



## Family characteristics and income: Evidence from Indonesia

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### Abstract

Balance in the form of linkages between socioeconomic aspects of a region is the key to economic stability. This economic stability is essential to achieve community welfare, so existing interventions must be considered considering that a slight change in one aspect will affect the economic balance. With the achievement of community welfare, the economic development of a region can be said to be good, which also has implications for handling existing socioeconomic problems. However, the misalignment of education level, gender, internet access, and marital status of each district/city area triggers differences in income levels. Therefore, through this study, it is expected to be able to answer whether factors such as education level, gender, internet access, and marital status are factors that influence the magnitude of income levels, especially in DIY Provinces. By using IFLS-5 data processed through an estimation method using logistic regression, test results were obtained that gender and internet access factors significantly affected the amount of people's income. In contrast, the level of education and marital status did not significantly affect the income of people in DIY Province.

Keywords: Education; gender; internet access; marital status; income

### 1. Introduction

Indonesia is a developing country that has been unable to achieve economic stability, so the level of welfare of its people still needs to be questioned. Community welfare will ideally be achieved if all levels of society obtain production results evenly (Azis et al., 2022). The key to people's interest lies in how the income level of the community. However, the size of income levels and their changes over time are rarely considered when assessing people's level of welfare. The story of community welfare has a significant relationship with economic growth in Indonesia (Sultan et al., 2023).

The difference in income between the low and the high from year to year is clear evidence that the community has not fully felt welfare. The government has done various ways to deal with it, including a policy that requires each local government to allocate 20% of its funds for investment in education. Quality education will produce humans with reliable quality resources. Through education, the quality of human resources will increase along with the increase in knowledge and skills. Nevertheless, the current phenomenon has diluted this view; some pros and cons say that higher education does not guarantee success. Universities produce thousands of workers yearly, but only some are unemployed while waiting for job applications. According to the BPS (*Badan Pusat Statistik-BPS*), in February 2021, 999,543 undergraduates still needed jobs. In addition to education level, gender differences and classic issues of gender equality also determine one's income level. The probability of being accepted by male workers

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looking for work is higher than that of female workers who are looking for jobs; this is related to men's more significant responsibility in meeting their household needs. This classic problem of gender equality occurs massively in Indonesia, a developing country. Low gender equality is one of the problems that can limit a person's productivity. This will not only harm women but also harm the country in general. This condition should be of particular concern to the government, bearing in mind that the projection for 2045 will be far more than for men, and even the difference will reach 1.45 million people (Kusnandar, 2022).

Another factor that contributes to differences in the income level of people in Indonesia, especially in the Special Region of Yogyakarta Province, is labor discrimination, as has been done by one of the Indonesian Government Banks. The bank stipulates that the requirements for workers to be accepted into banking staff positions are those whose marital status is "unmarried." Workers with "married" marital status are less likely to be absent from work and have higher satisfaction with results. This is due to their responsibility to fulfill their obligations, namely to meet the obligations of material and moral family needs. Therefore, workers with marital status "married" tend to arrive on time and avoid defaulters (Akbariandhini and Prakoso, 2020).

The phenomena described above should not be a problem in increasing income to achieve prosperity. Given that in the modern era like today, internet access is straightforward to reach everyone regardless of status. According to data from the BPS (2021), the percentage of internet access continues to increase from 2017 to 2021. With the Internet, communication is no longer difficult; communication becomes easy, and without any distance restrictions, everyone can communicate through Internet facilities; communication is also diverse and can be done by making short messages, voice calls, to video calls. The ease of internet access can also spoil its users for easy access to information.

Seeing the problems of the Indonesian economy, it is necessary to examine how the level of education, gender, internet access, and marital status can affect the economy of the Indonesian people, especially their income level. To achieve the expected goal, the author is interested in studying more deeply through his research, namely "Analysis of Factors of Education Level, Gender, Internet Access, and Marital Status on Income in the Special Region of Yogyakarta Province Based on IFLS-5" both partially and simultaneously. Low-income levels, when not immediately intervened, can lead to very complex socioeconomic problems. On the other hand, when people's income is high, it is also considered more profitable because people have freer preferences because there are many options. They can achieve a high level of welfare. Thus, researchers try to test existing factors to minimize the community's low-income level and can be a reference for local government stakeholders to determine what interventions will be carried out to overcome the problems that occur.

## **2. Literature review and hypothesis development**

### ***Income***

One indicator used to measure society's high or low welfare is income. Income is the payment obtained by a household in an economy for the use of its factors of production (Sukirno, 2000). In addition, Lovelock and Wirtz (2011) also explain that income is funds obtained by humans in companies in the form of wages, salaries, rent, and other conditions. Kadariah (2001) revealed that a person's income is in the form of salary, interest, rent, profit, and in the state of a flow of money calculated over a period of time. Each community has different income levels because various factors, such as education, work experience, and gender, influence it. In addition, access to credit, length of working hours, and working capital significantly affect individual income (Nazir, 2010). Differences in everyone's income levels reflect the uneven prosperity and standard of living that result in inequality of income distribution.

### ***Education level***

Law Number 20 of 2003 (*Undang-Undang Nomor 20 Tahun 2003*) explains that education is a planned effort to create a learning atmosphere and learning stages so that students can actively develop their potential. The level of education is a long-term stage using sequential and organized procedures, which make a workforce learn theoretical and conceptual knowledge for general purposes (Mangkunegara, 2002). The education level is one indicator that affects the difference in people's income. This happens because

quality education will produce humans with reliable quality resources. Through education, the quality of human resources will increase along with the increase in knowledge and skills. Education has a role to play in ensuring a prosperous and prosperous life. Higher education makes a person more knowledgeable and skilled to be useful for daily life and work (Sukma Dewi et al., 2021). Therefore, investment in education is one of the government's main policies. This is shown by the regulation that each district must allocate as much as 20% of the Regional Revenue and Expenditure Budget for education. Education can solve the problem of low-income levels in the community because it can increase community productivity through the absorption of labor into developing industries and create new jobs. This is in line with research Julianto and Utari (2018) which states that an individual's education level significantly positively influences an individual's income level.

### ***Gender***

One of the factors for the difference in income obtained by the community, especially in differences in wages, job participation rates, and the division of roles and responsibilities, is gender. In cases that occur in some countries, there are differences in wages earned by women and men. Men tend to earn higher wages than women despite having the same work qualifications. This is in line with research Pirmana (2006) using Sakernas data to obtain results that gender significantly influences individual income. Men have an income 4.34 percent higher than women; even though the two individuals have the same characteristic criteria but have different sexes, their income will still differ by about 4.34 percent. In addition, research Julianto and Utari (2018) also states that gender significantly influences individual income because the level of income produced by men tends to be greater when compared to women.

### ***Internet access***

The development and growth of technology today can potentially influence various areas of human socioeconomic life, including income. The existence of technology in the form of internet access encourages every individual to create innovations that can facilitate work. It is undeniable that the Internet can create jobs to increase income. The ease of using the Internet provides more access to the public to find information/news, shop for goods and services, and use social media to increase relationships (Juairiyah, 2020). This is in line with research Purwatiningsih et al. (2018), which states that the Internet can optimize and improve human resources' quality. In addition, Czernich et al. (2011), with a sample of 25 countries, revealed that the Internet with high access can increase (GDP) per capita by 0.5-1.5 points.

### ***Marital status***

Marriage or marriage is a bond that unites two people into one in a household. Married people will change their status from single to someone's husband or wife. Marriage carried out by two people will certainly increase the burden of expenses for the couple. Expenses that were only for alone will increase in amount along with the responsibility of dependents of family members they have. The more the number of family members, the more the family's household expenses. Therefore, people with many family dependents will usually be more intense in getting more income. Marriage or marriage is a bond that unites two people into one in a household. Married people will change their status from single to someone's husband or wife. In addition, marital status tends to affect a person's happiness. Research Lawrence et al. (2019) revealed that most happiness is based on marriage satisfaction and a healthy body. By getting married, a person tends to have more significant needs, so their income should be more outstanding. This is supported by research Mohan-Neill et al. (2014), which states that after marriage, every individual tends to have a higher income than unmarried individuals. When a follow-up analysis was carried out by gender, the results were that after marriage, men had a significantly higher income of about \$81,000, while women were married at about \$35,000. The income of married women is close to that of unmarried men. Unmarried women have a low income of about \$28,000.

### ***Hypothesis development***

Education has a strong negative relationship with participation in the informal sector. In addition, education does not affect a person's income (Gerxhani and Werfhost, 2013). DIY Province is a region that is strong in culture. In addition, DIY also has beautiful nature that is used as a tourist attraction. This makes DIY society's characteristics more dominant in the informal sector (Badan Pusat Statistika, 2015). Around 79% of the DIY provincial workforce 2016 worked in SMEs (Agus, 2020). Therefore, the first hypothesis of this study is that:

H1: Higher education does not significantly affect income.

Gender has a very significant effect on individual income (Pirmana, 2006). However, gender should not be a limitation in working in the informal sector. (Gupta, 2014) explains that the informal sector is an opportunity for women who lack skills to find a source of income. Therefore, the second hypothesis of this study is that:

H2: Gender does not significantly affect income.

Internet use in the informal sector significantly impacts (Rachmatullah et al., 2023). The Internet will make it easier to promote goods or services sold on a broader scope. Therefore, the third hypothesis of this study is:

H3: internet has a significant impact on income.

Married women have the potential to contribute income to the informal (Anugrahita Dewi and I Gusti Ayu Made, 2013). The fourth hypothesis of this study is that:

H4 marital status has a significant impact on income.

## **3. Method**

### ***Data***

This research was conducted using secondary data, namely data obtained indirectly. This is done considering that secondary data can be collected quickly, easily, and efficiently compared to primary data. The secondary data results from the *Indonesian Family Life Survey* (IFLS) conducted by RAND Labor and Population. The survey was conducted in 24 provinces, including Jakarta, East Java, Lampung, and West Sumatra to South Sulawesi. The survey results that have been carried out can be used in general by registering at [www.rand.org/labor/FLS/IFLS/ifls5.html](http://www.rand.org/labor/FLS/IFLS/ifls5.html) first. This IFLS survey is conducted every seven years, starting in 1993, continuing in 1997, and last born in 2014. Therefore, this study uses IFLS-5 data from 2014 because it is the latest data.

### ***Research variables***

In this study, data collection or collection was carried out using documentation techniques derived from IFLS-5 books. Where in IFLS-5 itself, there are 11 books which include Book K, Book 2 (*Household Economy*), Book 3A (*Adult Information Part 1*), and Proxy Book (*Adult Information by Proxy*). However, this study only involved variables derived from questionnaire topics and question columns in Book K and Book 3A. These variables are income, education level, gender, internet access, and marital status. The income variable is divided into two alternatives based on the value of the DIY Provincial Minimum Wage (UMP) applicable in 2014, which is Rp988,500.00. The brief explanation of the variables used can be found in Table 1.

### ***Model due diligence***

Feasibility testing of this logistic regression model is carried out to ensure no weaknesses in the regression model. This study's feasibility testing of logistic regression models was conducted using *Hosmer and Lemeshow's test*. The method measures whether a model has conformed to the observed data. If the value of  $\text{prob} > \chi^2$  is greater than  $\alpha$  (0.05), then the model to be formed is suitable and suitable for use,

and the null hypothesis ( $H_0$ ) is acceptable. Vice versa, when the value of  $\text{prob} > \chi^2$  is less than  $\alpha$  (0.05), then the model formed is not suitable and not suitable for use, so the alternative hypothesis ( $H_1$ ) is accepted.

Table 1. Variables used in the study

Variable name	Information
Income	1: Income above UMP (More than Rp988.500,00) 0: Income below UMP (Less than Rp988.500,00)
Education Level	1: Higher Education (D1,D2,D3,S1,S2,S3) 0: Other Educated
Gender	1: Male 0: Female
Internet Access	1: Accessing/Using the Internet 0: Not Accessing/Using the Internet
Marital Status	1: Married 0: Other Status

### ***Simultaneous parameter testing***

Parameter significance tests are simultaneously performed to determine whether there is a joint influence on the independent and dependent variables. This test will explain how much the independent variable can significantly affect the dependent variable. This simultaneous parameter significance test is carried out using *the likelihood ratio* test. This *likelihood ratio* test is used because it has the same function as the F test in multiple regression. In this test, there is a hypothesis used, while the hypothesis is as follows:  
 $H_0: \beta_j = 0$  (There is no significant effect between the j-th independent variable on income level)  
 $H_1: \beta_j \neq 0$  (There is a significant influence between the j-th independent variable on income level)

### ***Partial parameter testing***

A partial parameter significance test is a test performed to show the influence of individuals on the independent variable on the dependent variable. This test is performed to know that one independent variable can significantly explain variations in the dependent variable. The parameter significance test is partially performed using the Wald test.

### ***Logistic regression***

The data analysis technique used in this study was to use logistic regression. Logistic regression is a data technique in the form of non-linear regression used to determine and describe the relationship between dependent variables in the form of two or more categories, with independent variables in the form of classes and numerals. Logistic regression is a way that can be used to obtain the alleged value (score) of a variable's criteria; modeling with logistic regression produces an estimate of the probability of the occurrence of events (score 1) on the criteria variable (Basuki, 2018). Logistic regression aims to study the relationship between an independent variable (eg, a risk factor or predictor) and the probability of occurrence of a particular event (the dependent variable). The logistic regression model produces a regression coefficient that can be used to estimate the probability of events based on the existing independent variable values.

### ***Odds ratio***

The odds ratio is one measure that can determine how much the independent variable can affect the dependent variable. The odds ratio value is a value that shows the comparison of the tendency level of two categories in one independent variable, with one of the categories being used as a comparison of the essential category (Hosmer and Lemeshow, 2000). The odds ratio model also describes changes that can be either increased or decreased. The tendency for each addition to one unit variable occurs more often if the independent variable is categorical, if the independent variable is continuous, or if the tendency is different (Hosmer et al., 2013).

#### 4. Results and discussion

##### *Descriptive analysis*

Based on Table 2, it can be concluded that the average person in Yogyakarta Special Region Province is female and, on average, married. In addition, they also have average other levels of education and, on average, do not access the Internet. Based on the *Hosmer and Lemeshow* test results, the table above shows that the prob value of  $\chi^2 >$  is 0.9093, meaning more significant than the significance level of  $\alpha$  (0.05). With this value, the null hypothesis ( $H_0$ ) is accepted, and the model formed is appropriate and matches the observed data to explain how the influence of education level, gender, internet access, and marital status on the magnitude of income levels.

Table1. Results of descriptive analysis of variables in research

Variable	Category	Percentage	Total
Education level	Other	78,40	100%
	High (D1,D2,D3,S1,S2,S3)	21,60	
Gender	Woman	51,85	100%
	Man	48,15	
Internet access	Not Accessing	57,25	100%
	Access	42,75	
Marital Status	Another status	32,18	100%
	Marry	67,82	

Table 2 shows that the income of the people of Yogyakarta Special Region Province is dominated by income above UMP (>Rp988,500.00), which is 96.31%. This indicates that most people in Yogyakarta Special Region Province have a relatively good income level because they are above the stipulated UMP. In addition, there is also a fascinating thing in the table: only 21.60% of people have the last education (D1, D2, D3, S1, S2, S3). In contrast, the remaining 78.40% are educated people other than (D1, D2, D3, S1, S2, S3). This shows that the level of education of the people of Yogyakarta Special Region Province is dominated by educated people other than (D1, D2, D3, S1, S2, S3). This is likely due to the costs required for more outstanding higher education. Families with economic limitations may face difficulties financing their children's higher education. Therefore, they may send their children to high school as a more affordable alternative. Then many jobs in Yogyakarta and its surroundings do not require higher education qualifications as well as the tourism industry, handicrafts, arts, and other informal sectors, which until now are still important in the region's economy. Therefore, some individuals may go directly into the workforce after completing high school/vocational school rather than continuing higher education.

Meanwhile, most of the people of Yogyakarta Special Region Province are female, 78.40% and 67.82% are married. On the other hand, 57.25% of people do not access the Internet. People who do not access the Internet may be caused by lack of sufficient knowledge or skills in using technology and the Internet; they may be reluctant or unable to use it effectively. Then demographic factors such as age, education level, and socioeconomic background can affect internet access. The older generation or those less educated may have difficulty accessing or using the Internet compared to the younger generation or those with a higher level of education.

##### *Model due diligence*

Table2. Hosmer and Lemeshow test results

Number of observations	1,815
Number of groups	8
Hosmer-Lemeshow (2)	2,11
Prob > $\chi^2$	<b>0,9093</b>

Based on the results of binary logistic regression analysis, it was found that people with a high level of education have 1.61 times greater income than people with a low level of education. However, the level of education, i.e., higher education, does not significantly affect the income of DIY people. According to BPS (2014), DIY's main business field data is in the informal sector, which includes agriculture; the processing industry; large, small, and restaurant trade; and merits. In the informal sector, higher education is not needed to be able to meet the criteria for employment. This is in line with Sethuraman (1981), who says that there is no need for high skills and higher education to earn income to support his family in the informal sector.

***Simultaneous parameter testing***

Table3. Simultaneous parameter test results

Number of obs	1,815
LR chi2(4)	25.69
Prob > chi2	<b>0.0000</b>
Pseudo R2	0.0448

Simultaneous parameter testing is to determine the influence of independent variables together on dependent variables. Based on the results in the table above, it is shown that the value of prob> chi2 is 0.0000; the value is smaller than the significance level of 0.05. This indicates that there are independent variables that have a significant influence on income levels.

***Partial parameter testing***

Table4. Partial parameter test results

Variable	z	p >  z
Education Level	1.09	0.274
Gender	2.77	<b>0.006</b>
Internet Access	2.59	<b>0.010</b>
Marital Status	1.60	0.110

The partial parameter significance test performed showed  $p > |z|$ , which is the result of the Wald test. The independent variable significantly affects if the  $p\text{-value} > |z|$  less than 0.05. Based on the results in the table above, it can be seen that of the four independent variables, two variables have a significant influence on dependents, namely gender and internet access. This is because both variables have  $p > |z|$  less than 0.05, which is 0.006 in the gender variable and the internet access variable 0.010.

***Binary logistic regression model***

Based on the results in Table 6, a logistic regression model is formed, namely:

Table5. Logistic Regression Results

Income	Coefficient	Std. error	p > z
Education level	0,4784402	0,4371566	0,274
Gender	0,7728384	0,2786091	<b>0,006</b>
Internet access	0,8542073	0,3300963	<b>0,010</b>
Marital status	0,4264767	0,2669224	0,110
constant	2,334313	0,2400263	0,000

### ***The effect of education level on income***

Based on the results of binary logistic regression analysis, it was found that people with a high level of education have 1.61 times greater income than people with a low level of education. However, the level of education, i.e., higher education, does not significantly affect the income of DIY (*Daerah Istimewa Yogyakarta*) people. According to BPS (2015), DIY's main business field data is in the informal sector, which includes agriculture; the processing industry; large, small, and restaurant trade; and merits. In the informal sector, higher education is not needed to be able to meet the criteria for employment. This is in line with Sethuraman (1981), who says that in the informal sector, there is no need for high skills and higher education to earn income to support his family.

### ***The effect of gender on income***

Based on the results of binary logistic regression analysis, it was found that males have 2,166 times greater income than women. In addition, gender has a significant influence on income. Higher incomes tend to be obtained by individuals of the male sex than those of the female gender. This finding is in line with the perspective according to Mahendra (2014), which states that the sex of the workforce is inseparable from the increase in workers' work. Different genders show different levels of productivity, where men have higher levels of work productivity when compared to women; this makes men more likely to earn high incomes than women.

### ***The effect of internet access on income***

Based on the results of binary logistic regression, it is known that people who access the Internet have 2.35 times greater income than those who do not. In addition, internet access has a significant influence on income. With internet access, people will be more free to get additional knowledge and information to be more productive. This aligns with the research conducted Hermawan et al. (2022) that internet access positively impacts workers' income. In addition, Puspa Negara and Monika (2020) also said that internet use significantly influences the income of Micro and Small Industries (IMK). By using the Internet, IMK will better follow the needs of consumers so that it will provide better service for consumers. This result is also reinforced in a report Swenson and Ghertner (2020) which states that there is a digital divide between low-income households and those with higher incomes regarding internet access. Where people in low-income families have less access to Internet services. Thus, this gap can have significant implications for education, employment, and access to information and services.

### ***The effect of marital status on income***

Based on the results of binary logistic regression, it is known that married people have 1,532 times greater income than other status communities. In addition, marital status affects income. However, marital status did not significantly affect income. Married women will tend to have more roles and responsibilities, not only thinking about their work but also having responsibilities as wives. This resulted in a decrease in his productivity at work. Conversely, married men will tend to have high productivity because they carry the burden of being the head of the household. In addition, research Dunga (2017) heads of married households will have higher incomes than heads of families who are not married; even heads of households with widow status are classified as low-income.

## **5. Conclusion**

Based on the estimation results using the binary logistic regression method and data derived from the Indonesia Family Life Survey (IFLS-5), the factors that affect the amount of income of people in the Special Region of Yogyakarta Province are gender and internet access. Meanwhile, the level of education and marital status are relatively low in the community's income. The results of this study support the statement that there is still a wide gender gap in career development. In addition, the results of this study can also provide an overview of important factors that affect income levels and can be taken into consideration to find solutions to the problem of low-income levels in the community.



Based on the results and findings of the study, the researcher provides several suggestions for the government, the community, and subsequent researchers. As a decision/policy maker to form good economic growth, the government should pay attention to what essential factors affect the problem of people's income levels. The policy to be implemented is expected to encourage an increase in production capacity by creating new jobs that collaborate with the rapid development of technology, such as internet access. However, it also needs to be accompanied by improving human resources quality. This can be achieved through educational participation and training that can provide work experience and absorbed in the world of work. This study only used four variables: education level, gender, internet access, and marital status. Based on the results and findings obtained, researchers should be able to add other independent variables to better understand the factors causing income levels in the province of Yogyakarta Special Region. Even so, researchers hope that the research that has been done can be a reference source for future researchers.

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