



COUNTRIES MOST LIKELY TO EXPERIENCE STATE-LED MASS KILLING

STATISTICAL RISK ASSESSMENT 2016

UNITED STATES
HOLOCAUST
MEMORIAL
MUSEUM

SIMON-SKJODT CENTER
FOR THE PREVENTION OF GENOCIDE

Introduction

The Early Warning Project of the United States Holocaust Memorial Museum's Simon-Skjodt Center for the Prevention of Genocide seeks to help policy makers prevent mass atrocities by highlighting cases in which risks are detected but mass atrocities have not started. Providing governments, advocacy groups, and at-risk societies with earlier and more reliable warning means more opportunity to take action well before the killing occurs.

Our annual Statistical Risk Assessment is a rigorous estimate of the risk of deliberate killing of more than 1,000 civilians within a country by that country's government or its agents—that is, state-led mass killing—in all countries with populations of more than 500,000 (see Technical Details later in this document for the full operational definition).

What follows is a description of our statistical forecast, based on three different models (*bad regime*, *elite threat*, and a machine-learning algorithm called *random forest*, which has access to many predictors), and a discussion of the situation in many of the top 30 at-risk countries.

The chart that follows shows the 30 countries our updated statistical analysis identifies as the most susceptible to new onsets of state-led mass killing. The red dots represent our best estimates of the likelihood of such an event occurring in each country. The other dots represent the three different statistical forecasts from which the best estimate is derived (see Technical Details for more on the process used to arrive at those estimates). These assessments were developed using annualized data for the year ending 2015, the most recent year for which data are available.

Which States Are Most Likely to Perpetrate Mass Killing?

Sudan & Myanmar/Burma

For the third year in a row, our statistical models identify Sudan and Myanmar/Burma as two of the three most susceptible countries to the onset of a new episode of state-led mass killing. Both countries

are already experiencing state-led mass killing, according to our data, yet our models indicate significant risk of a new distinct episode occurring in each country. Despite Burma's progress toward democracy, flagrant attacks on Rohingya communities in late 2016, following an attack on police outposts in Rakhine State, could signal a major escalation in lethal violence. The Simon-Skjodt Center's own 2015 report on the situation of the Rohingya argued that early warning signs of genocide were present.

Risk on the Rise

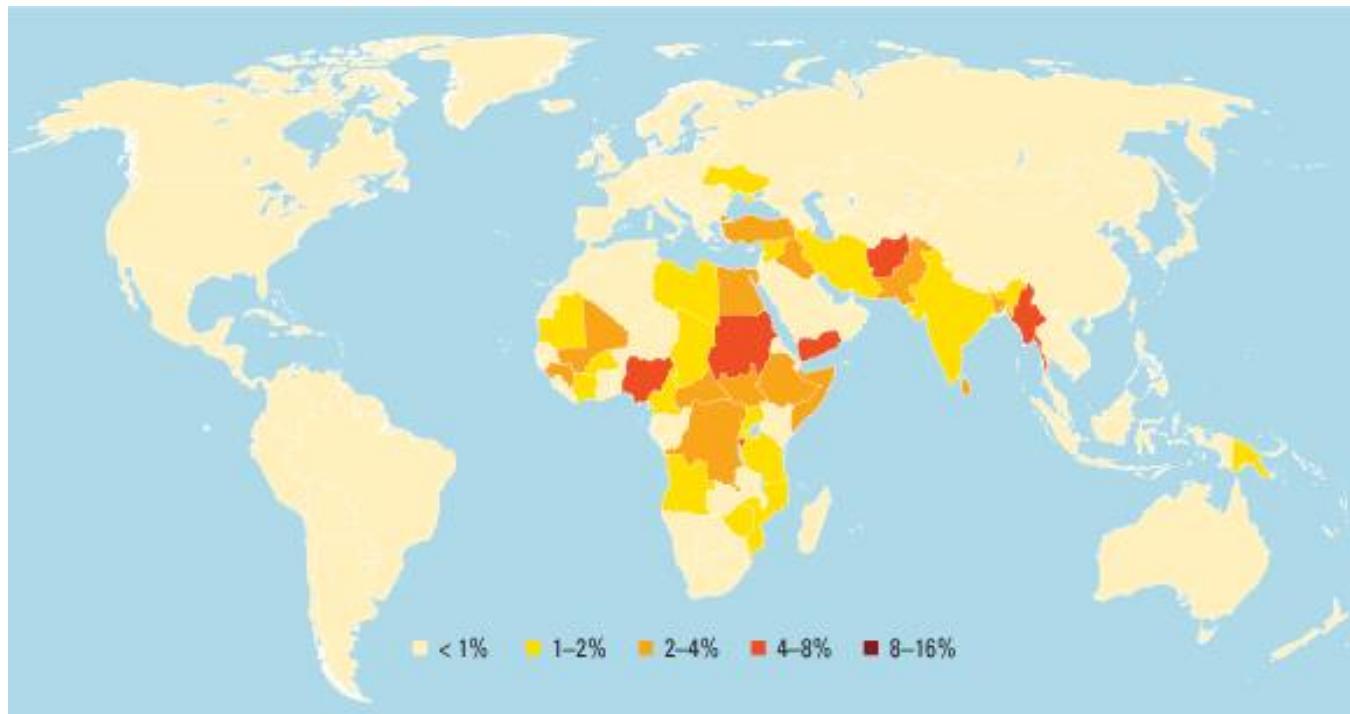
Three countries saw substantial increases in their estimated risk from last year that pushed them well into our top 30.

Burundi

Political tumult has catapulted Burundi toward the top of the global risk list, from 56th in 2015 to 6th this year. This dramatic shift reflects sharp changes in several risk factors. A failed coup attempt, a slide back into more openly authoritarian rule, the renewed political salience of ruling elites' ethnic identity, and the resumption of violent civil conflict, among other factors, all contributed to big increases in estimated risk from all three of our models. None of those changes are recent; in fact, most happened in the spring and summer of 2015. The situation in Burundi today continues to be worrisome: a United Nations inquiry concluded in September 2016 reported that although open violence had declined from 2015, repression in other forms was more systematic and was increasing.

Turkey

Turkey also appears in our top 30 for the first time this year, moving from 31st to 13th. That move came with a tripling of its estimated risk, from 1 to 3 percent. In Turkey's case, the shift resulted mainly from a couple sources: increasingly authoritarian rule and the escalation of armed conflict between the state and Kurdish rebel groups. As with Burundi, those changes led to higher forecasts from all three of our models. The July 2016 attempted coup in Turkey, which is not reflected in the current analysis, likely indicates a further increase in risk



Risk Assessment Map, Data: Early Warning Project

(which will show up next year when the model is updated again) because coup attempts are a component of the elite threat model.

Sri Lanka

Sri Lanka appears in this year's top 30, climbing to 18th after ranking 35th in our 2015 assessments. That result is surprising because Sri Lanka saw notable political gains after an unexpected but ultimately peaceful transfer of political power via legislative and presidential elections in 2015. According to our data sources, the government also made partial but significant reductions in discrimination against Tamils, and ruling elites no longer espoused an exclusionary ideology. Despite those positive developments, our statistical analysis estimated that Sri Lanka's risk has risen since 2015, from about 1 percent to 2 percent. The change was driven by the new forecast from the random forest model involving a large number of predictors, but the bad regime model also continues to rate Sri Lanka a relatively risky country because of its history of mass killing and the continued saliency of the ruling elite's ethnicity. By contrast, our elite threat model pegs Sri Lanka as a much lower-risk case.

Three countries—Burkina Faso, Iran, and Libya—dropped out of the top 30 in our latest update. Burkina Faso's risk fell mainly because it was coded as being somewhat more democratic, with a newly elected president taking office just before the end of 2015. Iran and Libya exhibited smaller changes, mainly because their scores on the random forest model involving a large number of predictors. The decline in their ranking also reflects the worsening outlook for Burundi, Turkey, and Sri Lanka, all of which jumped into the top 20.

Consistently High Risk

Many of the other countries our models identified as the highest-risk cases have hovered at or near the top for as long as we have been producing the list.

The Democratic Republic of the Congo

The Democratic Republic of the Congo remains near the top of our watch list. DRC scores especially high on our elite threat model, which focuses on the risks of coup attempts and civil war, but all three models rate it a relatively high-risk case. Disputes over the timing of and preparations for the next presidential election produced violent conflict in 2016. On

December 31, the government and opposition parties agreed to hold elections by the end of 2017 and institute a transitional government, with the prime minister appointed by the opposition. To date, however, little progress has been made toward implementation, with the parties disagreeing on almost every aspect of the transition.

Iraq

Iraq also remains near the top of our list, but in this case the bad regime model produces the brightest warning light because of factors including Iraq's previous episode of state-led mass killing, salience of the ruling elite ethnicity, and overall risk of political instability. By our reckoning, Iraq already has an ongoing episode of mass killing perpetrated by the self-proclaimed Islamic State, but our statistical assessments focus on the risk of mass atrocities perpetrated by state security forces or groups acting in coordination with those forces. Unfortunately, reports from Human Rights Watch (see the reports here and here) indicate that we may already be on the leading edge of a state-led episode as well, with Shia militias as the primary agents of that violence.

Yemen

Yemen moved from 10th to 2nd this year, following Houthi rebels' takeover of the capital, dissolution of the government, and ensuing civil war. Our models estimate Yemen's risk to have nearly doubled, driven by a forecast from the random forest model with many predictors and the bad regime model. Although Saudi Arabia has perpetrated an extensive bombing campaign that has had horrendous impact on civilians, our models focus on the risk of the Yemeni government killing civilians within Yemen.

Ethiopia

Ethiopia continues to rank among the countries most susceptible to state-led mass killing, with similar forecasts from all three of our models. Ethiopia experienced an onset of mass killing beginning in 2016; we determined that in response to anti-government protests in the Oromia Region, the government killed more than 1000 civilians in a 12-month period and arrested thousands of others. This

case was a very close call, as it barely met the 1000-civilian threshold, and we continue to closely monitor the situation.

Surprising Forecasts

This year's statistical assessments also produced a number of other results that might surprise some advocates and policy makers.

Mali

Mali remains near the top of our watch list, in part because it continues to get a poor forecast from our elite threat model of mass-killing onset. That forecast is driven by Mali's coup risk, which remains high relative to other countries a few years after a pair of coup attempts, one of which succeeded. Mali also gets low marks for state-led discrimination against Tuaregs, a long-standing conflict that spurred a renewal of armed rebellion in northern Mali against the central government in early 2012. That conflict has diminished since a peace agreement was struck in 2015, but human rights advocates have raised concerns about how state security forces are prosecuting their fight against armed Islamist groups. Additionally, increasing inter-communal violence, banditry, and jihadist influence in central Mali have raised the threat of mass killing in that region in a conflict separate from the north but suffering from many of the same tensions.

Bangladesh

Bangladesh is a country that our statistical models continue to identify as one of the world's highest-risk cases for state-led mass killing, but it does not commonly appear on other risk-monitoring groups' watch lists for mass atrocities (see here and here, for example). Our own expert wiki survey, conducted in December 2016, ranks Bangladesh 33rd. As we discussed in a blog post in 2015, however, the persistence of sharp and sometimes violent competition between national political factions, and the civilian government's sometimes awkward relationship with the country's powerful security forces, should give doubters reason to reconsider their more sanguine assessments. Furthermore, experts argue that starker political polarization and a

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growing extremist threat—as evidenced in the July 1, 2016 attack on a Dhaka cafe—matched with an increasingly authoritarian government elevate the risk of mass violence in the country.

Uganda

Uganda lands in the bottom half of our top 30 again this year. Uganda shows a substantial spread across our three models. It scores relatively high on the elite threat model, middling on the bad regime model, and low on the random forest model with many predictors. In this country, the risk of civil war drives the elite threat score more than the risk of coup attempts, although the latter is not especially low, either. In fact, the risk of renewed civil conflict in Uganda bubbled to the surface again in 2016. In February, security forces responded violently to opposition protests over the conduct of national elections, and clashes between supporters of rival candidates turned deadly a few weeks later. In May, authorities arrested opposition leader Kizza Besigye and charged him with treason, and they recently claimed to have uncovered plots to overthrow the government by force of arms.

Zimbabwe

Meanwhile, Zimbabwe's absence from the top of our list is arguably surprising. Our models continue to see Zimbabwe as only a moderately risky case in relative terms—it ranks 35th this year, with a virtually identical risk score to that of the past two years. Motivated in part to better understand divergent assessments of the severity and nature of risks in Zimbabwe, the Simon-Skjodt Center recently conducted qualitative research into the potential for mass atrocities in Zimbabwe. Without attempting to estimate the level of risk, that report concluded that two scenarios could plausibly lead to mass atrocities in the country: one stemming from severe factional competition and another from escalating anti-government protest activity.

We expect to update these assessments again in 2017 after the public sources on which they depend refresh their data to summarize conditions at the end of 2016. Meanwhile, we will continue to use our crowd-sourcing collaboration with Good Judgment, Inc. and our annual wiki survey to ask experts and concerned observers about risks of mass killing and

how they change over the course of the year. Within the next few weeks, we also plan to update our public repository with the data and code we used to generate this year's assessments so that interested researchers can get a better feel for the analytical process and help us search for ways to improve our process.

Technical Details

We consider a state-led mass killing to have occurred if the deliberate actions of state agents or other groups acting at their behest result in the deaths of at least 1,000 noncombatant civilians within their own country over a period of one year or less.

State-led refers to cases in which the relevant violence is carried out by uniformed troops, police, or other agents of state security or by other groups acting at the behest of government officials. In cases in which the state's role is ambiguous, we look for evidence of government encouragement of violence or coordination with state policies or military operations.

A *noncombatant civilian* is any person who is not a current member of a formal or irregular military organization and who does not apparently pose an immediate threat to the life, physical safety, or property of other people.

The reference to *deliberate actions* distinguishes mass killing from deaths caused by natural disasters, infectious diseases, the accidental killing of civilians during war, or the unanticipated consequences of other government policies. Fatalities are considered intentional if they result from actions designed to compel or coerce civilian populations to change their behavior against their will, as long as the perpetrators could have reasonably expected that those actions would result in widespread death among the affected populations. Examples of such actions include, but are not limited to, (a) mass starvation or disease-related deaths that result from the intentional confiscation or destruction of medicines or other healthcare supplies; and (b) deaths that occur during forced relocation or forced labor.

To distinguish mass killing from large numbers of unrelated civilian fatalities, the victims of mass killing must seem to be perceived by the perpetrators as belonging to a discrete group. That group may be defined communally (e.g., ethnic or religious), politically (e.g., partisan or ideological), socioeconomically (e.g., class or professional), or geographically (e.g., residents of specific villages or regions). Apparently unrelated executions by police or other state agents would not qualify as mass killing, but capital punishment directed against members of a specific political or communal group would.

Countries may experience more than one episode of state-led mass killing at the same time if the state targets more than one discrete group in distinct conflicts. Sudan is a contemporary example, with ongoing episodes of state-led mass killing in Darfur and South Kordofan. All states, therefore, are theoretically at risk of a mass-killing onset every year, even if one or more episodes are already ongoing. Because all states are at risk of an onset all the time, we include all countries in the statistical analysis, not just countries in which state-led mass killing is not currently happening.

Of course, rebel groups and other nonstate actors also kill civilians, sometimes on a scale that also meets our definition of mass killing. Our statistical risk assessments consider only state-led mass killing, however, because the assessments are produced by models that are “trained on” historical data, and at present we have deep and reliable data on mass killing carried out only by states. If and when we are able to produce or obtain comparable data on mass killing perpetrated by nonstate groups, we will expand our statistical modeling to incorporate those events as well.

Statistical Models

Our statistical risk assessments are an average of forecasts from three models. These three models represent competing views about factors that shape the risks of state-led mass killing or how best to assess those risks.

Drawing on work by Barbara Harff and the Political Instability Task Force, the first model, *bad regime*, emphasizes features of countries’ national politics that hint at a predilection to commit genocide or politicide, especially in the context of political instability. Key risk factors in Harff’s model include authoritarian rule, the political salience of elite ethnicity, evidence of an exclusionary elite ideology, and international isolation as measured by trade openness. Other factors considered are regime type, regional conflict, recent upheaval, state-led discrimination, and a previous episode of mass killing. This model is fitted using a simple statistical tool called “logistic regression.”

The second model, *elite threat*, takes a more instrumental view of mass killing. It uses statistical forecasts of future coup attempts and new civil wars as proxy measures of events that could either spur incumbent rulers to lash out against threats to their power or usher in an insecure new regime that might do the same. The factors that define the coup and civil war risk models are population size, per capita income, natural resource wealth, economic growth rate, type of government, institutional stability, recent coup activity, domestic civil conflict, and regional conflict. Again, this model is fitted using logistic regression.

The third model does not focus on a theoretical argument, as the first two do. Rather, we take a large number of predictors—including those provided to the first two models—and allow a flexible machine-learning method to determine the best way to use those variables to predict the onset of mass killing. The particular machine-learning tool is called *random forest*. Although theory remains important for choosing the range of variables to include in this model, the machine determines how to use those variables in complex ways.

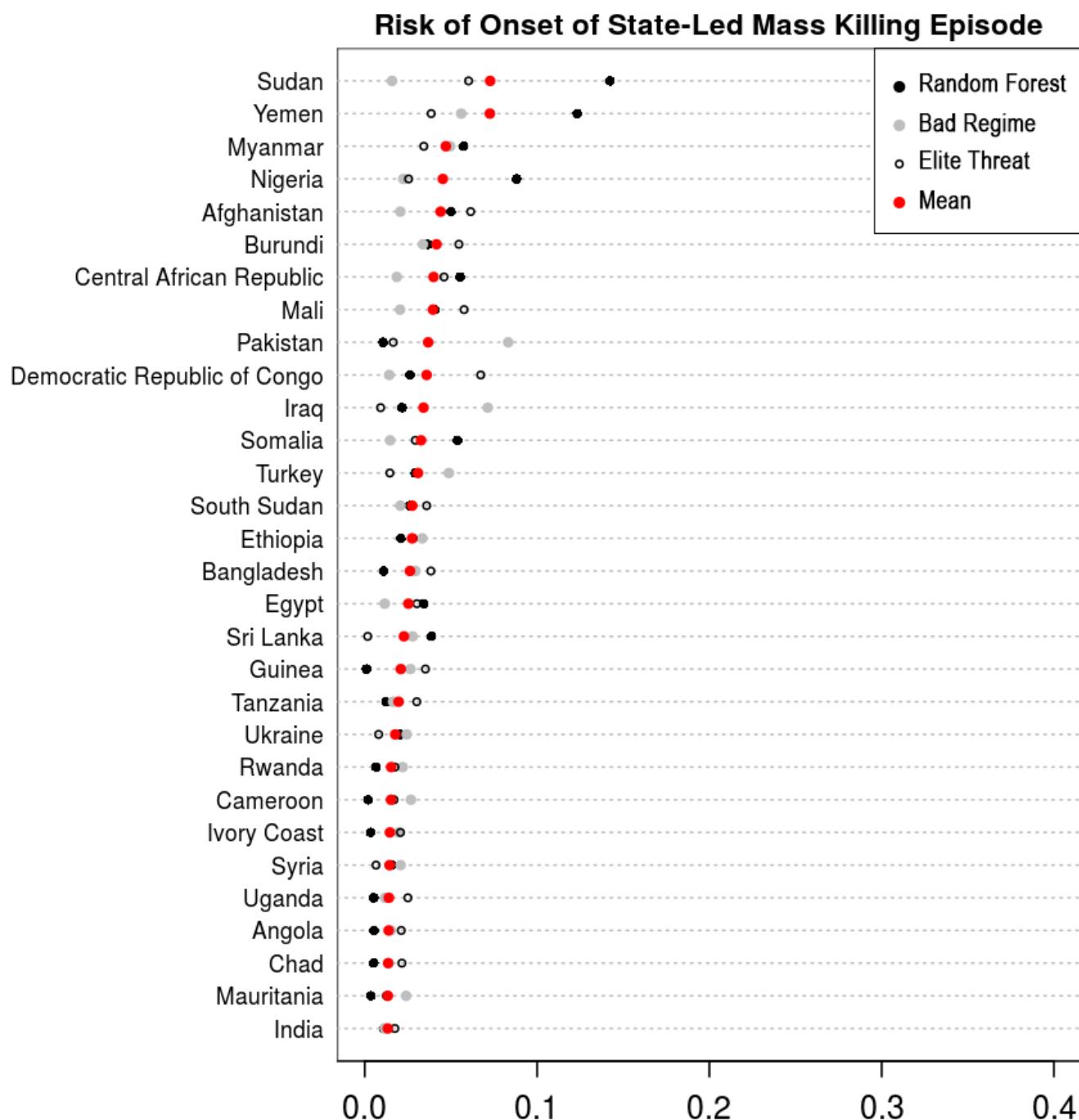
To get our single-best risk assessment, we average the forecasts from the three models. We prefer the average to a single model’s output because we know from work in many fields—including meteorology and election forecasting—that this “ensemble” approach generally produces more accurate assessments than we could expect to get from any

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one model. By combining forecasts, we learn from all three perspectives while hedging against the biases of any one of them.

All three models are estimated from publicly available historical data. To keep the forecasting models as current—and thus, in principle, as accurate—as possible, we reestimate them each year. The main point of updating the models is to take advantage of the additional information about global patterns that is contained in another year’s data. Our sources sometimes make revisions to their historical data, too, however, and this approach lets us learn from those revisions as well.

Risk of Onset of State-Led Mass Killing Episode



The Simon-Skjodt Center for the Prevention of Genocide of the United States Holocaust Memorial Museum works to prevent genocide and related crimes against humanity. The Simon-Skjodt Center is dedicated to stimulating timely global action to prevent genocide and to catalyze an international response when it occurs. Our goal is to make the prevention of genocide a core foreign policy priority for leaders around the world through a multi-pronged program of research, education, and public outreach. We work to equip decision makers, starting with officials in the United States but also extending to other governments, with the knowledge, tools, and institutional support required to prevent—or, if necessary, halt—genocide and related crimes against humanity.



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