

# What does the status of women reveal about a nation's pandemic preparedness and response?

By Marianne Dahl, Jeni Klugman, and Bryan Haiwen Zou | July 2020



Are nations that perpetuate injustice, exclusion, and insecurity for women less prepared to handle an epidemic outbreak, like COVID-19? We investigated the relationship between women's wellbeing (as measured by the Women, Peace, and Security Index) and risk factors associated with a COVID-19 outbreak that exceeds a nation's capacity to respond (as captured by the INFORM Epidemic Risk Index). The overall association between the WPS and INFORM Epidemic Risk indices reveals a strong negative correlation of  $-0.86$ . This suggests that countries that do poorly on women's inclusion, justice, and security are at higher risk during a pandemic. The significance of the correlation holds even when we control for per capita income, regime type, and other factors thought to be relevant. Correlation does not signify causation, but it is interesting to see that in countries where women enjoy a higher level of well-being, the government is generally better equipped to handle epidemics.

In countries around the world, the COVID-19 pandemic has quickly revealed systemic weaknesses in myriad national institutions, from health systems to banks and government agencies. Leaders have received increased scrutiny about their administrations' preparedness and actions in the face of the coronavirus outbreak.

One striking fact that has attracted media attention is that people are dying from COVID-19 at a rate six times higher in countries with male leadership than in countries with female leaders.<sup>1</sup> Examples of the latter include women from different political ideologies, such as Jacinda Ardern in New Zealand, Tsai Ing-wen in Taiwan, Erna Solberg in Norway, and Angela Merkel in Germany. Some observers have suggested that "female leadership may be more engaged on issues of social equality, sustainability and innovation, making societies more resilient to external shocks."<sup>2</sup> It has also been



argued that women-led nations are more successful in implementing large-scale contact tracing, early lockdowns, and non-pharmaceutical interventions—that is, community mitigation strategies such as wearing masks, staying at home, and practicing social distancing.<sup>3</sup>

It is important, however, to look beyond the head of government. It may be the case that nations that extensively exclude women from economic, social, and political life and perpetuate injustice and insecurity for women are also in bad shape when it comes to preparing for major risks, including those associated with an outbreak of an epidemic.

To explore this factor more systematically, we examined the relationship between country scores on the INFORM Epidemic Risk Index and the Women, Peace, and Security (WPS) Index.

The INFORM Epidemic Risk Index assesses a country's risk of an epidemic outbreak that would exceed the national capacity to respond to the crisis. The index is based on risk concepts published in scientific literature and envisages three dimensions of risk, as summarized in figure 1: hazards and exposure, vulnerability, and lack of coping capacity. The risk score ranges from zero to ten, where ten represents the greatest risk. The INFORM Epidemic Risk Index is an adaptation of the INFORM Risk Index, which identifies the underlying drivers of epidemic risk.

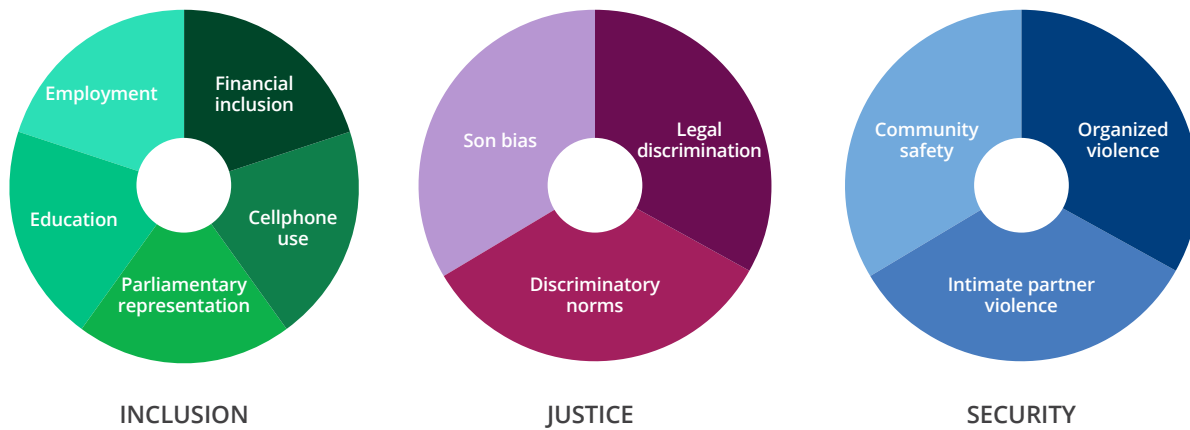
**FIGURE 1**  
**The INFORM Epidemic Risk Index**



Source: Georgetown Institute for Women, Peace and Security and PRIO, *Women Peace, and Security Index 2019/20* (Washington, DC: GIWPS and PRIO, 2019).

The WPS Index incorporates three basic dimensions of women's well-being—inclusion (economic, social, and political); justice (formal laws and informal discrimination); and security (at the family, community, and societal levels)—that are captured and quantified through 11 indicators. A higher score indicates better performance. The indicators are aggregated at the national level to create a global ranking of 167 countries.

**FIGURE 2**  
**Structure of the global WPS Index**



Source: Georgetown Institute for Women, Peace and Security and PRIO, *Women Peace, and Security Index 2019/20* (Washington, DC: GIWPS and PRIO, 2019).

We investigated the relationship between women’s status and risk factors associated with COVID-19 in several steps.

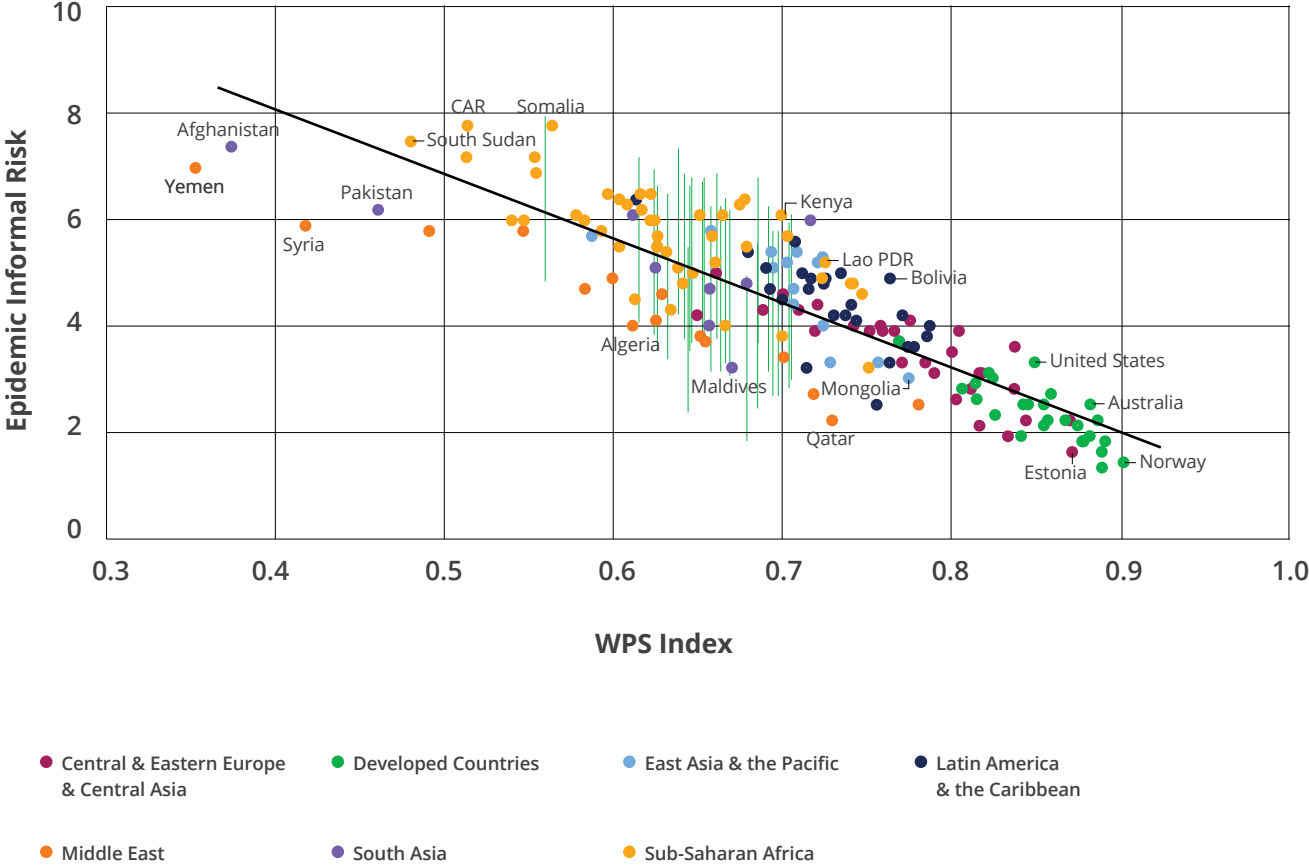
First, we examined overlaps between the two indices that would render correlations spurious. There are just two similar indicators used in both indices: mobile-phone access and education. However the actual measures are quite different. The INFORM Epidemic Risk Index takes the population average, while the WPS Index counts women’s achievements. While levels of cellphone access and education are likely to fall within similar ranges for men and women, we also know that there are still major gender gaps on both fronts. For example, there is a 20 percent gender gap in mobile-phone ownership in South Asia.<sup>4</sup> In 2016, the global literacy rate for women was 83 percent, compared to 90 percent for men, translating to a 236-million-person difference.<sup>5</sup> Moreover, these two indicators represent less than 3 percent of the total potential value of the INFORM Epidemic Index. It is therefore reasonable to investigate whether and how the overall indices are correlated.

The overall association between the WPS and INFORM Epidemic Risk indices reveals a strong negative correlation of -0.86 (figure 3). This suggests that countries that do well on women’s inclusion, justice, and security are at lower risk during a pandemic. Indeed, the association is much stronger than the correlation between the WPS Index and income per capita (0.62).

Very few countries are doing much better or much worse on the INFORM Epidemic Risk Index compared to their WPS Index score. Somalia and the Central African Republic (CAR) both score slightly worse on the INFORM Epidemic Risk Index than the WPS Index, while Qatar and Syria are

doing somewhat better. Mongolia, for example, has been observed to have responded well to the pandemic.<sup>6</sup> It also ranks well on the WPS Index (47 out of 167 countries) and, with an INFORM Epidemic Risk Index score of three, is situated close to the correlation line.

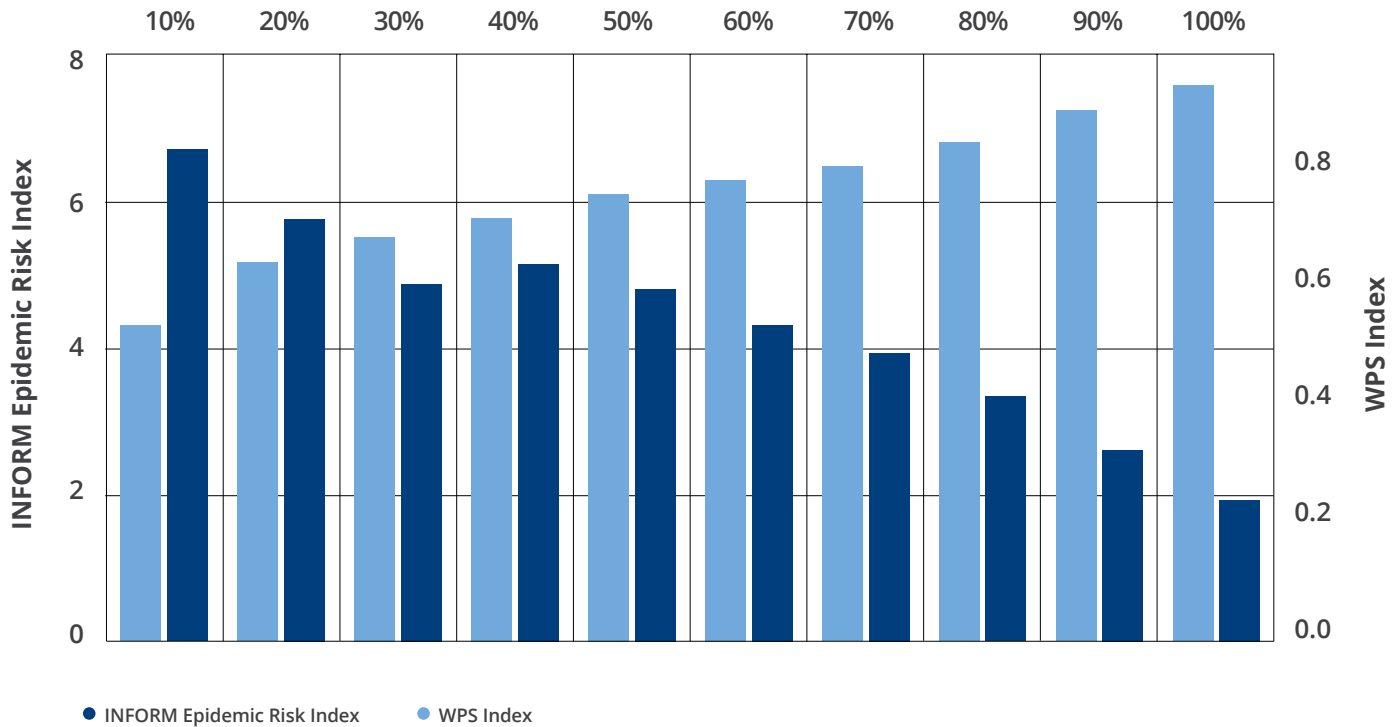
**FIGURE 3**  
**Countries that do better on the WPS Index have a lower risk of epidemic outbreak**



Source: Author estimates based on GIWPS and PRIO, *Women Peace, and Security Index 2019/20*.  
 “Index for Risk Management,” INFORM Epidemic Risk Index, 2020.

We can see the association clearly in the side-by-side comparisons of the index rankings by decile (figure 4). Countries in the bottom decile on the WPS Index have, on average, more than double the risk of epidemic-related crisis than countries in the top decile. The former group consists of Afghanistan, CAR, Chad, Democratic Republic of the Congo, Iraq, Libya, Mali, Mauritania, Niger, Pakistan, Sierra Leone, Somalia, South Sudan, Sudan, Syria, and Yemen.

**FIGURE 4**  
**WPS Index and INFORM Epidemic Risk Index**  
**by decile of performance**



Source: Author estimates based on GIWPS and PRIO, *Women Peace, and Security Index 2019/20*.  
 “Index for Risk Management,” INFORM Epidemic Risk Index, 2020.

Our analysis further suggests that the vast majority (84 percent) of “very low risk” countries, as classified by INFORM, are in the top tercile of the WPS Index. Exceptions—very low risk countries that do not perform well on the WPS Index—include Bahrain and Kuwait.

At the other end of the spectrum—as noted above—all but one (Uganda) of the “very high risk” countries are in the bottom tercile of the WPS Index.

Looking at selected countries, New Zealand is one of the 36 very low risk countries classified by INFORM, with a low risk in all three dimensions. New Zealand also performs well on the WPS Index, with a global rank of 14 and balanced performance across different dimensions.

Among the very high-risk countries, both Syria and Sudan are at the bottom of the WPS Index, ranked 165 and 157, respectively. Although both countries face major epidemic risk on several fronts, Syria faces a higher risk from vulnerability and lacks the infrastructural capacity to absorb and mitigate risks, while Sudan faces a higher risk from human and natural hazards.

Correlation does not signify causation, but it is interesting to see that in countries where women enjoy a higher level of well-being, the government is generally better equipped to handle epidemics.

One might respond to our finding that this is mostly a story about money, since there is also a positive—albeit variable—association between the WPS Index and the country's income level. It could also be a story about regime type. Some analysts suggest that democracies should be better positioned to handle epidemics due to their openness and greater focus on the well-being of citizens. On the other hand, more autocratic regimes have the tools to readily close down their economies and societies.

To test these explanations, we ran a simple OLS regression analysis to see which country-level factors emerge as significantly associated with epidemic risk, as captured in the INFORM Epidemic Risk Index. We compiled data for 157 countries and used the variables and model as outlined below and in appendix 1.

First, we ran a simple model that included the WPS Index, controlling for GDP per capita and the Electoral Democracy Index (V-Dem).<sup>7</sup> We also included a second model controlling for female leadership (model 2). The results, presented in table 1, reveal that the WPS Index is significantly correlated with the INFORM Epidemic Index, even when we control for GDP per capita, the level of democracy, and having a female national leader. In models 1 and 2, we find that both the WPS Index and income per capita are significant, but the level of democracy and female leadership are not. The coefficient sizes suggest that moving from the lowest score possible on the WPS Index (zero) to the highest (one) reduces the expected score on the INFORM Epidemic Risk Index by almost 6.6 points, that is, close to 70 percent.

We then disaggregated the WPS Index into its component indicators in models 3 and 4. The results in table 1 show the significant component indicators, even when controlling for female leadership.

Interestingly, the strongest results are for education, intimate partner violence, perceived community safety, and organized violence, with significant results also emerging for financial inclusion and parliamentary representation. Cellphone use, legal discrimination, discriminatory norms, and son bias were not significant.

In contrast to recent media reports and some emerging empirical analysis, female leadership per se was not significant in the presence of controls for women's status more broadly, as shown in models 2 and 4. While female leadership is significant in predicting INFORM epidemic risk alone, this does not hold when we control for GDP per capita and level of democracy. By way of contrast, the broader WPS measures are significant even when controlling for income and regime type.

This cross-sectional analysis provides further empirical support for the idea that societies with high levels of women's well-being are better able to handle crises such as the current COVID-19 pandemic.

**TABLE 1**

**How are women’s status, national income, and other country-level factors associated with pandemic risk?  
Results from multivariate analysis.**

Dependent variable: INFORM Epidemic Risk Index score

	1	2	3	4
<b>WPS Index score</b>	-6.577*** (-9.25)	-6.559*** (-9.17)		
<b>GDP per capita (logit transformed)</b>	-0.690*** (-12.83)	-0.689*** (-12.77)	-0.524*** (-6.98)	-0.523*** (-6.95)
<b>Electoral Democracy Index</b>	-0.0326 (-0.15)	-0.0222 (-0.10)	-0.310 (-1.29)	-0.323 (-1.30)
<b>Female leadership</b>		-0.0435 (-0.32)		0.0287 (0.21)
<b>Women’s mean years of schooling</b>			-1.325*** (-4.17)	-1.330*** (-4.16)
<b>Women’s financial inclusion</b>			-0.769* (-2.47)	-0.774* (-2.47)
<b>Women’s parliamentary representation</b>			-0.512* (-2.60)	-0.521* (-2.58)
<b>Current intimate partner violence</b>			-1.144* (-2.17)	-1.150* (-2.17)
<b>Perceived community safety</b>			-1.121*** (-4.10)	-1.122*** (-4.09)
<b>Organized violence</b>			-1.296*** (-5.70)	-1.297*** (-5.68)
<b>Constant</b>	15.47*** (44.47)	15.45*** (43.53)	13.26*** (18.02)	13.26*** (17.94)
<b>Observations</b>	<b>157</b>	<b>157</b>	<b>157</b>	<b>157</b>

*t* statistics in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note: GDP per capita in PPP (current international \$).

Variable definitions and sources are in appendix 1.

Returning to our opening theme: it may be that women are more likely to take up positions of leadership in societies that have already internalized important values of [equity, solidarity, and collaboration](#), which are usually associated with healthier communities.

The WPS Index underlines the point that structural conditions shaping the status of women matter, in the midst of the current crisis and also in the long term. While this statistical correlation does not prove causation, the empirical analyses point to key connections.

While female leadership itself was not significantly related to pandemic preparedness, it does seem to be the case that nations that promote gender-inclusive governance and diversity in leadership may also be better at collectively mobilizing effective pandemic responses.<sup>8</sup> Norms and outcomes that boost women's inclusion and participation in the public sphere and decision-making positions might also be expected to shape societal practices that place a greater emphasis on collaboration and empowerment of marginalized groups. Countries that are more willing or able to boost the status of women—as reflected in their WPS Index scores—may be more likely to care about disadvantaged groups and inequality, and therefore more likely to invest in policies and institutions that better prepare for an epidemic outbreak.

Likewise, our analysis suggests that the countries most at risk of an epidemic-related humanitarian crisis that would overwhelm national response capacity are those where the status and well-being of women is weak. These results imply that countries that extensively exclude women from economic, social, and political life and perpetuate injustice and insecurity are more vulnerable to major risks, including the risk of epidemic outbreak.

This is harmful not only to women but to everyone in society. Indeed, emerging evidence indicates that COVID-19 mortality rates are higher among men, as well as among minority and lower-income groups in the population. This picture is worse for countries facing protracted conflicts in fragile settings, where epidemics exacerbate security, mental-health, and physical-health risks.<sup>9</sup>

This analysis shows that women's exclusion, injustice, and insecurity heighten the risks and hazards created by the COVID-19 crisis for all. It has important implications for policymaking and development priorities in the recovery period and beyond.

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<sup>1</sup> Countries with female leaders include Bangladesh, Barbados, Belgium, Bolivia, Denmark, Estonia, Ethiopia, Finland, Georgia, Germany, Greece, Iceland, Myanmar, Nepal, New Zealand, Norway, Serbia, Singapore, Slovakia, Switzerland, Taiwan, Trinidad and Tobago.

<sup>2</sup> Lorenzo Fioramonti, Luca Coscieme, and Katherine Trebeck, "Women in Power: It's a Matter of Life and Death," *Social Europe*, June 1, 2020, [www.socialeurope.eu/women-in-power-its-a-matter-of-life-and-death](http://www.socialeurope.eu/women-in-power-its-a-matter-of-life-and-death).

<sup>3</sup> Peter H. Huang, "Put More Women in Charge and Other Leadership Lessons from COVID-19," (Law Legal Studies Research Paper No. 20-21, University of Colorado, Denver, June 15, 2020), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3604783](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3604783).

<sup>4</sup> Raiyan Kabir and Jeni Klugman, *Women's Financial Inclusion in a Digital World: How Mobile Phones Can Reduce Gender Gaps* (Washington, DC: GIWPS, 2019).

<sup>5</sup> Jackson Prettyman, "International Literacy Day: The Literacy Gender Gap," Vital Voices, September 8, 2019, [www.vitalvoices.org/2019/09/international-literacy-day-the-literacy-gender-gap/](http://www.vitalvoices.org/2019/09/international-literacy-day-the-literacy-gender-gap/).

<sup>6</sup> Indi Samarajiva, "COVID Underdogs: Mongolia," Medium, May 18, 2020, <https://medium.com/@indica/covid-underdogs-mongolia-3b0c162427c2>.

<sup>7</sup> The electoral democracy index from V-Dem measures whether the regime embodies the core value of making the rulers responsive to citizens, achieved through electoral competition for the electorate's approval under circumstances in which suffrage is extensive, political and civil society organizations can operate freely, elections are clean and not marred by fraud or systematic irregularities, and elections affect the composition of the chief executive of the country.

<sup>8</sup> Soumik Purkayastha, Maxwell Salvatore, and Bhramar Mukherjee, "Are Women Leaders Significantly Better at Controlling the Contagion?," *MedRX-iv*, June 12, 2020, <https://doi.org/10.1101/2020.06.06.20124487>.

<sup>9</sup> S. Bali, R. Dhath, A. Lal, A. Jama, K. Van Daalen, and D. Sridhar, "Off the Back Burner: Diverse and Gender-Inclusive Decision-Making for COVID-19 Response and Recovery," *BMJ Global Health* 5, no. 5 (2020), e002595.

