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The Impact of Morbidity and Education on Economic Growth in Bekasi City

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A B S T R A C T

The phenomenon of satellite cities' economic growth is interesting to study empirically due to the characteristics and several determinants that are different from one another. City of Bekasi is one of the growing satellite cities, whose rapid growth encompasses economics, social dynamics of society, and the environment. This research aims to find the influence of morbidity rate and education on the economic growth of Bekasi City, as one of the busiest cities in West Java Province. The method used here was multiple linear regression with OLS (Ordinary Least Squares). The period of observation starts from 2017 to 2022. The results show that morbidity rate and education do not have a significant impact on economic growth. Only a dummy variable as a proxy for environmental damage has a significant negative influence on the economic growth of Bekasi City. These findings demonstrate the need for enhanced development programs and more concern for environmental issues. Environmental pollution has been shown to hamper many economic activities in Bekasi City. Furthermore, Bekasi's role is crucial, not only as an industrial city but also as a satellite city of Jakarta and a hub for other surrounding areas.

Keywords:

Morbidity Rate,
Education,
Economic Growth,
Environmental issues

1. INTRODUCTION

Health and education are crucial issues in development programs, especially in developing countries like Indonesia. According to Law No. 23 of 1992 concerning Health, health is defined as a state of complete physical, mental, and social well-being that enables everyone to live productively, socially, and economically. Meanwhile, the WHO defines health as a state of complete physical, mental, and social well-being, not merely the absence of disease (World Health Organization, 2024). The UN Agenda for Sustainable Development encompasses inclusive and sustainable economic growth, achieved through a more holistic approach (Dima et al., 2024). Therefore, environmental protection, human development, and public health are essential components.

Health has been proven to be the core of a generation's wealth and a pillar of a nation's economic growth (Scott, 2018). With improved health, the fundamentals of the economy become stronger, and economic growth can reach its optimal level. Health and poverty, for example, have a complex relationship with economic growth in low-income countries (Sahn, 2013). Health, in many cases, is a fundamental factor for achieving societal well-being.

2. LITERATURE REVIEW

Empirical research has found that public spending on education, health, and welfare services has a significant positive impact on economic performance, both in the medium and long term (Kim & Ahn, 2020). This expenditure should be viewed as a promising investment for the sustainability of a more prosperous society. Another study in Kenya, conducted between 2000 and 2020, demonstrated that health spending significantly boosted economic growth in the long term, but not in the medium term (Alwago, 2023). This underscores the need for adjustments to ensure that health reforms significantly impact economic growth.

However, the benefits of health investment on economic growth differ between low-income and high-income countries (Mandal et al., 2018). It can vary from one country to another, depending on the policies of each country. Overall, economic growth is understood as the improvement in a country's economic performance in producing goods and services (Tungkele et al., 2023).

A study involving 45 sub-Saharan African countries from 1990 to 2018 concluded that health spending and health program outcomes significantly influence long-term economic growth (Kamanda et al., 2022). Meanwhile, economic growth only influences health spending in the short term. This finding aligns with research by experts, which concluded that economic growth and health spending have a positive, reciprocal causal relationship (Nasreen, 2021). Improving public health is a vital policy for boosting labor productivity and stable economic growth (Shahbaz et al., 2019).

As a dangerous disease that threatens communities worldwide, HIV/AIDS has had a serious impact on the economy of Ghana in particular and Africa in general (Asravor, 2023). Similarly, the spread of pandemics and pollution has led to high mortality rates worldwide, crippling various economic sectors. Strategic policies are essential to address the problems of pollution and the spread of disease globally (Alhassan et al., 2021).

Improving health quality is closely linked to good environmental conditions. Poor environmental factors can slow economic growth by weakening worker productivity (Khan et al., 2020). Meanwhile, economic growth is often found to be a cause of environmental degradation (Zafar et al., 2022). Therefore, improving environmental conditions will play a crucial role in maintaining public health and promoting quality economic outcomes to combat

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poverty, hunger, and many social injustices. Economic growth is not simply about financial amount; environmental sustainability is also essential.

To reduce environmental degradation, public spending on environmental improvement must be accompanied by changes to school curriculum that encourage environmental awareness, competency, and a positive mindset among the younger generation (Osuntuyi & Lean, 2023). This step can encourage the involvement of all parties, especially the youth, encouraging them to collectively preserve the environment, starting at an early age in school.

Education has a clear purpose and can raise awareness among those involved. A good education can produce high-quality individuals with great potential to advance community life (Khozin, 2020). Empirical research shows that education does not significantly impact economic growth in the short term, but its impact is very clear in the long term (Sarwar et al., 2021). Research using a panel random effects method shows that average years of schooling and life expectancy have a significant and directly proportional influence on Gross Regional Domestic Product per capita (Sitorus et al., 2024).

Our research takes the city of Bekasi as a case study. This research is crucial because, as a key economic support area for Jakarta (playing a major role in the metropolitan area's development), Bekasi requires a thorough examination of its economic status. High community productivity stems from the excellent health of its residents. However, the problem is that Bekasi's water was polluted and requires serious action (KLHK, 2018). Environmental pollution not only makes people sick but is also believed to reduce economic well-being. Therefore, we included a dummy variable in this research as a proxy for environmental pollution.

The novelty of this study lies in the use of different variables than those of other researchers, which examine the morbidity rate of the population (female group) and the educational participation rate of residents in Bekasi City—a buffer zone of the Jakarta Metropolitan area. The results of this study can contribute to the discourse and research on how to manage health and education policies better.

3. METHODS

This study aims to determine the effect of the morbidity rate of society (female group) and education levels on economic growth per capita in Bekasi City. The data used are secondary data sourced from the Bekasi City Central Statistics Agency. The research method used is multiple linear regression with the Ordinary Least Squares (OLS) approach, aiming to determine the effect of independent variables on the dependent variable (Gujarati & Porter, 2009). The study covered the period from 2017 to 2022.

The variables in this study are: economic growth, morbidity rate, education, and a dummy variable for environmental pollution. The economic growth data used is the Gross Regional Domestic Product (GRDP) per capita of Bekasi City. The data is in natural logarithmic form.

The morbidity rate describes how vulnerable a health condition is. It measures the effectiveness of disease eradication and sanitation programs, and provides an overview of the population's knowledge of health services. The morbidity rate chosen for this study is women's because they play the most important role in the household and ensure the well-being of members of a family. This data is presented in percentage form.

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The education variable is the Net Enrolment Rate—Angka Partisipasi Murni (APM), which is the ratio of school-age students at a specific educational level to the population of the corresponding age group. This data is presented as a percentage.

A dummy variable serves as a proxy for environmental pollution in Bekasi City.

The model in this study is structured as follows:

$$\ln PDB_t = \beta_0 + \beta_1 DM_t + \beta_2 PDDK_t + \beta_3 NT_t + \varepsilon_t$$

Information:

$\ln PDB_t$ = Natural Logarithm of GRDP per capita of Bekasi City at period t
DM_t = Variable Dummy at period t
$PDDK_t$ = Education at period t
NT_t = Morbidity Rate at period t
β_0 = constant
$\beta_1, \beta_2, \beta_3$ = coefficient
ε_t = error term

4. RESULTS AND DISCUSSION

4.1. Result

The result of calculation of multiple linear regression as follows

$LNPDB_t$ =	17.66845	− 0.072223 DM_t	+ 0.003762 $PDDK_t$	+ 0.002637 NT_t
Std. Error =	(0.109540)	(0.005576)	(0.001607)	(0.003762)
t-Statistic =	[161.2635] **	[-12.95214]**	[2.340736]	[3.934640]

Based on the equation function above, it can be seen that the constant significantly influences the dependent variable (economic growth per capita) by 17.66485. This is evidenced by the t-value of 161.2635, which is greater than the t-table at the 5 percent and 10 percent levels, which are 4.303 and 2.920, respectively. This means that, if the dummy variables, education, and morbidity rate, are assumed to be 0, the economic growth per capita will rise 17.66485 percent. There is a significant annual increase in economic activities in society.

The analysis found that the morbidity rate variable does not affect economic growth per capita in Bekasi City. This is evidenced by the t-value of 3.934640, which is smaller than the t-table at the 5 percent level (4.303) and the 10 percent level (2.920).

Meanwhile, the education variable also showed no effect on economic growth per capita in Bekasi City. This is evidenced by the t-value of 2.340736, which is smaller than the t-table at the 5% level (4.303) and the 10% level (2.920).

The insignificance of the two variables above indicates our research differs from that of other researchers. This difference is due to different variables and data characteristics (other researchers use national aggregate data, while our study uses city-level data). It could also be due to other undiscovered social issues, resulting in the calculation as described above.

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Interestingly, the DM variable (a dummy variable representing environmental pollution) was found to have a negative and significant effect on economic growth per capita in Bekasi City. The t-value of 12.95214 is greater than the t-table at the 5% and 10% levels, which were 4.303 and 2.920, respectively. A minus sign indicates a negative effect. A one percent increase in environmental pollution results in a 0.072 percent decrease in Bekasi City's GRDP. It is a common phenomenon in many regions, even across countries, that environmental issues must be resolved quickly in order not to hamper economic matters.

4.2. Analysis

In this study, the morbidity rate variable, which should ideally have a significant impact on economic growth per capita, was found to have no effect at all: the coefficient of the morbidity rate in this study did not show any significant signs, indicating no impact on Bekasi City's economic growth performance. This means that the morbidity rate did not affect various resident activities during the study. The findings of our results slightly contradict several previous studies, although using different variables, such as Kim & Ahn (2020) and Alwago (2023), which concluded a significant positive impact of health sector spending on economic growth. Their research explained that the healthier the population, the better the economic growth.

Meanwhile, the education variable in this study showed no significant effect on economic growth, despite its positive value. This finding is inconsistent with previous research, such as that of Sitorus et al. (2024), which clearly demonstrated the positive impact of education on the economy. We suspect this is due to our data's relatively short observation period. This hypothesis is supported by Sarwar et al. (2021) who explained that the influence of education on economic growth can only be tracked in the long term, not the short term. Therefore, we believe that if our research period were extended, the impact would become more visible.

Interestingly, the analysis result of the variable for environmental pollution aligns with other researchers, such as Khan et al., (2020) and Alhassan et al., (2021), who clearly demonstrate the detrimental impact of environmental damage on the economic sector. Environmental pollution not only impacts health but also economic growth in various regions. Our research findings also encourage strategic steps by the Bekasi City government to eradicate the various forms of pollution. These problems could worsen if not addressed promptly. Environmental pollution has significantly disrupted various community activities, particularly in the economic sector.

4.3. Policy Implication

Based on the findings of this study, several things must be considered, especially the issue of improving the quality of health and education in Bekasi City as a form of improving public services, namely: Health aspects include: a) improving health services for pregnant women and children. They are among the groups most vulnerable to disease, so priority services are appropriate. The program towards a golden era of Indonesia must be supported by preparing an intelligent generation since in the womb; b) the availability of

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medicines that are easily accessible to the public. It is undeniable that currently the price of medicines is increasingly high, due to dependence on imported raw materials, poor and long distribution and marketing chains. All of these problems are caused by poor governance. The government needs to stabilize prices. It is also important to develop traditional Indonesian medicines using natural ingredients, which are actually no less effective than manufactured chemical drugs; c) the provision of proper sanitation for the entire community. Poor sanitation causes many diseases, such as diarrhea, cholera, typhus, hepatitis A, worms, skin diseases, and respiratory tract infections. Data shows that the availability of proper sanitation is not distributed well in Indonesia, with the national value being around 85.37 percent in 2025 and 80.92 percent in 2022 (BPS, 2025). In West Java the value was around 76.20 percent in 2025, while in 2022 it was around 74.02 per cent. This is due to a lack of public awareness of hygiene and health, especially at the regional level, where proper sanitation programs are not running optimally. Therefore, it is important for local governments, including the Bekasi City government, to encourage easy access to sanitation for all citizens, so that various diseases can be avoided; d) expanding health services for the underprivileged. These programs can create overall improvements in the health conditions of residents. The better the health services, the higher the level of community welfare. Those who are in good health can contribute maximally to various economic activities.

Meanwhile, in the education sector, several steps need to be taken, such as: a) improving human resources through access to education for all; b) improving school facilities and infrastructure. Many schools require renovation of buildings, replacement of teaching and learning equipment, and access to roads to the school, all of which require serious attention; c) establishing an appropriate curriculum tailored to current needs and challenges; d) increasing teacher salaries. This is especially for long-serving honorary teachers who have proven their dedication to their work. Improving teacher salaries can improve their teaching. Educational surveys such as the PISA (Pacific Student Assessment System) are conducted every three years to measure the intelligence level of school-age children. In 2022, Indonesia ranked 12th from the bottom. Indonesia's PISA score is below that of five ASEAN countries, such as Singapore, Brunei, Vietnam, Malaysia, and Thailand, but above that of the Philippines and Cambodia (World Population Review (2026). This means that much needs to be improved within the Indonesian education system to produce superb human resources.

On the other hand, the government must also conduct an environmental awareness campaign to mobilize residents to maintain environmental sustainability. Concrete steps such as river restoration, drainage improvements, and waste management must be implemented immediately. If environmental pollution worsens beyond its current level, Bekasi City will face significant challenges. The impacts could be longer-lasting and more damaging than those currently occurring. Significant economic potential could be lost, and the losses incurred could be enormous.

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5. CONCLUSION

Based on the research results, it can be concluded that the morbidity rate showed no significant effect on economic growth per capita in Bekasi City. Similarly, the education variable also showed no significant effect on economic growth. Meanwhile, the dummy variable representing environmental pollution actually had a negative and significant effect on economic growth. When environmental pollution increased, economic growth declined significantly in Bekasi City. This is evident in the numerous losses experienced due to pollution. Similar to other cities around the world, severe environmental pollution can significantly disrupt economic performance.

As a satellite city supporting megacities like Jakarta, Bekasi City holds a strategic position for continued development. The quality of its human resources must be improved to contribute to improving the economic well-being of its residents. Economic strengthening begins with improving the quality of health and education for residents. This will ensure the city is truly capable of providing a skilled, healthy, and productive workforce, and can support better quality economic outcomes.

REFERENCES

Alhassan, G. N., Adedoyin, F. F., Bekun, F. V., & Agabo, T. J. (2021). Does Life Expectancy, Death Rate and Public Health Expenditure Matter in Sustaining Economic Growth under COVID-19: Empirical Evidence from Nigeria? *Journal of Public Affairs*, *21*(4), e2302.

Alwago, W. O. (2023). The Nexus between Health Expenditure, Life Expectancy, and Economic Growth: ARDL Model Analysis for Kenya. *Regional Science Policy and Practice*, *15*(5), 1064–1085.

Asravor, R. K. (2023). Uncovering the Forgotten Story of the Impact of Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome on Economic Growth in Ghana: a Gender Analysis. *The International Journal of Health Planning and Management*, *38*(5), 1495–1509.

BPS (2025). *Persentase Rumah Tangga menurut Provinsi dan Memiliki Akses terhadap Sanitasi Layak (Persen), 2025*. Artikel diakses pada 26 January 2026 dari https://www.bps.go.id/id/statistics-table/2/ODQ3IzI=/persentase-rumah-tangga-menurut-provinsi-dan-memiliki-akses-terhadap-sanitasi-layak.html.

Dima, B., Dima, S. M., & Tudor, A. T. (2024). Societal Sustainable Development and Long-Run Economic Growth: How do We Stand? *Sustainable Development*, *32*(4), 4222–4249.

Gujarati, Damodar. N., & Porter, Dawn. C. (2009). *Basic Econometrics* (5th ed.). The McGraw-Hill Companies, Inc.

DOI: http://dx.doi.org/10.xxxxx/SYNERGYJEB

Instruksi Presiden Republik Indonesia Nomor 5 Tahun 2006 tentang Gerakan Nasional Percepatan Penuntasan Wajib Belajar Pendidikan Dasar Sembilan Tahun dan Pemberantasan Buta Aksara.

Kamanda, E., Lanpin, Y., & Sesay, B. (2022). Causal Nexus between Health Expenditure, Health Outcome and Economic Growth: Empirical Evidence from Sub-Saharan Africa Countries. *The International Journal of Health Planning and Management*, *37*(4), 2284–2302.

Kementerian Lingkungan Hidup dan Kehutanan (KLHK) (2018). *Air Bekasi Tercemar*. Artikel diakses pada 25 Mei 2025 dari http://perpustakaan.menlhk.go.id/pustaka/home/index.php?page=detail_news&newsid=595

Khan, S. A. R., Zhang, Y., Kumar, A., Zavadskas, E., & Streimikiene, D. (2020). Measuring the Impact of Renewable Energy, Public Health Expenditure, Logistic, and Environmental Performance on Sustainable Economic Growth. *Sustainable Development*, *28*(4), 833–843.

Khozin, N. (2020). Pendidikan Nasionalisme dan Prinsip Hubbul Wathan Minal di Pondok Pesantren Lirboyo Mojoroto Kota Kediri Jawa Timur. In *Pendidikan*, 4(7).

Kim, S.-W., & Ahn, S.-H. (2020). Social Investment Effects of Public Education, Health Care, and Welfare Service Expenditures on Economic Growth. *Asian Social Work and Policy Review*, *14*(1), 34–44.

Li, X., Chen, F., & Hu, S. (2021). Spatial Spillover Effect of Government Public Health Spending on Regional Economic Growth during the PENCEMARAN LINGKUNGAN Pandemic: an Evidence from China. *Complexity*, *2021*(1).

Mandal, B., Batina, R. G., & Chen, W. (2018). Do Gender Gaps in Education and Health Affect Economic Growth? a Cross-Country Study from 1975 to 2010. *Health Economics*, *27*(5), 877–886.

Nasreen, S. (2021). Association between Health Expenditures, Economic Growth and Environmental Pollution: Long-Run and Causality Analysis from Asian Economies. *The International Journal of Health Planning and Management*, *36*(3), 925–944.

Osuntuyi, B. V., & Lean, H. H. (2023). Environmental Degradation, Economic Growth, and Energy Consumption: The Role of Education. *Sustainable Development*, *31*(2), 1166–1177.

Sahn, D. E. (2013). Health, Poverty, and Economic Growth: an Introduction. *African Development Review*, *24*(4), 267–269.

Sarwar, S., Streimikiene, D., Waheed, R., & Mighri, Z. (2021). Revisiting the Empirical Relationship among the Main Targets of Sustainable Development: Growth, Education, Health and Carbon Emission. *Sustainable Development*, *29*(2), 419–440.

Scott, A. (2018). Pump Up the Volume: Making Health and Wellbeing the Centre Stage of Economic Growth. *The Australian Economic Review*, *51*(2), 247–252.

DOI: http://dx.doi.org/10.xxxxx/SYNERGYJEB

Shahbaz, M., Shafiullah, M., & Mahalik, M. K. (2019). The Dynamics of Financial Development, Globalisation, Economic Growth and Life Expectancy in Sub-Saharan Africa. *Australian Economic Papers*, *58*(4), 444–479.

Sitorus, Y. F., Muchtar, M., & Sihombing, P. R. (2024). Pengaruh Tingkat Pendidikan dan Tingkat Kesehatan Terhadap PDRB Per Kapita di Indonesia. *Jurnal Pendidikan Ekonomi (JUPE)*, *2*(3), 1–11.

Tungkele, L. R., Lapian, A. L. C. P., & Siwu, H. F. D. (2023). Pengaruh Pertumbuhan EKONOMI, Tingkat Pendidikan dan Kesehatan Terhadap Kemiskinan di Kabupaten Minahasa Selatan. *Berkala Ilmiah Efisiensi*, *23*(6), 25–36.

World Health Organization. (2024). *WHO remains firmly committed to the principles set out in the preamble to the Constitution*. https://www.who.int/about/governance/constitution.

World Population Review (2026). *PISA Scores by Country 2026*. Article retrieved at 20 May 2026 from https://worldpopulationreview.com/country-rankings/pisa-scores-by-country

Zafar, M. W., Saleem, M. M., Destek, M. A., & Caglar, A. emre. (2022). The Dynamic Linkage between Remittance, Export Diversification, Education, Renewable Energy Consumption, Economic Growth, and CO2 Emission in Top Remittance-Receiving Countries. *Sustainable Development*, *30*(1), 165–175.

DOI: http://dx.doi.org/10.xxxxx/SYNERGYJEB