NESNE Psikoloji Dergisi

The Relationship between HDI Values and Road Traffic Fatality Rates

Salih Gökberk Düzyol[1], Kaan Daibaşoğlu[2], Yeşim Üzümcüoğlu[3]

Düzyol, S. G., Daibaşoğlu, K., & Üzümcüoğlu, Y. (2021). The relationship between HDI values and road traffic fatality rates. *Nesne*, *9*(19), 42-51. DOI: 10.7816/nesne-09-19-04

Keywords
Human Development Index, road safety, road traffic fatalities, traffic fatality rates

Abstract
Road traffic accidents are a serious but an avoidable problem that cause both life and economic loss worldwide. There are some common factors such as income, education and health that affect both socioeconomic development and road traffic fatality rates of countries. Examination of these factors separately during the analyze of road traffic fatality rates might cause misleading results due to the relationships between stated variables. Thus, using an inclusive parameter like Human Development Index (HDI), may provide more realistic results. In the current study, the relationship between HDI, its dimensions (GNI per capita, expected years of schooling, mean years of schooling and life expectancy at birth) and road traffic fatality rates are examined. Hierarchical regression analysis was conducted in order to obtain results about the effects of each dimension of HDI. Results showed that all dimensions of HDI negatively predicted road traffic fatalities. Results have been discussed according to related literature and suggestions have been made for further research and applications.

IGE Değerleri ve Karayolu Trafik Ölüm Oranları Arasındaki İlişkinin İncelenmesi

Anahtar kelimeler
İnsan Gelişmişlik Endeksi, yol güvenliği, karayolu trafik ölümleri, trafik ölüm oranları

Öz
Trafik kazaları dünya çapında yaşam kayıplarına ve ekonomik kayıplara neden olan ciddi ancak önlenebilir sorunlardır. Sağlık, eğitim ve gelir gibi faktörler de ülkelerin sosyoekonomik gelişmişlik düzeylerini ve trafik kazaları ölüm oranlarını etkileyen faktörlerdendir. Karayolu trafik ölüm oranlarının analizi sırasında bu faktörlerin ayrı ayrı incelenmesi, belirtilen değişkenler arasındaki ilişkilerden dolayı yanıltıcı sonuçlara neden olabilir. İnceleme yaparken İnsan Gelişmişlik Endeksi (İGE) gibi kapsayıcı bir parametre kullanmak daha realistik sonuçlar elde etmemize olanak sağlar. Bu çalışmada İGE endeksi, İGE endeksinin her bir boyutu (kişi başı gayrisafi milli hasıla, beklenen eğitim görme yılı, ortalama eğitim alınan yıl ve doğumdaki yaşam beklentisi) ve ölümlü trafik kazaları ile arasındaki ilişki incelenmiştir. İGE endeksinin her bir boyutunun etkilerini inceleyebilmek amacıyla hiyerarşik regresyon analizi kullanılmıştır. Sonuçlara göre İGE'nin tüm boyutları, karayolu trafik ölüm oranlarını negatif bir ilişki içerisinde tahmin etmektedir. Sonuçlar ilgili literatür ışığında tartışılmış ve uygulamalar ve gelecek çalışmalar için önerilerde bulunulmuştur.

Article History
Arrived: September 10, 2020
Revised: December 18, 2020
Accepted: January 24, 2021

DOI: 10.7816/nesne-09-19-04

[1] Psychology Student, TOBB University of Economics and Technology, Department of Psychology, sduzyol(at)etu.edu.tr, ORCID: 0000-0002-7037-8055
[2] Psychology Student, TOBB University of Economics and Technology, Department of Psychology, kdaibasoglu(at)etu.edu.tr, ORCID: 0000-0002-4385-3340
[3] Asst. Prof., TOBB University of Economics and Technology, Department of Psychology, yzihni(at)etu.edu.tr, ORCID: 0000-0002-4905-5518

According to the World Health Organization (WHO), even though the stable ratio of 18 road traffic fatalities (RTFs) per 100,000 population through years, an increasing trend has been observed in the number of traffic victims arriving at 1.35 million fatalities in 2016 as a consequence of increasing population (WHO, 2018a). In 2016, road traffic injuries (RTIs) was reported as the 5th leading cause of disability adjusted life years lost worldwide (WHO, 2018b), the 8th leading cause of fatalities for all ages (WHO, 2018a), and the leading cause of death for the age group between 5 to 29 years old (who are considered as children and young adults) (WHO, 2018a). The issue of road traffic accidents is a global problem affecting not only the health of people, but also the economy of countries. Wangdi et. al (2018) claimed that, approximately 3% of the gross national product is lost because of road traffic accidents.

Not every country suffers from traffic fatalities in the same severity as others. There are several factors that might prevent both accidents and their consequences (e.g. injuries, fatalities). Despite having 60% of the world's vehicles, more than 90% of RTFs occur in low and middle-income countries (WHO, 2020). In 2000, van Beeck, Borsboom, and Mackenbach also described the influence of economic development of a country on road safety. Although there are some exceptions such as Spain and Greece, economic growth first leads to a growing number of RTFs especially for low-middle income countries due to expanding rate of motor vehicles. After a critical point, it becomes more protective with in-vehicle measures of safety and investments on road traffic environment that minimizes risk (van Beeck et al., 2000). In other words, initially, increased income causes higher RTF risk briefly until the environment for safe drive and traffic safety culture is adopted in low-middle income countries. After a certain point, fatality risk decreases as a consequence of investments that are made for substructure of roads and transportation, enacted traffic laws while motor vehicles become a part of daily life, and safer vehicles by courtesy of technology. Supporting that, number of empirical studies has shown that RTFs increase as a country develops until a certain threshold where it starts to decline (Anbarci, Escaleras, & Register,2009; Bishai, Quresh, James, & Ghaffar, 2006; Garg & Hyder, 2006; Kopits & Cropper, 2005; Law, Noland, & Evans, 2011). However, there are also studies, which were conducted at national level, that indicate a negative relationship between gross national income and RTF (Gaygısız, 2010; Özkan & Lajunen, 2007).

Having an association with economic status, there are other factors like education and healthcare systems that play important roles in RTFs. To illustrate, the relationship between lower educational fulfilment and a higher risk of RTI due to unsafe driving behavior such as drunk driving, decreased use of seat belts and increased exposure to traffic and its risk has been supported by previous research (Cubbin, LeClere, & Smith, 2000; Eun, 2020; Spoerri, Egger, & von Elm,, 2011). While increasing the awareness of drivers about importance of obeying rules, better education also leads to better medical technology and emergency physicians. Qualified physicians with adequate equipment provide better post-accident intervention which is vital. Noland (2003) indicates that higher levels of physicians per capita is significantly associated with reduced total traffic fatalities. Evaluating the decline of RTFs in Korea, Kim et al. (2012) point out the development of the emergency medical services system to enhance post-accident response in the mid-1990s.

As mentioned above, economic status, education level of a country and adequate healthcare system are all related factors that influence RTF rates. Thus, an inclusive parameter that contains all three might provide a wider perspective and more realistic results. One of the most widely used measures of the comparative status of socioeconomic development across countries is Human Development Index (HDI). The HDI measures the socioeconomic levels of countries by taking into account their health, education and

adjusted real income per capita. In 2010, measurement of HDI modified and in the current study, "HDI" mentions the latest version, which is also known as "New HDI" (Todaro & Smith, 2015).

The HDI values of countries range between 0 and 1. These values help us to rank countries from lowest to highest developed. As it is stated above three end products of development (i.e. health, education, and adjusted real income per capita) are used to calculate HDI. Health is measured by life expectancy at birth. Education is measured by combination of expected years of schooling and mean years of schooling of people who are older than 25. Lastly, a decent standard of living is measured by gross national income (GNI) per capita.

While computing HDI values, two steps are followed. First, for each end product of development, a "dimension index" is calculated. Second, HDI value is calculated by taking the geometric mean of these dimension indexes. Final HDI values can be categorized into four groups, which are low (0.0 - 0.535), medium (0.536 - 0.711), high (0.712 - 0.799) and very high (0.8 - 1.0) (United Nations Development Program [UNDP], 2020a).

In the current study, the relationship between development level of countries and RTF rates is investigated. In addition, the relationships between the dimensions of HDI (i.e. health, education, and adjusted real income per capita) and their relationships with RTF rates are investigated. All parameters are expected to be in a negative relationship with RTF rates.

Method

Datasets

In the present study, The New HDI values is used as a measure of development. UNDP's data is used since they are the both the creator and the calculator of the index (UNDP, 2020b). HDI allows us to see the different human development outcomes of two countries with the same GNI per capita since it regards three key dimensions: long and healthy life, decent standard of living, and being knowledgeable. HDI values includes information about life expectancy at birth, mean years of schooling, expected years of schooling, GNI per capita and GNI per capita rank minus HDI rank. The present study does not include GNI per capita rank minus HDI rank to its investigation since it gives information about the difference between wealth and general HDI ranking. As an additional information, positive values of this data state that the country has a better development score compared to its wealth. However, HDI simplifies the needs of development and it cannot reflect all of the criterions such as poverty, inequalities and empowerment (UNDP, 2020a).

As a measure of RTF rates, estimated RTF rates of countries per 100 000 population is used. The estimation was calculated by WHO (2018a). The per 100 000 population ratios is selected to decrease biases that can result due to population differences between countries.

While UNDP's (2020b) HDI data contains information for 189 countries, WHO's (2018) report includes data for 175 countries. Hence, the common countries that were included in both datasets were used, resulting in 171 matching countries without missing values. Estimated RTF rates for Hong Kong, China (SAR), Liechtenstein, Andorra, Bahrain, Brunei Darussalam, Palau, Bahamas, Saint Kitts and Nevis, Algeria, Saint Vincent and the Grenadines, Marshall Islands, State of Palestine, Nicaragua, Zambia, Haiti, Djibouti, Yemen and Sierra Leone could not be found in WHO's report. Moreover, San Marino, West Bank and Gaza Strip, Cook Islands and Somalia appeared to be missing in UNDP's data even though their estimated road fatality rates have been calculated by WHO. The HDI and RTF rates of the countries that are included in the current are presented in Appendix 1.

Data Analysis

In order to analyze the stated relationships between HDI and RTF rates, hierarchical regression analysis is used. Hierarchical regression is decided because of the advantages it gives on multidimensional values such as HDI (Gustafson, 1997). In the current study, dimensions of HDI (GNI per capita, expected years of schooling, mean years of schooling and life expectancy at birth) are entered into 3-step hierarchical regression analysis. Although all dimensions are related to each other, dimensions are ranked from general to specific. GNI per capita is entered in the first step, since it directly affects other two dimensions. As mentioned before, without struggling to earn living, income increase creates a chance to maintain education and make it more qualified. Also, giving chance to invest in health technology increases the life expectancy. In the second step education dimension is entered in addition to income due to beneficial effects on drivers, environment and health workers. Finally, healthcare dimension was entered in the last step. All analyses were conducted by SPSS software (Statistical Packages for the Social Sciences, version 24.0).

Results

To examine the relationships between study variables, Pearson's r correlation test was conducted. The results showed that, there is a strong negative relationship between HDI values and RTF rates (r = -.75, p < .001). Among the dimensions of HDI, RTF rates was negatively related to GNI per capita (r = -.57, p < .001), life expectancy (r = -.59, p < .001), expected years of schooling (r = -.65, p < .001) and mean years of schooling (r = -.62, p < .001). Results indicate that HDI value is positively related to GNI per capita (r = -.76, p < .001), life expectancy (r = -.67, p < .001), expected years of schooling (r = -.90, p < .001) and mean years of schooling (r = -.82, p < .001). According to the results, GNI per capita has also positive relationships with life expectancy (r = -.52, p < .001), expected years of schooling (r = -.63, p < .001) and mean years of schooling (r = -.57, p < .001). Additionally, the results show that there is a positive relationship between life expectancy and both expected years of schooling (r = -.57, p < .001) and mean years of schooling (r = -.63, p < .001). Lastly, expected years of schooling have shown positive relationship with mean years of schooling (r = -.69, p < .001). To sum up, it can be stated that HDI value is positively correlated with all of its dimensions. Estimated RTF rates have negative relationship with HDI values and its all dimensions.

Table 1
Correlations Between Study Variables

	1	*2*	*3*	*4*	*5*
1. TFR (per 100 000)	1				
2. HDI Values	-.75*	1			
3. GNI per Capita (2011 PPP dolar)	-.57*	.76*	1		
4. Life Expectancy at Birth (years)	-.59*	.67*	.52*	1	
5. Expected Years of Schooling (years)	-.65*	.90*	.63*	.57*	1
6. Mean Years of Schooling (years)	-.62*	.82*	.57*	.63*	.69*

Note: TFR: Traffic fatality rates; *p<.001.

In the three-step hierarchical regression analysis, GNI per capita was entered as the independent variable. Results indicate that GNI per capita significantly predicted RTF rates (R^2= .32, *F (1,169)* = 79.68, p < .001). GNI per capita values are negatively related to RTF rates (β = -.57, p < .001).

In the second step of the hierarchical regression analysis, the education dimension was used as the independent variable. Both expected years of schooling and mean years of schooling variables were entered to the regression. Results indicate that, expected years of schooling and mean years of schooling values significantly predicted RTF rates (R^2 = .50, *F(3,167)* = 54.99, p < .001). Expected years of schooling (β = -.33, p < .001) and mean years of schooling (β = -.28, p < .001) were negatively related to RTF rates.

In the last step of our hierarchical analysis, life expectancy values were included as the independent variable. Results show that the model significantly predicted RTF rates (R^2= .523, *F (4,166)* = 45.50, p < .001). Life expectancy was negatively related to RTF rates (β = -.22, p < .01).

Table 2
Hierarchical Regression Analysis on Traffic Fatality Rates

Model	R^2	ΔR^2	*F*	β	*t*	*p*
1	.32		79.68			
GNI per Capita (2011 PPP dolar)				-.57	-8.93	.000
2	.50	.18	29.30			
GNI per Capita (2011 PPP dolar)				-.20	-2.75	.007
Expected Years of Schooling (years)				-.33	-3.94	.000
Mean Years of Schooling (years)				-.28	-3.57	.000
3	.52	.03	9.06			
GNI per Capita (2011 PPP dolar)				-.16	-2.24	.027
Expected Years of Schooling (years)				-.29	-3.51	.001
Mean Years of Schooling (years)				-.19	-2.31	.022
Life Expectancy at Birth (years)				-.22	-3.01	.003

Discussion

The aim of the current study was to investigate the relationship between HDI values and RTF rates at national level. Thus, effect of development on traffic fatality rates was investigated under three dimensions of HDI. The results showed that all of the HDI dimensions have positive correlations with HDI values. Hence, higher HDI rankings present a more developed country. Results of the current study indicate that HDI values were negatively related to RTF rates. It can be claimed that, any increase in the socioeconomic level of a country might play an important role to decrease RTF rates. Increased road safety can be achieved by improving socioeconomic level of a country.

HDI values provide general information about development level of countries. In order to obtain more detailed results, relationship between subdimensions of HDI and RTFs is examined with a hierarchical regression analysis. According to the results, GNI per capita, expected years of schooling, mean years of schooling and life expectancy at birth variables significantly predicted RTF rates and they were negatively related as expected. Based on the literature (Üzümcüoğlu, Solmazer & Özkan, 2020), as the income of country increases, the RTF rates decrease. Since GNI per capita has the maximum standardized coefficient

compared to other dimensions, a country showing progress in its economy is most likely to have a decrease in RTF rates. Hence, high-income countries have the least rate of RTF.

Education, which is a more specific variable than GNI per capita, was also negatively related to RTF rates. It has been shown that education attainment is positively related with seat belt use, especially front seat belt use, and obeying rules (Taylor & Daily, 2019). Effectiveness of seat belts on decreasing both RTFs and RTIs is undoubtable (Beck, Downs, Stevens, & Sauber-Schatz, 2017; Høye, 2016). Consequently, more educated people are less likely to cause deathly accidents. However, road fatality rates are more delicate to the change in the expected years of schooling than mean years of schooling. It might take long time to make changes in education systems. In addition, countries have to put this on the agenda and budget the changes which requires considerable bureaucracy, effort and time. Also, specific traffic education at young ages probably ensures more conscient population in the middle and long term. Therefore, consistent education policies might play a crucial role against the death rates caused by traffic accidents.

Results also show that, an increase in the life expectancy, the most specific subdimension that is affected from both economy and education level, might reduce the road fatality rates. Life expectancy may be related with the country's health system and a better health system can prevent high fatality ratios in traffic accidents. Supporting the aforementioned findings of Kim et al. (2012), the results show that life expectancy at birth is negatively related with RTFs. By improving the health system, a healthier population with high life expectancy can be procured, and also traffic death rates can be decreased. Therefore, investment in health services is also important to stand against road traffic death rates. Political actions that aim to increase the GNI per capita, mean years of schooling or expected years of schooling/life helps to save more people who die from traffic accidents and we can reduce the road death rate.

To increase the road security, policymakers can primarily focus on education since both mean and expected years of education tend to move together. Improving the education system and adding some specific courses about traffic security may have positive returns in a long term. Also, more educated people may increase the GNI per capita since GNI calculation includes every citizen's income even if they are working abroad (Pan, 2017). Interventions to increase road safety are not confidential. Any country could decrease fatality rate by adapting policies implemented from the countries with high HDI value and low fatality rate.

The issue of RTFs is a global problem. Despite the Bester's (2001) study where HDI values entered as independent variable in a stepwise regression, a study that examines the relationship between RTFs and both HDI values and its subdimensions has never been done. Nonetheless, the findings of this study have to be seen in light of some limitations. The last HDI ranking has been given in UNDP's 2019 report and these ranking have been made by regarding 2018 values of countries (UNDP, 2020b). However, since the last report of WHO published in 2016, instead of the most recent HDI rankings the 2016 rankings have been used to ensure consistency. Analyzing the stated relationships and examine the possible changes between years as new data gathered is crucial in order to prove consistency. As WHO provides more up-to-date data, this study can be reconducted for upcoming years and analyzed comparatively.

References

Anbarci, N., Escaleras, M., & Register, C. A. (2009). Traffic fatalities: does income inequality create an externality. *Canadian Journal of Economics/Revue Canadienne D'économique*, *42*(1), 244-266.

Beck, L. F., Downs, J., Stevens, M. R., & Sauber-Schatz, E. K. (2017). Rural and urban differences in passenger-vehicle–occupant deaths and seat belt use among adults—United States, 2014. *MMWR Surveillance Summaries*, *66*(17), 1-13.

Bester, C. J. (2001). Explaining national road fatalities. *Accident Analysis & Prevention*, *33*(5), 663-672.

Bishai, D., Quresh, A., James, P., & Ghaffar, A. (2006). National road casualties and economic development. *Health Economics*, *15*(1), 65-81.

Cubbin, C., LeClere, F. B., & Smith, G. S. (2000). Socioeconomic status and injury mortality: ndividual and neighbourhood determinants. *Journal of Epidemiology & Community Health*, *54*(7), 517-524.

Eun, S. J. (2020). Trends in mortality from road traffic injuries in South Korea, 1983–2017: Joinpoint regression and age-period-cohort analyses. *Accident Analysis & Prevention*, *134*, 105325.

Garg, N., & Hyder, A. A. (2006). Exploring the relationship between development and road traffic injuries: a case study from India. *The European Journal of Public Health*, *16*(5), 487-491.

Gaygısız, E. (2010). Cultural values and governance quality as correlates of road traffic fatalities: a nation level analysis. *Accident Analysis & Prevention*, *42*, 1894–1901.

Gustafson, P. (1997). Large Hierarchical Bayesian Analysis of Multivariate Survival Data. *Biometrics*, *53*(1), 230-242.

Høye, A. (2016). How would increasing seat belt use affect the number of killed or seriously injured light vehicle occupants?. *Accident Analysis & Prevention*, *88*, 175-186.

Kim, H., Jung, K. Y., Kim, S. P., Kim, S. H., Noh, H., Jang, H. Y., ... & Ju, J. M. (2012). Changes in preventable death rates and traumatic care systems in Korea. *Journal of the Korean Society of Emergency Medicine*, *23*(2), 189-197.

Kopits, E., & Cropper, M. L. (2005). Why Have Traffic Fatalities Declined in Industrialized Countries: Implications for Pedestrians and Vehicle Occupants. . *World Bank Publications*, *3678*Law, T. H., Noland, R. B., & Evans, A. W. (2011). The sources of the Kuznets relationship between road fatalities and economic growth. *Journal of Transport Geography*, *19*(2), 355-365.

Noland, R. B. (2003). Medical treatment and traffic fatality reductions in industrialized countries. *Accident Analysis & Prevention*, *35*(6), 877-883.

Özkan, T., & Lajunen, T. (2007). The role of personality, culture, and economy in unintentional fatalities: An aggregated level analysis. *Personality and Individual Differences*, *43*(3), 519–530.

Pan, W. T. (2017). A newer equal part linear regression model: a case study of the influence of educational input on gross national income. *Eurasia Journal of Mathematics, Science and Technology Education*, *13*(8), 5765-5773

Spoerri, A., Egger, M., & von Elm, E. (2011). Mortality from road traffic accidents in Switzerland: longitudinal and spatial analyses. *Accident Analysis & Prevention*, *43*(1), 40-48

Taylor, N. L., & Daily, M. (2019). Self-reported factors that influence rear seat belt use among adults. *Journal of Safety Research, 70, 25–31*

Todaro, M. P., & Smith, S. C. (2015). Economic Development. United Kingdom: Pearson Education.

United Nations Development Programme. (2020a). Human Development Index (HDI). http://hdr.undp.org/en/content/human-development-index-hdi

United Nations Development Programme. (2020b). Human Development Data (1990-2018). http://hdr.undp.org/en/data

Üzümcüoğlu, Y., Solmazer, G., Özkan, T. (2020). The relationship between culture and traffic fatality rates at national level: the moderating role of the economy. *Trafik ve Ulaşım Araştırmaları Dergisi , 3*(1) , 28-38.

van Beeck, E. F., Borsboom, G. J., & Mackenbach, J. P. (2000). Economic development and traffic accident mortality in the industrialized world, 1962–1990. *International Journal of Epidemiology*, *29*(3), 503-509.

Wangdi, C., Gurung, M. S., Duba, T., Wilkinson, E., Tun, Z. M., & Tripathy, J. P. (2018). Burden, pattern and causes of road traffic accidents in Bhutan, 2013–2014: a police record review. *International Journal of Injury Control and Safety Promotion, 25*(1), 65-69.

World Health Organization. (2018a). Global Status Report on Road Safety 2018. https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/

World Health Organization. (2018b, July 5). Disability-adjusted Life Years (DALYs). https://www.who.int/gho/mortality_burden_disease/daly_rates/text/en/

World Health Organization (2020, February 7). Road traffic injuries. https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries

Appendix

Appendix 1
HDI Values, Dimensions and Traffic Road Fatality Rates

Country	*HDI*	*LEB*	*EYS*	*MYS*	*GNI*	*TRF*
Afghanistan	0.491	63.8	10.3	3.6	1766	15.1
Albania	0.788	78.2	15.4	10	11534	13.6
Angola	0.57	59.9	11.4	5.1	6051	23.6
Antigua and Barbuda	0.772	76.6	12.5	9.2	20909	7.9
Argentina	0.828	76.2	17.4	10.5	18249	14
Armenia	0.751	74.6	13.2	11.7	8310	17.1
Australia	0.935	83	22.9	12.6	43653	5.6
Austria	0.909	81.3	16.1	12.6	44621	5.2
Azerbaijan	0.749	72.5	12.1	10.5	15146	8.7
Bangladesh	0.599	71.8	10.8	5.9	3620	15.3
Barbados	0.814	78.9	15.3	10.6	15881	5.6
Belarus	0.812	74	15.5	12.3	15997	8.9
Belgium	0.915	81.1	19.7	11.8	42260	5.8
Belize	0.722	74.2	13.5	9.7	7272	28.3
Benin	0.512	60.9	12.6	3.6	2001	27.5
Bhutan	0.61	70.8	12.1	3	8202	17.4
Bolivia (Plurinational State of)	0.692	70.6	13.6	8.9	6535	15.5
Bosnia and Herzegovina	0.765	77	13.9	9.7	11810	15.7
Botswana	0.719	68.2	12.6	9.3	15353	23.8
Brazil	0.757	75.2	15.4	7.7	13907	19.7
Bulgaria	0.812	74.7	15.1	11.8	17757	10.2
Burkina Faso	0.42	60.4	8.5	1.5	1582	30.5
Burundi	0.427	60.5	11.9	3	689	34.7
CÃ´te d'Ivoire	0.508	56.6	9.6	5.1	3387	23.6
Cabo Verde	0.645	72.3	12	6.2	5989	25
Cambodia	0.572	69	11.3	4.7	3248	17.8
Cameroon	0.556	58.1	12.7	6.1	3229	30.1
Canada	0.92	82.1	16.1	13.3	42691	5.8
Central African Republic	0.372	51.6	7.6	4.3	732	33.6
Chad	0.398	53.4	7.2	2.4	1836	27.6
Chile	0.843	79.8	16.4	10.3	21776	12.5
China	0.749	76.2	13.9	7.8	14311	18.2
Colombia	0.759	76.7	14.6	8.3	13087	18.5
Comoros	0.537	63.7	11.2	4.8	2504	26.5
Congo	0.613	63.6	11.6	6.5	6765	27.4
Congo (Democratic Republic of the)	0.453	59.7	9.6	6.6	794	33.7
Costa Rica	0.789	79.7	15.4	8.6	14393	16.7
Croatia	0.832	78	15.1	11.4	21216	8.1
Cuba	0.771	78.6	14.1	11.6	7597	8.5
Cyprus	0.869	80.5	14.7	12.1	31358	5.1
Czechia	0.885	78.9	16.8	12.7	29211	5.9
Denmark	0.928	80.6	19.1	12.6	47729	4
Dominica	0.729	77.9	13.1	7.8	10179	10.9
Dominican Republic	0.738	73.5	14.1	7.9	13801	34.6
Ecuador	0.756	76.4	14.9	9	10208	21.3
Egypt	0.695	71.5	13.1	7.2	10323	9.7
El Salvador	0.662	72.6	12	6.9	6745	22.2
Equatorial Guinea	0.592	57.7	9.2	5.5	21365	24,6
Eritrea	0.434	65.1	5.4	3.9	1627	25.3
Estonia	0.875	78.1	16.1	13.1	27915	6.1
Eswatini (Kingdom of)	0.596	57	11.4	6.7	9457	26.9
Ethiopia	0.46	65.5	8.7	2.7	1612	26.7
Fiji	0.718	67.2	14.4	10.8	8588	9,6
Finland	0.922	81.4	19.3	12.4	40609	4.7
France	0.887	82.3	15.5	11.4	38926	5.5
Gambia	0.456	61.2	9.2	3.5	1416	29.7
Georgia	0.776	73.2	15	12.8	8768	15.3
Germany	0.936	80.9	17.1	14.1	45577	4.1
Ghana	0.587	63.1	11.6	7.1	3756	24.9
Greece	0.866	81.7	17.3	10.3	24187	9.2
Grenada	0.76	72.4	16.9	8.7	11650	9.3
Guatemala	0.648	73.5	10.7	6.4	7199	16.6
Guinea	0.456	60.2	9	2.7	1971	28.2
Guinea-Bissau	0.457	57.3	10.5	3.3	1570	31.1
Guyana	0.666	69.5	11.5	8.4	7294	24.6
Honduras	0.618	74.7	10.2	6.5	4032	16.7
Hungary	0.838	76.3	15.1	11.8	25081	7.8
Iceland	0.932	82.6	19.2	12.4	44809	6.6
India	0.637	68.9	12.3	6.4	6075	22.6
Indonesia	0.7	71	12.9	8	10419	12.2
Iran (Islamic Republic of)	0.799	76	14.9	10	18710	20.5
Iraq	0.672	70.1	10.1	6.9	16387	20.7
Ireland	0.936	81.6	18.8	12.5	50911	4.1
Israel	0.902	82.5	15.9	13	32428	4.2
Italy	0.878	83	16.2	10.2	34818	5.6
Jamaica	0.722	74.2	13.1	9.7	7721	13.6
Japan	0.91	84.1	15.2	12.7	39407	4.1
Jordan	0.722	74.2	11.9	10.4	8253	24.4
Kazakhstan	0.808	72.1	15	11.7	22062	17.6
Kenya	0.568	65.4	11	6.4	2875	27.8
Kiribati	0.622	67.6	11.8	7.9	3985	4.4
Korea (Republic of)	0.901	71.7	16.4	12.2	35122	9.8
Kuwait	0.809	82.4	13.8	7.2	76145	17.6
Kyrgyzstan	0.669	75.2	13.4	10.9	3108	15.4
Lao People's Democratic Republic	0.598	71.1	11.2	5.2	5748	16.6

Latvia	0.845	66.9	15.8	12.8	23648	9.3
Lesotho	0.507	78.8	10.5	6.3	3347	28.9
Liberia	0.463	52.1	9.6	4.5	1091	35.9
Libya	0.69	62.8	12.9	7.3	8799	26.1
Lithuania	0.86	80.3	16.5	12.9	26860	8
Luxembourg	0.904	75.2	14.2	12.1	62818	6.3
Madagascar	0.515	81.8	10.4	6.1	1339	28.6
Malawi	0.478	65.9	10.9	4.5	1130	31
Malaysia	0.801	62.7	13.7	10.2	25394	23.6
Maldives	0.713	75.6	12.1	6.8	11978	0.9
Mali	0.42	78	7.6	2.2	1904	23.1
Malta	0.881	58	15.9	11.3	32619	6.1
Mauritania	0.519	73.4	8.3	4.4	3636	24.7
Mauritius	0.79	64.2	15	9.3	20893	13.7
Mexico	0.764	74.6	14.1	8.6	17344	13.1
Micronesia (Federated States of)	0.608	74.9	11.3	7.6	3635	1.9
Moldova (Republic of)	0.705	67.5	11.6	11.6	6292	9.7
Mongolia	0.73	71.6	14.2	10.1	10324	16.5
Montenegro	0.809	69.3	14.9	11.4	15883	10.7
Morocco	0.669	76.6	12.9	5.4	7169	19.6
Mozambique	0.435	76	9.7	3.3	1138	30.1
Myanmar	0.571	58.3	10	4.9	5155	19.9
Namibia	0.639	66.2	12.3	6.8	10171	30.4
Nepal	0.572	69.8	12.2	4.9	2486	15.9
Netherlands	0.929	81.9	18	12.2	47008	3.8
New Zealand	0.917	81.9	18.1	12.6	34538	7.8
Niger	0.365	61.1	6.1	1.9	892	26.2
Nigeria	0.528	53.5	9.5	6.3	5336	21.4
North Macedonia	0.757	75.5	13.5	9.6	12552	6.4
Norway	0.951	82	18	12.6	66746	2.7
Oman	0.834	77.1	14.7	9.7	39066	16.1
Pakistan	0.556	66.8	8.6	5.1	4891	14.3
Papua New Guinea	0.541	63.7	9.9	4.6	3810	14.2
Paraguay	0.718	73.8	12.7	8.4	10922	22.7
Peru	0.755	76	13.9	9.2	11956	13.5
Philippines	0.704	70.8	12.7	9.3	8701	12.3
Poland	0.864	78.1	16.4	12.3	25042	9.7
Portugal	0.846	81.4	16.3	9.2	26559	7.4
Qatar	0.847	79.9	12.2	9.7	113965	9.3
Romania	0.808	75.6	14.3	11	21173	10.3
Russian Federation	0.817	71.8	15.5	11.8	24096	18
Rwanda	0.525	67.9	11.2	4.1	1785	29.7
Saint Lucia	0.744	75.8	14.2	8.5	11142	35.4
Samoa	0.704	72.9	12.4	10.6	5795	11.3
Sao Tome and Principe	0.593	69.7	12.2	5.8	2962	27.5
Saudi Arabia	0.857	74.8	17	9.7	51099	28.8
Senegal	0.506	67.1	9	2.9	3018	23.4
Serbia	0.791	75.5	14.6	11.1	14078	7.4
Seychelles	0.801	73.2	15.8	9.7	23671	15.9
Singapore	0.933	83.1	16.3	11.5	78759	2.8
Slovakia	0.851	77	14.5	12.6	28706	6.1
Slovenia	0.892	80.9	17.4	12	29114	6.4
Solomon Islands	0.553	72.4	10.2	5.4	1986	17.4
South Africa	0.702	56.3	13.7	10.2	11908	25.9
South Sudan	0.418	63.2	5	10.2	1686	29.9
Spain	0.888	57.1	17.8	4.8	33379	4.1
Sri Lanka	0.774	83.1	13.9	9.8	11124	14.9
Sudan	0.505	76.5	7.7	10.9	3994	25.7
Suriname	0.726	64.7	12.9	3.6	12792	14.5
Sweden	0.934	71.4	18.8	9.1	46662	2.8
Switzerland	0.943	82.4	16.2	12.4	58138	2.7
Syrian Arab Republic	0.539	83.3	8.8	13.4	2551	26.5
Tajikistan	0.647	70.3	11.4	5.1	3168	18.1
Thailand	0.753	63.8	14.3	6	14966	32.7
Timor-Leste	0.628	76.4	12.4	7.6	8350	12.7
Togo	0.506	68.7	12.4	4.5	1545	29.2
Tonga	0.715	60.2	14.3	4.8	5678	16.8
Trinidad and Tobago	0.796	70.6	12.8	11.2	28854	12.1
Tunisia	0.736	73.1	15.1	11	10531	22.8
Turkey	0.8	76.1	16.4	7.1	23409	12.3
Turkmenistan	0.706	76.9	10.9	7.6	15236	14.5
Uganda	0.52	62	11.3	5.7	1733	24.7
Ukraine	0.746	71.7	15.1	11.3	7601	13.7
United Arab Emirates	0.863	77.5	13.6	10.8	67410	18.1
United Kingdom	0.918	81.1	17.4	12.9	38421	3.1
United States	0.919	78.9	16.3	13.4	54443	12.4
Uruguay	0.806	77.5	16.3	8.7	19196	13.4
Uzbekistan	0.701	71.2	11.8	11.4	5968	11.5
Vanuatu	0.592	70	11.4	6.7	2751	15.9
Venezuela (Bolivarian Republic of)	0.752	72.4	13.6	10.3	12570	33.7
Viet Nam	0.685	75.2	12.7	8.1	5638	26.4
Zimbabwe	0.549	60.3	10.4	8.3	2246	34.7