RAD-AID International Country Reports

Indonesia

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General Country Profile

Geography and Population

Indonesia is the largest archipelago nation in the world consisting of nearly 18,000 islands, roughly 6,000 of which are inhabited ("Indonesia | History", 2023). The nation is located south of mainland Asia and north of Australia and the islands stretch into both the Pacific and Indian Oceans. The five major and largest islands in the nation are Sumatra,


Figure 1: Map of Indonesia highlighting the five major islands ("The Republic of Indonesia", 2023).

Borneo, Java, Sulawesi, and Western Papua ("Indonesia | History", 2023). The capital city of Jakarta is located on the island of Java. Indonesia shares land borders with Malaysia, Papua New Guinea, and East Timor ("Indonesia", 2016). Indonesia stretches 3,200 miles horizontally across the globe and is located very close to the Equator. This results in a hot and humid climate for most of the nation; however, the mountainous regions are at a high enough elevation to periodically get snow. Indonesia's rainy season is from December to March and its dry season spans from June to October ("Indonesia | History", 2023). The majority of the terrain is low-lying and coastal, but there are mountains in the interior of islands. Indonesia is also located adjacent to the Pacific Ring of Fire, meaning the nation is prone to frequent earthquakes and volcanic eruptions (Central Intelligence Agency, 2023).

As of 2021, Indonesia was the fourth most populous country with 273,753,191 residents ("Indonesia | Data", 2021). The population grows at a rate of 0.7% each year; however, this rate has consistently trended downwards over the past sixty years ("Indonesia | Data", 2021).

Indonesia has a young population age distribution, with nearly 60% of the population being below the age of 54 (Central Intelligence Agency, 2023). The most populous island in Indonesia is Java, where the capital of Jakarta is located.
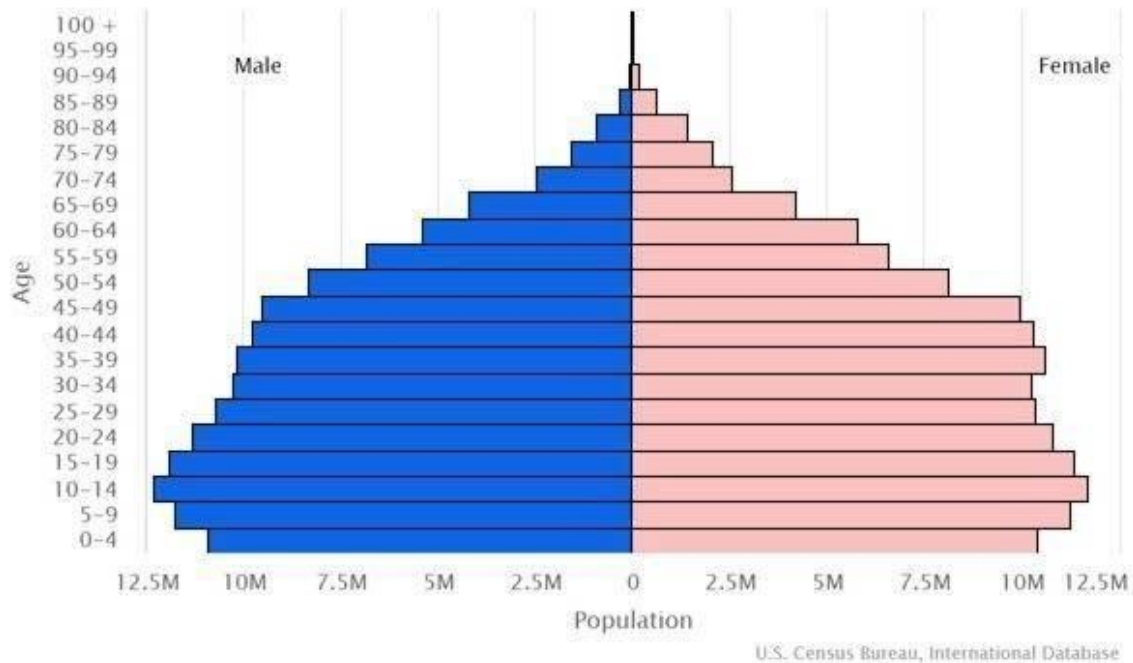
Figure 2: Indonesia population age distribution as of 2020 (Central Intelligence Agency, 2023).

Figure 3: General population data about Indonesia (Central Intelligence Agency, 2023) (United Nations, 2022).

General Facts	
Capital	Jakarta
Population Size	273,753,191
Land Area	1,904,569 km^2
Coastline Length	54,716 km
Life Expectancy at Birth (m, f, average)	71.1, 75.8, 73.3 years
Infant Mortality Rate	19 deaths/1,000 live births
Average Income per Capita	4,332 USD
United Nations Human Development Index Score (out of 1)	0.705 (rank 114th out of 190)

History and Politics

Some of the first remains of the ancestors of humans were found in Indonesia and date back to 1.9 million years ago ("Indonesia | History", 2023). At this time, the ocean levels were low and most of the Indonesian islands were connected by land. The sea level rose 6,000 years ago due to the melting of glaciers resulting in the expansive islands that make up Indonesia today ("Indonesia | History", 2023). Modern human civilization formed roughly five millennia ago and consisted of a diverse group of cultures. These groups were distinct and sought to maintain their unique identities.

The national language in Indonesia is Bahasa Indonesian, but there are numerous regional dialects. In total, nearly 800 languages are spoken throughout Indonesia today, but many can be grouped into the Austronesian language family. This is a grouping of languages with the same historical background that are spoken in areas ranging from Madagascar to the Pacific Islands ("History of Indonesia", 2023). English is the most common foreign language learned in Indonesia; however, only a small portion of locals are proficient in it (Jembatan Bahasa, 2021).

The first major religion to come to Indonesia was Hinduism; this was spread by Indian Brahman, or priests, who came to Indonesia in the 2nd century. Hinduism concentrated on the island of Java and resulted in several kingdoms. Buddhism was brought to Indonesia by traders during the same period and became an equally prominent religion ("Indonesia | History", 2023).

Figure 4: Map of the dominant religion in each part of Indonesia ("Religion in Indonesia", 2021).

Islam arrived in Indonesia in the fourteenth century and quickly became the dominant religion. It was brought from India and spread from West to East across the country. Over twenty Muslim kingdoms were established by the sixteenth century, with the Kingdoms of Demak, Mataram, and Aceh being notably strong. Today, 88% of Indonesia is Muslim, with 99% of those individuals being Sunni Muslim ("Religion in Indonesia", 2021). Other state-recognized religions include Protestantism, Catholicism, Hinduism, Buddhism, and Confucianism which are spread in clusters throughout the nation. The government promises freedom of religion to its citizens ("Religion in Indonesia", 2021).

The first European influence in Indonesia came from Portuguese traders in the sixteenth century. Then, the Dutch East India Company defeated Portuguese and British interests in the region and established a commercial monopoly over the region ("Indonesia | History", 2023). The company began to infiltrate itself into local economics and politics throughout the next few centuries. After the fall of the Dutch East India Company and several wars in Europe, Indonesia ended up under the control of the Netherlands' monarchical government. The Dutch's objective was to make Indonesia a self-supporting colony. One such strategy was the Culture System in which towns dedicated one-fifth of their land for raising crops that will be exported; if the crops are sold for more than the value of their property tax the farmers receive the difference back as a profit ("Indonesia | History", 2023). There was also Dutch migration to Indonesia during this time which introduced Western European social ideals to society.

The desire for independence grew in Indonesia during the early twentieth century. This feeling intensified during World War II. Japan was given control of the island nation once the Netherlands was occupied by German forces. Two leaders, Sukarno and Mohammed Hatta, declared Indonesia's independence from both the Dutch and Japanese governments on August 17th, 1945 ("Indonesian War of Independence", 2018). The Dutch tried to regain control of Indonesia and were backed by the Allied powers. After years of fighting, in 1949 the Dutch agreed to give independence to the Republic of Indonesia, which included the entire nation except for Western New Guinea ("Indonesian War of Independence", 2018).

The nation enjoyed independence until 1965 when a coup d'etat resulted in a military dictatorship. The military was strongly opposed to the communist party (PKI) which had been a leading political faction during the previous government. As a result, the new dictatorship oppressed and murdered tens of thousands of communists throughout the nation. The new government also began to integrate itself with the West and reformed many economic policies ("Indonesia | History", 2023). In 1998, the dictatorship fell after civil protests and the country returned to democracy.

Cultural etiquette has emerged throughout Indonesia's history that should be used during business and health transactions. Indonesia is a hierarchical society where authority figures must

be heavily respected. Introductions, entrance orders, and other practices often occur in order of rank. Furthermore, one's public persona is important and therefore, it is imperative not to disrespect or shame others in public settings. People are often indirect when speaking so as to not disrespect their companion. Additionally, women often dress conservatively when outside of the home ("Indonesia - Language, Culture, Customs and Business Etiquette", 2019).

Government and Legal System

Indonesia has a presidential system of government, meaning that the executive branch is separate from the legislative branch of the government. Since 2004, there has been a presidential election every five years in which citizens directly elect their president and vice president. Prior to this, the People's Consultative Assembly, part of the legislative branch, elected the president ("Indonesia | History", 2023). The current president is Joko Widodo and he is the head of state and the head of government; however, his term ends in 2024 and he is constitutionally not allowed to run for a third term. Widodo is a member of the Indonesian Democratic Party of Struggle which is a secular party that gains support from the poorer parts of the population. Other major political parties are the Golkar (a secular neoliberal party) and five Islamic parties with varying political views (Bulkin, 2013).

In Indonesia, there is a bicameral legislative branch and each legislator is directly elected and serves a five-year term. The judicial branch is overseen by a Supreme Court in the nation's capital of Jakarta and consists of numerous lower, regional court systems ("Indonesia | History", 2023). Indonesia has been politically stable since its return to democracy in 1998, with only small movements of political unrest. Corruption also lessened in 2004 when changes were made that no longer guaranteed seats in the legislative assembly ("Indonesia | History", 2023).

Figure 5: Table displaying the World Bank's Worldwide Governance Indicators for Indonesia and their relative rank compared to other countries ("WGI-Home", 2021)

The World Bank Worldwide Governance Indicators for Indonesia (as of 2021)		
Indicator	Estimate (range: -2.5 - +2.5)	Rank (percentile rank of all countries– 0: low, 100: high)
Voice and Accountability	0.16	52.66
Political Stability & Absence of Violence	-0.51	27.83
Government Effectiveness	0.38	65.38
Regulatory Quality	0.30	62.50
Rule of Law	-0.22	46.63

Control of Corruption	-0.43	38.46

Economy and Employment

Indonesia has the largest economy in Southeast Asia with a GDP of 1.186 trillion USD as of 2021. The GDP is growing at a rate of 3.7% each year, with this number expected to rise as the COVID-19 pandemic passes ("Indonesia | Data", 2021). Per capita, the GDP is 4,332 USD. The economy has made tremendous growth since 2005 when the government began a twenty-year plan to further the economic development of the country. Another result of this plan was the reduction of poverty rates to only 9.7%; this is a 50% reduction in poverty since 1998 when the nation returned to democracy ("The World Bank in Indonesia", 2022). Indonesia is currently considered a lower-middle-income country. It was categorized as upper-middle-income; however, due to the economic ramifications of the COVID-19 pandemic, it was recategorized in 2021 ("The World Bank in Indonesia", 2022). Indonesia's main source of international aid is the United States; they have provided aid to support democracy and stability in the region as well as disaster relief aid in the aftermath of natural disasters ("Indonesia | U.S. Agency for International Development", 2023).

The three main industries that comprise Indonesia's economy are service, manufacturing, and agriculture (Bada, 2018). The service industry, particularly tourism, is rapidly growing in Indonesia; reports state that it grew 7.1% each year between 2010 and 2017 (Aisyah, 2019). The manufacturing sector is responsible for producing products ranging from motorcycles to textiles. The agricultural sector employs roughly 40% of Indonesia's labor force and is responsible for a large portion of the GDP (Bada, 2018). Major crops grown include rice, palm oil, and rubber. Indonesia's landscape is ideal for agriculture because of its location on the equator and its volcanic soil that helps plants grow quickly (Bada, 2018).

Physical and Technological Infrastructure

Indonesia's telecommunication industry has grown significantly in recent years and is projected to continue that expansion. In 2021, 204 million Indonesians, equivalent to 70% of the population, accessed the internet ("Indonesia: number of internet users", 2023). Nearly all parts of the country are covered by 4G networks, with the exception of some small rural areas. The three largest telecommunications providers in Indonesia are Telkomsel, Indosat, and XL Axiata ("Telecommunications industry in Indonesia", 2023). Citizens must abide by national laws regarding telecommunications; notably, the Law on Information and Electronic Transactions which bars online defamation of other citizens ("Indonesia: number of internet users", 2023).

The availability of electricity has increased tremendously throughout Indonesia in the past two decades. In 2000, only 86% of the nation had access to electricity whereas in 2019, nearly 99% of the nation had access (Ritchie et al., 2022). Coal is the source of most of the electricity in Indonesia, primarily because it can be mined within the country. However, the government has

stated that it intends to increase its use of renewable sources to generate energy for the nation. The government subsidizes the electricity sector in order to motivate companies to provide energy in sparsely populated, rural regions ("Electricity sector in Indonesia", 2022).

Indonesia's extensive size and archipelago geography have caused the transportation sector to struggle to effectively connect parts of the country. Most personal transportation in Indonesia occurs via road networks. However, these roads suffer from being low quality and experiencing large traffic jams ("Indonesia Transport Sector", 2015). The railroad sector was recently unmonopolized which has resulted in better pricing for customers. Unfortunately, railroads only exist on the two larger islands of Java and Sumatra; however, the government has long-term plans to expand these networks to other islands ("Indonesia Transport Sector", 2015).

In urban areas of Indonesia, there is reliable access to drinking water; however, recent studies have shown that this water is often unclean. Two thirds of household drinking water was found to be contaminated with fecal products which poses a large risk of epidemic disease for Indonesians ("Water, sanitation and hygiene", 2019). In rural areas, there is scarce access to clean water with twenty million Indonesians not having safe or easily accessible drinking water or sanitation facilities ("Indonesia's Water Crisis", 2022).

Indonesia National Healthcare Profile

National Healthcare Profile:
Indonesia's healthcare system has been steadily improving but still faces many challenges not experienced by most developed countries. Currently, the mortality rate in Indonesia is 9 deaths per 1,000 people. This number has risen slightly as a result of the COVID-19 pandemic and is expected to eventually return to its previous level of 7 deaths per 1,000 people. The birthing process has a higher mortality rate with every 1,000 live births resulting in 19 infant deaths and 1.8 maternal deaths ("Indonesia | Data", 2021) ("Indonesia Maternal Mortality Rate", 2023).

In 2010, the largest cause of mortality in Indonesia was non-communicable diseases (55.6%) such as stroke and cancer, followed by communicable diseases (16.4%), and traumatic injuries (4.2%) (Mahendradhata et al., 2017). Different diseases affect different parts of the archipelago more. For instance, malaria is still very common in Western Papua; however, the Western islands have implemented more measures to keep it under control ("CDC in Indonesia", 2023).

Figure 6: Causes of death by percentage in Indonesia, every five years from 1990 to 2010 (Mahendradhata et al., 2017).

	1990	1995	2000	2005	2010
Communicable diseases	29.1	23.6	20.7	19.4	16.4
Tuberculosis	11.3	10.3	10.4	11.0	9.5
Lower respiratory infections	12.0	9.4	6.1	4.6	4.1
Diarrhoea	5.8	3.9	4.2	3.8	2.8
Noncommunicable diseases	35.9	42.4	47.8	51.8	55.6
Cancer	7.5	9.1	9.9	10.4	11.3
Liver cancer	0.6	0.7	0.8	0.8	0.9
Colon cancer	0.5	0.6	0.7	0.8	0.9
Cancer of the trachea, bronchus and lung	1.2	1.6	1.8	1.9	2.1
Breast cancer	0.6	0.7	0.8	0.9	1.0
Cervical cancer	0.6	0.7	0.7	0.7	0.7
Diabetes	3.7	4.6	5.2	5.7	6.0
Ischaemic heart diseases	4.9	5.9	6.6	7.3	8.1
Stroke	12.4	14.0	16.5	18.4	19.5
Chronic respiratory diseases	3.9	4.5	4.8	4.9	5.1
External cause	3.3	4.3	4.5	4.0	4.2
Road injury	3.3	4.3	4.5	4.0	4.2

Indonesia's government has implemented a National Health Insurance Scheme intending to establish universal healthcare coverage throughout the nation. The plan has made progress with 80% of the population now being insured; however, the system still struggles with large financial deficits and weak infrastructure in more rural areas (Maulana et al., 2022).

National Healthcare Structure
Structure and Policy:
The healthcare system in Indonesia is composed of both public and private providers. The Ministry of Health, located in the capital of Jakarta, is the overseer for all health-related policy; however, the healthcare system is largely decentralized with provinces responsible for operating the health centers within their boundaries and ensuring their constituents are receiving quality care (Mahendradhata et al., 2017).

Indonesia's health centers are classified as primary, secondary, and tertiary-level providers. Patients must first visit a primary health center to receive treatment for any ailment. These community health centers, or Puskesmas, are abundant throughout the nation with a total of 10,667 locations (Sari & Pasinringi, 2020). If an ailment requires surgery or advanced care, patients may be referred to a secondary-level hospital. If the disease requires specialization and more intensive care, the secondary-level facility will refer the patient to a tertiary-level hospital.

Indonesia has 2,813 secondary and tertiary level hospitals, with 64% of those being run by private corporations and the remainder being publicly owned.

Health Service Coverage:
The quality of healthcare services in Indonesia will vary depending on if you are being treated in a public or private hospital. Private facilities tend to be more sanitary and modern; they also offer more specialized procedures ("What is healthcare", 2023). However, foreigners living in Indonesia still prefer to leave the country for advanced procedures rather than visiting private hospitals ("What is healthcare", 2023). Notably, mental health services are not adequately accessible throughout Indonesia. Only 2% of healthcare expenditures are spent on mental health services, resulting in low funding and fewer psychologists and psychiatrists (Cipta & Saputra, 2022).

Healthcare Expenditures:
In 2013, the per capita healthcare expenditure was approximately 300 USD per resident, equating to 2.8% of the GDP. This number has risen over the years and is nearly three times the per capita healthcare spending in 1995; however, it is still relatively low in comparison to similar countries (Mahendradhata et al., 2017).

Citizens often paid large out-of-pocket expenses for their hospital visits and medications. Out of the 300 USD per capita spent on healthcare, 62% of that was paid by the citizen out of pocket (Mahendradhata et al., 2017). In 2014, the Indonesian government introduced a universal healthcare system, known as Jaminan Kesehatan Nasional (JKN). This plan covers the cost of nearly all inpatient and outpatient health needs for citizens and has no maximum. However, it does not cover cosmetic elective procedures or addiction treatment (Maulana et al., 2022). As of 2021, it is used by 80% of the population and has reduced out-of-pocket expenses for its users. The government subsidizes the cost of JKN membership for citizens experiencing poverty whereas many other citizens are enrolled in JKN by their employer ("Comprehensive Assessment", 2022). However, the COVID-19 pandemic and lack of services in remote areas have hindered JKN from being fully effective (Maulana et al., 2022).

Health Workforce and Infrastructure:
In total, Indonesia's hospitals provide 1.17 hospital beds for every 1,000 citizens ("Healthcare - Indonesia", 2021). This number is far below average for comparable countries in the region, indicating that Indonesia needs to improve its healthcare capacity. Furthermore, there are fewer physicians and health professionals in Indonesia than in comparable countries. Those health professionals are not evenly distributed throughout the population either, with rural areas being at a significant disadvantage (Rokx et al., 2013).
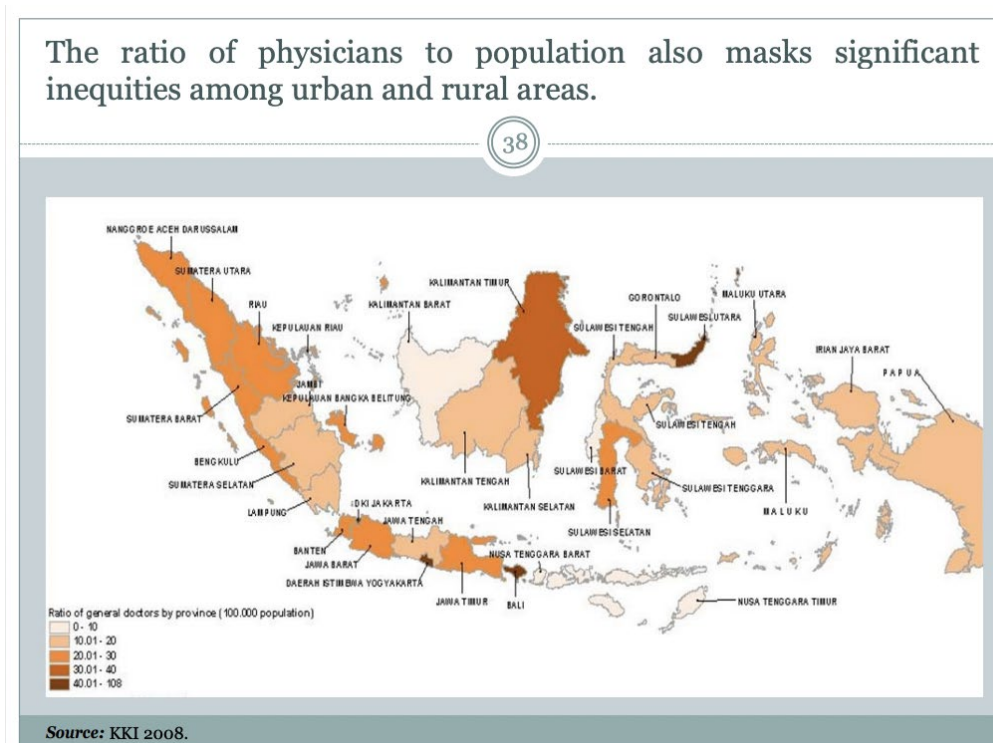
Figure 7: A distribution of physicians throughout Indonesia highlighting that they are not evenly distributed (Rokx et al., 2013).

The World Health Organization (WHO) has set a goal for every country to have 1 physician for every 1,000 civilians; Indonesia falls short of this standard and has approximately 0.6 physicians per 1,000 civilians, or 185,547 total. The majority of these are general practitioners with only 43,989 being specialists (Putra, 2022). According to the World Bank, in 2020 there were 3.95 nurses and midwives per 1,000 civilians in Indonesia and this value has been trending upwards ("Indonesia | Data", 2021). The access to pharmacies has improved in the past decade with approximately 13,900 villages having a pharmacy in 2021 ("Indonesia villages with pharmacy", 2021). This is likely due to the increasing number of trained pharmacists and growing pharmacist training programs; there are currently 77,191 licensed pharmacists throughout the nation (Meilianti et al., 2022).

Other ministries that play a role in public health programs are the Ministry of Education, Ministry of Religious Affairs, Family Planning Bureau, Ministry of Public Works, Drug and Food Monitoring Bureau, and Ministry of the Environment. Each agency helps oversee programs designed to improve the public health of the nation through different facets as seen in Figure 8.

Figure 8: National ministries involved in the healthcare sector in Indonesia (Mahendradhata et al., 2017).

Institutions	Health programmes
Ministry of Education	Public Health Programme
Ministry of Religious Affairs	Public Health Curative Programme
	Health Resources Programme
Family Planning Bureau	Family Planning Programme
	Youth Reproductive Health Programme
Ministry of Public Works	Environmental Health Programme
	Drinking Water and Wastewater System Development Programme
Drug and Food Monitoring Bureau	Drug and Food Monitoring Programme
	Traditional Indonesian Medicine Development Programme
Ministry of the Environment	Environmental Pollution Control Programme

National Radiology Profile

Radiology Workforce and Training and Professional Representation

Radiology is still a developing sector of the medical field in Indonesia. The exact number of trained radiologists and quantity of radiology equipment in Indonesia are not known due to poor data recording. However, estimates predict that there are only 0-9.9 radiologists per 1 million citizens– one of the lowest rates in the world (Hricak et al., 2021). This means that at a maximum, Indonesia has 2738 trained radiologists, though the true number is likely much lower. Radiology residents, radiologic technologists, radiation oncologists, and radiology nurses also play a role in preparing and imaging patients (Hricak et al., 2021). Radiation safety is a growing concern and experts in Indonesia have received training from the International Atomic Energy Agency to reduce risk in hospitals and other settings ("IAEA Helps Indonesia", 2018).
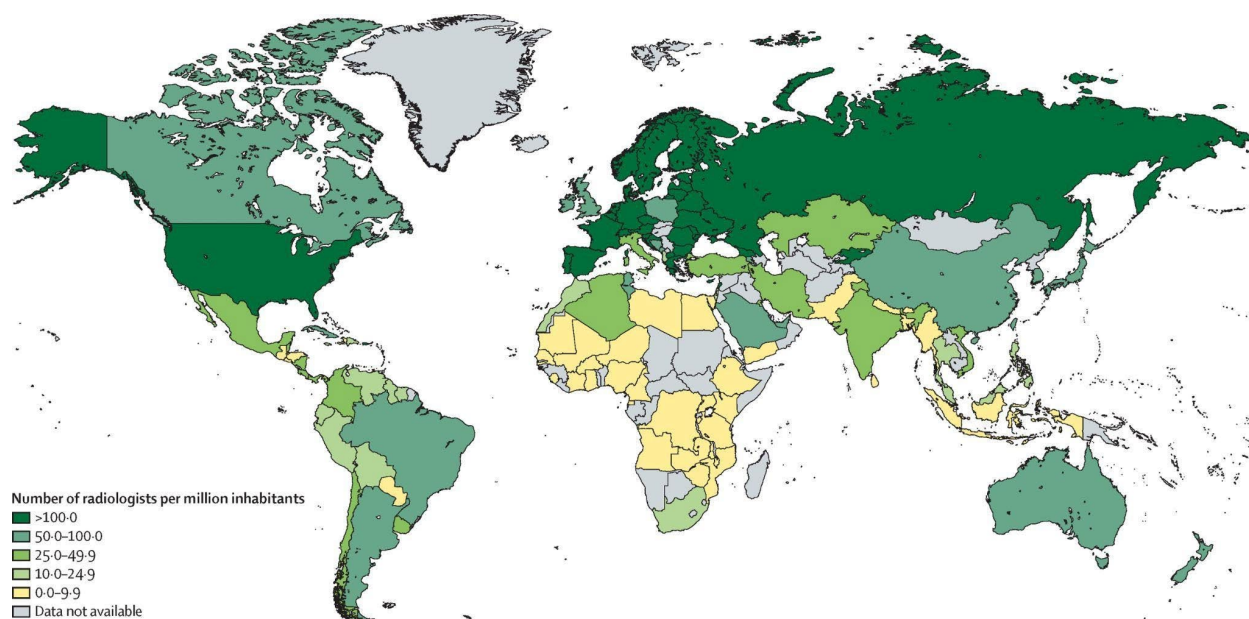
Figure 9: A global map of the density of radiologists found within each country. Notably, Indonesia falls into the lowest category of having 0.0-9.9 radiologists per million residents (Hricak et al., 2021).

To become a radiologist in Indonesia, one must first attend medical school which is combined with an undergraduate degree in a 6 year program. To qualify for this degree, students must pass a national entrance exam for higher-level education. Students will graduate with a Bachelors in Medicine, Bachelors in Surgery (MBBS) degree that is the equivalent of an MD or DO in the United States. The schooling is split into five academic years followed by a one-year internship ("Indonesia Medical Education Market", 2021). Doctors can then complete a medical residency in one of sixteen possible specialties; each residency lasts roughly four to five years. There are only a few hospitals that offer a residency in radiology, the largest of which is Cipto Mangunkusumo Hospital in Jakarta ("Advancing Radiology Services", 2016). RAD-AID began working with this facility in 2018 and reported that there were 19 radiologists, 57 residents, 30 radiologic technologists, and 10 radiologic nurses ("Indonesia", 2020). One issue affecting medical residency in Indonesia is that it is unpaid; instead, students are still responsible for covering tuition and housing fees on their own (Harris, 2016).

One available subspecialty of radiology is radiation oncology which is used to provide palliative care to cancer patients. According to the Indonesian Radiation Oncology Society, in 2008 there were 42 radiation oncologists, 38 medical physicists, 125 radiation therapy technologists, 60 radiation nurses, and 17 radiation oncology medical residents. This field grew greatly in the early 2000s and increased its capacity by 50% (Gondhowiardjo et al., 2008).

Equipment Inventory, Distribution, and Rules and Regulations

Estimates indicate that Indonesia has an inadequate amount of radiological equipment including CT, MRI, PET, and mammography machines for their population (Hricak et al., 2021). This is primarily due to healthcare budgetary constraints. Indonesia imports 97.2% of its medical supplies, including these advanced scanners, from more developed nations. Notably, the government does not allow the purchase or donation of used medical equipment. Additionally, in 2021, the Ministry of Health introduced a law in which 40% of the parts of imported medical devices must be manufactured in Indonesia ("Indonesia - Country Commercial Guide", 2022). As a result, new scanners are not regularly purchased, leading to inadequate access and outdated machines being used (Remis, 2014).

A recent study examined the MRI capabilities across Indonesia as of 2022. It found that there are 1.11 MRI scanners for every one million residents, demonstrating the difficulty to access these machines. On average, an MRI machine saw ten patients each day over the course of 8 hours. Qualified radiology technicians had a variety of experience levels; however, 40% of them only underwent a one-week course to become certified after receiving a Bachelor's degree (Sugiyanto et al., 2022).

The Nuclear Energy Regulatory Agency (BAPTEN) in Indonesia is responsible for overseeing that medical imaging machines are safely operated. They have established licensing guidelines and hosted seminars for radiology workers in Indonesia (Badan Pengawas Tenaga Nuklir, 2020).

RAD-AID has been present in Indonesia for the past few years and has been making strides to improve the radiological readiness of the country. Their primary partner hospital is Rumah Sakit Cipto Mangunkusumo (RSCM), located in Jakarta, and the associated medical school Faculty of Medicine Universitas Indonesia (FKUI). One action RAD-AID has taken is giving virtual lectures to Indonesian radiologists focused on specialties that they may not have had prior exposure to ("Indonesia", 2020).

Conclusion

As one of the most populous nations in the world, Indonesia has a large need for a strong and developed medical sector, including its radiology workforce. As of now, the nation is primarily struggling in evenly distributing its physicians and resources across the unique country landscape. A promising development is the national universal healthcare insurance scheme that is being implemented and increasing the ability of citizens of all backgrounds to access care.

In terms of radiology, there are plenty of avenues that could be used to increase this sector's development. As of now, nearly all medical imaging equipment is imported from other nations; manufacturing scanners and other devices within Indonesia could greatly reduce their cost and

therefore increase the number of scanners available to patients. Furthermore, RAD-AID is already working to promote radiology education.

References

Advancing Radiology Services in Indonesia: Developing a Global Health Radiology Project. (2016). Acr.org. https://www.acr.org/Member-Resources/rfs/Resident-and-Fellow-News/Advancing-Radiology-Services-in-Indonesia

Aisyah, R. (2019). Indonesia's services sector has great potential, Trade Ministry says. The Jakarta Post. https://www.thejakartapost.com/news/2019/01/20/indonesias-services-sector-has-great-potential-trade-ministry-says.html

Bada, F. (2018, July 26). The Biggest Industries In Indonesia. WorldAtlas; WorldAtlas. https://www.worldatlas.com/articles/the-biggest-industries-in-indonesia.html

Badan Pengawas Tenaga Nuklir - Webinar on Policies for Radiology Facilities Supervision of Diagnostic and Interventional and the Latest Development of Modality and Radiology Diagnostic Services. (2020). Bapeten.go.id. https://www.bapeten.go.id/berita/webinar-on-policies-for-radiology-facilities-supervision-of-diagnostic-and-interventional-and-the-latest-development-of-modality-and-radiology-diagnostic-services-143815

Bulkin, N. (2013). Indonesia's Political Parties. Carnegie Endowment for International Peace. https://carnegieendowment.org/2013/10/24/indonesia-s-political-parties-pub-53414#PKS

CDC in Indonesia. (2023). https://www.cdc.gov/globalhealth/countries/indonesia/default.html

Central Intelligence Agency. (2023). Indonesia. CIA World Factbook. https://www.cia.gov/the-world-factbook/countries/indonesia/

Cipta, D. & Saputra, A. (2022). Changing Landscape of Mental Health from Early Career Psychiatrists' Perspective in Indonesia. https://doi.org/10.52872/001c.37413

Comprehensive Assessment of Indonesia's National Health Insurance Scheme. (2022). Healthpolicyplus.com. http://www.healthpolicyplus.com/indonesiaJKN.cfm

Electricity sector in Indonesia. (2022). Statista; Statista. https://www.statista.com/topics/5781/energy-in-indonesia/#topicOverview

Gondhowiardjo, S., Prajogi, G., & Sekarutami, S. (2008). History and growth of radiation oncology in Indonesia. Biomedical Imaging and Intervention Journal, 4(3). https://doi.org/10.2349/biij.4.3.e42

Harris, L. (2016, June 9). Fair access to residency programs for a fair distribution of Indonesian doctors. The Jakarta Post. https://www.thejakartapost.com/academia/2016/06/09/fair-access-to-residency-programs-for-a-fair-distribution-of-indonesian-doctors.html

Healthcare - Indonesia. (2021). Healthcare Resource Guide - Indonesia. International Trade Administration | Trade.gov. https://www.trade.gov/healthcare-resource-guide-indonesia#:~:text=According%20to%20the%20Directorate%20General,1.17%20beds%20per%20thousand%20population.

History of Indonesia. (2023). Nations Online;. Nationsonline.org. https://www.nationsonline.org/oneworld/History/Indonesia-history.html

Hricak, H., Abdel-Wahab, M., Atun, R., Lette, M. M., Paez, D., Brink, J. A., Donoso-Bach, L.,

Frija, G., Hierath, M., Holmberg, O., Khong, P.-L., Lewis, J. S., McGinty, G., Oyen, W. J. G., Shulman, L. N., Ward, Z. J., & Scott, A. M. (2021). Medical imaging and nuclear medicine: a Lancet Oncology Commission. The Lancet Oncology, 22(4), e136–e172. https://doi.org/10.1016/s1470-2045(20)30751-8

IAEA Helps Indonesia Strengthen Occupational Radiation Protection. (2018, December 21). Iaea.org. https://www.iaea.org/newscenter/news/iaea-helps-indonesia-strengthen-occupational-radiation-protection

Indonesia. (2016). Aseanip.org. https://www.aseanip.org/Resources/ASEAN-IP-Offices-Details/Indonesia#:~:text=Indonesia%20shares%20borders%20with%20Malaysia,and%20Nicobar%20Islands%20in%20India.

Indonesia. (2020). Rad-Aid.org. https://rad-aid.org/countries/asia/indonesia/

Indonesia - Country Commercial Guide. (2022). Indonesia - Information and Telecommunications Technology. International Trade Administration | Trade.gov. https://www.trade.gov/country-commercial-guides/indonesia-information-and-telecommunications-technology

Indonesia | Data. (2021). Worldbank.org. https://data.worldbank.org/country/indonesia

Indonesia | History, Flag, Map, Capital, Language, Religion, & Facts | Britannica. (2023). In Encyclopædia Britannica. https://www.britannica.com/place/Indonesia

Indonesia - Language, Culture, Customs and Business Etiquette. (2019). Commisceo-Global.com. https://www.commisceo-global.com/resources/country-guides/indonesia-guide

Indonesia Maternal Mortality Rate 2000-2023. (2023). Macrotrends.net. https://www.macrotrends.net/countries/IDN/indonesia/maternal-mortality-rate

Indonesia Medical Education Market | Indonesia Medical Education Industry: Ken Research. (2021). Kenresearch.com. https://www.kenresearch.com/education-and-recruitment/education/landscape-of-indonesia-medical-education-market/465122-99.html?utm_source=prnewswire&utm_medium=press%20release&utm_campaign=ken%20research

Indonesia: number of internet users in Indonesia from 2017 to 2022 with forecasts until 2028 | Statista. (2023). Statista; Statista. https://www.statista.com/statistics/254456/number-of-internet-users-in-indonesia/

Indonesia Transport Sector | GBG. (2015). Gbgindonesia.com. http://www.gbgindonesia.com/en/services/article/2011/transport_in_indonesia_roads_and_railways.php

Indonesia | U.S. Agency for International Development. (2023). U.S. Agency for International Development. https://www.usaid.gov/indonesia

Indonesia villages with pharmacy stores 2021 | Statista. (2021). Statista; Statista. https://www.statista.com/statistics/975565/indonesia-villages-with-pharmacy-stores/

Indonesian War of Independence - New World Encyclopedia. (2018).

Newworldencyclopedia.org.
https://www.newworldencyclopedia.org/entry/Indonesian_War_of_Independence

Indonesia's Water Crisis - Indonesia's Water Problems In 2022 | Water.org. (2022). Water.org.
https://water.org/our-impact/where-we-work/indonesia/#:~:text=Indonesia's%20water%20and%20sanitation%20crisis&text=About%2018%20million%20Indonesians%20lack,lack%20access%20to%20improved%20sanitation.

Jembatan Bahasa. (2021, January 19). What languages are spoken in Indonesia? - Jembatan Bahasa. Jembatan Bahasa Indonesian Language School.
https://jembatanbahasa.com/what-languages-are-spoken-in-indonesia/

Mahendradhata, Y., Trisnantoro, L., Listyadewi, S., Soewondo, P., Marthias, T., Harimurti, P., & Prawira, J. (2017). The Republic of Indonesia Health System Review.
https://apps.who.int/iris/bitstream/handle/10665/254716/9789290225164-eng.pdf

Maulana, N., Soewondo, P., Adani, N., Limasalle, P., & Pattnaik, A. (2022). How Jaminan Kesehatan Nasional (JKN) coverage influences out-of-pocket (OOP) payments by vulnerable populations in Indonesia. PLOS Global Public Health, 2(7), e0000203.
https://doi.org/10.1371/journal.pgph.0000203

Meilianti, S., Smith, F., Kristianto, F., Himawan, R., Ernawati, DK., Naya, R., & Bates, I. (2022). A national analysis of the pharmacy workforce in Indonesia. 20(1). https://doi.org/10.1186/s12960-022-00767-4

Putra, ST. (2022, July 20). Dealing with Shortage of Medical Doctors in Indonesia. Kompas.id; Harian Kompas.
https://www.kompas.id/baca/english/2022/07/20/dealing-with-shortage-of-medical-doctors-in-indonesia

Religion in Indonesia - New World Encyclopedia. (2021). Newworldencyclopedia.org.
https://www.newworldencyclopedia.org/entry/Religion_in_Indonesia

Remis, K. (2014, December 17). Challenges & Opportunities in the Indonesia Radiology Market. Everything Rad. https://www.carestream.com/blog/2014/12/17/challenges-opportunities-indonesia-radiology-market/

Ritchie, H., Roser, M., & Rosado, P. (2022, October 27). Energy. Our World in Data.
https://ourworldindata.org/energy/country/indonesia

Rokx, C., Harimurti, P., Marzoeki, P., Pambudi, E., Schieber, G., Tandon, A., & Giles, J. (2013, April 6). Indonesia's Health Sector Review. World Bank- Jakarta.
https://www.worldbank.org/content/dam/Worldbank/document/EAP/Indonesia/HSR-Overview-.pdf

Sari, N., & Pasinringi, S. A. (2020). IMPLEMENTATION OF THE INTEGRATED REFERRAL SYSTEM (SISRUTE) IN INDONESIA: CONCEPT, CHALLENGES AND PROGRESS. Retrieved March 29, 2023.

Sugiyanto, S., Sabarudin, H., Fatimah, F., Budiati, T., Setiawan, A., & Susanta, P. (2022).

Current Situation of Magnetic Resonance Imaging Services in Indonesia. Journal of
Medical Imaging and Radiation Sciences, 53(4), S52.
https://doi.org/10.1016/j.jmir.2022.10.170

Telecommunications industry in Indonesia. (2023). Statista; Statista.
https://www.statista.com/topics/7820/telecommunications-industry-in-
indonesia/#topicOverview

The Republic of Indonesia. (2023). The Republic of Indonesia. Google.com.
https://sites.google.com/a/richland2.org/indonesia-fantone-dyer1/

The World Bank in Indonesia. (2022, April 5). World Bank.
https://www.worldbank.org/en/country/indonesia/overview#1

United Nations. (2022). Country Insights. Human Development Reports.
https://hdr.undp.org/data-center/country-insights#/ranks

Water, sanitation and hygiene. (2019). Unicef.org.
https://www.unicef.org/indonesia/water-sanitation-and-hygiene

WGI-Home. (2021). Worldbank.org. https://info.worldbank.org/governance/wgi

What is healthcare like in Indonesia? Health and Medical Information | - CountryReports.
(2023). Countryreports.org.
https://www.countryreports.org/country/Indonesia/health.htm#:~:text=The%20general%2
0level%20of%20sanitation,services%20are%20limited%20throughout%20Indonesia.