FORDHAM | IPED

GRADUATE PROGRAM IN INTERNATIONAL POLITICAL ECONOMY AND DEVELOPMENT

FORDHAM UNIVERSITY

2020


# FORDHAM'S POPE FRANCIS GLOBAL POVERTY INDEX

*"To enable these real men and women to escape from extreme poverty, we must allow them to be dignified agents of their own destiny.*

*At the same time, government leaders must do everything possible to ensure that all can have the minimum spiritual and material means needed to live in dignity.*

*In practical terms, this absolute minimum has three names: lodging, labor, and land; and one spiritual name: spiritual freedom, which includes religious freedom, the right to education and other civil rights."*

*-- Pope Francis in his Address to the United Nations on September 25, 2015*

Photo Credit: UN Photo / Cia Pak


## About the Logo:

The logo illustrates the seven primary elements that are considered in the Fordham Francis Index. The four elements on the left side represent the Material Well-being components: Water, Food, Housing, and Employment. The remaining three on the right side comprise the Spiritual Freedom components: Education, Gender Equity, and Religious Freedom.

# ACKNOWLEDGEMENTS

The Fordham Francis Index would not exist without the invitation of the US branch of the Vatican Foundation *Centesimus Annus Pro Pontifice*. The Foundation's request for us to present our ideas at their 2016 international conference on "Pope Francis' Call for Escaping Poverty" is what led to the creation of this index. We want to thank Archbishop Bernardito Auza, formerly the Permanent Observer of the Holy See to the UN, for his unfailing availability. We also want to thank Mr. Joseph Cornelius Donnelly of *Caritas Internationalis* for his support in promoting the report at the United Nations Headquarters in New York. We are indebted to many of our readers who have provided us with suggestions over the last five years on ways to improve the index. We owe thanks to Dr. Robert Brent of Fordham University for various insights on aggregation, Dr. Christian Oldiges of Oxford University's Poverty and Human Development Institute for his helpful comments on measuring adequate housing as well as on the value of multi-dimensional poverty indicators in general, and Dr. Andrew Simmons of Fordham University for his insights on global food security. We also want to acknowledge the many responses we received from Papal Nuncios from around the world including Ireland, Italy, Japan, Kenya, New Zealand, Spain, and the United States. And finally we want to thank Fordham University's Graduate Program in International Political Economy and Development (IPED) for their official sponsorship and the Cassamarca Foundation for their financial support. All remaining errors and omissions are solely the responsibility of the authors.


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Graduate Program in International Political Economy and Development

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ABSTRACT: The Fordham Francis Index (FFI) is a multidimensional measure of international poverty inspired by Pope Francis' address to the United Nations General Assembly in 2015. Pope Francis identified four basic human needs—water, food, housing, and employment—as essential for a minimal level of material well-being. Francis also identified religious freedom, education, and other civil rights such as gender equity, as the basic human needs essential for a minimal level of spiritual freedom. The FFI identifies appropriate measures for each of Pope Francis' seven basic human needs and then aggregates them into a material well-being index, a spiritual freedom index, and an overall Fordham Francis Index (FFI). The FFI's indicators are closely related to many of the UN's Sustainable Development Goals (SDG's). To date, we have documented a strong relationship between the FFI indicators and reduced poverty, better nutrition, improved health, better sanitation, and press freedom. The FFI is innovative in two ways. First, when compared to other measures of poverty, it has a stronger emphasis on basic human needs and favors outcomes that benefit the marginalized. Second, besides including indicators of material well-being, it also includes indicators of spiritual freedom. These spiritual freedom indicators, such as education and the civil rights of religious freedom and gender equity, may play an important role in empowering the poor to be champions of their own destinies.

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# FOREWORD

I am pleased to present to our readers the 2020 issue of *Fordham University's Pope Francis Global Poverty Index*. In simple terms the Fordham Francis Index (FFI) documents the extreme poverty suffered by roughly one billion of our brothers and sisters from around the globe.

The Fordham Francis Index (FFI) was inspired by Pope Francis' address to the United Nations General Assembly in 2015. In his address, the Pope identified a simple multidimensional poverty index composed of just seven indicators. These seven indicators of material well-being and spiritual freedom would measure whether the minimal level of basic human needs deem essential for a dignified human life are being met. For material well-being the indicators were water, food, housing, and employment. And for spiritual freedom they were education, religious freedom, and other civil rights such as gender equity.


*Prof. Henry Schwalbenberg (Fordham IPED), Mr. Joseph C. Donnelly (CARITAS Internationalis) and Prof Andrew Simons (Fordham Economics Dept) at the UN Side Event launching the 2019 FFI Report and Forum on Climate Change and Bread Basket Failures held Sept 17, 2019.*

### *2020: A Global Pandemic*

2020 is the year of a global pandemic and this year's report will give us a baseline to document the extent of extreme poverty in our world prior to the pandemic. Our mission in future reports will be to document the immediate and lasting effects of the pandemic on the world's most vulnerable people. 2020 is also the year of Pope Francis' encyclical on *Fraternity and Social Friendship* with its clarion call for international solidarity and cooperation on behalf of those most in need. As a result of the world answering the Pope's call to come together to address the pandemic and other global crises, we very much hope that we will also be able to document in the not too distant future the recovery of the world's extreme poor from this pandemic.

### *Global Trend*

Using the Fordham Francis Index (FFI) we were able to identify recent short term global trends such as improved access to drinking water, access to better remunerative employment, and reduced illiteracy. On the other hand, we also found that the recent global trend in gender equity was stagnant and that access to adequate nutrition had worsened.

Geographically we found that material deprivation is highly concentrated in Sub-Saharan Africa, while spiritual deprivation, especially the lack of religious freedom, is more predominant in northern Africa, the Middle East and Asia.

### *UN's Sustainable Development Goals (SDGs)*

We are able to report that the Fordham Francis Index

*Dr. Christian Oldiges, Director of Policy Research at the Oxford Poverty and Human Development Initiative (OPHI), presenting on Measurement of Multidimensional Poverty on March 3, 2020*

(FFI) is broadly indicative of development trends in the fight against global poverty. Its indicators correlate well with many of the targets of the UN's Sustainable Development Goals (SDG's) such as: poverty reduction, improved health, better sanitation and press freedom.

### *Innovative Global Poverty Measure*

The Fordham Francis Index (FFI) is innovative in two very important ways. First, when compared to other measures of poverty such as per capita GDP or the Human Development Index, the FFI has a stronger emphasis on basic human needs and therefore gives more weight to outcomes that benefit the poor and the marginalized. Second, besides including indicators of material well-being, it also includes indicators of spiritual freedom. These spiritual indicators, such as education and the civil rights of religious freedom and gender equity, may play an important role in empowering the poor to be, in the words of Pope Francis, "dignified agents of their own destinies."

The development of a simple technical instrument of verification like the Fordham Francis Index (FFI) can also empower civil society organizations who want to promote integral human development. They can use the FFI to monitor and evaluate the effects of national and international development efforts. Do these politics and programs benefit the poor? Do these policies and programs empower the marginal to champion their own causes?

We welcome and invite your comments and critiques. Please contact us at your convenience.

Prof. Henry Schwalbenberg
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*Fordham IPED Students at the 2019 FFI Report Launch on Sept 17, 2019 at the Church Center for the United Nations*

# GUEST COMMENTARY

## POPE FRANCIS GLOBAL POVERTY INDEX & EUCATION

*By **His Eminence, Cardinal Pietro Parolin**, Secretary of State for Pope Francis. Excerpted from his "Greetings and Remarks" delivered at Fordham University, New York, 27 September 2019. The full text is available on the website of the Holy See Observer Mission to the United Nations.*

I bring you the prayerful best wishes of our Holy Father Pope Francis. […]

### *Pope Francis Global Poverty Index*

Looking at the *Pope Francis Global Poverty Index*, I am reminded of our brothers and sisters in those countries … [who] ... lack the minimum material and spiritual goods that Pope Francis mentioned in his Address to the United Nations General Assembly in September 2015, "Those goods that would 'enable' them 'to escape from extreme poverty … allow them to be dignified agents of their own destiny'" and "live in dignity." "In practical terms" — the Holy Father continued — "this absolute minimum has three names: lodging, labor, and land; and one spiritual name: spiritual freedom, which includes religious freedom, the right to education, and other civil rights."

These words have inspired the *Pope Francis Global Poverty Index*. I am pleased that through this initiative, the words of the Holy Father continue to resound at Fordham in particular in the hearts and minds of the students and professors...

### *The Preferential Option for the Poor*

There are many indexes and measurements of the situations of peoples and nations. We have, for instance, the UN Human Development Index or the World Happiness Report. However, the *Pope Francis Global Poverty Index* is different: it focuses on the poor, the marginalized, those left behind.

The Church's preferential option for the poor provokes many people to ask why Pope Francis and the Catholic Church seem to be "obsessed" with the poor! The answer is simple. Because this is who we are. Because taking care of the hungry, the thirsty, the stranger, the naked, the sick, and the imprisoned is the yardstick that our Lord Jesus will use to measure how much we shall have lived the greatest commandment of love. We depend on Christ's love and he depends on our love to care for others. In brief, we care, because Jesus cares! As such, it is essential that Jesus Christ live and grow in us by way of an ever more

profound faith, which is cultivated by listening to the Word of God in the Church, through an active sacramental life and personal prayer, and that His sentiments and actions become ever more realized in us, so that we might be able to say as did St. Paul: "It is no longer I who live, but Christ lives in me." (Gal.2.20)

We know by heart the celebrated opening passage of the Second Vatican Council's *Gaudium et spes*, the Pastoral Constitution of the Church in the Modern World: "The joys and the hopes, the griefs and the anxieties of the men of this age, especially those who are poor or in any way afflicted, these are the joys and hopes, the griefs and anxieties of the followers of Christ. Indeed, nothing genuinely human fails to raise an echo in their hearts."

My dear friends, this sharing in the suffering of the poor, this feeling *com-passion* for them that fundamentally defined [Pope Francis'] Apostolic Journey, is also the spirit that inspired you to devise the *Pope Francis Global Poverty Index*, with the aim of knowing the situation of the poor, in order to help them to become dignified agents of their own development, so that they may live a life worthy of the children of God.

*Donna Odra,FFI Managing Director presenting the 2019 Report to Cardinal Parolin on Sept 27, 2019 at Fordham University*

***The Mission of Catholic Education***

[…] I am therefore very pleased to note that the *Pope Francis Global Poverty Index* has education as one of the indicators of the spiritual wellbeing of the person. That fits perfectly with the mission of Catholic educational institutions like Fordham, and expresses the Church's conviction that education is at the heart of her mission to the world. In his 2015 Address to the UN General Assembly, Pope Francis spoke three times about the importance of education and every person's right to this basic human need. Speaking immediately before the adoption of the 2030 Agenda for Sustainable Development, he underlined how important education is for achieving the integral development of persons and peoples. Recently, the Holy Father launched the global Educational Alliance initiative… In that announcement, he remarked: "Never before has there been such need to unite our efforts in a broad *educational alliance,* to form mature individuals capable of overcoming division and antagonism, and to restore the fabric of relationships for the sake of a more fraternal humanity […]" (Pope Francis, Message for the launch of the Global Educational Alliance, 12 September 2019.)

We are rightly proud that over the course of our two thousand-year history, the Catholic Church has played a major role in education. We founded the first universities in Europe and that same tradition is very much alive today as we continue to establish schools and universities, especially in the developing world and in remote areas where they are most needed […]

Today the Catholic Church runs approximately two hundred and twenty thousand (220,000) schools at all levels, from kindergarten to graduate schools, educating approximately sixty-eight million (68,000,000) students across the world, many of whom are not Catholic or even Christian. Catholic schools serve societies and not just the Church, while

*Fordham IPED students and members of FFI 2019 Research Team with Archbishop Auza (first from left) and Cardinal Parolin (fourth from left) on Sept 27, 2019 at Fordham University*

remaining faithful to the distinctive approach of Catholic education that is rooted in the wisdom of the Gospel and the pedagogy of centuries of experience. A Catholic school knows that providing access to education, although essential, is not enough. For children to grow into flourishing young people and adults, much more is needed, because education is far more than instruction. Its aim is not just to inform but also to form; not just make people smarter but wiser; not just intelligent but genuinely compassionate. In this context, there remains the hope that States would be ever more attentive to the role played by Catholic educational institutions, offering them support, even financially, and recognize their invaluable contribution to society and the possibility that they offer to parents to choose freely the type of education they want for their children.

The Holocaust survivor Haim Ginott reminded us of the need for a truly integral education. Having survived the Holocaust, Ginott immigrated to the United States and became a schoolteacher, parent, child psychologist and psychotherapist. In 1972, he wrote a letter to teachers in which he gave them this admonition: "I am a survivor of a concentration camp. My eyes saw what no person should witness: gas chambers built by learned engineers. Children poisoned by educated physicians. Infants killed by trained nurses. Women and babies shot by high school and college graduates. So I am suspicious of education. My request is: help your children become human. Your efforts must never produce learned monsters, skilled psychopaths or educated Eichmann's. Reading, writing, and arithmetic are important only if they serve to make our children more human."

### *Concluding Reflections*

Ladies and Gentlemen, I am confident that Fordham, remaining fateful to its vocation and mission to give the best integral education possible, is doing exactly that, producing "learned men and women of both the highest intellectual caliber and the most compassionate of hearts for all, especially for the poor and the suffering."

Thank you for your kind attention and God bless you all!

# Pope Francis' Primary Indicators

Pope Francis identified seven basic human needs that are essential for a minimal level of both material well-being and spiritual freedom. Francis sees **water**, **food**, **housing**, and **employment** as essential for material well-being. He also sees **education**, **religious freedom**, and other civil rights, such as **gender equity,** as essential for spiritual freedom.

The researchers at Fordham carefully evaluated various statistics that could be appropriate measures for each of these seven basic human needs. Our selection criteria followed a robust yet straightforward approach. Initially, we wanted a statistic that best captured Pope Francis' views of each of these seven basic human needs. Next we needed the data to be easily accessible so that our results could be reproduced anywhere in the world. An important concern was geographical coverage and obtaining as many observations as possible. Finally, we were concerned about the consistency, reliability, and credibility of the data and sought to use data collected and distributed by respected international organizations, such as the United Nations and the World Bank. In the following sections, you will receive a more detailed definition, identification, and justification for each of our seven chosen measures. It is worth mentioning that in this year's report, we continue to overcome caveats in the previous years' reports by identifying and updating our measures of housing, employment and gender equity in order to improve on the robustness of the FFI going forward.

Once we selected a statistical measure of a primary indicator, we graphed its global trend from 2013 to 2017, mapped its 2017 data to better visualize geographical disparities around the world, and identified the ten countries who most lacked each particular basic human need. Finally, we calculated the coefficients of correlation to empirically test the relationships between our FFI indicator measures and various UN Sustainable Development Goals (SDG's). The SDG's we examined were: poverty, health, sanitation, energy, growth, inequality and justice.

Through this process, we were able to document that these seven primary indicators are indeed correlated with many of the targets of the UN's Sustainable Development Goals. In future iterations of this report, we hope to eventually regress all seven of the primary indicators selected with all 169 targets within the UN Sustainable Development Goals (SDGs) framework.

## Material Well-being Indicators

*In this section we will review each of Pope Francis' indicators of material well-being: water, food, housing, and employment respectively. We will describe the choice of statistics we used to measure each indicator, describe recent global trends, identify those areas of the world most lacking these basic material needs, and then relate the successful provision of these basic material needs to the achievement of some of the UN's Sustainable Development Goals.*

# WATER

We estimate that in 2017 roughly 763.5 million people, or 10.2% of the world's population, lack basic access to drinking water. These numbers show a reduction in the number of people who lack basic access to drinking water compared to previous years.

Pope Francis includes access to drinking water as a basic human need because it is fundamental to sustaining human life. He argues that it is not enough for the marginalized to have access to any type of water. The water should be clean and accessible enough to be obtained when needed, and without undue burden. We chose *the percentage of a nation's population with basic access to drinking water services from an improved drinking water source* as the best statistic to measure Pope Francis' understanding of the fundamental human need for clean water.

> "Water is an essential asset for the equilibrium of ecosystems and human survival, and it must be managed and cared for so that it is not polluted or lost."
>
> *- Pope Francis, World Water Day (March 2019)*

This statistic measures a population's access to drinking water from improved sources with collection time not exceeding 30 minutes for a roundtrip including queuing. Improved drinking water sources are those that have the potential to deliver safe water by the nature of their design and construction and include: piped water, boreholes or tubewells, protected dug wells, protected springs, rainwater and packaged or delivered water. For 2017, the WHO/ UNICEF Joint Monitoring Programme (JMP) water and sanitation database provided us with data covering 221 countries.

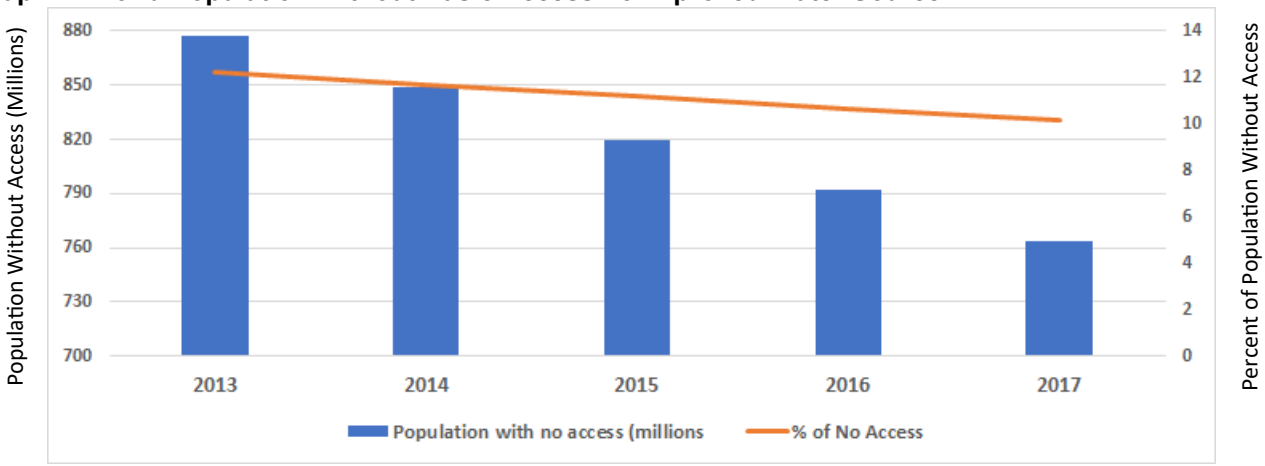

### *International Distribution of Needs*

Table 1 lists the ten countries whose populations have the least basic access to drinking water. As the table shows, nine of the ten countries most deprived of access to drinking water are in Africa, while the fourth most deprived country—Papua New Guinea— is in Oceania.

**Table 1: Top ten most deprived nations with respect to access to an improved drinking water source**

| Rank | Country | % No access (2017) | Population affected (in millions) |
|---|---|---|---|
| 1 | Chad | 61.3 | 9.2 |
| 2 | South Sudan | 59.3 | 6.5 |
| 3 | Ethiopia | 58.9 | 62.7 |
| 4 | Papua New Guinea | 58.7 | 5.0 |
| 5 | DR Congo | 56.8 | 46.2 |
| 6 | Burkina Faso | 52.1 | 10.0 |
| 7 | Uganda | 50.9 | 21.0 |
| 8 | Niger | 49.7 | 10.7 |
| 9 | Somalia | 47.6 | 6.9 |
| 10 | Madagascar | 45.6 | 11.7 |
| | **WORLD** | **10.2** | **763.5** |

**Graph 1: World Population Without Basic Access To Improved Water Source**




The map in Figure 1 shows the percentage of each country's population with basic access to drinking water from an improved source, with the darker color indicating increased level of deprivation. The map reveals concentrations of water deprivation across Sub-Saharan Africa in particular, with sporadic deprivation throughout the Middle East and Asia.

### *Global Trend*

Graph 1 shows the number and percentage of the world population without access to an improved water source. This number has been on a general steady decline since 2013.

### *UN's Sustainable Development Goals*

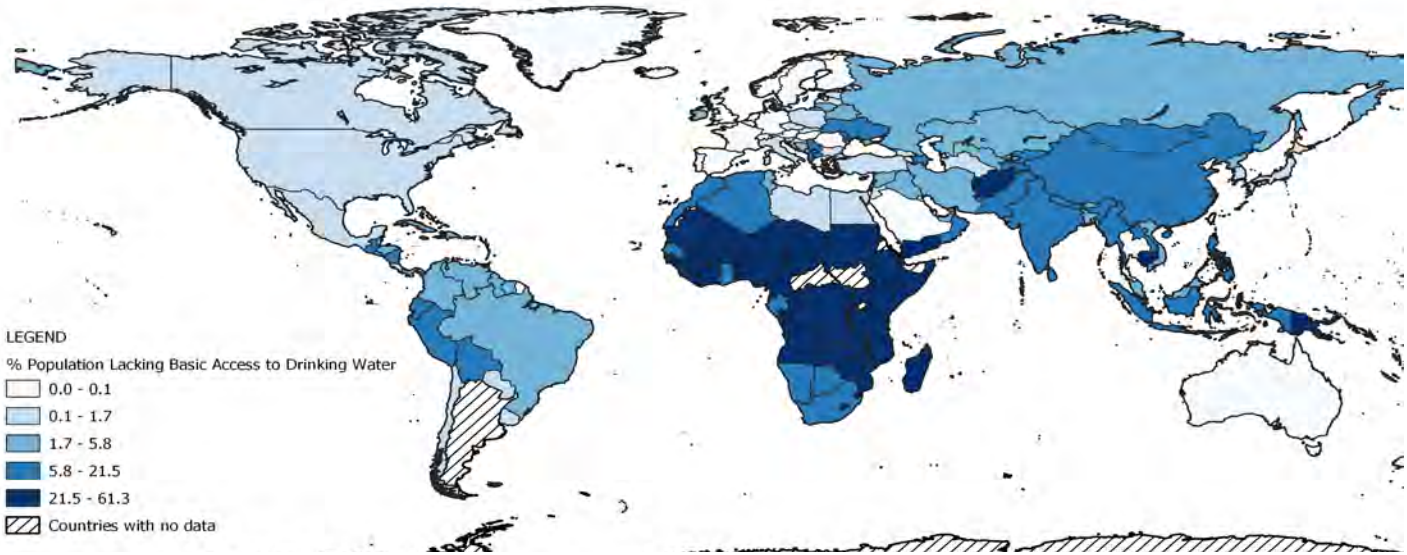
The importance of this indicator is easy to demonstrate empirically. For example, regarding the UN's First Sustainable Development Goal of **No Poverty,** we were able to find a significant statistical relationship between access to water and lower poverty rates. Regarding the third UN Goal of **Good Health**, we were able to determine that access to improved water sources is significantly related to reductions in infant and maternal mortality rates. As expected, we found that access to improved water sources is also clearly correlated with access to sanitation under the sixth Sustainable Development Goal of **Clean Water and Sanitation.** Lastly, we found a significant statistical relationship between water and the seventh Sustainable Development Goal of **Affordable and Clean Energy,** the access to financial institutions under the eight goal of **Decent Work and Economic Growth,** and access to internet under the seventeenth goal of **Sustainable Development Through Global Partnerships.**

*(See Appendix B for more details regarding the statistical correlations between the Fordham Francis Index primary statistical measures and the UN Sustainable Development Goals.)*

## FOOD

We estimate that in 2017 roughly 781 million people, or 10.4% of the world's population, are undernourished. The prevalence of

**Figure 1: Map of the percentage of the population lacking basic access to drinking water (2017)**




undernourishment has stopped declining. And we see a rise in the number of people suffering from undernourishment.

Pope Francis' selection of access to adequate food as another primary indicator is based on the belief that every individual has a right to life. In 2013, he called the inexplicable presence of hunger and food insecurity endured by one billion people "a global scandal". Thus we need to choose a measure that explicitly captures the number of individuals regularly experiencing food insecurity.

We chose the *prevalence of undernourishment* as the best statistic to measure access to food. Although the prevalence of undernourishment covers fewer countries than other metrics, such as the average dietary supply adequacy measure, we chose it because it captures food insecurity across an entire population. Moreover, it is more nuanced insofar as it places emphasis on individual energy requirements, as opposed to average food intake.

*"… hunger and malnutrition can never be considered a normal occurrence to which one must become accustomed, as if it were part of the system. Something has to change in ourselves, in our mentality, in our societies."*
*-Pope Francis's Address on World Food Day (2013)*

The prevalence of undernourishment is defined as the percentage of a population who are continuously unable to consume enough food to meet dietary energy requirements. The data for prevalence of undernourishment is obtained from the UN Food and Agriculture Organization (FAO). The FAO reports the data as three-year moving averages and is available every two years for 167 countries.

### *Global Trend*

Graph 2 shows the number and percentage of the world population that are undernourished in a four year period. Data show that over the last three years, there has been an increasing number of people who


are undernourished.

### *International Distribution of Need*

Table 2 shows that seven of the ten countries that most lack adequate nourishment are located in Sub-Saharan Africa. The country with the highest value in the world is the Central African Republic. Using averaged data over a three-year period from 2015-2017, the dark red areas of the map in Figure 2 reveals the prevalence of undernourishment across Sub-Saharan Africa, Asia, and parts of Latin America.

**Table 2: Top ten most deprived nations with respect to adequate nourishment**

| Rank | Country | % Without Adequate Nourishment (2017) | Population (in millions) |
|---|---|---|---|
| 1 | Central African Republic | 59.6 | 2.7 |
| 2 | Zimbabwe | 51.3 | 7.3 |
| 3 | Haiti | 49.3 | 5.4 |
| 4 | North Korea | 47.8 | 12.2 |
| 5 | Zambia | 46.7 | 7.9 |
| 6 | Madagascar | 44.4 | 11.4 |
| 7 | Uganda | 41 | 16.9 |
| 8 | Congo | 40.3 | 32.8 |
| 9 | Yemen | 38.9 | 10.8 |
| 10 | Chad | 37.5 | 5.6 |
| | World | 10.4 | 780.9 |

### *UN Sustainable Development Goals*

Like water, it is easy to demonstrate empirically the importance of human access to food. Regarding the First UN's Sustainable Development Goal of **No Poverty**, we were able to find a significant statistical relationship between adequate nourishment and poverty reduction. Our statistic is a direct measure of the UN's second Sustainable Development Goal of **Zero Hunger**. And with regard to the third goal of achieving **Good Health**, we were able to show that adequate nourishment is significantly related to reductions in infant and maternal mortality rates. Regarding the UN's sixth Sustainable Development Goal of **Clean Water and Sanitation,** we found a significant relationship between nourishment and access to sanitation. Lastly, within the UN's seventh Sustainable Development Goal of **Affordable and Clean Energy**, we were able to show that adequate nourishment is significantly related to access to electricity.

*(See Appendix B for more details regarding the statistical correlations between the Fordham Francis Index primary statistical measures and the UN Sustainable Development Goals.)*

## HOUSING

We estimate that in 2017 nearly 1.75 billion people, or 23.3% of the world's population, live in sub-standard housing.

Pope Francis includes housing as one of his four primary indicators of material well-being. People

**Graph 2: World Population that are Undernourished.**

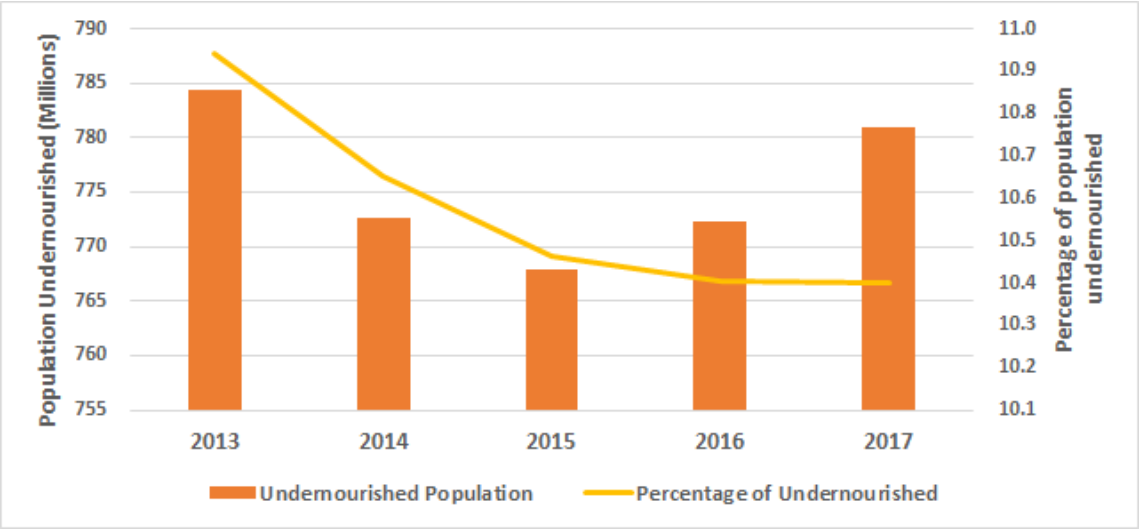
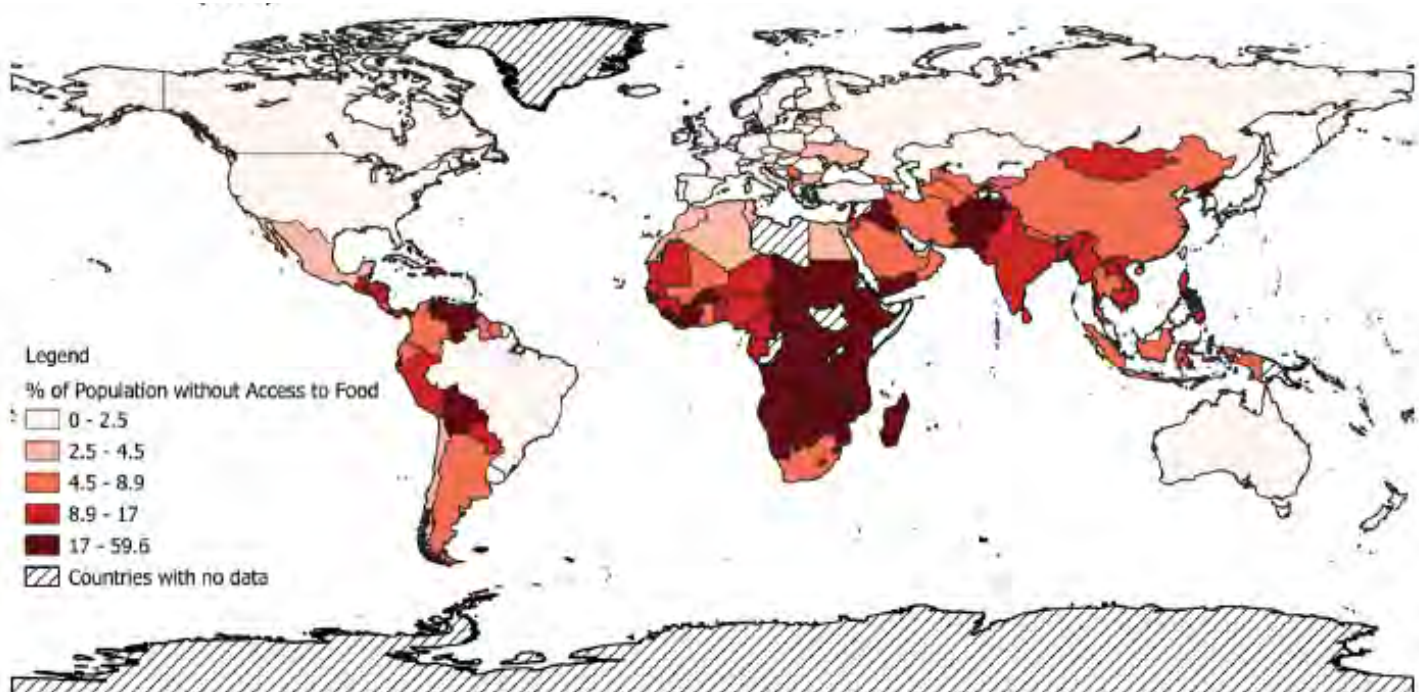



**Figure 2: Map of the percentage of the population without adequate access to food (2017)**



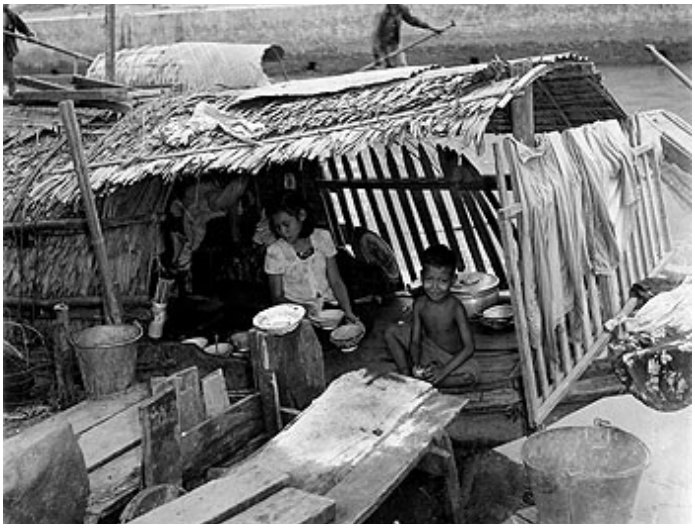
"We can find no social or moral justification...no justification whatsoever, for lack of housing."

*- Pope Francis, Meeting with the Homeless (2015)*

require adequate physical space in order to create safe, secure, and nurturing homes for their families.

Adequate housing with secure tenure can also provide households with regular access to basic sewage, safe drinking water, garbage collection, and electricity. The lack of proper housing and the proliferation of slums around the world often mark whole groups of people who are experiencing homelessness and exclusion from mainstream society.

Starting with data in 2016 and following the lead of the Oxford Poverty & Human Development Initiative in partnership with UNDP, we changed our measure to their new indicator, *Access to Adequate Housing*. In previous years we only had data on their older indicator, *Access to Adequate Flooring*, which we then used as a proxy for adequate housing. The



UNICEF/NYHQ1955-0006/Photographer Unknown

**Table 3: Top ten most deprived nations**

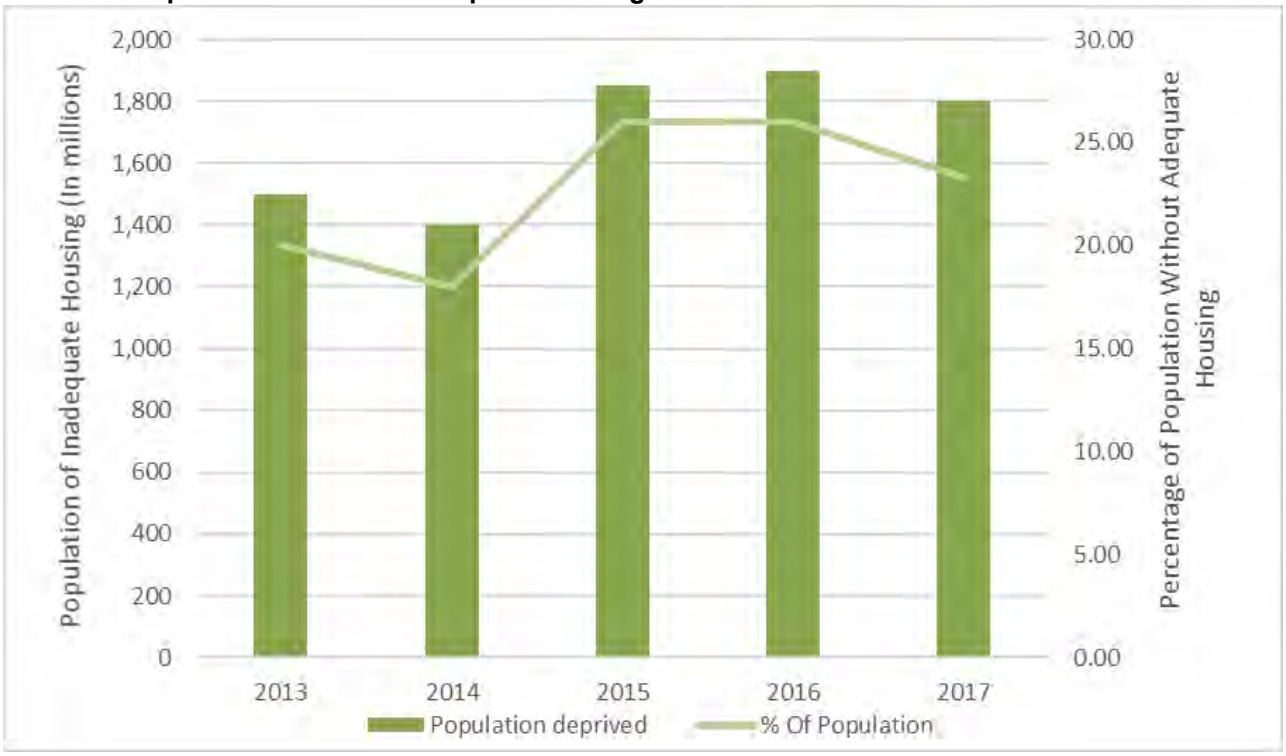
| Rank | Country | % Inadequate Housing (2017) | Population (In millions) |
|---|---|---|---|
| 1 | South Sudan | 90.8 | 9.9 |
| 2 | Niger | 88.5 | 19.1 |
| 3 | Ethiopia | 83.3 | 88.6 |
| 4 | Chad | 83.0 | 12.5 |
| 5 | Central African Republic | 73.1 | 3.4 |
| 6 | Burkina Faso | 71.8 | 13.8 |
| 7 | Somalia | 71.0 | 10.4 |
| 8 | Madagascar | 70.5 | 18.0 |
| 9 | Burundi | 70.0 | 7.6 |
| 10 | Mozambique | 69.0 | 19.8 |
| | **World** | **23.3** | **1,746** |

definition of inadequate housing is that the floor or the roof or both are made of rudimentary materials. Inadequate flooring is made of mud, clay, earth, sand or dung; while inadequate roofing occurs if a dwelling lacks a roof or wall or if either are constructed using rudimentary materials such as cane, mud, grass, thatch, bamboo, plastics, plywood, cardboard, etc. We obtained our data on *Access to Adequate Housing* from the Oxford Poverty & Human Development Initiative. Their database was started in 2010 and contains data ranging back to 2003. Their most recent data released in 2019 aggregated five measures of adequate housing and covered 105 countries

### *Global Trend*

Graph 3 compares the number and percentage of the world population who live in inadequate housing structures for 2013-2017. For the first three years of

**Graph 3: World Population That Lack Adequate Housing**




the trend we used *Access to Adequate Flooring*. Beginning in 2016 we are able to use the new indicator *Access to Adequate Housing* as our measure. Because of the change in indicators we make no comment on the overall trend except to note that there is a decline from 2016 to 2017. The new indicator for 2017 shows that about 23.3% of the global population continue to experience deprivation in housing, a 3% decrease from 26.3% in 2016.

### *International Distribution of Need*

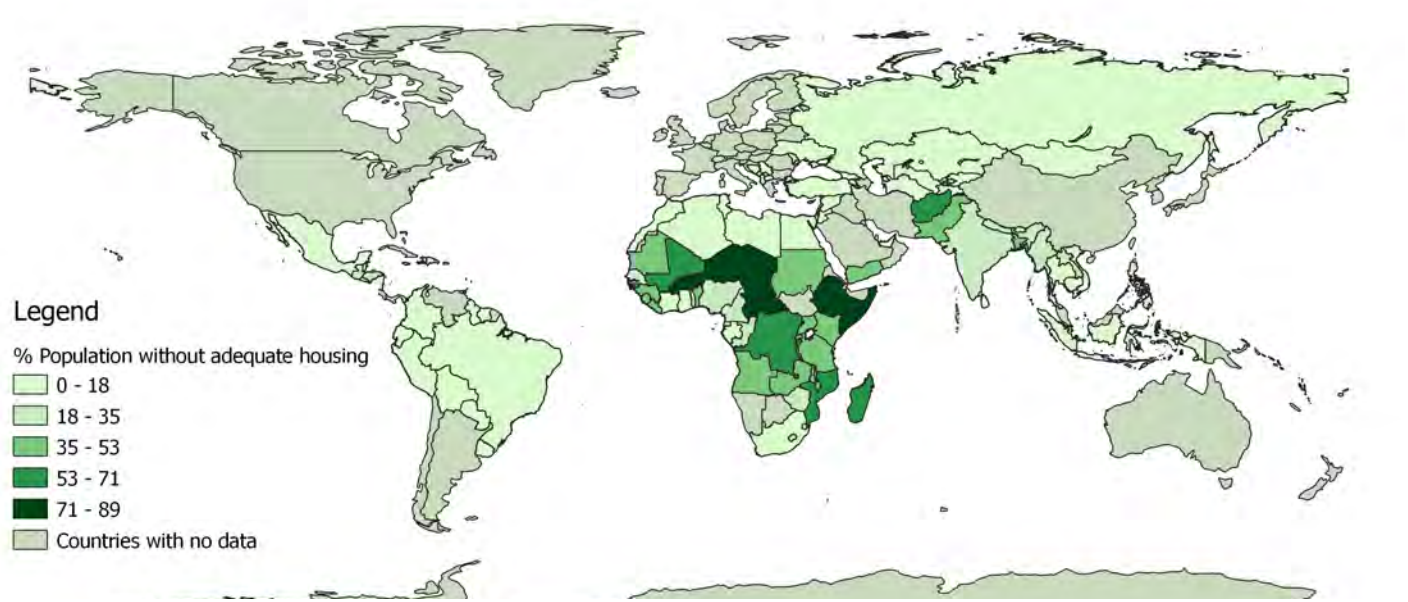
Table 3 is a list of the top ten most deprived nations with respect to access to adequate housing. All ten countries are located in Sub-Saharan Africa.

Figure 3 maps the percentage of a population with access to adequate housing. It can be seen that housing deprivation is highly concentrated in Sub-Saharan Africa.

### *UN Sustainable Development Goals*

Similar to water and food, we found that housing is strongly related to achieving several of the UN's Sustainable Development Goals. Regarding the first UN's Sustainable Development Goal of **No Poverty**, we found a significant statistical relationship between access to adequate housing and reduction in the percentage of the population below the poverty line. With respect to the third goal of achieving **Good**

**Figure 3: Map of the percentage of individuals with inadequate housing (2017)**




**Health**, we were able to show that access to housing is significantly related to a reduction in maternal and infant mortality rates. Related to the UN's sixth goal of **Clean Water and Sanitation**, we also found a positive and statistically significant relationship between access to housing and access to sanitation. And finally, we found that housing is significantly correlated with access to electricity which speaks to the seventh Sustainable Development Goal of **Affordable and Clean Energy.**

*(See Appendix B for more details regarding the statistical correlations between the Fordham Francis Index primary statistical measures and the UN Sustainable Development Goals.)*

## EMPLOYMENT

We estimate that in 2017 more than 2..42 billion people, or nearly 32.2% of the world's population, suffer from either the lack of employment or employment at a poverty wage of $3.20 or less per day, adjusted for purchasing power parity (PPP). We call this combined unemployment rate and poverty employment rate the *distressed labor rate*. From 2013 to 2017 the *distressed labor rate* for the world has been declining steadily.

The last material indicator selected by Pope Francis is employment. At his address to the UN in 2015, Pope Francis lists "dignified and properly remunerated employment" as one of the indicators representing "essential material and spiritual goods." According to Pope Francis, everyone needs the minimum spiritual and material means, not only to live in dignity, but to also create and support a family, the primary cell of any society. Employment with

"There is no worse material poverty...than the poverty which prevents people from earning their bread and deprives them of the dignity of work. - *Pope Francis, Address to the Centesimus Annus Pro Pontifice Foundation (May 2013)*

adequate compensation is required "to enable these real men and women to escape from extreme poverty [and become] dignified agents of their own destiny. "

In previous years' reports, we used the *unemployment rate* which is defined as the percent of the labor force that is not employed but actively seeking employment and willing to work, as our indicator. Since the 2019 report, in order to better meet the intention of the Pope for workers to also have properly remunerated work, we have combined the unemployment rate with the poverty employment rate to create what we call the *Distressed Labor Rate*.

The *Distressed Labor* Rate takes the total number of unemployed plus the total number of employed earning less than $3.20 PPP per day and divides that sum by the total number in the labor force, which includes employed and unemployed still looking for work. Following the practice of the International Labor Office (ILO) we use a maximum salary of $3.20 PPP per day to define employed workers who are receiving moderate and extreme poverty wages. It is argued that a minimum salary of $3.20 PPP per day will allow an individual's continued existence without assistance. Without assistance from community members, NGOs, or governments the lives of individuals earning less than $3.20 PPP per day may be at risk.

The data needed to construct the *Distressed Labor* Rate is available from the ILO covering 129 countries in 2017.

**Table 4 : Top Ten most deprived nations with respect to employment.**

| Rank | Country | Distressed Labor Rate (2017) | Population (in millions) |
|---|---|---|---|
| 1 | Burundi | 89.5 | 9.7 |
| 2 | Malawi | 88.5 | 15.6 |
| 3 | DR Congo | 87.7 | 71.4 |
| 4 | Somalia | 87.6 | 12.8 |
| 5 | Madagascar | 86.6 | 22.1 |
| 6 | Yemen | 86.2 | 3.8 |
| 7 | Central African Republic | 83.8 | 3.8 |
| 8 | Guinea-Bissau | 80.4 | 1.5 |
| 9 | Mali | 79.1 | 14.6 |
| 10 | Eritrea | 77.9 | 5.8 |
| | **World** | **32.2** | **2,420** |

### *Global Trend*

Graph 4 shows a downward trend in both the *Distressed Labor Rate* as well as in the world's population that lacks access to adequately remunerated employment.

### *International Distribution of Needs*

Table 4 lists the ten countries in the world with the highest reported *Distressed Labor Rates*. Nine of the worst performing countries are located in Sub-Saharan Africa. Figure 4 maps geographically the lack of access to adequately remunerated employment with higher concentrations in Africa, South Asia and the Middle East.

### *UN Sustainable Development Goals*

Similar to water, food, and housing we found that access to adequately remunerated employment is strongly related to achieving several of the UN's Sustainable Development Goals. Regarding the first UN's Sustainable Development Goal of **No Poverty**, we found a significant statistical relationship between access to adequately remunerated employment and reduction in the percentage of the population below the poverty line. Regarding the third goal of achieving **Good Health**, we were able to show that adequately

**Graph 4: Distressed Labor Rate of Adult Working Population**

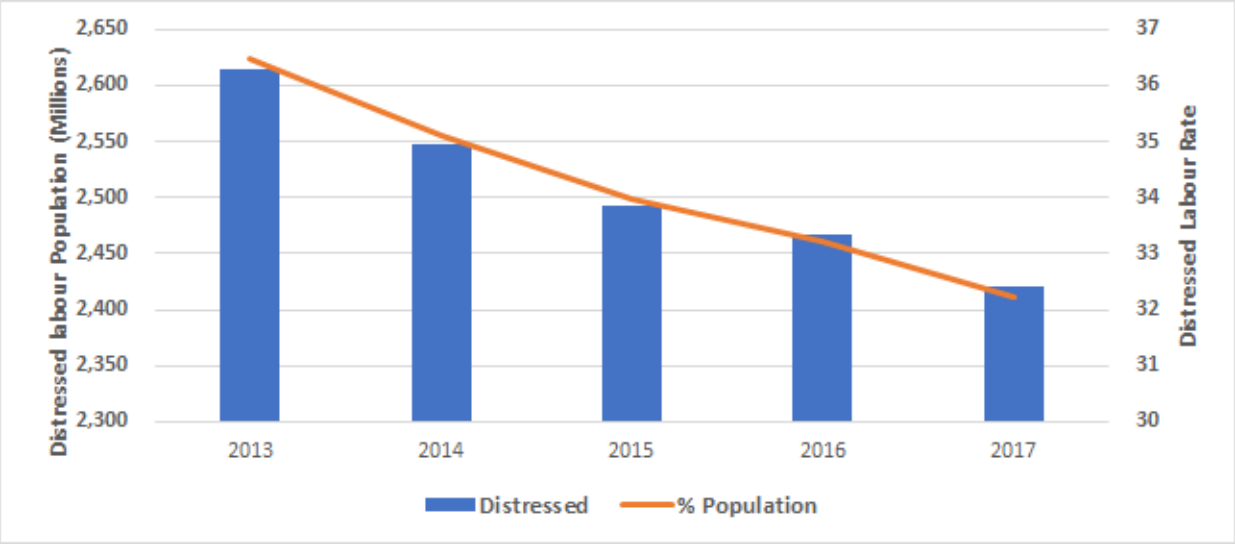
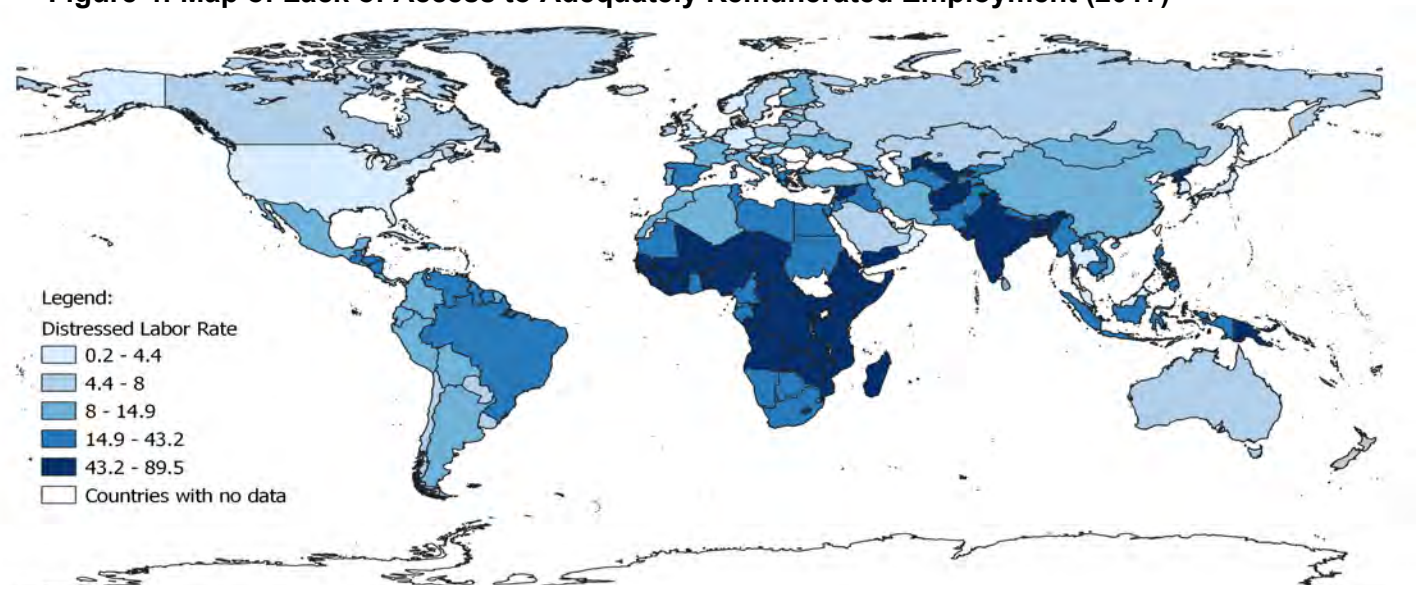


**Figure 4: Map of Lack of Access to Adequately Remunerated Employment (2017)**




remunerated employment is significantly related to maternal and infant mortality rates. Related to the UN's sixth goal of **Clean Water and Sanitation**, we also found a positive and statistically significant relationship between access to adequately remunerated employment and access to sanitation. We also found that good jobs have a significant relationship with access to electricity which speaks to the seventh Sustainable Development Goal of **Affordable** and Clean Energy. Lastly, related to the seventeenth goal of **Sustainable Development through Global Partnerships,** we found a statistically significant relationship between use of internet and access to adequately remunerated employment.

*(See Appendix B for more details regarding the statistical correlations between the Fordham Francis Index primary statistical measures and the UN Sustainable Development Goals.)*

# Spiritual Freedom Indicators

*In this section, we will review each of Pope Francis' indicators of spiritual freedom: education, religious freedom, and other civil rights (gender equity), respectively. We will describe the choice of statistics we used to measure each indicator, map its recent global trend, identify those areas of the world most lacking these basic spiritual needs, and then relate the successful provision of these basic spiritual freedoms to the achievement of some of the UN's Sustainable Development Goals.*

## EDUCATION

We estimate that at least 1.28 billion adults, or roughly 17.1 percent of the world's population, were illiterate in 2017, maintaining the trend of declining illiteracy in the last five years

Education is one of the key primary indicators chosen by Pope Francis to measure spiritual freedom. According to Pope Francis, human dignity and development cannot be imposed. Rather, "they must be built up and allowed to unfold for each individual, for every family, in communion with others, and in a right relationship with all those areas in which human social life develops." Education, similar to our other indicators of spiritual freedom, is a critical element that enables the poor to be "dignified agents of their own destiny."

"True education enables us to love life and opens us to the fullness of life."
*- Pope Francis, Address with Italian school teachers, parents, educators, pupils and other workers (May 2014)*

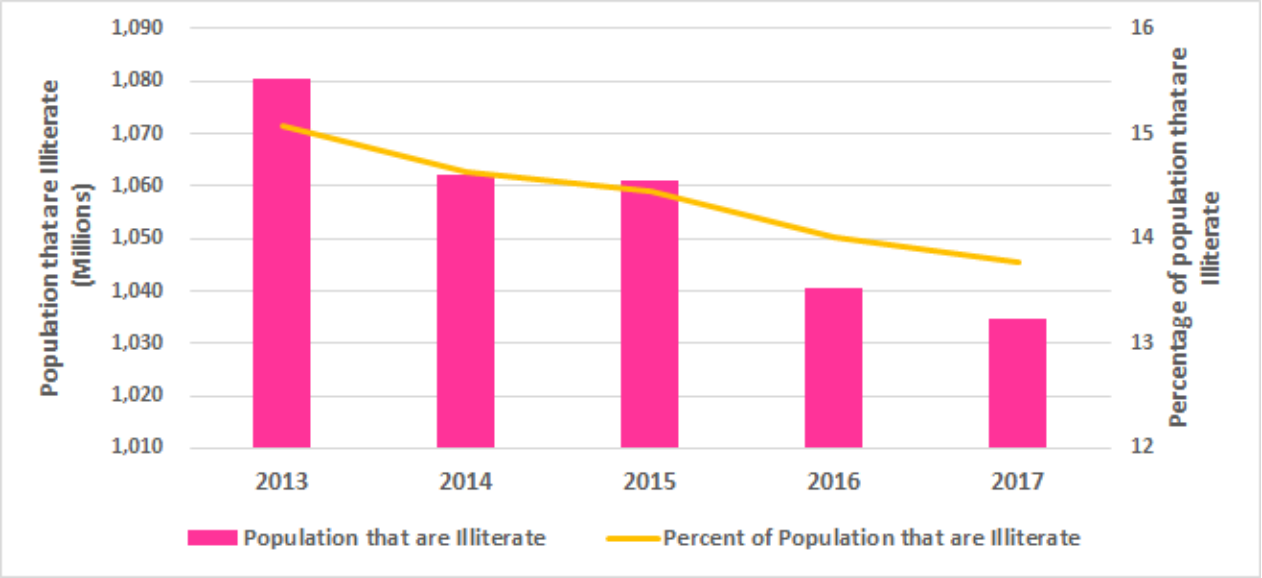
We chose the *adult literacy rate* as our statistic to measure a basic minimum level of education that should be available to all. The Adult Literacy Rate is formally defined as the percentage of the population age 15 and above who can read, write, and comprehend a simple statement about their everyday life.


UNICEF Thailand/2014/Thuentap

This measure captures how many individuals received a basic education that enables them to participate in the formal economy. This measure is not simply a performance measure like attendance at school or the completion of a set number of grades. Rather, it is an impact indicator measuring whether or not individuals have mastered basic reading skills. It measures the actual impact of the education provided.

The UN Educational, Scientific, and Cultural Organization (UNESCO) and the World Bank collect and monitor the reliability and accuracy of this measure. Data used for each country is the most recent available between 2010-2017. A total of 140 countries had data for this time period from UNESCO's database.

**Graph 5: World Population Illiteracy Rates**




Like water, food, housing and employment, it is easy to demonstrate empirically the importance of

### *Global Trend*

Graph 5 show the global trend in literacy rates from 2013 to 2017. Both the percentage and the absolute number of illiterate people have declined.

### *International Distribution of Needs*

Table 5 lists the ten countries with the lowest rates of adult literacy. Nine out of the ten countries with the lowest rates of adult literacy are in Africa. Afghanistan is the only country on this list located in Asia.

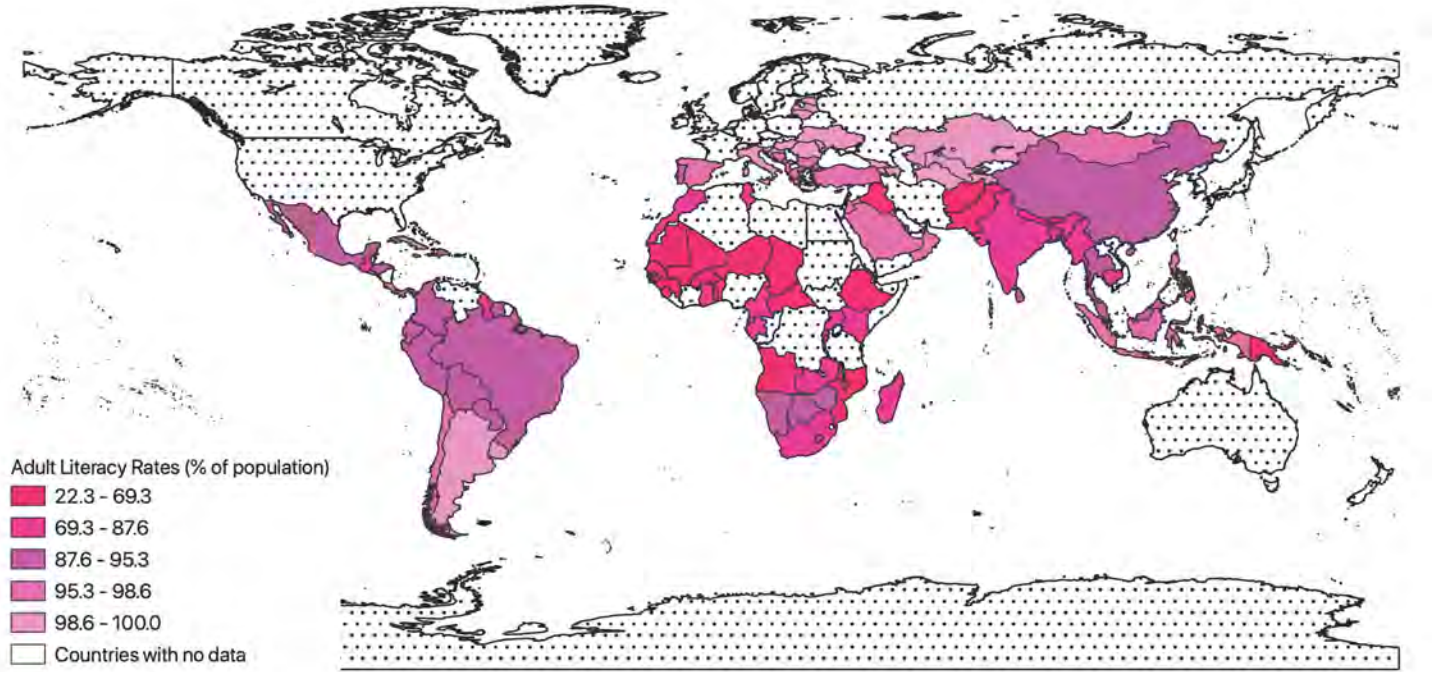
Figure 5 shows a map of adult literacy rates around the world in 2017. Countries with the lowest literacy rates are shaded in dark pink and seem to be concentrated in Africa and in South Asia.

### *UN Sustainable Development Goals*

**Table 5: Top ten most deprived nations with respect to education**

| Rank | Country | Illiteracy Rate (2017) | Population (In Millions) |
|---|---|---|---|
| 1 | Chad | 77.7 | 14.9 |
| 2 | Niger | 69.4 | 21.5 |
| 3 | Afghanistan | 68.3 | 35.5 |
| 4 | Guinea | 67.9 | 12.7 |
| 5 | Sierra Leone | 67.6 | 7.6 |
| 6 | Benin | 67.1 | 11.2 |
| 7 | Mali | 66.9 | 18.5 |
| 8 | Burkina Faso | 65.4 | 19.2 |
| 9 | Central African Republic | 63.2 | 4.7 |
| 10 | The Gambia | 58 | 2.1 |
| | **WORLD** | **13.8** | **1,035** |

**Figure 5: Map of adult literacy rates (2017)**




education. Regarding the first UN's Sustainable Development Goal of **No Poverty**, we were able to find a highly significant statistical relationship between adult literacy and the percentage of the population below the poverty line. And with regard to the third UN goal of achieving **Good Health**, we were able to show that adult literacy is highly significantly related to reductions in both infant and maternal mortality rates. Related to the UN's sixth goal of **Clean Water and Sanitation**, we also found a positive relationship between education and access to better sanitation. And finally, we found that education has a significant relationship with access to electricity which speaks to the seventh Sustainable Development Goal of **Affordable and Clean Energy.**

*(See Appendix B for more details regarding the statistical correlations between the Fordham Francis Index primary statistical measures and the UN Sustainable Development Goals.)*

## GENDER

For the year 2017, we estimate that 42.6% of women in the world or 1.59 billion women live in countries with severe discrimination against women. There appears to have been some limited progress since 2013.

In promoting civil rights to life, dignity, and development, Pope Francis emphasized that access to these rights must be inclusive. In his address to the UN, Pope Francis specifically stressed that girls should not be excluded from education. It is through exclusion and marginalization that many women

"All violence inflicted on women is a desecration of God."

*- Pope Francis, Homily for the New Year (January 1,2020)*

continue to suffer in poverty today.

Beginning with our 2019 report, we have chosen to use the Health and Survival Index reported in The Global Gender Gap Report (2017) produced by the World Economic Forum measuring missing women in 144 countries. The Index is based on two different factors: the female-over-male ratio at birth and the ratio of female-over-male healthy life expectancy. A value of 0.98 indicates that a country has closed the gender gap

We chose this index as it provides an overview of the differences between women's and men's health. Sex ratio at birth captures the phenomenon of "missing women", prevalent in many countries with a strong preference for boy children. The life expectancy measure provides an estimate of the number of years that women and men can expect to live in good health, taking into account the years lost to violence, disease, malnutrition and other relevant factors.


(c)UN Women/Ladi Eguche

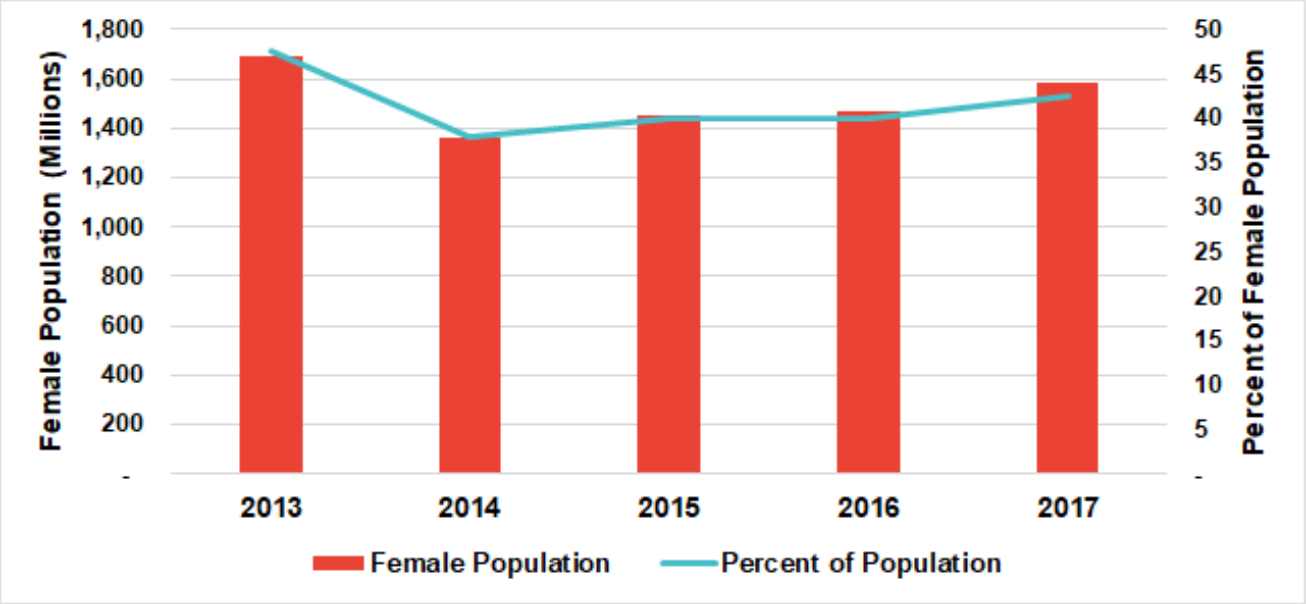
**Table 6: Top ten most deprived nations with respect to gender equality.**

| Rank | Country | Health and Survival Index |
|---|---|---|
| 1 | China | 0.918 |
| 2 | Armenia | 0.939 |
| 3 | Azerbaijan | 0.941 |
| 4 | India | 0.942 |
| 5 | Pakistan | 0.948 |
| 6 | Mali | 0.956 |
| 7 | Vietnam | 0.957 |
| 8 | Bhutan | 0.959 |
| 9 | Bahrain | 0.961 |
| 10 | Burkina Faso | 0.963 |
| | **Women Experiencing Gender Gap** | **1.59 Billion women** |

In the 2018 report, we used *the percentage of women who agree that a husband/partner is justified in beating his wife/ partner under certain circumstances* as a parameter for gender equality. A climate of violence against women can clearly marginalize and exclude women from their rights to life, dignity, and development. While this measure seems to capture Pope Francis' desire to promote basic needs, a new measure had to be sought given the unavailability of data for violence against women for succeeding years.

Previous work done by Fordham researchers in 2017 used the proportion of seats held by women in national parliaments. Women's access to the political process and policy-making may be key for the representation and empowerment of women. Additionally, extensive data exists to measure women political participation. We were concerned, however, that we were looking at a measure that reflected elite welfare and were diverging away from the Pope's

**Graph 6: Female Population Experiencing Gender Inequality**




emphasis on basic human needs and rights.

### *Global Trend*

In 2013, 80% of all countries had a score greater than 0.9658 for the Health and Survivor Index. We use this score as a benchmark. Women living in countries with scores at or below 0.9658 faced severe gender inequality by definition. Graph 6 plots the trend in global gender inequity from 2013 to 2017. There appears to be some improvement followed by a slight increase and stagnation since 2013 in the number of women as well as the percentage of all the world's women who live in countries that have a high survival and health gap between women and men.

### *International Distribution of Needs*

Table 6 highlights the 10 countries in 2017 that had the highest gender equity gaps. Most of these countries are in Asia and the Middle East.

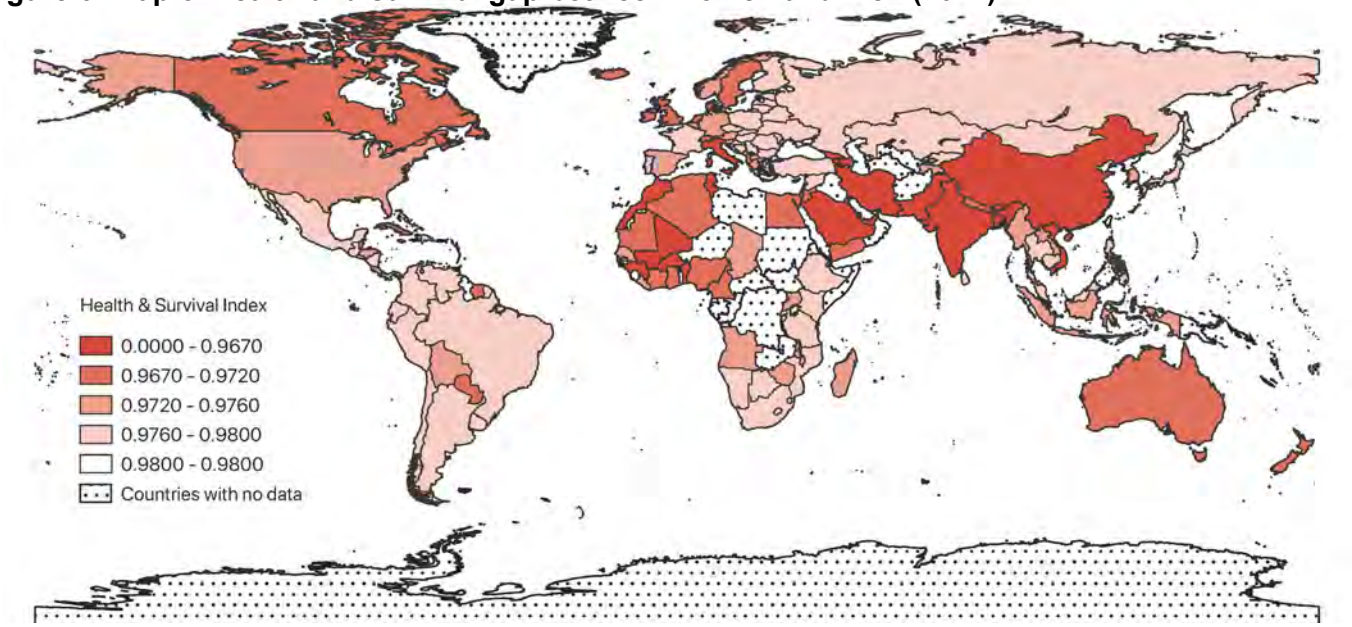
Figure 6 maps the geographical distribution of the health and survival gap between women and men in 2017. The map indicates that the darker the shade, the stronger the preference for boy children and/or the greater the survival of boy children relative to girl children. All of the countries in the lowest quintile are located in Central and South Asia, the Middle East and Africa.

### *UN Sustainable Development Goals*

The percentage health and survival gap between women and men is a direct measure of the fifth UN Sustainable Development Goal of **Gender Equality**.

*(See Appendix B for more details regarding the statistical correlations between the Fordham Francis Index primary*

**Figure 6: Map of health and survival gap between women and men (2017).**




*statistical measures and the UN Sustainable Development Goals.)*

## RELIGIOUS FREEDOM

In 2017 we estimated that more than 4.18 billion people lived in countries where religious freedom is severely restricted. Roughly 56% of the world's population live in countries that severely restrict religious freedom.

Pope Francis specifies that religious freedom is also among the absolute minimum requirements needed to live in dignity. Governments must protect the religious freedom of their citizens. Creating an environment suitable for religious freedom means ensuring each person, consistent with the common good, has the opportunity to act in accordance with his or her conscience. Religious freedom, similar to education and other civil rights such as gender equity, may be an important component in empowering the marginalized "to be dignified agents of their own destiny."

We used the *Government Restrictions Index (GRI)* from the Pew Research Center as our metric to measure religious freedom. We found this measure to be most suitable because it also accounts for the role of government institutions in promoting or deterring

> "Religious freedom certainly means the right to worship God, individually and in community, as our consciences dictate. But religious liberty, by its nature, transcends places of worship and the private sphere of individuals and families."
> *- Pope Francis, Meeting for Religious Liberty ( Sept. 2015)*

religious freedom.

The Pew Research Center compiles 20 measures of restrictions, including efforts by government to ban particular faiths, prohibit conversion, limit preaching, or give preferential treatment to one or more religious groups. The Pew Research Center employs extensive data verification checks and obtains its data from various government and independent sources giving us confidence that the Government Restrictions Index (GRI) is reliable, consistent and comprehensive.

For the year 2017, the Pew Research Center provided data covering 198 countries.

### *Global Trend*

In 2013, 80% of all countries had a score less than 5.2 on the government restriction index. We use this score as a benchmark. People in countries with scores at or above 5.2 face severe government restrictions on their religious freedom by definition. Graph 7

**Table 7: Top ten most deprived nations with respect to religious freedom**

| Rank | Country | Government Restrictions Index (2017) |
|---|---|---|
| 1 | China | 8.9 |
| 2 | Iran | 8.4 |
| 3 | Malaysia | 8.3 |
| 4 | Syria | 8.3 |
| 5 | Maldives | 8.2 |
| 6 | Russia | 8.1 |
| 7 | Algeria | 8 |
| 8 | Egypt | 8 |
| 9 | Uzbekistan | 8 |
| 10 | Indonesia | 7.9 |
| 10 | Turkmenistan | 7.9 |
| | **Bottom Quantile Population** | **4.18 Billion people** |

**Graph 7: World Population Experiencing Religious Restriction**

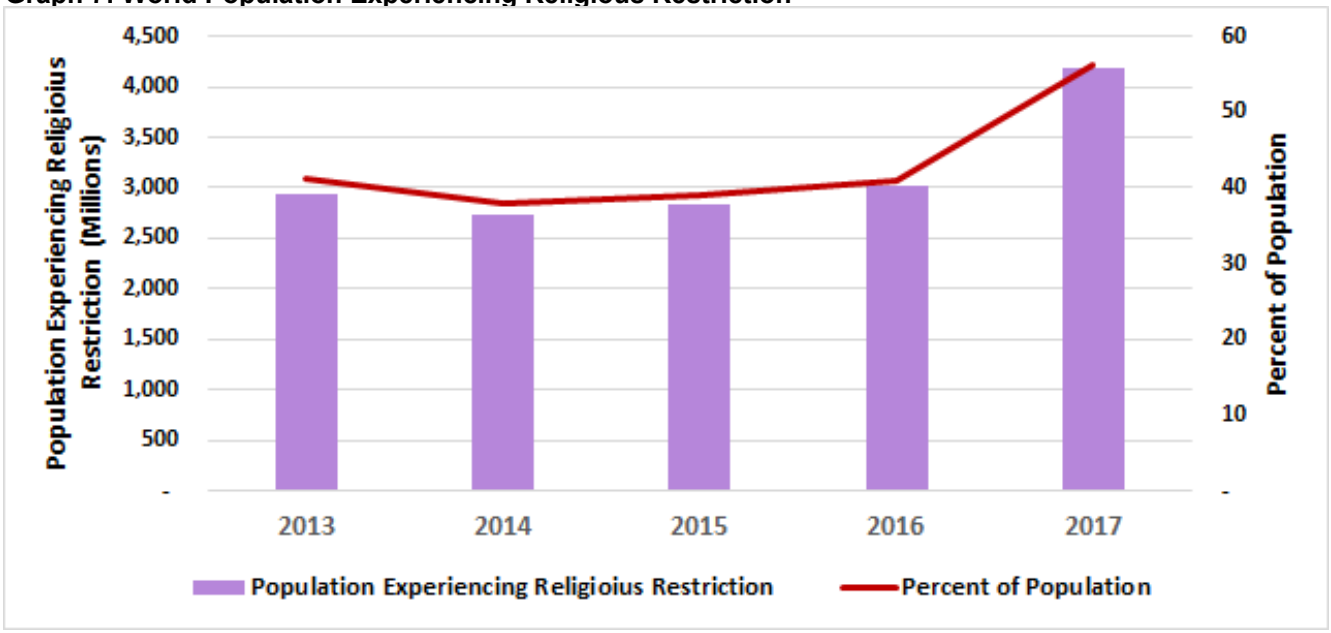
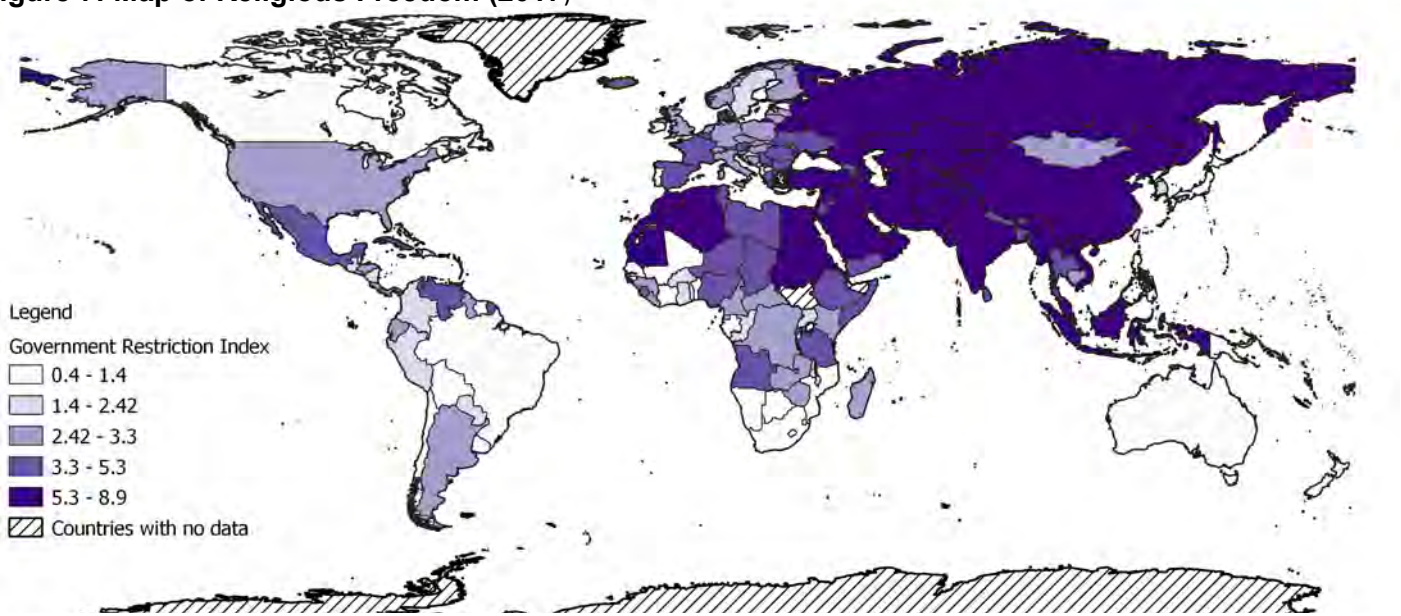


**Figure 7: Map of Religious Freedom (2017)**




illustrates the percentage of world population and the number of people experiencing severe restrictions in religious freedom by considering populations in countries that have a government restriction index of 5.2 or higher. Our analysis reveals that the number and the percentage of people affected by religious restrictions has been increasing since 2014.

### *International Distribution of Needs*

Table 7 highlights the top ten nations with the lowest levels of religious freedom. Of these countries, six are in Asia , two in the Middle East, two in North Africa and one in Europe.

Figure 7 is an international mapping of religious freedom for 2017. Lack of religious freedom, shown in the dark areas on the map, is concentrated in North Africa, the Middle East and in large parts of Asia.

Clearly, the geographical distribution of restrictions on religious freedom with its focus primarily on Asia, the Middle East, and North Africa, is very different from the concentration of material deprivation found primarily in Sub-Saharan Africa.

### *UN Sustainable Development Goals*

In analyzing the correlation of the UN Sustainable Development Goals with religious freedom, we found

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significant correlations with more press freedom under the sixteenth UN goal of **Peace, Justice and Strong Institutions.**

*(See Appendix B for more details regarding the statistical analyses between the Fordham Francis Index indicators and the UN Sustainable Development Goals.)*

# Correlation Matrix

While the seven primary indicators should be highly correlated with all important measures of development, ideally these seven indicators should also be independent from each other. As a rule of thumb, a correlation coefficient with an absolute value of 60% (0.60) or more is deemed high, meaning that the two indicators are correlated, either positively or negatively. We calculated the correlation coefficients for each pair of primary indicators. The results are presented in a correlation matrix in Table 8.

Boxes highlighted in yellow contain correlation coefficients that exceed the absolute value of 60% (0.60). Based on the correlations between our seven indicators over the last five reports, we have made some significant improvements in our measures. While we still have a number of correlations at 60% or above, we no longer have any correlations at 90% or above and we only have three correlations at 80% or above. Those high correlations at 80% or above show that housing, water, and employment strongly go together. Achieving success in one measure is significantly correlated with achieving success in the other two measures. One way to simplify the composite Fordham Francis Index (FFI) would be to drop two out of these three indices.

On the other hand, Gender Equity and Religious Freedom are not correlated with each other or with any of the other primary indicators. These two indicators therefore represent two entirely different perspectives on development and the measurement of global poverty. This result is important because one of the characteristics that makes the FFI unique is its inclusion and emphasis on civil rights, such as religious freedom and gender equity, as a means of measuring development. Other development indexes, such as economic income or the UN Human Development Index (HDI), exclude religious freedom and other political dimensions that are included in the FFI. By including religious freedom, gender equity and potentially other civil rights as important indicators of development, the Pope is urging us to study an under-explored area of analysis into the drivers of poverty and development.

Additionally, as can be seen in Appendix B, gender

**Table 8: Correlation Matrix – Correlation Coefficients of the Seven Primary Indicators in the FFI (2017)**

| | Water | Food | Housing | Employment | Education | Gender | Religious |
|---|---|---|---|---|---|---|---|
| Water | 1 | | | | | | |
| Food | -0.72 | 1 | | | | | |
| Housing | -0.86 | 0.65 | 1 | | | | |
| Employment | 0.80 | -0.66 | -0.86 | 1 | | | |
| Education | 0.53 | -0.33 | -0.62 | 0.60 | 1 | | |
| Gender | 0.08 | -0.15 | -0.01 | 0.10 | -0.01 | 1 | |
| Religious Freedom | 0.15 | -0.11 | -0.14 | 0.26 | -0.02 | 0.11 | 1 |

does not correlate to any of the other SDGs we have considered to date. While the other six indicators—water, food, housing, education, religious freedom and employment —all show strong correlation with multiple SDGs. This result suggests that our measure of gender may be pointing us to explore other dimensions of development not covered by the SDG's.

# FORDHAM FRANCIS INDEX

Our approach to computing the Fordham Francis Index is identical to the methodology employed by the United Nations Development Program in their calculation of the Human Development Index (HDI). Using the same approach assures that different implications between the indices are due to substantial differences in their components, such as our focus on basic needs both material and spiritual, and not simply due to technical differences in how we aggregated the various components.

Initially, we inverted our measures of food (from percent undernourished to percent nourished) and employment (from distressed labor rate to adequately remunerated employment rate), so that a higher number for all seven of our measures would represent a better outcome similar to the Human Development Index.

Then we standardized our seven primary statistical indicators of water, food, housing, employment, education, gender, and religious freedom so that they each yielded indices with values between 0 and 1 according to the following formula:

$$\textit{Primary Indicator Score} = \frac{(X - \textit{Min Theoretical Value of Statistic})}{(\textit{Max Value of Statistic} - \textit{Min Theoretical Value of Statistic})}$$

In line with best practice, the maximum values were set to the historical maximum observed within each dataset of the respective indicator. Meanwhile, the minimum values were set to the lowest observed value for each indicator within the existing dataset from 1990 (see appendix E for countries and year).

**Table 9: Measurement parameters for each indicator**

| | Minimum | Maximum |
|---|---|---|
| Water | 19 | 99 |
| Food | 71.5 | 2.5 |
| Housing | 90.8 | 0.02 |
| Employment | 0.23 | 89.7 |
| Education | 10.9 | 99.9 |
| Gender | 0.92 | 0.98 |
| Religious Freedom | 0.0 | 9.1 |

Next, we created a Material Well-being Index (MWI) by computing the geometric mean of the four normalized indices of water, food, housing, and employment according to the following formula:

$$\textit{Material Well-being Index} = \textit{Water}^{1/4} * \textit{Food}^{1/4} * \textit{Housing}^{1/4} * \textit{Employment}^{1/4}$$

It is important to note that equal weight was given to all four components when computing the Material Well-being Index (MWI).

Similarly, we created a Spiritual Freedom Index (SFI) by computing the geometric mean of the three normalized indices of education, gender equity, and religious freedom according to the following formula:

$$\textit{Spiritual Freedom Index} = \textit{Education}^{1/3} * \textit{Gender}^{1/3} * \textit{Religious Freedom}^{1/3}$$

As was the case with the Material Well-being Index, we gave equal weight to all three components when computing the Spiritual Freedom Index.

Finally, we computed Fordham's Pope Francis Global Poverty Index by calculating the geometric mean of the Material Well-being Index and the Spiritual Freedom Index according to the following formula:

***Fordham Francis Index =***

***Material Well-being Index$^{1/2}$ * Spiritual Freedom Index$^{1/2}$***

Again, we gave equal weight to both the Material Well -being Index and the Spiritual Freedom Index.

Data collected for each indicator were from 2017, except in the instance of food. The food measure is reported as a three-year average from 2015-2017. The year 2017 was selected for all other indicators as it was the most recent year that had a large number of available observations for all variables. That said, the Housing variable was the most limiting variable with only 107 observations which subsequently limits the dataset for our Material Well-being Index and consequently the Fordham Francis Index.

# Material Well-being Index

In order to provide a comparison between the Material Well-being Index (MWI) and the more conventional measures of poverty and deprivation, the Material Well-being Index (MWI) was regressed separately on *economic well-being*, measured as the *logarithm of Per Capita GDP*, and on the Human Development Index (HDI). The Human Development Index (HDI) expands our economic well-being measurement of human welfare by including an indicator of health (measured by life expectancy) and an indicator of knowledge (measured by the mean of actual and expected years of schooling). These two measures are in addition to a more traditional indicator of economic well-being measured by per capita gross national income. Our results indicate a strong statistical relationship of our Material Well-being Index (MWI) with both economic well-being and the Human Development Index (HDI) (Table 10). Additionally, $R^2$ values imply that 74% of the variation in values of the Material Well-being Index (MWI) is explained by economic well-being, while 83% is explained by the Human Development Index (HDI). The unexplained variation in Material Well-being Index (MWI) can be attributed to the additional indicators not considered by the former two indices. The graph in Figure 8 illustrates a positive relationship between the log of Gross Domestic Product (GDP) per capita and the MWI score. Transforming the data on the Gross Domestic Product (GDP) per capita into a logarithmic scale allows us to run a linear regression analysis. Countries are essentially ranked from low to high income.

**Table 10: Ordinary least squares regression results of the MWI and two commonly used poverty measures**

| Variables | Material Well-being | | Economic Interpretation |
|---|---|---|---|
| | Regression Coefficient (t-stat) | $R^2$ | |
| **Economic Well-being (GDP per Capita in log form)** | 0.47<br>(15.5) | 0.74 | A 1% increase in per capita income is associated with a 0.47% increase in the MWI |
| **Human Development Index** | 1.73<br>(20.1) | 0.83 | An increase in the HDI by .01 is associated to an increase of 0.0173 in the MWI |

An interpretation of the $R^2$ shows that GDP per capita explains 74% of changes in Material Well-being

Index as measured by Pope Francis' primary indicators. Other factors, such as government policy, can explain the remaining 26%. For instance, Cambodia and Zambia have similar levels of income, yet there is a large difference in their Material Well-being Index (MWI) scores (0.73 and 0.41, respectively). Zambia has significantly lower scores in nutrition, water, housing and employment compared to Cambodia, even though both have similar levels of income. The Fordham Francis Index ranks countries

**Figure 8: Regression results of the Material Well-being Index (MWI) and the log of GDP per capita**

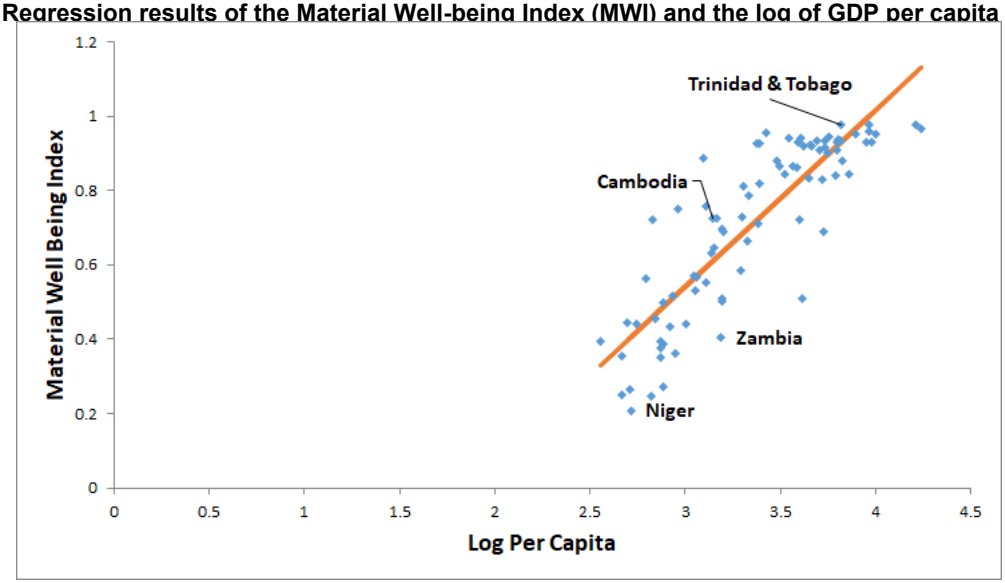
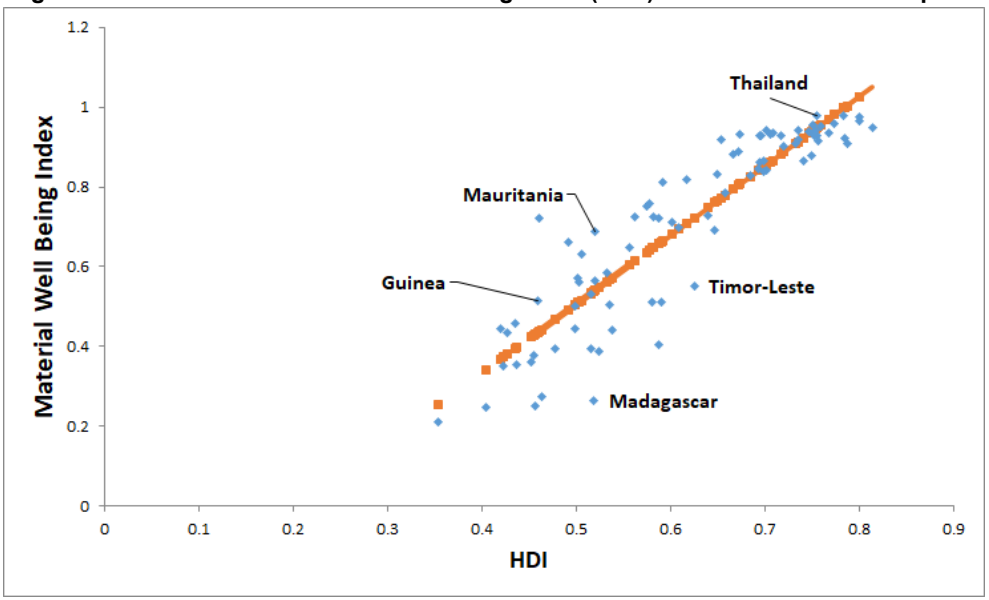



**Figure 9: Regression results of the Material Well-being Index (MWI) and the Human Development Index (HDI)**

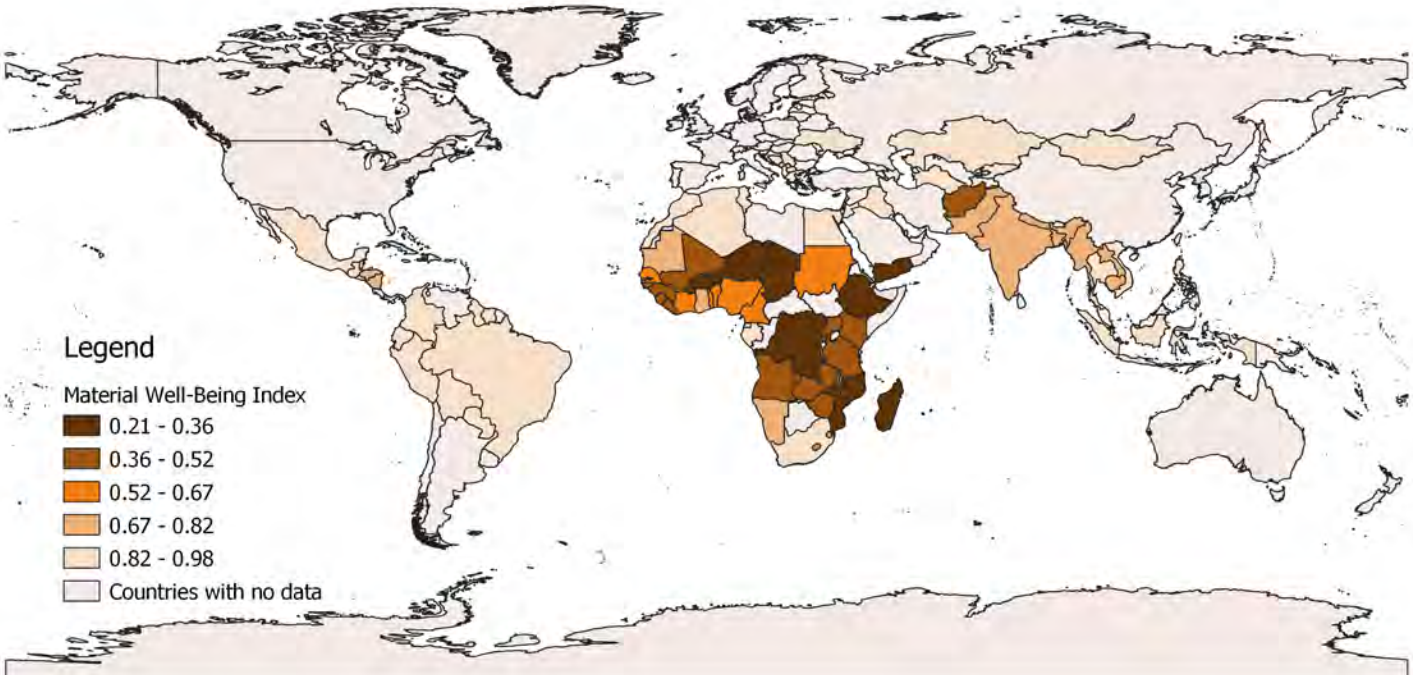


who use their economic resources to meet basic material needs higher than countries who may have the same level of resources but decide not to focus on the basic human needs of water, food, housing, and employment.

Similar to economic well-being, there is also a strong positive relationship between our Material Well-being Index (MWI) and the UN Human Development Index (HDI). The Material Well-being Index (MWI) scores are dispersed in countries with low to medium Human Development Index (HDI) (Figure 9). Interestingly, there are countries which are categorized in the Human Development Index (HDI) as low but may have high Material Well-being Index scores because of the priority they place on providing clean water, adequate food, basic housing, and employment. Take for example Mauritania which has a low Human Development Index (HDI) score of 0.52 but a Material Well-being Index of 0.69. Compare this to Madagascar which has similar levels of HDI (0.52) but has a low Material Well-being Index (MWI) score of 0.26. Madagascar`s low level of Material Well-being Index (MWI) score is primarily due to its low levels of housing, food and employment.

The map in Figure 10 highlights the geographical distribution of the Material Well-being Index scores across the sample of 86 countries. The lowest scores are largely distributed across Sub-Saharan Africa, while South American countries have relatively high Material Well-being Index scores.

**Figure 10: Material Well-being Index (2017)**



# Spiritual Freedom Index

In order to provide a comparison between the Spiritual Freedom Index (SFI) and alternative measures of development, the Spiritual Freedom Index (SFI) was also regressed with *economic well-being*, measured as the *logarithm of GDP per capita*, and the Human Development Index (HDI). The results indicate that there is a positive, but not statistically significant, relationship between our Spiritual Freedom Index (SFI) and economic well-being. We do find, however, a significant positive statistical relationship between our Spiritual Freedom Index (SFI) and the Human Development Index (HDI) (Table 11). The respective $R^2$ values of the regressions, however, imply that at most 8% of the variations in the Spiritual Freedom Index can be explains by changes in either economic well-being or in the Human Development Index. The large unexplained variations in our Spiritual Freedom Index (SFI) can be attributed to the additional dimensions of gender and religious freedom not considered by the other two poverty measures.

A low $R^2$ of only 6% indicates that Spiritual Freedom is weakly linked to Economic Well-being. For example, the Philippines and Azerbaijan have similar levels of per capita GDP, but have very different scores on our Spiritual Freedom Index (SFI). Philippines is an example of a country that does much better than countries with the same level of income, while Azerbaijan's overall score is pulled down primarily by its low score on the gender and religious freedom indicators. The results imply that high income does not necessarily translate into high spiritual freedom.

Furthermore, the Spiritual Freedom Index (SFI) is also weakly linked to the Human Development Index (HDI). The HDI only explains about 8% of the SFI. (Table 11).

There are many countries that are ranked low by the Human Development Index (HDI) that exhibit a high measure of spiritual freedom, while many countries ranked high or very high by the HDI exhibit a low measure of spiritual freedom. Burundi for instance, has a low HDI score, mainly because of its low per capita income and education indicators, but has a high Spiritual Freedom Index (SFI) score because of its high scores in gender and religious freedom. Conversely, Saudi Arabia has a high HDI score, but is doing poorly in terms of its Spiritual Freedom Index (SFI) score. While Saudi Arabia is performing well in terms of per capita income, they are among those

**Table 11: Ordinary least squares regression results of the SFI and three commonly used poverty measures**

| Variables | Spiritual Freedom | | Economic Interpretation |
|---|---|---|---|
| | Coefficient (t-stat) | $R^2$ | |
| GDP per Capita Log form | 0.08 (2.76) | 0.06 | A 1% increase in Per Capita GDP is associated with a .08% increase in the SFI |
| HDI | 0.36 (3.08) | 0.08 | A .01 increase in HDI is associated with a 0.0036 increase in SFI |

**Figure 11: Regression results of Spiritual Freedom Index (SFI) and the log of GDP per capita**

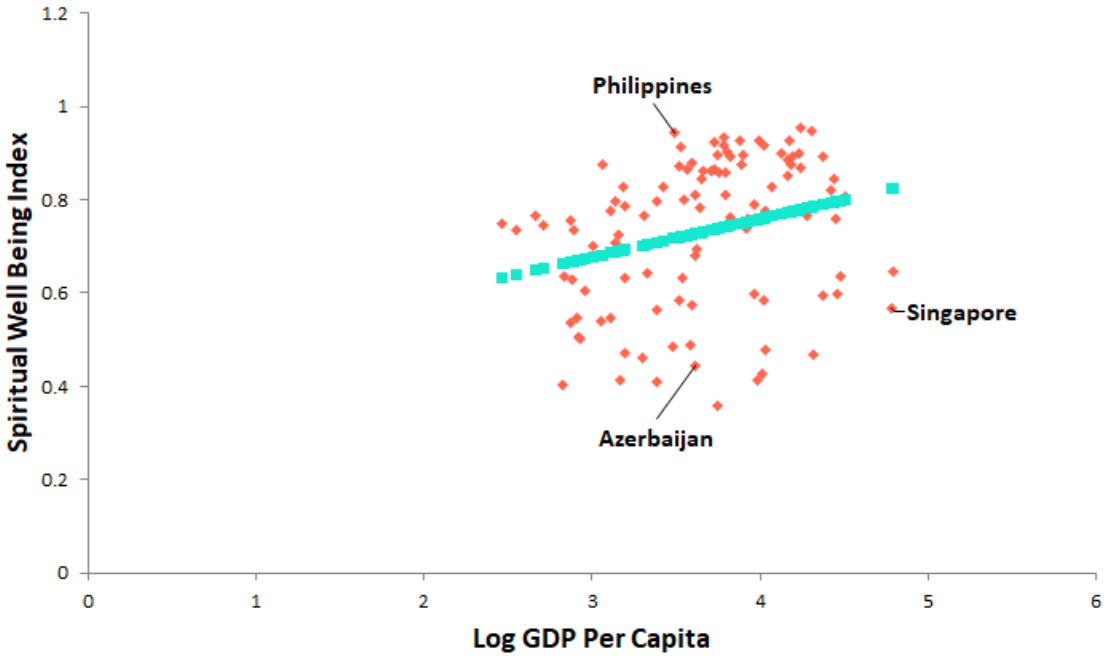



**Figure 12: Regression results of Freedom Index (SFI) and the Human Development Index**

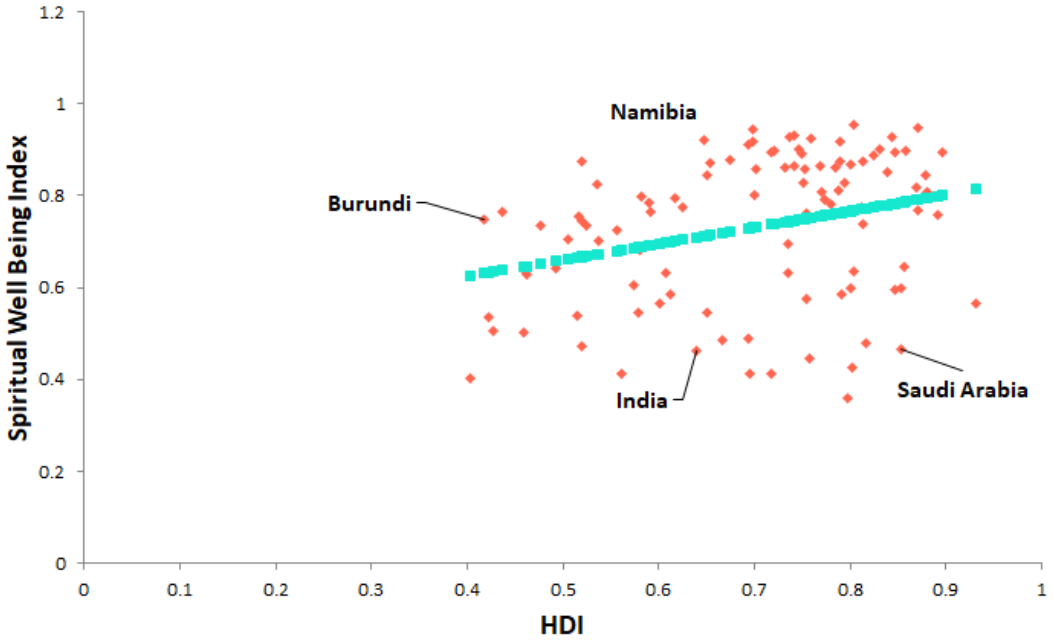
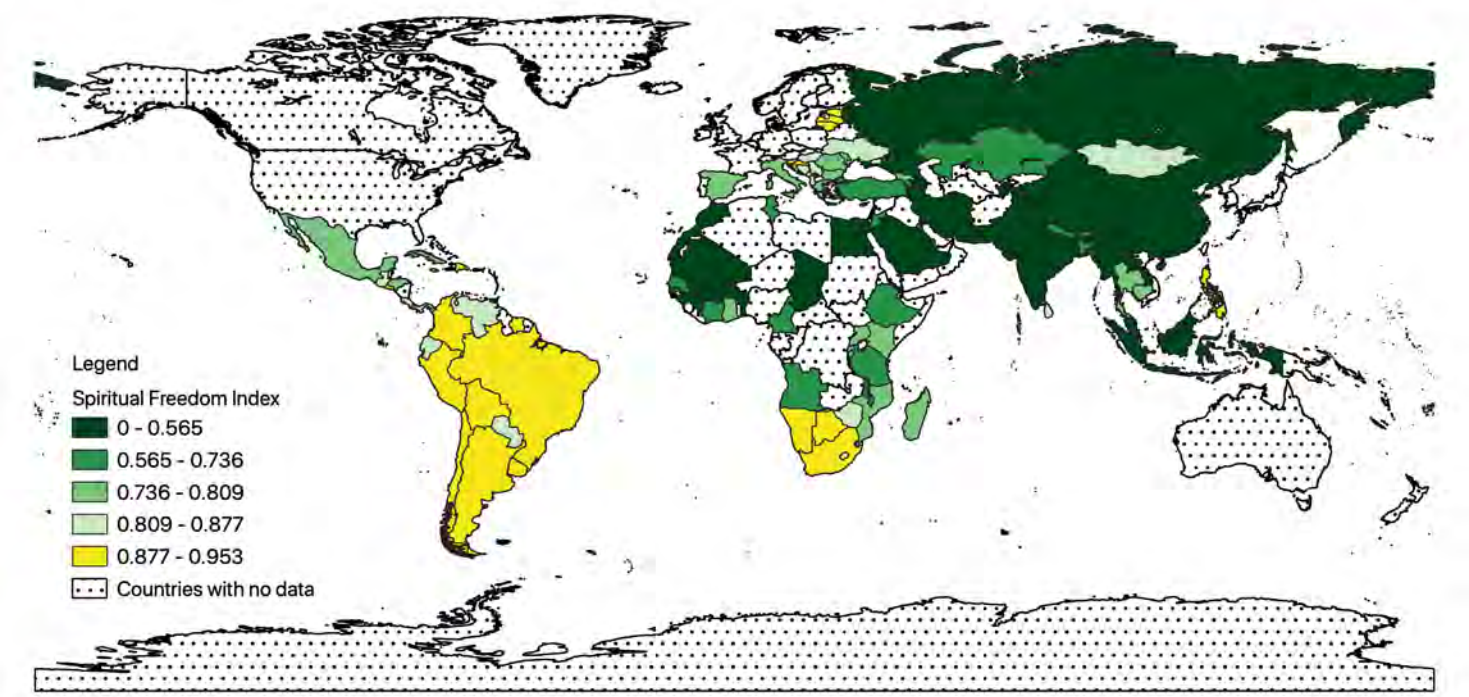


**Figure 13: Map of Spiritual Freedom Index (2017)**




countries with limited religious freedom. The map in Figure 13 highlights the geographical distribution of Spiritual Freedom Index scores across our sample of 102 countries. Our mapping shows that low SFI scores are largely concentrated around Asia, North and West Africa and the Middle East.

# Fordham's Pope Francis Global Poverty Index

The Fordham Francis Index (FFI) represents an equally weighted aggregation of the Material Well-being Index (MWI) and the Spiritual Freedom Index (SFI) by taking their geometric mean.

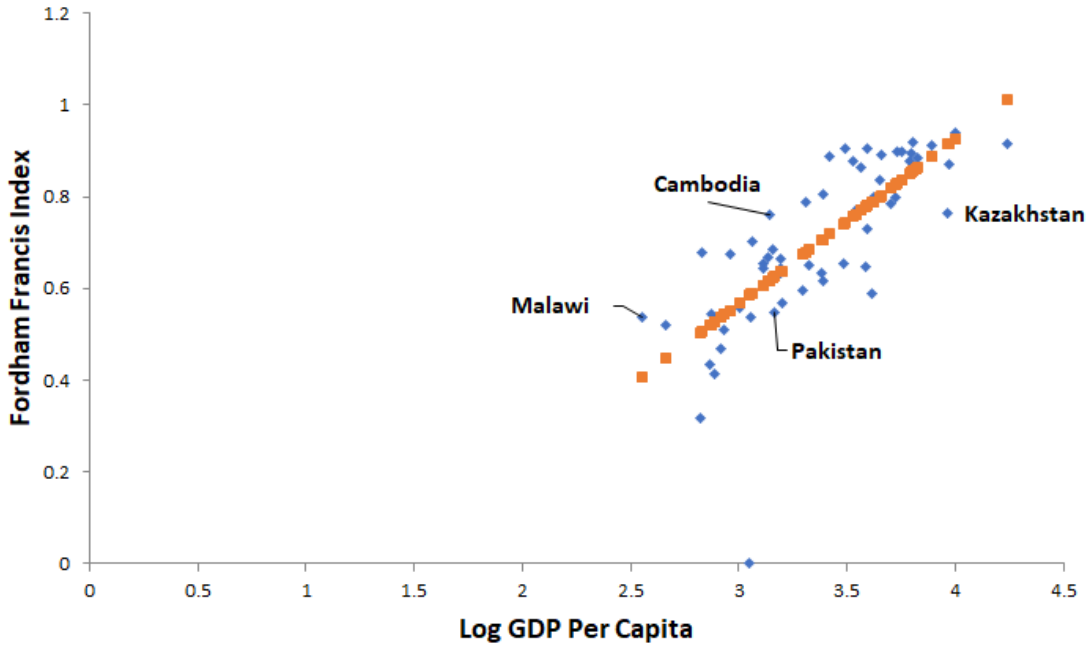
In order to provide a comparison between the Fordham Francis Index (FFI) and standard measures of poverty, the Fordham Francis Index (FFI) was regressed on economic well-being, measured as the *logarithm of GDP per capita*, and on the Human Development Index (HDI). The results indicate a strong statistical relationship of the Fordham Francis Index (FFI) with both economic well-being and the Human Development Index (HDI) (Table 12).

**Table 12: Regression results of the FFI and two commonly used poverty measures**

| Variables | Fordham Francis Index Coefficient (t-stat) | $R^2$ | Economic Interpretation |
|---|---|---|---|
| Economic Well-being | 0.36 (8.80) | 0.58 | A 1% increase in the log GDP per capita is associated with a 0.36% increase in Fordham Francis Index |
| HDI | 1.23 (10.01) | 0.64 | A .01 increase in HDI is associated with a 0.0123 increase in Fordham Francis Index |

Additionally, the $R^2$ values of the regressions imply that 57% and 64% of the variation in values of the

**Figure 14: Regression results of the Fordham Francis Index and the log of real GDP per capita**



Fordham Francis Index (FFI) can be explained by either economic well-being or the Human Development Index (HDI), respectively. The inability of the more traditional measures to be able to explain more than 2/3rd's of the variation in the FFI is due to the additional dimensions captured in the Fordham Francis Index (FFI). These additional dimensions represent its value added and are what makes this new index innovative, namely its focus on basic human needs as well as its inclusion of basic spiritual needs.

The graph in Figure 14 represents the positive relationship between economic well-being and the Fordham Francis Index (FFI). It indicates where countries stand in levels of deprivation pertaining to Pope Francis' seven primary indicators relative solely to their per capita GDP. One can notice countries with almost equal levels of economic well-being, that, nonetheless, have very different scores on the Fordham Francis Index (FFI). Looking closely at some of these pairs, one can see that the variation between scores measured by the Fordham Francis Index (FFI) primarily stem from the divergence in the spiritual primary indicators of literacy, gender equity in health and survival and religious freedom from government restrictions. Additionally, for countries at lower levels of economic well-being, there is also a divergence caused by differences in the material primary indicators of basic access to drinking water, adequate nutrition, adequate housing, and access to adequately remunerative employment. Some countries with the same level of economic resources focus more of their limited resources on providing basic needs such as clean water and adequate housing to the poorer groups in their society and therefore score significantly higher on the Fordham Francis Index (FFI).

**Figure 15: Regression results of the Fordham Francis Index and Human Development Index**

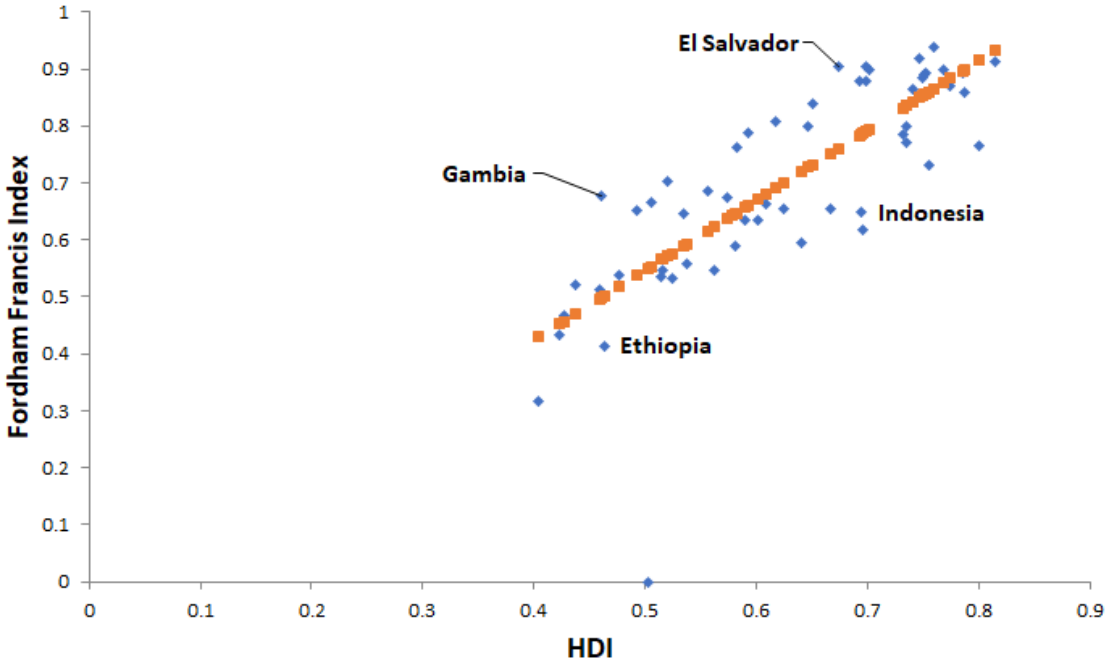
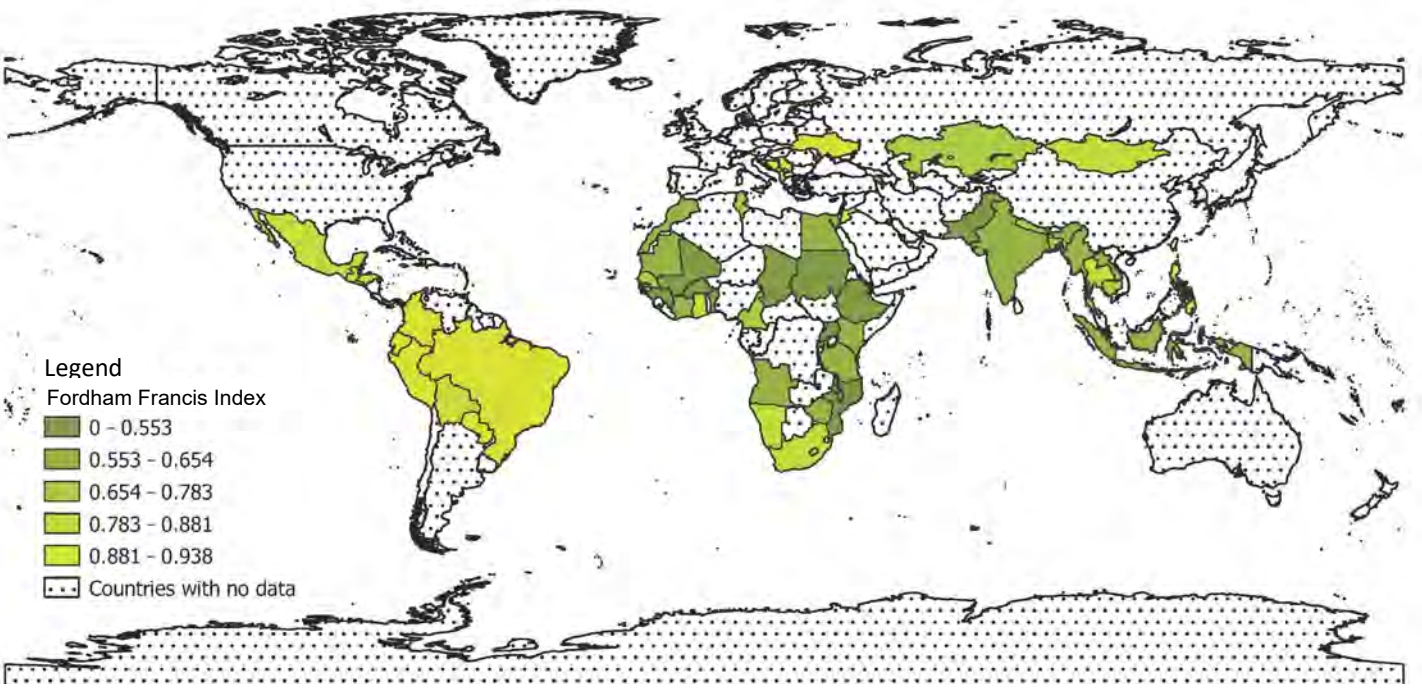


**Figure 16: Map of the Fordham Francis Index (2017)**




The graph in Figure 15 represents the relationship between the Fordham Francis Index (FFI) and the Human Development Index (HDI). It reveals disparities between the two poverty measurements. There are countries, with almost equal scores on the Human Development Index (HDI) that have significantly different scores on the Fordham Francis Index (FFI). Looking closely at some of these interesting pairs, one can see that the variation in Fordham Francis Index (FFI) scores between countries stems from the divergence in the spiritual freedom and most notably differences in religious freedom. But there are some countries at the lower levels of human development index where the variation in FFI scores is driven not by differences in religious freedom, but by differences in the provision of basic goods needed by the poor such as clean water, adequate nourishment , adequate housing, and adequately remunerative employment.

To summarize, unlike previous measures of human well-being, such as per capita GDP or the Human Development Index (HDI), the Fordham Francis Index (FFI) places a much larger emphasis on satisfying the basic needs of the poor as well as a stronger value on political freedoms and in particular religious freedom and gender equity.

The map in Figure 16 highlights the analysis done for 59 countries and shows that low Fordham Francis Index scores are largely concentrated in Africa and Asia.

# CONCLUSION

The Fordham Francis Index (FFI) is a multidimensional measure of international poverty inspired by Pope Francis' address to the United Nations General Assembly in 2015. In his address, Pope Francis identified four basic human needs as essential for a minimal level of material well-being. They were water, food, housing, and employment. Pope Francis also identified religious freedom, education, and other civil rights, such as gender equity, as the basic human needs essential for a minimal level of spiritual freedom.

### *Global Trend—Material Poverty*

In measuring material poverty, our **water indicator** shows improvement, but still more than 763.5 million people, or 10.2% of the world's population, lack basic access to drinking water. Our **food indicator**, on the other hand, reveals some recent deterioration. Roughly 780.9 million people, or 10.4% of the world's population, are undernourished. And our **housing indicator shows** that nearly 1.75 billion people, or 23% of the world's population, live in sub-standard **housing**. Finally, our **employment indicator** has been improving , but still nearly 2.42 billion people, or 32% of the world's population, lack access to remunerated employment of at least $3.20 per day.

### *Global Trend—Spiritual Poverty*

In measuring spiritual poverty, our **education indicator** shows improvement, but still an estimated 1 billion people, or 13.8% of the world's population, is illiterate. While our **gender indicator** has been stagnant and reveals that roughly 1.6 billion women, about 42.6% or nearly half of the women in the world, live in countries where the health and survival outcomes for women are significantly less than for men. And finally our **religious** freedom indicator has worsen and shows that 4.2 billion people, which is about 46% of the world's population, live in countries where governments severely restrict religious freedom.

### *Geographical Dispersion of Poverty*

Geographically we found that material deprivation is highly concentrated in Sub-Saharan Africa, while spiritual deprivation, especially the lack of religious freedom, is more predominant in Asia.

### *A Simple Tool to Measure Global Poverty*

The Fordham Francis Index (FFI) is a simple tool. It relies on only seven indicators. It attempts to identify appropriate measures for each of Pope Francis' seven basic human needs. We believe that the statistics we use to measure water (percentage of a population using an improved drinking water source), food (prevalence of undernourishment), housing (access to adequate housing), education (illiteracy) and religious freedom (Pew Center's Government Restrictions Index) are very good. They adequately represent the perspective expressed by Pope Francis in his UN Address. The data is collected, reviewed, and

Do we favor the basic needs of the poor?


published by respected international organizations yielding credible and easily obtainable datasets on the internet. Finally, these statistics consistently cover a large number of countries on a regular basis.

We were not satisfied with our previous measures of gender equity and have attempted to utilize a new measure of gender equity, *the health and survival gap between men and women*. Our initial measure of gender equity in 2016, the parity between literacy between girls and boys, was extremely correlated at 90% with our measure of education (illiteracy), meaning that it added little additional information to the Fordham Francis Index. In 2017, we then attempted to use a statistic that measures women's political participation at the national level. Again we were not satisfied with this measure since we felt that it did not adequately express Pope Francis' vision. We felt that it was more a measure of the welfare of elite women and perhaps not directly reflective of the welfare of women living at the margins of our societies. In 2018, we chose a

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measure focused on domestic violence. We liked this measure very much; but, unfortunately, this data is not available on a regular basis. In 2019, we chose a statistic that measures the gender gap in health and survival. The measure should capture disparities in opportunities in health, quality of living, and even the impact of violence on survival. However, this indicator had no significant correlations with any of the SDGs' targets that we have so far considered. We are not sure if we should consider another measure of gender disparity.

We were previously not satisfied with our measure of employment, the unemployment rate, for two reasons. First, we have found that so far it simply did not correlate well with other measures of the UN's Sustainable Development Goals (SDGs). Second, we were concerned that it did not adequately reflect the focus of Pope Francis on the most marginalized. In his UN Address, he was not only concerned with the availably of jobs but also with the quality of

employment. In 2019, we chose the distressed labor rate which captures not only the unemployed but also those employed at below poverty wages and are therefore unable to sustain a decent standard of living. Our new measure of employment is more in line with Pope Francis's intentions and is correlated with a number of SDGs' targets.

### *A Broad Measure of Global Poverty*

The Fordham Francis Index (FFI) is also a broad measure of global poverty. Its indicators are related to many of the UN's Sustainable Development Goals (SDGs). To date we have documented a strong correlation between many of the FFI indicators and various SDG targets such as poverty reduction, improved health, and better sanitation. We found that Religious Freedom is closely associated with Press Freedom.

### *An Innovative Measure of Global Poverty*

To see how the Fordham Francis Index (FFI) is innovative compared to other measures such as Per Capita Income and the UN Human Development Index (HDI), we aggregated our statistical measures into a material well-being index, a spiritual freedom index, and an overall Fordham Francis Index. We found that the Fordham Francis Index (FFI) is unique in two ways.

First, when compared to other measures of poverty such as per capita income and the Human Development Index, the FFI has a stronger emphasis on meeting basic human needs and therefore favors outcomes that benefit the poor. We are able to use the FFI to identify numerous countries with similar resources that either outperform or underperform their peers in meeting the basic human needs of the poor. In the future, we hope to discern patterns that might explain why some countries are better able to serve the poor than other countries with similar resources.

Second, besides including indicators of material well-being, the FFI also includes indicators of spiritual freedom. These spiritual indicators, such as education, the civil rights of religious freedom, and gender equity, may play an important role in empowering the marginal to be champions of their own causes.

The development of a simple technical instrument of verification like the Fordham Francis Index (FFI) can also empower civil society to carry out their own oversight responsibilities. They can use the FFI to evaluate the efforts of national and international governmental agencies as well as other national and international actors to promote integral human development through the proper attainment of the UN's Sustainable Development Goals (SDGs). The FFI is designed to help answer two key questions. Do our actions favor the basic needs of the poor? Do our actions enable the poor to become "dignified agents of their own destinies"?

# APPENDICES

## APPENDIX A: VARIABLE DEFINITIONS & SOURCES

| Variable | Definition |
|---|---|
| **Level of Poverty** | Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population): Poverty headcount ratio at $1.90 a day is the percentage of the population living on less than $1.90 a day at 2011 international prices. As a result of revisions in PPP exchange rates, poverty rates for individual countries cannot be compared with poverty rates reported in earlier editions.<br>- World Bank<br>- http://iresearch.worldbank.org/PovcalNet/index.htm |
| **Maternal Mortality** | Maternal mortality ratio is the number of women who die from pregnancy-related causes while pregnant or within 42 days of birth per 100,000 live births in a given year.<br>- World Bank<br>- http://data.worldbank.org/indicator/SH.STA.MMRT |
| **Infant Mortality** | Infant mortality rate is the number of infants dying before reaching one year of age, per 1,000 live births in a given year.<br>- World Bank<br>- https://data.worldbank.org/indicator/SP.DYN.IMRT.IN |
| **Incidence of TB** | Measured as the estimated incidence (all forms) per 100,000 population<br>- WHO<br>- http://www.who.int/tb/en/ |
| **Sanitation** | Percentage of population who use an adequate/improved sanitation facility. A sanitation facility is considered adequate/improved if it hygienically separates human excreta from human contact. The types of technology that are likely to meet this criterion are: flush to piped sewer system ; flush to septic tank; flush/pour flush to pit; composting toilet; ventilated improved pit (VIP) latrine; pit latrine with a slab<br>- WHO/UNICEF Joint Monitoring Programme ( JMP ) for Water Supply and Sanitation<br>- https://washdata.org/data |

| | |
|---|---|
| **Corruption** | Measured by Transparency International to rank countries by their perceived levels of corruption, as determined by expert assessments and opinion surveys. Measured from 0 (highly corrupt) to 100 (very clean).<br>- Transparency International<br>- http://www.transparency.org/cpi2014/results |
| **Press Freedom** | Measured as 0 to 100, with 100 as worst/least free<br>- Reporters Without Borders<br>- https://rsf.org/en/detailed-methodology |
| **Income Inequality** | Inequality in income is a distribution based on data from household surveys estimated using the Atkinson inequality index.<br>-UNDP Human Development Index<br>- http://hdr.undp.org/en/indicators/101706 |
| **Water Indicator: Percentage of population who drink improved drinking water.** | Basic access to drinking water services refers to drinking water from an improved source, provided collection time is not more than 30 minutes for a roundtrip including queuing. Improved drinking water sources are those that have the potential to deliver safe water by nature of their design and construction, and include: piped water, boreholes or tube wells, protected dug wells, protected springs, rainwater, and packaged or delivered water<br>- WHO/UNICEF Joint Monitoring Programme ( JMP ) for Water Supply and Sanitation<br>- https://washdata.org/data<br>- Data Download Date: June 20, 2019 |
| **Food Indicator: Prevalence of Undernourishment** | The percentage of the population that is continuously unable to consume enough food to meet dietary energy requirements<br>- Food and Agriculture Organization (FAO)<br>- http://faostat.fao.org/beta/en/#data/FS |
| **Housing Indicator: Access to Adequate Housing** | The percent of the population with access to adequate housing. The definition of inadequate housing is that the floor or the roof or both are made of rudimentary materials. Inadequate flooring is made of mud, clay, earth, sand or dung; while inadequate roofing occurs if a dwelling lacks a roof or wall or if either are constructed using rudimentary materials such as cane, mud, grass, thatch, bamboo, plastics, plywood, cardboard, etc.<br>- Oxford Poverty & Human Development Initiative<br>- http://www.ophi.org.uk/multidimensional-poverty-index/mpi-resources/#2015resources |

| | |
|---|---|
| **Employment Indicator:**<br>**Distressed Labor Rate** | The Distressed Labor Rate refers to the percentage of the working age population who are able to work but are unemployed or who are employed but earning less than $3.20 PPP per day and are unlikely to meet their basic needs without assistance. Data on working age population, unemployed and the employed earning poverty wages below $3.20 PPP per day can be found at:<br>- International Labor Organization<br>- http://ilo.org/ilostat |
| **Education Indicator:**<br>**Adult Literacy Rate** | The proportion of the adult population aged 15 years and over that is literate. This unit of measurement is expressed as a percentage (%). This indicator provides a measure of the stock of literate persons within the adult population who are capable of using written words in daily life and to continue to learn. It reflects the accumulated accomplishment of education in spreading literacy. Any shortfall in literacy would provide indications of efforts required in the future to extend literacy to the remaining adult illiterate population.<br>- UNESCO/World Bank<br>- http://databank.worldbank.org/data/reports.aspx?source=2&series=SE.ADT.LITR.ZS&country=# |
| **Gender Indicator:**<br>**Health and Survival Index** | The Index is based on two different factors: sex ratio at birth (converted to female-over-male ratio) and ratio of female healthy life expectancy over male healthy life expectancy<br>- Gender Gap Report of World Economic Forum<br>- http//reports.weforum.org/global-gender-gap-report-2016/ |
| **Religious Freedom Indicator:**<br>**Government Restrictions Index** | The Government Restrictions Index (GRI) measures on a 10-point scale government laws, policies and actions that restrict religious beliefs or practices. The GRI is comprised of 20 measures of restrictions, including efforts by governments to ban particular faiths, prohibit conversions, limit preaching or give preferential treatment to one or more religious groups.<br>- Pew Research Center<br>- http://www.pewforum.org/2016/06/23/trends-in-global-restrictions-on-religion/ |

# APPENDIX B: CORRELATION COEFFICIENTS BETWEEN THE SEVEN INDICATORS IN THE FFI AND SEVERAL TARGETS OF THE UN SUSTAINABLE DEVELOPMENT GOALS

**** Strong correlations above 60% are highlighted in yellow.***

| SDG Targets | Primary Indicators | | | | | | |
|---|---|---|---|---|---|---|---|
| | Water | Food | Housing | Employment | Education | Gender | Religious Freedom |
| ***SDG 1: No Poverty*** | | | | | | | |
| Percent of Population below the Poverty Line | -0.67 | 0.66 | 0.7 | -0.88 | -0.67 | -0.11 | -0.19 |
| ***SDG 3: Good Health*** | | | | | | | |
| Maternal Mortality | -0.67 | 0.62 | 0.74 | -0.76 | -0.8 | -0.12 | -0.09 |
| Infant Mortality | -0.69 | 0.65 | 0.72 | -0.75 | -0.79 | -0.19 | -0.03 |
| Incidence of TB | -0.46 | 0.51 | 0.32 | -0.47 | -0.3 | 0.03 | -0.15 |
| ***SDG 6: Clean Water and Sanitation*** | | | | | | | |
| Access to Sanitation | 0.75 | -0.63 | -0.77 | 0.76 | 0.74 | 0.12 | 0.19 |
| ***SDG 7: Affordable and Clean Energy*** | | | | | | | |
| Electricity (% of population) | 0.75 | -0.79 | -0.84 | 0.84 | 0.67 | 0.04 | 0.14 |
| ***SDG 8: Decent work and Economic Growth*** | | | | | | | |
| GDP per capita Growth Rate | 0.13 | -0.15 | -0.12 | 0.1 | 0.02 | -0.04 | 0.06 |
| Percentage of population with an account at a financial institution | 0.60 | -0.171 | 0.311 | -0.61 | 0.088 | 0.1 | -0.134 |
| ***SDG 10: Reduced Inequalities*** | | | | | | | |
| Income Inequality | -0.2 | 0.33 | 0.01 | -0.05 | -0.05 | 0.13 | -0.18 |
| ***SDG 15: Life On Land*** | | | | | | | |
| Red List Index | -0.081 | -0.59 | -0.08 | 0.07 | -0.46 | 0.03 | 0.057 |
| ***SDG 16: Peace, Justice, and Strong Institutions*** | | | | | | | |
| Corruption Index (0-100, 100 very clean) | 0.54 | -0.54 | -0.36 | 0.42 | 0.36 | 0.07 | -0.25 |
| Press Freedom (0-100, 100 less free) | -0.23 | 0.21 | 0.03 | -0.02 | 0 | -0.36 | 0.61 |
| Unsentenced detainees as a proportion of overall prison population | -0.1 | 0.15 | -0.07 | -0.05 | -0.22 | -0.03 | -0.23 |
| ***SDG 17: Sustainable development through global partnerships*** | | | | | | | |
| Percentage of population using the internet | 0.77 | 0.104 | 0.018 | -0.83 | 0.209 | 0.011 | 0.018 |

# Appendix C: Ten Lowest Ranked Countries: MWI and SFI

| Rank | Country name | Material Index | Water | Food | Housing | Employment |
|---|---|---|---|---|---|---|
| 1 | Niger | 0.21 | 0.39 | 0.80 | 0.24 | 0.03 |
| 2 | Chad | 0.25 | 0.25 | 0.49 | 0.36 | 0.09 |
| 3 | Democratic Republic of the Congo | 0.25 | 0.31 | 0.45 | 0.11 | 0.25 |
| 4 | Madagascar | 0.26 | 0.44 | 0.39 | 0.12 | 0.22 |
| 5 | Ethiopia | 0.27 | 0.28 | 0.74 | 0.32 | 0.08 |
| 6 | Burkina Faso | 0.35 | 0.36 | 0.75 | 0.27 | 0.21 |
| 7 | Mozambique | 0.35 | 0.46 | 0.63 | 0.22 | 0.24 |
| 8 | Yemen | 0.36 | 0.56 | 0.47 | 0.13 | 0.50 |
| 9 | Guinea-Bissau | 0.38 | 0.60 | 0.63 | 0.19 | 0.28 |
| 10 | Rwanda | 0.39 | 0.49 | 0.50 | 0.22 | 0.42 |

| Rank | Country | Spiritual Index | Education | Gender | Religious Freedom |
|---|---|---|---|---|---|
| 1 | Iran, Islamic Rep. | 0.36 | 0.84 | 0.08 | 0.72 |
| 2 | Chad | 0.40 | 0.13 | 0.57 | 0.90 |
| 3 | Egypt, Arab Rep. | 0.41 | 0.68 | 0.12 | 0.85 |
| 4 | Pakistan | 0.41 | 0.54 | 0.27 | 0.47 |
| 5 | Maldives | 0.41 | 0.99 | 0.10 | 0.72 |
| 6 | Malaysia | 0.43 | 0.93 | 0.09 | 0.95 |
| 7 | Azerbaijan | 0.45 | 1.00 | 0.25 | 0.35 |
| 8 | India | 0.46 | 0.66 | 0.41 | 0.37 |
| 9 | Saudi Arabia | 0.47 | 0.95 | 0.14 | 0.75 |
| 10 | Mauritania | 0.47 | 0.48 | 0.26 | 0.83 |

# Appendix D: Fordham Francis Index Country Rankings

| Rank | Country name | FFI | Material Index | Water | Food | Housing | Employment | Spiritual Index | Education | Gender | Religion |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Brazil | 0.94 | 0.95 | 0.99 | 1.00 | 0.99 | 0.83 | 0.93 | 0.92 | 1.00 | 0.86 |
| 2 | Colombia | 0.92 | 0.94 | 0.98 | 0.97 | 0.96 | 0.86 | 0.90 | 0.94 | 1.00 | 0.78 |
| 3 | Barbados | 0.92 | 0.97 | 0.99 | 0.98 | 1.00 | 0.90 | 0.87 | 1.00 | 0.88 | 0.75 |
| 4 | Montenegro | 0.91 | 0.95 | 0.98 | 1.00 | 1.00 | 0.84 | 0.88 | 0.98 | 0.90 | 0.76 |
| 5 | El Salvador | 0.90 | 0.93 | 0.98 | 0.91 | 0.93 | 0.91 | 0.88 | 0.87 | 1.00 | 0.78 |
| 6 | Philippines | 0.90 | 0.87 | 0.93 | 0.84 | 0.95 | 0.75 | 0.94 | 0.96 | 0.98 | 0.89 |
| 7 | Paraguay | 0.90 | 0.94 | 1.00 | 0.88 | 0.96 | 0.94 | 0.86 | 0.94 | 0.85 | 0.79 |
| 8 | Bosnia and Herzegovina | 0.90 | 0.93 | 0.96 | 1.00 | 1.00 | 0.79 | 0.86 | 0.97 | 0.98 | 0.68 |
| 9 | Ecuador | 0.89 | 0.93 | 0.94 | 0.92 | 0.98 | 0.88 | 0.86 | 0.92 | 0.95 | 0.73 |
| 10 | Albania | 0.89 | 0.92 | 0.90 | 0.95 | 1.00 | 0.85 | 0.86 | 0.97 | 0.80 | 0.82 |
| 11 | Ukraine | 0.89 | 0.96 | 0.94 | 0.99 | 1.00 | 0.90 | 0.83 | 1.00 | 0.97 | 0.58 |
| 12 | Peru | 0.89 | 0.88 | 0.90 | 0.90 | 0.87 | 0.86 | 0.89 | 0.94 | 0.97 | 0.78 |
| 13 | Bolivia | 0.88 | 0.84 | 0.92 | 0.79 | 0.81 | 0.86 | 0.91 | 0.92 | 0.93 | 0.89 |
| 14 | South Africa | 0.88 | 0.84 | 0.92 | 0.95 | 0.95 | 0.60 | 0.92 | 0.86 | 1.00 | 0.90 |
| 15 | Mexico | 0.87 | 0.96 | 1.00 | 0.98 | 0.98 | 0.88 | 0.79 | 0.94 | 0.95 | 0.55 |
| 16 | Mongolia | 0.87 | 0.87 | 0.80 | 0.84 | 0.90 | 0.92 | 0.87 | 0.98 | 1.00 | 0.66 |
| 17 | Thailand | 0.86 | 0.98 | 1.00 | 0.92 | 1.00 | 0.99 | 0.76 | 0.92 | 0.97 | 0.49 |
| 18 | Serbia | 0.86 | 0.91 | 0.83 | 0.95 | 1.00 | 0.86 | 0.81 | 0.99 | 1.00 | 0.54 |
| 19 | Guatemala | 0.84 | 0.83 | 0.94 | 0.82 | 0.75 | 0.83 | 0.84 | 0.79 | 1.00 | 0.76 |
| 20 | Honduras | 0.81 | 0.82 | 0.95 | 0.85 | 0.80 | 0.69 | 0.80 | 0.88 | 0.90 | 0.64 |
| 21 | Jordan | 0.80 | 0.92 | 1.00 | 0.86 | 1.00 | 0.84 | 0.69 | 0.98 | 0.82 | 0.42 |
| 22 | Namibia | 0.80 | 0.69 | 0.80 | 0.64 | 0.67 | 0.67 | 0.92 | 0.87 | 1.00 | 0.90 |
| 23 | Ghana | 0.79 | 0.81 | 0.78 | 0.96 | 0.81 | 0.71 | 0.77 | 0.68 | 0.80 | 0.82 |

# Appendix D: Fordham Francis Index Country Rankings

| Rank | Country | FFI | Material Index | Water | Food | Housing | Employ-ment | Spiritual Index | Education | Gender | Religion |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | Jamaica | 0.79 | 0.91 | 0.90 | 0.92 | 0.97 | 0.85 | 0.68 | 0.87 | 0.87 | 0.85 |
| 25 | Tunisia | 0.77 | 0.94 | 0.97 | 0.97 | 1.00 | 0.84 | 0.63 | 0.77 | 0.75 | 0.44 |
| 26 | Kazakhstan | 0.76 | 0.98 | 0.96 | 1.00 | 1.00 | 0.95 | 0.60 | 1.00 | 0.98 | 0.22 |
| 27 | Cambodia | 0.76 | 0.73 | 0.74 | 0.80 | 0.83 | 0.57 | 0.80 | 0.78 | 1.00 | 0.65 |
| 28 | Armenia | 0.73 | 0.93 | 1.00 | 0.97 | 1.00 | 0.77 | 0.57 | 1.00 | 0.32 | 0.59 |
| 29 | Lesotho | 0.70 | 0.57 | 0.62 | 0.85 | 0.70 | 0.28 | 0.87 | 0.74 | 0.98 | 0.92 |
| 30 | Cameroon | 0.69 | 0.65 | 0.52 | 0.89 | 0.62 | 0.61 | 0.73 | 0.68 | 0.87 | 0.65 |
| 31 | Gambia, The | 0.68 | 0.72 | 0.74 | 0.89 | 0.68 | 0.61 | 0.64 | 0.35 | 0.80 | 0.92 |
| 32 | Nepal | 0.67 | 0.75 | 0.87 | 0.91 | 0.64 | 0.62 | 0.61 | 0.55 | 0.82 | 0.49 |
| 33 | Senegal | 0.67 | 0.63 | 0.77 | 0.87 | 0.67 | 0.35 | 0.71 | 0.46 | 0.88 | 0.87 |
| 34 | Bangladesh | 0.66 | 0.70 | 0.98 | 0.82 | 0.58 | 0.51 | 0.63 | 0.70 | 0.77 | 0.47 |
| 35 | Timor-Leste | 0.65 | 0.55 | 0.74 | 0.68 | 0.56 | 0.33 | 0.77 | 0.53 | 0.98 | 0.89 |
| 36 | Morocco | 0.65 | 0.88 | 0.85 | 0.99 | 0.84 | 0.85 | 0.48 | 0.66 | 0.75 | 0.23 |
| 37 | Cote d'Iv-oire | 0.65 | 0.66 | 0.67 | 0.76 | 0.82 | 0.46 | 0.64 | 0.37 | 0.80 | 0.89 |
| 38 | Indonesia | 0.65 | 0.86 | 0.88 | 0.92 | 0.97 | 0.71 | 0.49 | 0.95 | 0.93 | 0.13 |
| 39 | Zimbabwe | 0.64 | 0.50 | 0.56 | 0.29 | 0.75 | 0.52 | 0.83 | 0.87 | 0.93 | 0.69 |
| 40 | Myanmar | 0.64 | 0.76 | 0.79 | 0.88 | 0.62 | 0.78 | 0.55 | 0.73 | 0.93 | 0.24 |
| 41 | Lao PDR | 0.63 | 0.71 | 0.79 | 0.80 | 0.71 | 0.58 | 0.57 | 0.83 | 0.90 | 0.24 |
| 42 | Kenya | 0.63 | 0.51 | 0.50 | 0.61 | 0.57 | 0.39 | 0.79 | 0.76 | 1.00 | 0.64 |
| 43 | Egypt, Arab Rep. | 0.62 | 0.93 | 1.00 | 0.97 | 0.99 | 0.77 | 0.41 | 0.68 | 0.85 | 0.12 |
| 44 | India | 0.60 | 0.73 | 0.92 | 0.83 | 0.74 | 0.50 | 0.49 | 0.66 | 0.37 | 0.41 |
| 45 | Angola | 0.59 | 0.51 | 0.46 | 0.67 | 0.51 | 0.42 | 0.68 | 0.62 | 0.93 | 0.55 |
| 46 | Mauritania | 0.57 | 0.69 | 0.65 | 0.89 | 0.52 | 0.75 | 0.47 | 0.48 | 0.83 | 0.26 |

# Appendix D: Fordham Francis Index Country Rankings

| Rank | Country | FFI | Material Index | Water | Food | Housing | Employment | Spiritual Index | Education | Gender | Religion |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 47 | Tanzania | 0.56 | 0.44 | 0.47 | 0.59 | 0.49 | 0.28 | 0.70 | 0.75 | 0.95 | 0.48 |
| 48 | Pakistan | 0.55 | 0.72 | 0.91 | 0.74 | 0.61 | 0.67 | 0.41 | 0.54 | 0.47 | 0.27 |
| 49 | Uganda | 0.55 | 0.39 | 0.38 | 0.44 | 0.46 | 0.31 | 0.76 | 0.67 | 0.88 | 0.74 |
| 50 | Malawi | 0.54 | 0.39 | 0.62 | 0.78 | 0.47 | 0.11 | 0.74 | 0.58 | 0.90 | 0.77 |
| 51 | Benin | 0.54 | 0.53 | 0.59 | 0.89 | 0.53 | 0.29 | 0.54 | 0.25 | 0.73 | 0.87 |
| 52 | Rwanda | 0.53 | 0.39 | 0.49 | 0.50 | 0.42 | 0.22 | 0.74 | 0.67 | 1.00 | 0.59 |
| 53 | Mozambique | 0.52 | 0.35 | 0.46 | 0.63 | 0.24 | 0.22 | 0.77 | 0.56 | 0.95 | 0.85 |
| 54 | Guinea | 0.51 | 0.52 | 0.54 | 0.80 | 0.52 | 0.32 | 0.51 | 0.24 | 0.73 | 0.73 |
| 55 | Mali | 0.47 | 0.43 | 0.74 | 0.94 | 0.25 | 0.20 | 0.51 | 0.25 | 0.60 | 0.87 |
| 56 | Burkina Faso | 0.43 | 0.35 | 0.36 | 0.75 | 0.21 | 0.27 | 0.54 | 0.27 | 0.72 | 0.80 |
| 57 | Ethiopia | 0.41 | 0.27 | 0.28 | 0.74 | 0.08 | 0.32 | 0.63 | 0.46 | 0.98 | 0.55 |
| 58 | Chad | 0.32 | 0.25 | 0.25 | 0.49 | 0.09 | 0.36 | 0.40 | 0.13 | 0.90 | 0.57 |
| 59 | Sudan | 0.00 | 0.57 | 0.52 | 0.74 | 0.43 | 0.64 | 0.00 | 0.00 | 0.00 | 0.26 |

# APPENDIX E: PARAMETERS FOR THE INDICATORS

| | Food | Education | Water | Employment | Religious Freedom | Gender | Housing |
|---|---|---|---|---|---|---|---|
| **Year/Country of the Minimum (Deprived)** | 2000<br>Angola | Multiple years<br>Multiple countries | 2000<br>Ethiopia | 2013<br>Burundi | 2013<br>China | 2017<br>Multiple Countries | 20107<br>South Sudan |
| **Year/Country of the Maximum** | Multiple years<br>Multiple countries | 1993<br>Chad | Multiple Years<br>Multiple Countries | 2017<br>Qatar | 2014<br>New Zealand | 2017<br>China | 2015<br>Armenia |

# APPENDIX F: PHOTO CREDITS & QUOTE SOURCES

## PHOTO CREDITS

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## SOURCES FOR QUOTATIONS FROM POPE FRANCIS:

| Component | Source |
|---|---|
| **Water** | World Water Day 2019: A Massage by Pope Francis, March 22, 2019. |
| **Food** | Pope Francis' Address on World Food Day, October 16, 2013 |
| **Housing** | Meeting with the Homeless at St. Patrick in the City, Washington, D.C., September 24, 2015. |
| **Employment** | Pope Francis' Address to the Centesimus Annus Pro Pontifice Foundation, May 25,2013 |
| **Education** | Pope Francis, Address with Italian school teachers, parents, educators, pupils and other workers , May 10, 2018. |
| **Gender** | Pope Francis, Homily for the New Year, January 1,2020 |
| **Religious Freedom** | Pope Francis' Address during the Meeting for Religious Liberty with the Hispanic Community and other Immigrants, September 26, 2015. |

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