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The Economics of Education: Factors that affect education in Papua New Guinea

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Abstract

This study explores the economics of education: factors that affect education in Papua New Guinea. Theoretical concepts in the economics of education commonly used human capital, markets, and education production. The data used in this study was obtained from the information on the socioeconomic characteristics of the household population in the 2016-18 Papua New Guinea Demographic and Health Survey (DHS). The study found that half of the population has completed less than the median number of years of schooling, while the other half of the population has completed more than the median number of years of schooling. Furthermore, in the de facto household population aged 6 and older 32% of females and 24% of males have never attended school. In terms of school attendance, a large proportion of children are not attending school.

Keywords: economics of education, human capital, market, educational attainment, school attendance, population

1. Introduction

This paper aims to explore the economic factors that affect education in Papua New Guinea. Economics of education is a study of economic issues relating to education, this includes the demand for education, the financing, and the provision of education. Moreover, it can be defined as the application of economic tools of analysis to education, which is concerned with how educational objectives can be met out of scarce resources. It is also the study of how man and society choose with or without increasing the use of money to employ scarce productive resources. Which is to produce different types of training, skills, mind, and character through formal schooling over time (Wikipedia, 2022, Nasib, 2017). Furthermore, it cannot be separated field of inquiry that is different from normal economics. It is the application of economic principles, concepts, and laws to the process of education. It studies human behaviour regarding human resolutions, acts, and responses to schooling and how human beings familiarize themselves with the education system (Kapur, 2015).

This paper has five sections: literature review, material and methods, results, discussions of findings, and conclusion.

Economic of education is vital to the future health of our nation's economy.

2. Literature Review

2.1. Theoretical Concepts in the Economics of education

Theoretical concepts in the economics of education commonly used are human capital, markets, and education production. Economics is often defined as “the study of the allocation of scarce means to satisfy competing ends” (Walberg and Bast, 2003:182). Economists study how individuals, organizations, and societies employ time, money, and effort. In terms of

education, economists are interested in how society organizes and uses scarce resources to produce different kinds of knowledge and skills through formal schooling (Brewer and Hentschke, 2010, Brewer, *et al*, 2010).

Economists build a theory or a model to simplify reality and highlight key characteristics. Economic theories are built on three basic foundations: scarcity, rationality, and optimization. Scarcity refers to the assumption that individuals and society will never have adequate resources to satisfy their unlimited wants completely. Whereas, rationality refers to people's ability to make decisions systematically and purposefully. The last assumption is the idea of optimization either profit or goal maximization concerning organizations and individuals (Brewer and Hentschke, 2010)

2.1.1. *Human Capital*

Economics of education's main research area is the association between schooling and individual outcomes associated with the labour market. Education and training are modeled as an individual investment decision that will receive a monetary return in the labour market. This idea of human capital according to early economists such as Adam Smith, John Stuart Mill, and Alfred Marshall stated that an individual's skills could contribute to their economic status. The human capital theory foundation was laid by Smith in 1776 when he wrote that human effort lies at the root of all wealth. Mill in 1848 built on Smith's notion and stated human abilities as means to wealth (Sweetland, 1996).

Knowledge and skills obtained through educational investments increase human productivity. Each investment may incur out-of-pocket expenses, foregone earnings, and mental costs including the pressure of studying and examinations. Benefits accumulate later in life through enhanced earnings in the labour market, access to better jobs, a higher likelihood of being employed, and better health (Brewer and Hentschke, 2010).

2.1.2. *Market and Markets Failure*

The general agreement is that national investments in education lead to economic growth. Each year countries spend a sizable percentage of their gross domestic product (GDP) on education. The spending on education can be by private individuals and by governments through public expenditures. Thus, the decision as to how an education at different age levels should be allocated scarce resources to maximise output (i.e. education) is an economic decision (Sturm, 1993; Hanushek and Kimko, 2000).

In an economic context, a market is defined as a collection of buyers who purchase and sellers who produce and sell goods and services. Thus, the interaction between the buyers and sellers results in an exchange in the allocation of goods and services. The transaction is facilitated through an agreement on price (Brewer and Hentschke, 2010).

Markets are the preferred method for allocating resources. They can coordinate many buyers and sellers, moreover, give consumers considerable influence over price, characteristics, and quantity, and avoid relying on a handful of arbitrary decision makers. Moreover, under these circumstances, markets are an efficient mechanism for allocating resources. Efficiency is a specific criterion for judging an allocation mechanism (Gill, *et al.*, 2001).

Market failure occurs when the market does not efficiently organize production or allocate goods and services to consumers. Market failure arises from many sources, some are

unavoidable features and others are the result of government decisions. First, market power rises when the supplier of a good and service has the ability to control price. An example of such market power is a monopoly. Competitive markets have many buyers and sellers, therefore, no single buyer or seller has a big impact on price. The second type of market failure is the market cannot respond efficiently and correctly about price and product quality. Therefore, consumers have incomplete information about price and product. Parents may not choose schools under incomplete information (McTaggart, *et al.*, 2010, Brewer and Hentschke, 2010). Third, externalities exist when consumption or production indirectly affects others that is not reflected in market prices. In the case of education, the decision maker, for example, an individual student does not bear all the costs or reap all the rewards from his or her decision about how much education to obtain. Society may benefit from an educated person, however, the person making the educational decisions may not see those benefits as his or her own. So, good education will be under-consumed from the view of the market. Fourth, the market may fail for public goods – those that are made available to people without additional cost. Schooling is to some degree a public good. Just like externalities, markets will tend to undersupply public goods (Brewer and Hentschke, 2010).

2.1.3. Education Production

Economists have sought to understand how education is produced. This leads to two different forms; one is to treat education as a production function. Schooling inputs are processes from which outputs are produced. These processes occur within a black box of the school system. The other approach looks inside the black box and examines the organization as a web of interpersonal contracts. Individuals seek to coordinate with others, however, are in turn coordinated by others in the performance of work (Brewer and Hentschke 2010).

The production function approach uses an input-output framework to think about schooling. The main inputs include teachers, administrators, supplies, and facilities. On the other hand, the main outputs are student achievement. Thus, the relation between the educational inputs and outputs is always statistically estimated using multiple regression techniques. Even though the education production function is simple in theory, it is very complex in practice (Goldhaber and Brewer, 1997).

3. Material and Methods

3.1. The data used in the study

The data used in this study was obtained from the information on the socioeconomic characteristics of the household population in the 2016-18 Papua New Guinea Demographic and Health Survey (DHS). The DHS data collection was conducted in October 2016 and concluded two (2) years later in December 2018. The National Statistical Office (NSO) provided all necessary technical and advisory support in the implementation. ICF provided technical assistance through the DHS program, which offers support and technical assistance for the implementation of population and health surveys in countries worldwide. Financial support came from the Government of Papua Guinea (GOPNG), the Australian Government Department of Foreign Affairs and Trade (DFAT), the United Nations Population Fund (UNFPA), and the United Nations Children's Fund (UNICEF) (NSO, 2019).

The sample was nationally representative and covered the entire population that lived in private dwelling units in the country. The survey used the list of census units (CUs) from the 2011 PNG National Population and Housing Census (NPHC) as the sampling frame. The

country is divided into 22 provinces. Each province is divided into urban and rural areas. Province is also divided into districts and each district is divided into local-level governments, which are further divided into wards. Each ward is made up of CUs. The average CU size is 50 households, with urban CUs having 70 households on average and rural CUs having 48 (NSO, 2019).

Three questionnaires were used for the 2016 – 18 PNG DHS: the Household Questionnaire, the Woman's Questionnaire, and Man's Questionnaire. Based on the DHS Program's standard Demographic and Health Survey (DHS-7) questionnaires, these questionnaires were adapted to reflect the population and health issues relevant to Papua New Guinea (NSO, 2019).

The Household Questionnaire was used to list all usual members and visitors who slept in the household the night before the survey. Basic demographic information was collected on the characteristics of each person listed, including his or her age, sex, marital status, education, and relationship to the head of household; data on their parents' survival status were also collected.

4. Results

4.1 Education

Education is one of the most important aspects of social and economic development. Education improves capabilities and is strongly associated with various socioeconomic variables such as lifestyle, income, and fertility for both individuals and societies. The following discusses educational attainment, school attendance, net attendance ratio, gross attendance, and gender parity.

4.1.1 Educational Attainment

Median educational attainment

Half of the population has completed less than the median number of years of schooling, and half of the population has completed more than the median number of years of schooling.

Sample: De facto household population age 6 and older

Overall, 32% of females and 24% of males aged 6 and over have never attended school. However, this statistic masks enormous differences by age group. For example, the proportion of women with no education decreases from 70% of those aged 65 and over to 11% among those aged 15-19. Similarly, among all females aged 6 and over, only 15% have attended secondary school or more; however, among women aged 20-24, 38% have some secondary schooling or have gone on to higher education. Educational attainment tends to be greater among those in urban areas, especially in the National Capital District, and among those in the higher wealth quintiles (see **Appendix A Tables 1.1 and 1.2**).

Trends: Educational attainment at the household level has increased since 2006. The percentage of women and men with no education has declined in almost all age groups. Overall, it fell from 35% to 24% for men and 45% to 32% for women.

4.1.2 School Attendance

In addition to educational attainment, it is useful to know the proportion of young people who are currently attending various levels of school. As shown in **Table 1.3** and **Table 1.4** (see **Appendix A**) large proportions of children are not attending school. Almost half of girls and

boys aged 6-10 (46% each) are not attending school. Even among those aged 10-15, almost one in five girls (19%) and boys (18%) are not attending school. As expected, higher proportions of older children are not attending school. Among the population aged 6-24, school attendance increases with the wealth quintile.

Net attendance ratio (NAR)

Percentage of the school-age population that attends primary or secondary school

Sample: Children aged 6-8 for elementary school NAR, children aged 9-14 for primary school NAR, and children aged 15-18 for secondary school NAR

In Papua New Guinea, the elementary school net attendance ratio (NAR) for the population aged 6-8 is 44%, whereas the primary school NAR is 50%. The secondary school NAR drops to 21% (see **Appendix A: Table 1.5**).

Patterns by background characteristics

- All three NARs (elementary, primary, and secondary school) are higher in urban areas than in rural areas.
- Among provinces, the primary school NAR is highest in Manus (69%) and National Capital District (69%) and lowest in Gulf (30%). The secondary school NAR is highest in Chimbu (51%) and lowest in Gulf (5%).
- Both the primary and secondary school NARs increase with increasing household wealth.

Gross attendance ratio (GAR)

The total number of children attending primary school is divided by the official primary school-age population and the total number of children attending secondary school is divided by the official secondary school-age population.

Sample: Children aged 6-8 for elementary school GAR, children aged 9-14 for primary school GAR, and children aged 15-18 for secondary school GAR

Gender parity index (GPI)

The ratio of female to male students attending primary school and the ratio of female to male children attending secondary school. The index reflects the magnitude of the gender gap.

Sample: Primary and secondary school students

The gross attendance ratio (GAR) provides an indicator of the extent to which children who are under or over the official school age are attending school. If there are significant numbers of overage and underage students at a given level of schooling, the GAR can exceed 100%. However, in Papua New Guinea, the GAR is 94% at the elementary school level, 80% at the primary school level, and 37% at the secondary school level. The figures indicate that not all of those who should be attending school are doing so (see **Appendix A: Table 1.5**).

A gender parity index (GPI) of 1 indicates parity or equality between male and female school participation ratios. A GPI lower than 1 indicates a gender disparity in favour of males, with a

higher proportion of males than females attending that level of schooling. A GPI higher than 1 indicates a gender disparity in favour of females

The GPI for the NAR is 0.99 at the elementary school level, 1.04 at the primary school level, and 1.06 at the secondary school level, which indicates that there is a slight preference in school attendance by girls (**see Appendix A: Table 1.5**).

5. Discussion of findings

The findings from this study revealed that half of the population has completed less than a median number of years of schooling, while the other half of the population has completed more than the median number of years of schooling. The De facto household population age 6 and older shown that 32% of females and 24% of males have never attended school. However, there were huge differences by age group. For example, the proportion of women with no education decreases from 70% of those aged 65 and over to 11% among those aged 15-19. Likewise, among all females aged 6 and over, only 15% have attended secondary school or more. Moreover, of women aged 20-24, 38% have some secondary schooling or have gone on to higher education. Overall, educational attainment tends to be greater among those in urban areas, especially in the National Capital District, and also among those in the higher wealth quintiles. This finding confirms that urban areas have access to more opportunities to meet the demand for their education and pursue further.

In terms of school attendance, it was found that a large proportion of children are not attending school as shown in Tables 1.3 and 1.4. For those aged 10-15, almost one in five girls (19%) and boys (18%) are not attending school. Higher proportions of older children are not attending school. However, school attendance increases among the population aged 6-24 with the high-wealth quintile.

Net attendance ratios (NARs) for elementary, primary, and secondary schools are higher in urban areas than in rural areas. Among the provinces, the primary school NAR is highest in Manus (69%) and National Capital District (69%) and lowest in Gulf (30%).

6. Conclusion

This study investigates the economic factors that affect education. The findings reveal that half of the population has completed less than the median number of years of schooling, while another half of the population has completed more than the median number of years of schooling. The de facto household population aged 6 and older revealed that 32% of females and 24% of males have never attended school. Moreover, in terms of school attendance, a large proportion of children are not attending school.

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About the Author

Dr. Philip Kavan is a Senior Research Fellow in the Economic Policy Research Program at the PNG National Research Institute.

Appendix A: List of Tables

Table 1.1 Educational attainments of the female household population

Percent distribution of the de facto female household population age 6 and over by highest level of schooling attended or completed and median years completed, according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	No education	Some elementary	Completed elementary ¹	Some primary	Completed primary ²	Some secondary	Completed secondary ³	More than secondary	Don't know/missing	Total	Number	Median years completed
Age												
6-14	29.6	31.1	7.2	27.2	0.9	0.5	0.0	0.0	3.5	100.0	9,653	0.1
6-9	45.6	41.3	4.5	3.9	0.2	0.0	0.0	0.0	4.4	100.0	4,596	0.0
10-14	15.0	21.8	9.7	48.4	1.5	1.0	0.0	0.0	2.6	100.0	5,057	1.8
15-24	13.5	1.8	2.2	37.0	13.7	21.7	4.7	3.4	1.9	100.0	6,697	6.4
15-19	11.1	2.0	2.6	48.6	11.3	19.5	2.4	0.1	2.3	100.0	3,521	5.8
20-24	16.2	1.6	1.7	24.3	16.3	24.2	7.1	7.1	1.5	100.0	3,175	7.3
25-29	26.1	1.6	2.7	25.4	13.2	18.0	6.2	4.5	2.4	100.0	2,908	5.6
30-34	29.5	1.4	2.9	28.3	10.1	16.0	4.3	4.9	2.5	100.0	2,514	5.1
35-39	32.5	2.3	2.8	34.4	6.3	13.4	1.5	5.0	1.9	100.0	2,282	4.6
40-44	31.3	1.7	2.5	38.0	5.0	12.7	2.6	5.0	1.3	100.0	1,663	5.1
45-49	38.9	1.9	2.5	36.6	3.8	11.2	1.0	2.9	1.3	100.0	1,349	3.9
50-54	55.9	0.9	1.5	28.6	3.0	4.4	1.3	2.1	2.3	100.0	2,427	0.0
55-59	57.3	1.3	1.7	24.8	2.5	5.3	1.2	3.4	2.7	100.0	1,073	0.0
60-64	62.9	1.5	1.0	22.5	1.2	5.7	0.5	1.7	3.0	100.0	811	0.0
65+	69.9	1.8	5.4	15.3	1.2	1.2	0.0	1.0	4.1	100.0	1,042	0.0
Don't know/missing	57.7	1.5	1.0	15.1	2.5	1.6	0.0	0.0	20.6	100.0	79	0.0
Residence												
Urban	13.6	9.2	2.9	29.3	8.0	20.6	5.4	8.1	3.0	100.0	3,833	5.8
Rural	34.1	10.6	4.0	30.2	6.0	8.8	1.9	1.8	2.6	100.0	28,664	1.8
Region												
Southern	22.5	10.9	4.0	33.6	8.1	12.5	2.4	3.5	2.4	100.0	6,040	3.9
Highlands	43.0	8.5	4.1	23.6	4.1	8.5	2.0	3.0	3.3	100.0	13,266	0.3
Momase	29.4	12.3	3.7	32.5	6.7	8.7	2.8	1.5	2.3	100.0	8,446	2.3
Islands	16.2	11.7	3.1	39.6	9.1	14.7	2.1	2.1	1.4	100.0	4,744	4.9
Province												
Western	23.0	9.8	4.2	37.2	9.8	10.3	1.2	1.7	2.8	100.0	767	4.1
Gulf	40.1	9.4	4.1	28.4	5.9	6.7	0.9	0.6	3.9	100.0	585	0.7
Central	27.0	11.3	3.0	32.9	6.8	13.5	1.5	1.1	2.9	100.0	1,197	2.7
National Capital District	7.7	8.0	3.1	26.2	7.7	21.3	8.2	14.4	3.3	100.0	946	7.4
Milne Bay	19.3	12.2	4.8	36.8	9.6	12.1	1.9	2.3	1.0	100.0	1,631	4.1
Northern	25.5	13.2	4.8	36.8	7.8	8.6	0.5	0.6	2.3	100.0	914	2.8
Southern												
Highlands	51.9	8.2	3.9	21.0	3.1	6.5	1.1	1.5	2.8	100.0	2,446	0.0
Enga	53.4	8.7	4.2	20.6	3.6	6.5	1.0	0.9	1.1	100.0	1,182	0.0
Western												
Highlands	32.4	9.1	4.2	25.8	4.9	8.6	2.1	4.9	7.9	100.0	1,606	1.9
Chimbu	30.3	7.1	4.8	21.5	6.9	15.7	4.5	5.5	3.8	100.0	2,171	3.5
Eastern												
Highlands	37.5	10.9	3.5	29.1	3.6	8.2	2.0	3.6	1.7	100.0	2,692	1.2
Morobe	26.5	11.1	4.0	29.7	6.3	11.5	5.8	2.9	2.2	100.0	3,072	3.1
Madang	27.4	14.0	4.0	35.3	9.0	6.2	0.7	0.9	2.5	100.0	2,206	2.0
East Sepik	30.8	11.9	3.6	35.6	5.4	8.1	1.5	0.6	2.4	100.0	1,992	2.2
West Sepik	38.3	12.8	2.9	29.5	5.7	6.8	0.9	0.6	2.4	100.0	1,176	0.6
Manus	10.1	10.7	4.8	38.1	9.1	18.2	3.4	3.4	2.1	100.0	300	5.4
New Ireland	11.9	13.5	4.4	37.3	8.1	17.4	1.8	2.6	3.0	100.0	910	5.1
East New Britain	15.3	11.3	2.8	40.6	9.1	15.7	1.8	2.7	0.7	100.0	1,178	5.1
West New Britain	20.5	13.0	2.6	38.8	9.4	11.7	2.2	1.1	0.7	100.0	1,129	3.9
Autonomous Region of Bougainville	17.7	9.8	2.5	41.3	9.7	13.7	2.1	1.6	1.6	100.0	1,226	5.0
Hela	58.0	6.2	5.0	19.5	1.6	4.4	0.4	1.1	3.8	100.0	1,925	0.0
Jiwaka	39.7	8.8	3.0	26.6	5.4	9.3	2.4	2.6	2.1	100.0	1,245	1.1
Wealth quintile												
Lowest	54.4	10.2	3.9	23.2	3.0	2.6	0.2	0.2	2.3	100.0	6,421	0.0
Second	41.3	10.0	4.3	29.9	5.6	5.1	0.5	0.2	3.0	100.0	6,360	0.3
Middle	30.3	12.4	4.5	33.9	6.6	7.8	1.0	0.4	3.1	100.0	6,385	2.0
Fourth	21.0	12.1	3.5	36.3	8.4	12.4	1.6	2.1	2.5	100.0	6,638	3.9
Highest	12.7	7.3	3.0	27.2	7.6	22.6	7.8	9.6	2.2	100.0	6,694	6.6
Total	31.7	10.4	3.8	30.1	6.3	10.2	2.3	2.6	2.6	100.0	32,497	2.3

¹ Completed grade 2 at elementary level

² Completed grade 8 at primary level

³ Completed grade 12 at secondary level

Source: NSO, (2019). Papua New Guinea Demographic and Health Survey 2016 – 18.

Table 1.2 Educational attainments of the male household population

Percent distribution of the de facto male household population age 6 and over by highest level of schooling attended or completed and median years completed, according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	No education	Some elementary	Completed elementary ¹	Some primary	Completed primary ²	Some secondary	Completed secondary ³	More than secondary	Don't know/missing	Total	Number	Median years completed
Age												
6-14	29.3	32.2	8.0	26.3	0.5	0.4	0.0	0.0	3.3	100.0	10,516	0.0
6-9	45.2	41.8	4.9	4.0	0.0	0.0	0.0	0.0	4.0	100.0	5,062	0.0
10-14	14.4	23.3	10.9	47.1	0.9	0.7	0.0	0.0	2.6	100.0	5,454	1.7
15-24	9.3	2.0	1.8	42.0	13.0	21.9	5.5	2.4	2.1	100.0	7,279	6.4
15-19	7.8	2.4	2.1	53.5	12.9	16.9	1.3	1.0	2.1	100.0	4,120	5.7
20-24	11.3	1.4	1.3	27.0	13.1	28.4	11.1	4.1	2.2	100.0	3,159	7.6
25-29	16.6	1.7	1.8	20.9	13.3	24.2	11.2	7.3	3.0	100.0	2,832	7.5
30-34	20.0	1.8	1.9	28.7	9.4	21.1	6.8	8.0	2.3	100.0	2,367	6.0
35-39	20.1	2.1	2.1	33.9	10.2	18.2	4.8	6.2	2.3	100.0	2,218	5.7
40-44	19.0	2.7	2.4	36.8	6.1	18.7	3.8	8.3	2.2	100.0	1,791	5.6
45-49	23.4	2.2	2.7	39.8	8.4	13.4	1.4	6.7	2.0	100.0	1,630	5.4
50-54	32.8	1.1	1.6	35.6	6.6	10.5	2.0	7.4	2.6	100.0	1,873	5.2
55-59	35.9	1.7	1.5	34.9	4.5	11.0	1.1	6.4	2.9	100.0	1,289	5.0
60-64	45.0	1.8	1.2	26.7	3.6	10.6	1.1	7.0	2.9	100.0	818	2.1
65+	53.4	2.3	2.6	26.0	2.0	5.9	1.0	3.1	3.8	100.0	1,257	0.0
Don't know/missing	35.5	6.7	0.0	14.9	2.5	7.5	0.0	2.9	29.9	100.0	79	0.0
Residence												
Urban	9.7	9.7	2.8	28.3	6.8	20.2	7.3	12.2	2.9	100.0	3,998	6.5
Rural	25.4	11.6	3.9	32.4	6.8	11.6	2.9	2.6	2.8	100.0	29,950	3.2
Region												
Southern	18.3	11.7	3.9	33.1	7.6	13.7	3.5	5.7	2.5	100.0	6,347	4.8
Highlands	32.3	11.1	3.9	26.2	5.0	11.2	3.2	3.5	3.7	100.0	13,630	2.0
Momase	19.4	11.2	3.8	35.9	8.3	12.4	4.0	3.0	2.1	100.0	9,049	4.4
Islands	14.2	11.9	3.6	38.7	8.1	15.6	2.7	3.3	1.9	100.0	4,923	5.1
Province												
Western	17.5	10.2	3.3	36.9	9.6	14.2	3.2	2.3	2.9	100.0	785	5.1
Gulf	29.9	10.9	3.7	29.8	6.7	11.7	1.9	1.4	4.1	100.0	614	2.6
Central	19.8	11.4	3.8	32.1	6.7	17.4	2.8	2.7	3.3	100.0	1,274	4.4
National Capital District	6.1	7.9	2.5	22.6	6.6	17.7	10.4	22.7	3.5	100.0	1,011	9.0
Milne Bay	18.7	14.2	4.2	38.6	8.1	10.7	1.5	3.1	0.9	100.0	1,719	3.8
Northern	21.5	13.2	5.5	34.8	8.0	11.0	1.9	2.1	2.1	100.0	943	3.1
Southern												
Highlands	35.8	11.7	3.9	26.4	3.1	10.2	2.6	3.2	3.1	100.0	2,387	1.2
Enga	42.9	10.2	3.3	22.7	3.6	11.5	2.0	2.7	1.1	100.0	1,308	0.3
Western												
Highlands	21.5	9.4	4.2	32.0	4.6	13.1	3.6	3.9	7.7	100.0	1,662	4.0
Chimbu	25.2	13.3	3.6	22.2	5.0	13.5	6.6	6.5	4.2	100.0	2,166	3.0
Eastern												
Highlands	28.5	13.4	4.1	28.3	6.3	11.9	2.6	2.8	2.1	100.0	2,849	2.4
Morobe	15.5	8.6	4.1	34.9	8.3	14.3	8.2	4.2	1.9	100.0	3,390	5.3
Madang	21.4	12.5	3.7	34.8	8.7	12.3	1.7	2.8	2.2	100.0	2,359	3.7
East Sepik	20.1	14.5	3.0	37.9	7.5	11.5	1.3	2.0	2.2	100.0	2,021	3.7
West Sepik	24.7	10.8	4.4	37.0	8.6	8.6	1.5	2.1	2.2	100.0	1,278	3.4
Manus	9.1	10.6	4.5	36.0	9.0	18.8	3.3	6.6	2.0	100.0	320	5.6
New Ireland	12.1	14.6	4.2	36.1	6.5	15.8	2.7	4.3	3.7	100.0	977	4.9
East New Britain	14.0	11.6	2.1	43.6	6.4	15.7	2.7	3.1	0.9	100.0	1,150	5.1
West New Britain	16.6	13.0	4.9	34.0	9.8	15.8	2.7	2.2	1.0	100.0	1,239	4.8
Autonomous Region of Bougainville	15.0	9.3	2.9	41.8	9.1	14.1	2.6	2.8	2.3	100.0	1,237	5.1
Hela	48.7	7.3	3.1	21.2	5.7	5.4	1.1	1.5	5.9	100.0	1,926	0.0
Jiwaka	24.7	9.5	5.4	31.7	6.1	13.4	3.4	4.1	1.8	100.0	1,331	3.6
Wealth quintile												
Lowest	42.4	11.3	4.2	28.3	4.7	5.2	0.6	0.4	3.1	100.0	6,658	0.1
Second	31.2	12.9	4.3	32.4	6.4	8.1	1.2	0.5	2.9	100.0	6,808	1.8
Middle	21.6	12.6	4.1	35.0	7.4	12.8	2.3	1.3	3.0	100.0	6,811	3.6
Fourth	15.1	11.0	3.7	36.4	7.8	16.1	3.0	4.0	2.9	100.0	6,741	5.1
Highest	8.3	8.9	2.8	27.5	7.7	20.6	9.6	12.5	2.0	100.0	6,931	7.2
Total	23.6	11.3	3.8	31.9	6.8	12.6	3.4	3.8	2.8	100.0	33,948	3.6

¹ Completed grade 2 at elementary level

² Completed grade 8 at primary level

³ Completed grade 12 at secondary level

Source: NSO, (2019). Papua New Guinea Demographic and Health Survey 2016 – 18.

Table 1.3 Current school attendance: Female

Percent distribution of the de facto female household population age 6-24 currently attending school by highest level of schooling attended or completed, and currently not attending school, according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	Level of schooling ¹					Currently not attending	Missing	Total	Number of females
	Preparatory ²	Elementary ³	Primary ⁴	Secondary ⁵	More than secondary ⁶				
Age									
6-10	10.9	28.9	9.3	0.1	0.0	45.5	5.3	100.0	5,669
10-15	1.4	14.2	60.3	2.1	0.1	18.6	3.3	100.0	4,564
16-20	0.0	0.4	28.7	20.6	1.1	45.9	3.2	100.0	3,727
21-24	0.0	0.0	1.7	4.8	3.5	81.6	8.4	100.0	2,390
Residence									
Urban	3.9	12.2	28.5	12.2	1.3	36.4	5.6	100.0	1,889
Rural	4.2	14.3	26.6	5.2	0.7	44.3	4.6	100.0	14,460
Region									
Southern	4.6	14.7	26.4	4.6	0.5	44.5	4.8	100.0	3,103
Highlands	2.8	12.7	26.5	8.1	1.2	44.1	4.7	100.0	6,513
Momase	4.8	15.6	25.1	4.5	0.6	43.7	5.7	100.0	4,312
Islands	6.3	14.3	31.7	5.2	0.4	39.3	2.8	100.0	2,421
Living arrangements⁷									
Living with both parents	6.4	21.4	33.3	2.1	0.1	32.4	4.3	100.0	7,161
Living with mother but not father	5.1	15.7	34.6	7.0	0.0	33.4	4.2	100.0	1,773
Living with father but not mother	5.1	20.5	39.6	2.9	0.0	26.4	5.5	100.0	585
Not living with either parent	4.9	17.0	35.7	3.7	0.0	35.0	3.7	100.0	2,085
Wealth quintile									
Lowest	4.1	14.0	20.0	2.0	0.0	56.5	3.3	100.0	3,179
Second	3.8	14.3	24.5	2.7	0.0	49.3	5.3	100.0	3,084
Middle	4.7	15.4	29.6	3.9	0.0	41.6	4.8	100.0	3,282
Fourth	5.1	16.5	30.9	5.0	0.8	37.5	4.3	100.0	3,373
Highest	3.2	10.4	28.8	15.8	2.9	33.3	5.7	100.0	3,430
Total	4.2	14.1	26.9	6.0	0.8	43.4	4.7	100.0	16,349

¹ Currently attending school

² Preparatory refers to grade 0.

³ Elementary refers to grades 1-2.

⁴ Primary refers to grades 3-8.

⁵ Secondary refers to grades 9-12.

⁶ More than secondary or higher refers to more than grade 12 (tertiary).

⁷ Includes only de jure children under age 18

Source: NSO, (2019). Papua New Guinea Demographic and Health Survey 2016 – 18.

Table 1.4 Current school attendance: Male

Percent distribution of the de facto male household population 6-24 years of age currently attending school by highest level schooling attended or completed, and currently not attending school, according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	Level of schooling ¹					Currently not attending	Missing	Total	Number of males
	Preparatory ²	Elementary ³	Primary ⁴	Secondary ⁵	More than secondary ⁶				
Age									
6-10	11.0	29.0	9.9	0.1	0.0	45.5	4.5	100.0	6,308
10-15	1.5	16.1	58.6	1.8	0.0	18.1	3.9	100.0	5,012
16-20	0.0	1.3	36.6	22.0	0.6	35.5	3.9	100.0	4,198
21-24	0.0	0.1	8.9	12.8	3.7	70.0	4.5	100.0	2,277
Residence									
Urban	3.8	12.8	30.2	11.8	2.5	34.0	5.0	100.0	1,982
Rural	4.4	15.4	29.8	6.8	0.4	39.1	4.1	100.0	15,813
Region									
Southern	4.3	16.1	26.9	5.6	0.9	41.9	4.2	100.0	3,226
Highlands	3.2	15.6	29.1	10.1	0.8	36.6	4.7	100.0	7,255
Momase	5.1	13.5	30.9	5.5	0.4	40.9	3.7	100.0	4,754
Islands	6.0	15.6	33.6	5.3	0.4	35.6	3.6	100.0	2,560
Living arrangements⁷									
Living with both parents	6.6	21.3	32.8	2.5	0.0	32.6	4.1	100.0	8,090
Living with mother but not father	6.2	19.9	33.0	3.2	0.0	34.6	3.1	100.0	1,780
Living with father but not mother	4.3	26.0	34.0	2.6	0.0	27.4	5.6	100.0	792
Not living with either parent	3.8	16.9	41.4	4.4	0.0	29.5	4.0	100.0	2,212
Wealth quintile									
Lowest	3.9	14.6	23.9	4.0	0.1	49.5	3.9	100.0	3,592
Second	4.9	16.3	27.5	5.3	0.0	41.4	4.6	100.0	3,625
Middle	5.4	15.6	30.5	6.4	0.2	37.4	4.5	100.0	3,571
Fourth	4.3	15.2	33.8	7.6	0.4	33.9	4.7	100.0	3,494
Highest	3.0	14.0	33.5	13.7	2.4	30.2	3.2	100.0	3,513
Total	4.3	15.1	29.8	7.4	0.6	38.6	4.2	100.0	17,795

¹ Currently attending school

² Preparatory refers to grade 0.

³ Elementary refers to grades 1-2.

⁴ Primary refers to grades 3-8.

⁵ Secondary refers to grades 9-12.

⁶ More than secondary or higher refers to more than grade 12 (tertiary).

⁷ Includes only de jure children under age 18

Source: NSO, (2019). Papua New Guinea Demographic and Health Survey 2016 – 18.

Table 1.5 School attendance ratios

Net attendance ratios (NAR) and gross attendance ratios (GAR) for the de facto household population by sex and level of schooling; and the Gender Parity Index (GPI), according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	Net attendance ratio ¹				Gross attendance ratio ²			
	Male	Female	Total	Gender parity index ³	Male	Female	Total	Gender parity index ³
ELEMENTARY SCHOOL								
Residence								
Urban	57.6	60.0	58.7	1.04	102.8	106.5	104.5	1.04
Rural	42.4	41.8	42.1	0.99	95.3	90.2	92.8	0.95
Region								
Southern	49.3	45.5	47.5	0.92	99.2	97.8	98.5	0.99
Highlands	45.1	43.4	44.4	0.96	85.8	79.7	83.1	0.93
Momase	36.4	41.4	39.0	1.14	105.9	102.0	103.9	0.96
Islands	43.9	44.1	44.0	1.01	108.1	97.1	102.6	0.90
Province								
Western	51.8	41.2	46.2	0.80	96.7	79.6	87.7	0.82
Gulf	27.5	22.1	24.9	0.81	82.4	75.4	79.0	0.91
Central	45.6	40.3	42.9	0.88	87.5	77.4	82.3	0.88
National Capital District	66.0	66.5	66.2	1.01	109.1	114.1	111.5	1.05
Milne Bay	59.9	64.5	61.7	1.08	104.9	135.9	117.3	1.30
Northern	34.9	34.7	34.8	0.99	109.8	96.1	102.6	0.88
Southern Highlands	59.5	42.8	50.5	0.72	121.8	70.2	93.9	0.58
Enga	42.3	41.8	42.1	0.99	95.5	72.4	84.5	0.76
Western Highlands	44.4	43.9	44.2	0.99	73.8	82.5	78.1	1.12
Chimbu	55.5	54.6	55.2	0.98	91.5	100.0	94.6	1.09
Eastern Highlands	47.5	52.5	49.4	1.11	86.6	97.1	90.6	1.12
Morobe	49.4	53.1	51.5	1.07	120.7	96.9	107.4	0.80
Madang	30.0	37.5	33.9	1.25	101.3	108.0	104.7	1.07
East Sepik	40.1	39.7	39.9	0.99	106.5	107.9	107.1	1.01
West Sepik	20.1	26.9	23.5	1.34	88.5	93.9	91.2	1.06
Manus	53.6	59.1	56.1	1.10	103.3	112.0	107.4	1.08
New Ireland	48.7	49.9	49.3	1.03	119.8	111.7	116.0	0.93
East New Britain	45.0	48.2	46.6	1.07	94.9	99.1	97.0	1.04
West New Britain	37.8	39.7	38.8	1.05	137.7	101.8	118.7	0.74
Autonomous Region of Bougainville	41.1	37.1	39.0	0.90	85.1	76.8	80.8	0.90
Hela	18.9	20.4	19.6	1.08	51.0	55.7	53.0	1.09
Jiwaka	44.9	50.1	47.2	1.12	81.2	83.3	82.2	1.03
Wealth quintile								
Lowest	33.8	31.7	32.8	0.94	83.8	82.5	83.2	0.99
Second	36.3	36.8	36.5	1.02	93.6	86.1	90.3	0.92
Middle	45.1	41.4	43.3	0.92	99.9	92.8	96.4	0.93
Fourth	49.8	52.6	51.3	1.06	107.7	105.2	106.4	0.98
Highest	58.4	57.6	58.0	0.99	97.6	90.7	94.5	0.93
Total	43.7	43.4	43.6	0.99	95.9	91.6	93.9	0.95
PRIMARY SCHOOL								
Residence								
Urban	62.8	65.6	64.2	1.05	92.7	85.7	89.3	0.93
Rural	47.8	49.5	48.6	1.03	82.1	75.2	78.8	0.92
Region								
Southern	49.3	51.7	50.5	1.05	79.3	75.1	77.2	0.95
Highlands	52.2	54.1	53.0	1.04	82.5	78.4	80.6	0.95
Momase	43.5	44.8	44.1	1.03	83.3	68.6	76.4	0.82
Islands	52.7	55.3	53.9	1.05	88.7	86.8	87.8	0.98
Province								
Western	53.5	54.6	54.1	1.02	87.3	77.0	82.3	0.88
Gulf	30.0	29.6	29.8	0.99	75.3	58.4	66.7	0.78
Central	55.2	51.3	53.4	0.93	81.3	77.9	79.7	0.96
National Capital District	69.2	68.4	68.8	0.99	91.5	91.2	91.3	1.00
Milne Bay	51.1	61.0	56.5	1.19	76.0	74.5	75.2	0.98
Northern	30.9	33.3	32.1	1.08	67.1	70.3	68.6	1.05
Southern Highlands	54.5	53.3	54.0	0.98	84.3	77.9	81.4	0.92
Enga	48.2	46.3	47.4	0.96	76.6	71.1	74.2	0.93
Western Highlands	65.4	65.2	65.3	1.00	101.0	99.8	100.5	0.99
Chimbu	56.6	67.2	62.0	1.19	84.9	91.3	88.1	1.08
Eastern Highlands	49.7	53.3	51.3	1.07	72.8	78.4	75.3	1.08
Morobe	55.4	54.9	55.2	0.99	88.6	76.0	83.3	0.86
Madang	37.7	40.6	39.1	1.08	74.0	61.3	67.7	0.78
East Sepik	38.1	43.6	40.9	1.14	91.1	70.7	80.6	0.83
West Sepik	31.8	34.8	33.3	1.09	76.5	64.8	70.9	0.85
Manus	66.1	72.7	69.1	1.10	99.6	100.4	99.9	1.01
New Ireland	49.2	54.9	51.9	1.11	80.2	78.7	79.5	0.98
East New Britain	64.6	59.2	62.0	0.92	106.8	90.9	99.0	0.85
West New Britain	37.6	46.6	41.8	1.24	74.4	74.2	74.3	1.00
Autonomous Region of Bougainville	55.7	56.0	55.8	1.00	89.9	99.5	94.5	1.11
Hela	33.0	35.9	34.4	1.09	68.4	57.3	62.9	0.84
Jiwaka	65.0	63.5	64.4	0.98	101.8	79.6	91.9	0.78

Continued...

Table 2.16—Continued

Background characteristic	Net attendance ratio ¹				Gross attendance ratio ²			
	Male	Female	Total	Gender parity index ³	Male	Female	Total	Gender parity index ³
PRIMARY SCHOOL (continued)								
Wealth quintile								
Lowest	34.1	35.0	34.5	1.02	64.6	54.9	60.1	0.85
Second	40.7	40.9	40.8	1.01	73.5	68.4	71.2	0.93
Middle	47.8	52.8	50.3	1.10	87.4	79.7	83.6	0.91
Fourth	56.3	57.1	56.7	1.01	93.6	85.7	89.7	0.92
Highest	70.5	71.5	71.0	1.01	99.4	93.7	96.7	0.94
Total	49.4	51.3	50.3	1.04	83.1	76.4	79.9	0.92
SECONDARY SCHOOL								
Residence								
Urban	30.5	41.6	35.8	1.37	54.7	58.4	56.5	1.07
Rural	18.6	18.1	18.4	0.97	36.7	30.2	33.7	0.82
Region								
Southern	16.0	17.0	16.5	1.06	29.7	25.9	27.9	0.87
Highlands	28.3	28.9	28.6	1.02	54.7	41.3	48.2	0.76
Momase	14.4	12.5	13.6	0.87	28.8	29.2	29.0	1.01
Islands	13.5	17.7	15.4	1.31	27.1	30.4	28.6	1.12
Province								
Western	18.1	15.8	17.1	0.87	35.4	26.8	31.6	0.76
Gulf	5.8	3.6	4.7	0.62	13.3	6.0	9.7	0.46
Central	16.5	13.0	14.9	0.79	26.5	17.2	22.3	0.65
National Capital District	41.9	48.0	45.1	1.15	67.3	66.2	66.7	0.98
Milne Bay	9.4	12.8	10.8	1.36	17.5	18.2	17.8	1.04
Northern	7.9	5.1	6.4	0.64	26.6	16.4	21.2	0.62
Southern Highlands	25.4	15.9	20.9	0.63	51.1	26.6	39.6	0.52
Enga	15.8	21.8	18.3	1.38	47.8	41.0	44.9	0.86
Western Highlands	37.1	24.0	31.1	0.65	63.1	35.2	50.3	0.56
Chimbu	46.4	55.1	51.4	1.19	67.5	69.2	68.5	1.03
Eastern Highlands	26.7	29.3	28.0	1.10	61.8	38.4	49.7	0.62
Morobe	23.0	13.7	19.3	0.60	35.8	42.3	38.4	1.18
Madang	7.2	10.8	8.9	1.49	28.9	21.8	25.7	0.75
East Sepik	11.6	17.1	13.9	1.47	24.0	30.9	26.9	1.29
West Sepik	8.8	4.3	6.9	0.49	20.3	9.2	15.7	0.45
Manus	15.5	18.1	16.6	1.17	28.8	24.4	26.9	0.84
New Ireland	13.8	15.3	14.4	1.11	24.5	30.5	26.9	1.25
East New Britain	16.8	18.4	17.5	1.10	27.3	30.7	28.9	1.13
West New Britain	13.2	20.9	16.5	1.58	28.3	36.3	31.7	1.28
Autonomous Region of Bougainville	8.7	15.8	12.4	1.81	27.4	26.8	27.1	0.98
Hela	13.7	14.4	14.0	1.05	36.1	25.3	31.0	0.70
Jiwaka	30.3	21.4	26.7	0.71	52.0	39.5	46.9	0.76
Wealth quintile								
Lowest	8.7	5.9	7.4	0.68	23.9	11.8	18.2	0.49
Second	13.2	9.1	11.2	0.69	32.1	15.9	24.5	0.50
Middle	14.4	14.3	14.3	1.00	31.2	23.2	27.8	0.74
Fourth	18.8	16.4	17.7	0.87	36.9	28.4	33.0	0.77
Highest	43.1	52.5	47.7	1.22	68.2	79.0	73.5	1.16
Total	20.1	21.3	20.6	1.06	39.0	34.1	36.7	0.87

¹ The NAR for elementary school is the percentage of the elementary school-age (6-8 years) population that is attending elementary school. The NAR for primary school is the percentage of the primary-school age (9-14 years) population that is attending primary school. The NAR for secondary school is the percentage of the secondary-school age (15-18 years) population that is attending secondary school. By definition the NAR cannot exceed 100.0.

² The GAR for elementary school is the total number of elementary school students, expressed as a percentage of the official elementary school-age population. The GAR for primary school is the total number of primary school students, expressed as a percentage of the official primary-school-age population. The GAR for secondary school is the total number of secondary school students, expressed as a percentage of the official secondary-school-age population. If there are significant numbers of overage and underage students at a given level of schooling, the GAR can exceed 100.0.

³ The gender parity index for elementary school is the ratio of the elementary school NAR (GAR) for females to the NAR (GAR) for males. The gender parity index for primary school is the ratio of the primary school NAR (GAR) for females to the NAR (GAR) for males. The gender parity index for secondary school is the ratio of the secondary school NAR (GAR) for females to the NAR (GAR) for males.

Source: NSO, (2019). Papua New Guinea Demographic and Health Survey 2016 – 18.