publishing.

World Health Organization (2018). Research for universal health coverage. The world health report.

## APPENDICES

### Appendix I: Data Sheet

<b>Year</b>	<b>Gross County Product</b>	<b>Health Budget Allocation</b>	<b>National Budget Allocation</b>	<b>Own revenue</b>
2018				
2017				
2016				
2015				

## Appendix II: Raw Data

County	Year	Gross County Product	Healthcare Budgetary allocation	National allocation share	Own revenue
Baringo	2018	92,866.00	2,123,870,000.00	5,469,527,014.00	301,404,377.00
	2017	77,905.00	1,960,450,000.00	5,316,374,243.00	288,518,677.00
	2016	65,837.00	1,780,580,000.00	5,038,836,421.00	279,317,203.00
	2015	49,474.00	1,236,520,000.00	4,671,455,031.74	249,723,429.00
Bomet	2018	159,569.00	1,109,900,000.00	6,355,441,205.00	181,375,343.00
	2017	131,746.00	976,060,000.00	5,612,953,393.00	236,697,038.00
	2016	103,106.00	931,920,000.00	5,328,028,163.00	166,987,287.00
	2015	82,807.00	723,110,000.00	4,955,767,288.37	206,386,334.00
Bungoma	2018	183,509.00	2,299,500,000.00	9,482,956,683.00	656,750,139.00
	2017	152,657.00	2,061,860,000.00	9,289,884,312.00	661,588,149.00
	2016	131,289.00	1,533,930,000.00	8,728,060,297.00	630,988,485.00
	2015	115,101.00	1,619,950,000.00	8,077,641,330.11	504,623,643.00
Busia	2018	86,712.00	1,616,610,000.00	6,401,973,669.00	176,294,585.00
	2017	68,215.00	1,340,360,000.00	6,236,777,034.00	256,826,239.00
	2016	59,147.00	1,218,970,000.00	6,165,418,241.00	334,222,084.00
	2015	48,356.00	1,307,820,000.00	5,716,202,989.33	315,202,075.00
Marakwet	2018	159,531.00	1,577,700,000.00	4,117,797,077.00	105,483,195.00
	2017	126,950.00	1,391,260,000.00	3,905,518,265.00	97,323,973.00
	2016	92,266.00	1,128,760,000.00	3,737,997,115.00	128,055,734.00
	2015	65,504.00	1,067,100,000.00	3,459,771,007.31	128,905,771.00
Embu	2018	103,734.00	1,712,590,000.00	5,125,861,008.00	416,111,597.00
	2017	89,067.00	1,732,210,000.00	4,719,140,103.00	416,272,247.00
	2016	84,545.00	1,314,420,000.00	4,653,027,222.00	396,525,612.00
	2015	66,911.00	875,740,000.00	4,244,955,133.56	401,105,103.00
Garisa	2018	39,394.00	2,063,270,000.00	7,715,147,878.00	86,687,563.00
	2017	36,706.00	1,695,000,000.00	7,386,372,975.00	81,958,151.00
	2016	32,919.00	1,432,200,000.00	6,814,383,598.00	105,943,675.00
	2015	29,872.00	1,245,600,000.00	6,365,608,260.78	130,717,649.00
Homabay	2018	114,198.00	1,704,760,000.00	7,133,154,827.00	106,939,465.00
	2017	96,781.00	1,800,750,000.00	6,934,177,282.00	144,131,692.00
	2016	81,548.00	1,276,030,000.00	6,420,713,836.00	183,765,405.00
	2015	70,049.00	995,230,000.00	5,955,853,153.98	157,860,245.00
Isiolo	2018	15,850.00	1,088,960,000.00	4,374,049,293.00	114,557,116.00
	2017	14,262.00	779,970,000.00	4,151,614,698.00	94,996,063.00
	2016	13,020.00	681,130,000.00	3,470,189,108.00	110,108,172.00
	2015	11,664.00	548,310,000.00	3,217,689,764.62	133,699,318.00
Kajiado	2018	107,805.00	1,747,710,000.00	6,412,606,684.00	682,162,558.00
	2017	100,041.00	1,521,330,000.00	6,095,898,687.00	557,094,069.00
	2016	85,848.00	1,271,270,000.00	5,001,250,430.00	650,984,978.00
	2015	75,667.00	497,020,000.00	4,630,304,502.74	785,837,768.00

kakamega	2018	182,563.00	1,343,070,000.00	11,337,578,228.00	440,611,031.00
	2017	156,444.00	1,853,700,000.00	10,904,230,285.00	443,176,020.00
	2016	141,457.00	2,737,060,000.00	10,518,265,389.00	504,238,292.00
	2015	117,996.00	1,744,460,000.00	9,713,667,783.74	516,889,024.00
Kericho	2018	136,799.00	1,773,030,000.00	6,124,319,496.00	414,048,710.00
	2017	120,356.00	1,604,470,000.00	5,566,087,512.00	489,980,629.00
	2016	106,916.00	1,537,750,000.00	5,139,097,299.00	434,404,563.00
	2015	89,549.00	1,382,380,000.00	4,756,583,671.97	413,581,432.00
Kiambu	2018	421,918.00	4,432,270,000.00	10,445,065,232.00	1,693,708,234.00
	2017	367,137.00	4,024,100,000.00	10,585,227,765.00	2,032,980,758.00
	2016	316,725.00	3,739,590,000.00	8,923,097,756.00	2,461,351,514.00
	2015	263,706.00	3,197,160,000.00	8,246,780,249.34	2,110,856,557.00
Kilifi	2018	119,295.00	2,868,950,000.00	11,397,228,319.00	523,347,190.00
	2017	105,456.00	2,496,730,000.00	10,457,567,945.00	620,093,575.00
	2016	97,614.00	2,262,660,000.00	8,456,342,867.00	519,075,625.15
	2015	80,431.00	1,922,840,000.00	7,834,437,040.60	545,499,050.00
Kirinyaga	2018	100,836.00	1,746,300,000.00	4,485,194,810.00	343,970,322.00
	2017	88,055.00	1,393,020,000.00	4,704,319,105.00	320,638,299.00
	2016	78,491.00	1,287,930,000.00	4,029,201,671.00	390,377,140.00
	2015	68,332.00	202,510,000.00	3,741,941,662.57	311,635,045.00
Kisii	2018	163,546.00	2,954,020,000.00	8,610,177,976.00	256,284,854.00
	2017	134,892.00	2,726,270,000.00	8,300,711,268.00	271,644,380.00
	2016	122,771.00	2,533,880,000.00	8,460,233,029.00	306,129,637.75
	2015	100,668.00	1,647,440,000.00	7,839,673,320.26	296,771,415.00
Kisumu	2018	194,489.00	2,701,480,000.00	7,721,848,454.00	874,901,775.00
	2017	181,161.00	1,715,130,000.00	7,309,995,347.00	1,004,043,906.00
	2016	165,503.00	876,950,000.00	6,811,407,625.00	978,889,261.00
	2015	152,655.00	504,430,000.00	6,334,176,497.81	970,903,407.00
Kitui	2018	101,560.00	2,491,750,000.00	9,239,997,140.00	335,122,477.00
	2017	86,041.00	1,986,980,000.00	9,147,757,373.00	315,347,364.00
	2016	87,749.00	1,545,890,000.00	8,135,221,764.00	416,188,728.35
	2015	65,254.00	1,575,810,000.00	7,542,541,592.73	320,521,294.00
Kwale	2018	86,278.00	2,196,920,000.00	7,991,485,910.00	276,295,129.00
	2017	72,335.00	1,580,660,000.00	7,621,107,313.00	221,011,186.00
	2016	63,569.00	1,459,090,000.00	5,846,200,085.00	248,617,586.00
	2015	54,583.00	977,250,000.00	5,406,159,398.25	253,972,260.00
Laikipia	2018	81,095.00	526,740,000.00	4,461,022,182.00	413,328,186.00
	2017	72,890.00	383,790,000.00	4,785,846,433.00	462,723,251.00
	2016	56,623.00	354,500,000.00	3,946,324,309.00	471,147,987.00
	2015	44,345.00	238,910,000.00	3,662,031,978.07	400,484,744.00
Lamu	2018	32,386.00	744,910,000.00	3,996,282,050.00	55,286,688.00
	2017	26,579.00	489,560,000.00	2,814,800,604.00	76,960,788.00
	2016	23,149.00	598,330,000.00	2,461,626,281.00	57,324,400.00
	2015	18,834.00	398,440,000.00	2,192,828,410.40	61,672,255.00

Machakos	2018	232,860.00	436,040,000.00	9,202,092,537.00	1,063,726,784.0
	2017	208,178.00	515,430,000.00	8,256,806,061.00	1,259,304,944.0
	2016	190,166.00	2,525,730,000.00	8,006,984,686.00	1,121,680,949.5
	2015	157,703.00	1,924,630,000.00	7,377,468,646.73	1,356,559,888.00
Makueni	2018	100,924.00	2,356,950,000.00	7,566,474,526.00	319,282,234.00
	2017	92,746.00	2,625,380,000.00	7,258,861,302.00	216,257,976.00
	2016	85,224.00	1,769,460,000.00	6,739,213,862.00	213,170,805.00
	2015	70,170.00	1,264,910,000.00	6,242,674,031.45	215,349,954.00
Mandera	2018	35,101.00	2,114,380,000.00	10,665,950,213.00	61,813,295.00
	2017	31,721.00	1,789,380,000.00	10,272,126,010.00	55,843,625.00
	2016	28,495.00	1,439,330,000.00	9,978,397,074.00	88,234,634.00
	2015	25,684.00	934,800,000.00	9,235,568,339.52	87,729,461.00
Marsabit	2018	34,073.00	1,527,410,000.00	7,419,480,542.00	83,390,480.00
	2017	30,144.00	1,232,070,000.00	6,936,693,486.00	128,730,136.00
	2016	27,058.00	955,190,000.00	5,813,245,866.00	111,943,205.00
	2015	22,703.00	716,350,000.00	5,377,268,476.37	99,107,465.00
Meru	2018	229,646.00	2,558,100,000.00	8,889,363,597.00	441,690,937.00
	2017	196,488.00	2,612,660,000.00	8,537,607,144.00	552,668,157.00
	2016	171,009.00	1,769,940,000.00	7,712,952,567.00	548,289,334.00
	2015	141,079.00	1,728,890,000.00	7,071,667,193.43	539,239,910.00
Migori	2018	96,337.00	1,514,660,000.00	7,149,927,100.00	222,251,290.00
	2017	78,998.00	1,367,250,000.00	6,875,906,666.00	290,815,303.00
	2016	71,360.00	1,170,500,000.00	6,684,782,429.00	339,368,967.50
	2015	62,035.00	478,530,000.00	6,193,178,922.82	355,111,556.00
Mombasa	2018	332,122.00	2,500,170,000.00	9,095,124,719.00	3,159,156,334.00
	2017	301,070.00	2,532,320,000.00	8,913,622,516.00	3,166,240,961.00
	2016	263,925.00	2,285,280,000.00	6,309,693,626.00	2,943,520,686.00
	2015	239,680.00	1,535,970,000.00	5,920,733,428.06	2,492,600,145.00
Muranga	2018	173,018.00	2,907,330,000.00	6,698,968,887.00	453,706,818.00
	2017	149,154.00	1,470,200,000.00	6,619,174,399.00	506,685,732.00
	2016	129,173.00	2,215,630,000.00	6,063,309,168.00	617,526,358.50
	2015	109,739.00	931,900,000.00	5,622,565,039.64	562,227,534.00
Nairobi	2018	1,492,323.00	5,435,050,000.00	16,524,040,781.00	10,109,419,494.00
	2017	1,379,459.00	4,229,850,000.00	16,161,568,406.00	10,929,830,353.00
	2016	1,230,361.00	4,904,880,000.00	14,614,500,877.00	11,710,008,300.00
	2015	1,107,647.00	5,246,650,000.00	13,633,213,384.45	11,500,049,480.00
Nakuru	2018	517,462.00	4,262,850,000.00	10,360,643,228.00	2,278,646,064.00
	2017	436,088.00	3,966,880,000.00	10,160,984,107.00	1,548,294,999.00
	2016	343,665.00	4,119,160,000.00	9,598,499,327.00	2,295,462,842.00
	2015	278,971.00	3,262,400,000.00	8,949,391,311.99	2,200,279,602.00
Nandi	2018	119,691.00	1,423,810,000.00	5,766,112,989.00	197,886,883.00
	2017	104,412.00	1,256,870,000.00	5,449,513,873.00	244,730,757.00
	2016	92,634.00	1,309,140,000.00	5,391,650,811.00	236,898,601.00
	2015	75,817.00	1,067,100,000.00	4,995,866,275.67	298,042,483.00

Narok	2018	179,226.00	2,079,360,000.00	6,793,442,432.00	2,188,436,615.00
	2017	149,722.00	1,550,030,000.00	6,896,305,934.00	1,533,933,960.00
	2016	125,659.00	1,396,700,000.00	5,979,386,611.00	1,752,937,952.00
	2015	104,696.00	774,150,000.00	5,526,966,899.23	1,639,205,710.00
Nyamira	2018	103,239.00	1,414,740,000.00	5,164,553,888.00	96,617,045.00
	2017	95,786.00	1,378,500,000.00	4,990,236,128.00	93,920,087.00
	2016	74,112.00	1,310,490,000.00	4,741,175,780.00	106,981,969.00
	2015	65,643.00	1,150,300,000.00	4,396,954,909.87	104,254,684.00
Nyandarua	2018	245,203.00	416,490,000.00	5,433,033,263.00	318,585,599.00
	2017	196,770.00	1,131,690,000.00	5,231,181,935.00	296,766,563.00
	2016	148,139.00	1,137,620,000.00	4,874,173,211.00	279,226,186.00
	2015	106,482.00	970,040,000.00	4,522,153,694.03	240,629,472.00
Nyeri	2018	174,961.00	2,361,980,000.00	5,806,635,195.00	760,225,951.00
	2017	145,775.00	2,254,550,000.00	5,701,886,744.00	643,139,153.00
	2016	120,875.00	2,032,450,000.00	5,442,275,722.00	709,554,435.00
	2015	104,583.00	2,107,110,000.00	5,068,372,053.33	680,700,067.00
Samburu	2018	26,503.00	772,670,000.00	4,770,110,164.00	257,292,957.00
	2017	23,498.00	687,710,000.00	4,082,902,372.00	187,663,504.00
	2016	18,401.00	699,050,000.00	4,009,869,487.00	166,836,134.00
	2015	17,076.00	548,540,000.00	3,712,564,707.24	195,715,348.00
Siaya	2018	95,265.00	1,380,490,000.00	6,444,227,861.00	139,336,798.00
	2017	82,200.00	1,642,260,000.00	5,894,020,940.00	172,837,124.00
	2016	68,208.00	1,333,410,000.00	5,700,169,349.00	127,931,767.00
	2015	53,482.00	1,096,970,000.00	5,302,224,374.16	143,328,488.00
Taita	2018	51,381.00	141,100,000.00	4,412,220,075.00	193,595,795.00
	2017	45,313.00	515,430,000.00	4,187,598,676.00	172,017,112.00
	2016	37,710.00	992,260,000.00	3,765,971,117.00	172,765,506.00
	2015	33,660.00	548,070,000.00	3,496,112,102.79	216,603,678.00
Tana river	2018	33,498.00	852,590,000.00	6,055,304,571.00	56,625,198.00
	2017	30,280.00	1,117,620,000.00	5,764,958,308.00	27,417,024.00
	2016	25,474.00	781,150,000.00	4,592,137,432.00	28,405,081.00
	2015	29,620.00	351,370,000.00	4,155,861,182.85	33,033,490.00
Tharaka Nithi	2018	67,692.00	1,126,740,000.00	4,107,609,339.00	126,606,742.00
	2017	53,129.00	974,030,000.00	4,081,166,501.00	78,569,190.00
	2016	47,286.00	855,790,000.00	3,571,509,839.00	139,130,083.10
	2015	39,592.00	736,670,000.00	3,316,934,994.06	115,729,722.00
Transzoia	2018	116,683.00	1,643,720,000.00	6,043,600,418.00	246,062,902.00
	2017	99,005.00	2,001,950,000.00	6,020,838,282.00	217,893,803.00
	2016	97,622.00	1,613,730,000.00	5,779,340,400.00	364,970,035.00
	2015	85,468.00	1,232,000,000.00	5,347,142,362.65	301,267,105.00
Turkana	2018	78,301.00	635,540,000.00	11,304,689,927.00	143,896,898.00
	2017	73,761.00	1,969,820,000.00	10,665,917,857.00	186,316,769.00
	2016	67,910.00	860,940,000.00	11,634,574,357.00	134,015,964.85
	2015	58,064.00	1,028,000,000.00	10,751,065,766.13	126,524,507.00

Uasin Gishu	2018	162,273.00	1,818,380,000.00	6,344,915,914.00	819,220,211.00
	2017	148,668.00	1,548,960,000.00	6,080,997,782.00	663,830,778.00
	2016	135,521.00	1,290,860,000.00	5,845,778,019.00	719,042,325.00
	2015	121,836.00	938,730,000.00	5,490,755,454.61	800,823,542.00
Vihiga	2018	59,050.00	912,080,000.00	4,843,853,522.00	143,530,752.00
	2017	51,001.00	886,630,000.00	4,733,437,222.00	96,033,000.00
	2016	46,163.00	611,260,000.00	4,416,704,389.00	138,938,281.00
	2015	38,586.00	732,930,000.00	4,097,180,369.79	115,939,226.00
Wajir	2018	37,159.00	1,598,200,000.00	8,938,298,353.00	67,608,475.00
	2017	33,526.00	1,354,710,000.00	8,586,902,378.00	75,908,720.00
	2016	30,907.00	1,287,300,000.00	8,091,461,061.00	81,782,275.00
	2015	27,772.00	1,168,050,000.00	7,486,061,302.46	107,742,634.00
West Pokot	2018	46,785.00	1,211,450,000.00	5,300,610,825.00	88,411,177.00
	2017	43,093.00	1,192,430,000.00	5,065,615,400.00	83,218,907.00
	2016	38,432.00	1,058,430,000.00	4,885,157,418.00	98,305,114.00
	2015	33,226.00	513,290,000.00	4,517,464,714.81	103,899,329.00

**Source: KNBS & CRA**