Trends in racial and ethnic discrimination in hiring in six Western countries

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We examine trends in racial and ethnic discrimination in hiring in six European and North American countries: Canada, France, Germany, Great Britain, the Netherlands, and the United States. Our sample includes all available discrimination estimates from 90 field experimental studies of hiring discrimination, encompassing more than 170,000 applications for jobs. The years covered vary by country, ranging from 1969 to 2017 for Great Britain to 1994 to 2017 for Germany. We examine trends in discrimination against four racial-ethnic origin groups: African/Black, Asian, Latin American/Hispanic, and Middle Eastern or North African. The results indicate that levels of discrimination in callbacks have remained either unchanged or slightly increased overall for most countries and origin categories. There are three notable exceptions. First, hiring discrimination against ethnic groups with origins in the Middle East and North Africa increased during the 2000s relative to the 1990s. Second, we find that discrimination in France declined, although from very high to "merely" high levels. Third, we find evidence that discrimination in the Netherlands has increased over time. Controls for study characteristics do not change these trends. Contrary to the idea that discrimination will tend to decline in Western countries, we find that discrimination has not fallen over the last few decades in five of the six Western countries we examine.

discrimination | racism | race and ethnicity | inequality | labor markets

From 1940 to 1960, much changed regarding race and racism in Western Europe and North America. The defeat of Nazi Germany delegitimized many forms of biological racist thinking (1). The American Civil Rights Movement and decolonization movements highlighted the contradiction between the claims of the West to represent freedom while at the same time people of color at home and abroad in colonial empires continued to face repression. As these movements succeeded, open racial discrimination and support for White preference were increasingly viewed as illegitimate (2). Codifying these changes was a new body of international law, beginning with the Universal Declaration of Human Rights, which declared equal treatment and freedom from discrimination as universal human rights. In the 1950s and 1960s, international bodies like the International Labor Organization and UNESCO passed resolutions calling for the elimination of discrimination based on race and ethnicity (3). Racial discrimination in employment and housing was made illegal in the United States and Great Britain in the 1960s and in France and Canada in the 1970s.

Despite the establishment of a normative and legal framework against discrimination in the West, the goal of fair and equal treatment—without regard to race or ethnicity—has not been achieved. There remain substantial gaps in important economic and social outcomes between White and non-White populations in Western countries, with some of the largest and most critical gaps in the labor market (4). Persistent discrimination in labor markets in North America and Europe has been demonstrated most clearly by field experiments in which investigators use testers or submit applications by mail or over the internet for jobs with clues indicating the race or ethnicity of applicants (5–7). These experiments show that on average in Western countries native Whites receive about 50% more callbacks than similarly qualified non-White applicants (5).* This does not include significant additional discrimination that occurs after the callback (8).

Given the clear evidence of continuing discrimination, a critical remaining question is the trajectory of change over time. Both popular and academic discussions often assume a trajectory of declining racial and ethnic discrimination (9, 10). Measurement of trends in discrimination is essential to evaluate this assumption and the success of policy efforts to reduce discrimination.

Significance

Trends in discrimination are critical to evaluate the extent to which Western societies are (or are not) achieving the fundamental goal of ensuring fair and equal treatment regardless of race and ethnicity. We examine trends in hiring discrimination based on 90 field experiments of hiring over time in six Western countries, providing the first national estimates of discrimination trends in four of these countries and disaggregating trends for four racial-ethnic origin groups. We incorporate more extensive controls for study characteristics that could confound time trends than previous studies. Only in France do we find evidence that discrimination declined. Further efforts are needed to reduce persistent racial and ethnic biases in Western labor markets.

*We use the term non-White to refer to ethnic and racial groups in the countries we examine that do not have European origins, including Hispanics of any race by US racial-ethnic classifications.

The prediction that discrimination will tend to decline over time was developed in classic postwar social and economic theories. Modernization theorists proposed that ascriptive inequalities—notably race/ethnicity, gender, and class background—would be replaced by achieved inequalities because employers in modern economies selected employees based on rationalized criteria tied to achievement, especially educational credentials (ref. 11, pp. 429–431, 12, 13). The prediction that discrimination would decline was also made in Becker's (1957) classic economic account of discrimination (14). Becker argued that discrimination grounded in employer prejudices should be eventually eliminated in competitive markets because it was an inefficient practice.

Historical accounts viewed systemic factors as less determinative, instead pointing toward contingent changes in culture and law. Scholars have suggested at least four changes that may have reduced discrimination in employment since the mid-1970s. The first change is the international diffusion of antidiscrimination movements and minority group rights. During World War II and the Cold War, Western countries attempted to claim superiority based on their democratic and inclusive systems, which were contradicted by the persistence of open racial and ethnic discrimination (1, 15). International organizations and social justice movements subsequently adopted and spread a discourse declaring minority group rights as fundamental human rights (16, 17). Countries increasingly faced international scrutiny for their treatment of minority groups, with beneficial effects for minority groups in many contexts.

The second change is alterations to racial attitudes. Survey data show sharp declines after 1970 in biological racist beliefs and support for the "right" of Whites to discriminate, corresponding to a rising norm against discrimination. This change is well-documented in the United States (18). Evidence from national datasets in Europe indicates changes in attitudes similar to those in the United States (19), with some variation across countries (20).

The third change is the strengthening of antidiscrimination laws. Racial discrimination in employment was made illegal in the United States in 1964, in Great Britain in 1968, in France in 1972, in Canada in 1977, in the Netherlands in 1994, and in Germany in 2006. The definition of prohibited discrimination and the extent of enforcement varied widely across these countries. In the United States, the basis of antidiscrimination enforcement was the victims' right to sue in Civil Court for damages. Legal reforms over time increased the plaintiff's chances of winning and the magnitude of possible compensation for damages, most notably in a 1991 reform (21). In Europe, early laws against discrimination varied greatly in their concepts of discrimination and methods of enforcement, including both criminal and civil penalties. Enforcement actions were less frequent than in the United States; in some countries, discrimination was not made illegal until the 1990s or later. In 2000, the European Union adopted a racial equality directive that required member states to pass laws making racial and ethnic discrimination illegal (if such a law was not already on the books). The equality directive also required antidiscrimination laws to meet specific standards for the definition of discrimination and means of enforcement. European states have gradually incorporated these more extensive antidiscrimination provisions into national laws since 2000 (22).

The final change was the adoption of corporate and government policies aiming to increase their workforces' racial and ethnic diversity. These policies include hiring chief diversity officers, diversity training, mentoring programs for people of color and women seeking promotion, recruitment from diverse hiring pipelines, and monitoring their workforces' racial/ethnic composition (23). While some of these measures are weak lip-service, evidence suggests that some diversity management policies have positively affected the hiring and promotion of non-Whites and women (24, 25). Large American companies and bureaucracies have most readily adopted these policies. To a lesser extent, they are also present in European and Canadian companies (for a discussion of corporate diversity policies in European government and corporate bureaucracies, see ref. 26, p. 24).

However, other social and political developments suggest a less optimistic picture of discrimination trends. In response to racial attitude changes, skeptics have pointed out that support for active policies to reduce racial inequality and beliefs in negative stereotypes have shown relatively minor change over time. A number of "new racism" accounts have argued that the apparent decline of racism from attitude surveys misses the fact that racism largely took on a more subtle and covert form (e.g., refs. 27–31; ref. 19, pp. 57–58; and ref. 29, p. 271 discuss European and Canadian studies in this tradition).

A growing backlash against population diversity and the increased status of historically disadvantaged groups has been evident in Western countries. The 1980s saw the rise of a far-right in Europe that politicized debates about immigration, emphasized the difficulty of incorporating new migrants, and cast non-White immigrants as a threat to national identities. Far-right parties have won increasingly large shares of the vote in European elections since 1980 (32). Correspondingly, European surveys show increased hostility to immigrants from 1985 to 1995 (33). In the United States, the election of Donald Trump in 2016 can be seen as a capturing of the Republican Party by far-right elements (34). Recent studies suggest that political events like these can affect hiring discrimination. Gorzig and Rho (35) show that Donald Trump's election increased employment discrimination against Somali immigrants in the Minneapolis area, especially in occupations involving customer contact (see also refs. 36 and 37).

A final reason to believe discrimination may have increased, especially against groups perceived as Muslim, is international conflicts between Islamic extremists and Western countries. Negative perceptions and hate crimes against Muslims increased following terror attacks by Islamic extremists, most notably the attacks of September 11, 2001, and subsequent attacks in Europe by Al Qaeda and the Islamic State, and the wars in Afghanistan and Iraq carried out by the United States and allies (38–41).

While anti-Muslim discrimination may be motivated by religious prejudice, it is usually grounded in racialized markers such as phenotype, name, and dress rather than direct indicators of religion. Immigrants from Muslim-majority countries who are not Muslim are often subject to anti-Muslim discrimination because they are perceived to be likely Muslims (42). Because racial and ethnic markers drive much anti-Muslim discrimination, many scholars argue that Islamophobia is best regarded as a type of racism, even though Islam is not a race (43).

Studies of Trends in Racial-Ethnic Hiring Discrimination

We examine trends in field experimental studies of racial discrimination in callbacks for jobs. In these studies, investigators make fictitious applications for real jobs. Most commonly, the application is made by mail or over the internet, and race or ethnicity is signaled by a racially or ethnically identifiable name (44, 45). Some studies use face-to-face applications by persons hired to portray job seekers (e.g., refs. 46 and 47). In either case, the control the experimenter exercises over the procedure ensures that members of the White and non-White racial-ethnic groups are given resumes of on-average equivalent strength in terms of their nonracial qualifications, making

discrimination the likely explanation of systematic differences in outcomes between groups and giving these studies higher internal validity than other approaches to measuring discrimination (48, 49).

Four previous articles examine trends in discrimination over time using field experimental data. Zschirnt and Ruedin (7) contrasted rates of hiring discrimination from a sample of 26 correspondence experiments from European Union countries before and after 2000, finding an increase in discrimination after 2000. Their early analysis was important, but they did not examine country-specific or group-specific trends or account for changes in study characteristics over time. Quillian et al. (50) examined trends in hiring discrimination in the United States, finding no change in discrimination against African-Americans since 1989 and some evidence of a decline in discrimination against Latinos. Heath and Di Stasio (51) examined trends in racial-ethnic discrimination in Great Britain, finding no changes in discrimination overall or against specific groups over time. Finally, a recent working paper by Lippens et al. (52) finds evidence of a decline in racial-ethnic hiring discrimination in European correspondence studies between 2005 and 2020. They do not examine country or group-specific trends or include study controls (their primary focus is a contrast over several bases of discrimination beyond race-ethnicity).

Our paper adds to this literature in four ways. First, we assess temporal trends using more data, allowing better estimates of trends and allowing us to produce the first national trend estimates of hiring discrimination for Canada, France, Germany, and the Netherlands. Second, we measure trends for specific racial-ethnic groups that are targets of discrimination rather than treating all non-White groups as one category, which masks potentially significant variability in discrimination trends. Third, we consider country-specific trends because evidence suggests that country is an important structuring factor of discrimination lost in samples aggregated over a broad region like Western Europe (5, 6). Moreover, countries vary greatly in the time range of data available. Fourth, we control for study characteristics that are potential confounders of the time trend, such as whether the study is conducted via postal mail or over the internet. As Ross (53) points out, this is a potentially critical issue in drawing valid conclusions about discrimination trends from trends in the outcomes of field experiments.

Data and Approach

We conduct an analysis that combines all available field experimental estimates of discrimination against non-White racial-ethnic groups from six countries: Canada, France, Germany, Great Britain, the Netherlands, and the United States. We chose these six countries because they have at least six field experiments of racial-ethnic discrimination conducted more than 10 years apart.

Table 1 shows the number of effects—estimates of discrimination against a non-White racial-ethnic group—and the number of studies in each country and for each group. There are more effects than studies because many studies include estimates of discrimination against multiple groups, such as a study that examines discrimination against Black and Latino applicants. The range of years available varies significantly over countries and groups: in some countries like Great Britain, we have discrimination estimates as far back as 1969, whereas for others like Germany, the first field experiments of discrimination begin in the early 1990s. We excluded studies with fieldwork conducted in 2020 or 2021 because COVID-19 may have influenced discrimination in hiring. There are too few discrimination studies with fieldwork conducted during COVID-19 to characterize this period separately.

Table 1. Number of effects, studies, and applications by country and group

Country	Effects	Studies	Applications	Year Range of Data
Canada	14	7	22735	1985 to 2011
France	23	20	44586	1976 to 2018
Germany	8	6	9447	1994 to 2017
Great Britain	30	12	9089	1969 to 2017
Netherlands	25	15	10727	1976 to 2017
United States	40	30	77495	1989 to 2019
Total	140	90	174079	

Racial-Ethnic group	Effects	Studies	Notes
African/Black	57	49	Excludes North African
Middle-Eastern/N. African (MENA)	41	37	Includes Turkish
Latin Am./Hispanic	12	12	
Asian	30	19	Includes East Asian and South Asian
Total	140		

Notes: Effects are discrimination estimates against one or more of the four non-White racial-ethnic groups. Some studies have effects for multiple groups.
Three US studies before 1985 were excluded for problems in how they signaled race.

To allow an analysis of trends by racial-ethnic group, we coded specific racial-ethnic groups into four broader racial/ethnic categories based on their region of origin: African/Black, Asian, Latin American/Hispanic, and Middle Eastern/North African (see *SI Appendix,* Table S8 for a list of the specific racial-ethnic groups). We use these categories because outsiders recognize them in relatively quick interactions such as a hiring review. By contrast, ethnic distinctions within these categories are often incorrectly perceived by outsiders (54). There are too few field experiments including White or European-origin ethnic minority groups or indigenous groups to allow a trend analysis.

To assess discrimination, field experiments contrast the outcomes of non-White job applicants with those of White, native-born applicants. Typically, studies signal the White majority status using a name that suggests ancestry from the third-plus generation White population of the country.[†] In most field experiments, White and non-White fictitious applicants are native-born, which is often indicated by the place of birth on the resume, a mention of immigration history in the cover letter, and/or the place of educational institutions attended (see *Materials and Methods*). To account for potential anti-immigrant discrimination in studies with non-White immigrant applicants, we include controls in meta-regressions for foreign birth, foreign education, and foreign citizenship. Applicants typically have completed their education and have fewer than 10 y of experience in the labor market.

[†]Canada is the only country in our analysis with a plurinational European-origin majority group: Studies in anglophone Canada use typical Canadian anglophone names, while studies conducted in Quebec use typical Canadian francophone names.

Results

We begin with a pooled analysis and then move to the group and country-specific analyses. Fig. 1 shows a scatterplot of all the data in our study by year. Each dot indicates a discrimination estimate against a non-White group. The discrimination ratio is on the y-axis, and the fieldwork year is on the x-axis. We may interpret the discrimination ratios as the expected number of applications a non-White applicant must submit to expect the same number of callbacks as a similar White applicant (see *Materials and Methods*). Larger numbers indicate higher levels of discrimination; for instance, a ratio of 1.5 means that the non-White applicant must submit 50% more applications to receive the same number of callbacks as a comparable native White applicant. The size of each dot is proportional to the weight given to the observation in the meta-analysis (the random-effect weights).

We overlay a meta-regression trend line in black on the dots in Fig. 1. The line is flat: The meta-regression slope of discrimination on year is 0.0001, indicating an estimated increase in the discrimination ratio of 0.01% per year, or almost no change over time. On average, hiring discrimination in our sample has not changed.

We also show a red dashed line, indicating the meta-regression trend line using data from 1985 to 2019, eliminating the early years when the data is sparse. The post-1985 trend line shows a slight, statistically nonsignificant upward trend in discrimination.

This trend estimate lacks controls for study characteristics. Table 2 lists control variables we introduce to account for potential confounding with year: dummies for country and non-White racial-ethnic group, occupational categories, applicant gender, applicant education, immigrant status, source of jobs online/offline, study in-person or correspondence, local (metropolitan or regional) unemployment rate, and share of the local population made up of immigrants.

Fig. 2 shows estimates of the linear trend in discrimination and a 95% CI for the trend from eight meta-regression models. The meta-regressions are a subgroup correlated effects model outlined in Pustejovsky and Tipton (55), allowing for country-specific residual variability (residual variability is significantly different by country) but estimating a single cross-country trend. The model estimates are shown in *SI Appendix,* Table S1. For model details, see *Materials and Methods*.
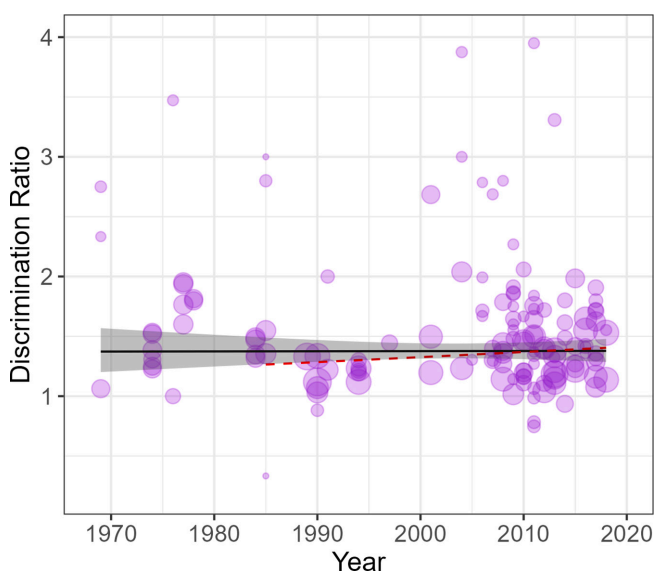
Fig. 1. Discrimination ratios over time, pooled. Notes: The black solid line is from Model 1, *SI Appendix,* Table S1. The shaded area is the 95% confidence region. The red dashed line is from the model using 1985 to 2019 data. The size of the symbol is proportional to meta-analysis weight. Two points are outside the range and not displayed.

Table 2. Control variables included in meta-analysis models of discrimination trends

Variables	Measurement/Categories
Country	Indicators: Canada, France, Germany, Great Britain, Netherlands, United States (ref.)
Non-White racial-ethnic Group	Indicators: African/Black (ref.), Asian, Latin Am./Hispanic, MENA
Controls added in the "Basic Model"	
Study method	Indicators: Resume Audit (ref.), In-Person Audit
Tester gender	Indicators: Male (ref.), Female, Mixed
Applicant education	Indicators: H.S. or Less, Some College or Post-HS Vocational Degree (ref.), College or More, Missing
Occupations included (All that apply)	Indicators: Blue Collar Jobs, Jobs with Customer Contact, Office Jobs
Foreign birth	Indicators: Non-White group includes Foreign Born Persons, Domestic born (ref.)
Source of jobs online	Indicators: Online Source, Offline Source, Both Online and Offline (ref.)
Additional controls in some models in Fig. 2	
Highest degree from foreign school?	Indicators: Yes, No (ref.), Mixed
Foreign nationality (Citizenship)	Indicators: Yes, No (ref.), Mixed
Local (metropolitan or region) unemployment rate	Percentage
Proportion foreign born in region	Percentage

For descriptive statistics for controls see *SI Appendix,* Table S7.
"Indicators" variables are represented by dummy variables, with reference category indicated by "ref."

In Fig. 2, model 1 (top) shows the slope of year in the model with no controls, corresponding to the slope of the solid black line in Fig. 1. The slope of the line is almost exactly zero. Model 2 shows the slope of year in the model with no controls using data from 1985 to 2019, corresponding to the dashed red line in Fig. 1. The slope is more positive than in model 1 but statistically nonsignificant. We add dummy variables for the non-White group and country in model 3. The point estimate of the linear trend remains small and statistically nonsignificantly different from zero. In model 4, we add controls for the basic model study characteristics listed in Table 2. The slope of the year variable becomes positive, suggesting an upward trend in discrimination. However, the slope is still small and nonsignificant, with an estimated slope of 0.37% per year. Model 5 adds additional controls for nationality and place of education of the non-White job applicant. In model 6, we add the local (metropolitan or regional) unemployment rate and share of the population foreign-born. Both models 5 and 6 have positive estimates of the slope of year that are not statistically significant.

The two models at the bottom (models 7 and 8) alter the sample used to estimate the trend, first by dropping studies that only include one occupation, then by only using resume audits. Again, the linear trend estimates remain nearly flat. As discussed in *Materials and Methods*, tests for nonlinearity found no significant evidence of nonlinearity. Beginning the time series in the mid-1980s produces similar estimates; see *SI Appendix,* Table S2.
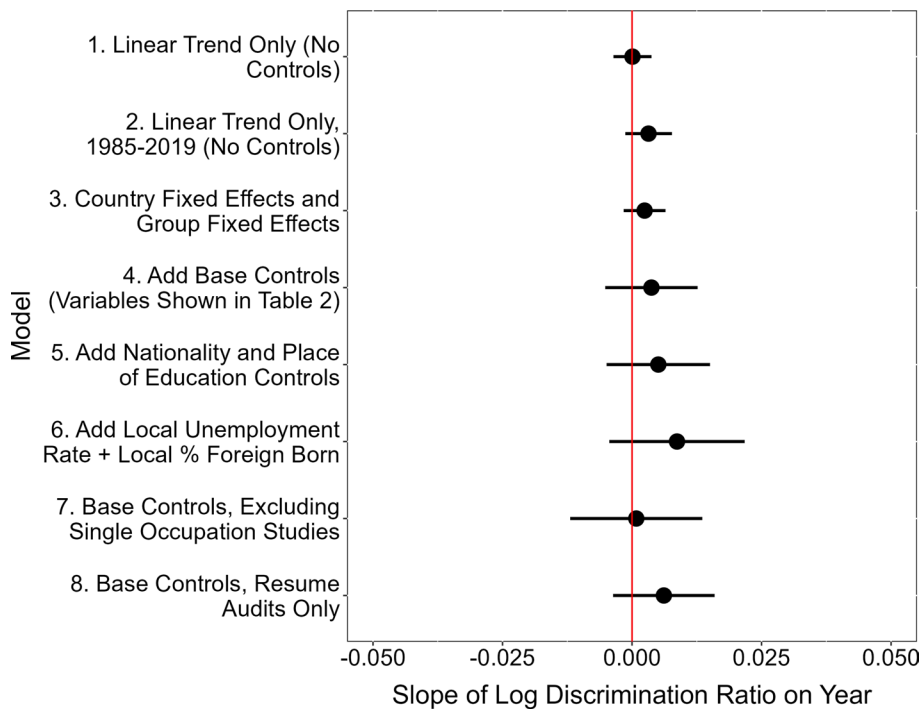
Fig. 2. Overall trend in hiring discrimination, pooled models. Notes: Dots represent the point estimates, and lines represent the 95% CIs. Model variables are listed in Table 2. Models are shown in *SI Appendix,* Table S1.

Trends by Racial-Ethnic Group. We now turn to estimates of trends specific to the non-White group's region of origin. In Fig. 3, we overlay a black solid meta-regression line on scatterplots of discrimination ratios over time by non-White group's region of origin. We also overlay a red dashed meta-regression line based only on the data from 1985 to 2019 (only added for groups that have data before 1985). Trend lines for 1985 to 2019 are almost the same as those for all years. Fig. 4 contains dot-and-line plots of estimates of group-specific linear trends from the all-years meta-regression models. We show results for three sets of models. The first set of models shows slope estimates of a separate meta-regression for each racial-ethnic group with no controls—this matches the slope of the black solid lines in Fig. 3. The second set of models shows results from a separate meta-regression for African/Black and Middle-Eastern/N. African (MENA) groups with "base" controls (listed in Table 2). There is insufficient data to estimate this model for Asian and Latin Am./Hispanic ethnic groups. The third model estimates a model pooling all countries and groups together with base controls allowing group-specific year trends. In model three, the slopes of control variables are constrained to be the same across countries. (Model estimates are in *SI Appendix,* Table S3.) The addition of the controls does not change the pattern of trends in discrimination by group.

Similar to the pooled analysis, trends by group are approximately flat for three of the four groups. The one exception is for groups with origins in the MENA region, where we find evidence of an upward trend in discrimination, but the slope is not statistically significantly different from zero. However, an investigation of the scatterplots (Fig. 3) suggested a possible nonlinear pattern for the MENA group: studies in the 1990s appear to find less discrimination than those after 2000. (No MENA studies are available before 1990.)

Fig. 5 shows estimates for MENA ethnic groups modeled with a series of dummy variables representing decades. We divide the data into the years 2000 or earlier, 2001 to 2010, and after 2010. Years 2000 or earlier is the reference category.

(Model estimates are in *SI Appendix,* Table S4.)

The estimates of the decade indicators show a statistically significant increase in discrimination against MENA groups from 2001 to 2010 and after 2010 compared to the 1990s. This trend persists when we include a set of controls for country and study characteristics. The change from the 1990s is substantively significant: it is an increase in the discrimination ratio of 40% [exp(0.3351)] in the baseline model and more when we add base model controls. These results are consistent with the idea that attacks carried out by Islamic extremists during the 2000s in Europe and the United States (including September 11, 2001) and the wars in Afghanistan and Iraq provoked an increase in hiring discrimination against MENA ethnic groups in Western countries.

Discrimination against MENA ethnic groups may result from discrimination based on the perception that applicants are Muslim. Religion is not signaled directly in most field experiments because job candidates do not typically indicate their religion in job applications. To further explore this increase in discrimination and its relation to Muslim origins, we examined trends in discrimination against ethnic groups with roots in Muslim-majority countries (shown in the *Right* panel of *SI Appendix,* Table S4). Muslim-majority countries include those in the MENA region (e.g., Algeria) and some countries in South Asia (like Pakistan) and Sub-Saharan Africa (like Senegal). These results show similar patterns of change in the point estimates for ethnic groups from Muslim-majority countries of origin as we saw for MENA groups. Hiring discrimination against groups of MENA origin and Muslim-majority origin countries saw an increase after 2000, with stability thereafter.

Trends by Country. Fig. 6 shows scatterplots of discrimination ratios over time by country. Fig. 7 shows dot-and-line graphs of the slopes (trends) by country from meta-regressions. (Corresponding model estimates of trends in discrimination are shown in *SI Appendix,* Table S5.) The figures demonstrate that the trends over time vary by country: there is little change in Canada, Germany, Great Britain, and the United States; some increase in the Netherlands; and a decrease in France. Most countries do not have enough studies to estimate country-specific slopes for controls. To allow us to add the base controls in national models, we constrain the slope of the control variables to be the same across countries. Adding controls does not significantly change the estimates of the year slopes.

France is unique in having evidence of declining discrimination. But we note three caveats about the French trend results. First, one study from the 1970s in France found very high levels of discrimination. This early study is a plausible influential point, but removing it only slightly alters the trend line's slope. However, dropping this early study causes the SE of the year coefficient to increase, so the decline is no longer statistically significant at conventional levels. Second, we note that the downward trend for France is just beyond statistical
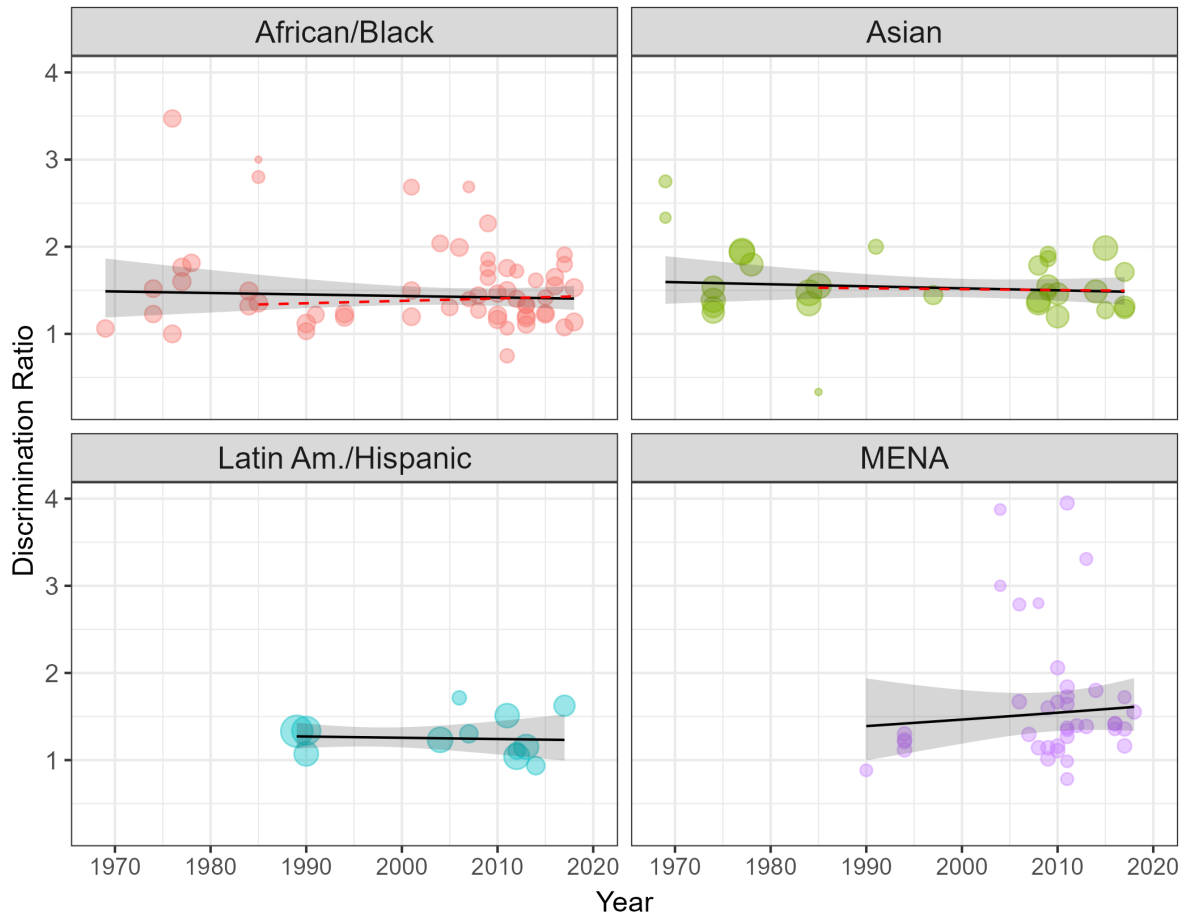
Fig. 3. Discrimination ratios over time by group. Notes: Black solid lines are from Column 1, *SI Appendix,* Table S3. The shaded area is 95% confidence region. Data are from all years used. Red dashed lines are from models excluding data before 1985. The size of the symbol is proportional to meta-analysis weight. Two points are outside the range.

significance in the pooled model with controls (Fig. 7). Third, high residual variability in the French data suggests greater differences in discrimination ratios between studies in France than in most other countries, although the implications of this for trend estimation are unclear.
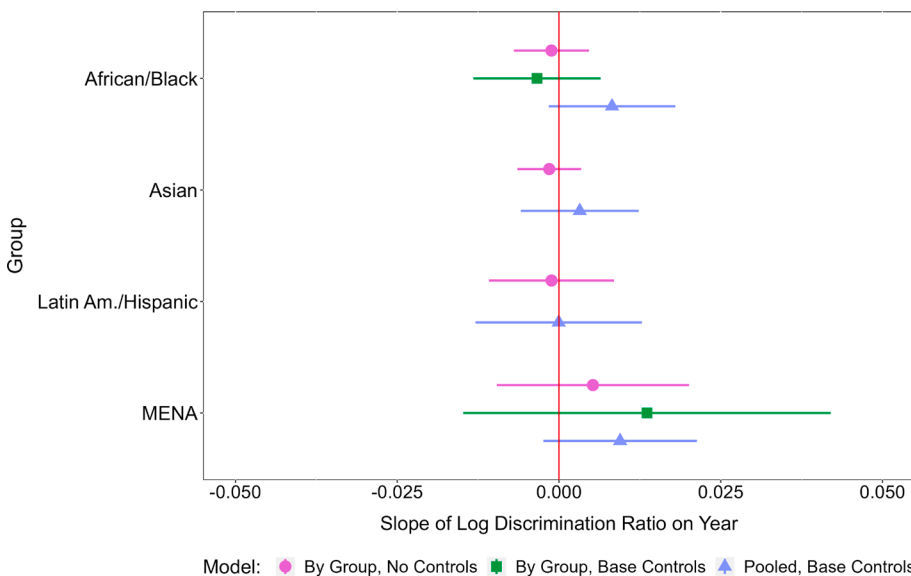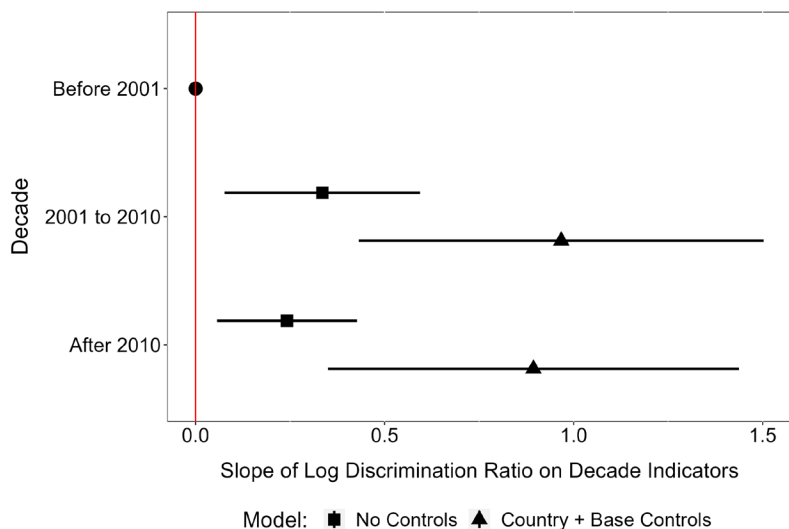

Fig. 4. Trends in hiring discrimination by group. Notes: Dots represent the point estimates, and lines represent the 95% CIs. Model estimates are shown in *SI Appendix,* Table S3.

Trends by Country and Group Combined. Finally, we consider results for the combination of country and non-White racial-ethnic groups. We calculate trends for country-group combinations with at least five studies. Results are shown in *SI Appendix,* Fig. S1 (scatterplots), *SI Appendix,* Fig. S2 (dot-and-line graphs of slopes), and *SI Appendix,* Table S6 (model estimates).

Discrimination trends for different non-White groups within a country usually follow the same direction. For most country-group combinations, there is a pattern of relative stability in discrimination over time. However, there is evidence of declining racial-ethnic discrimination in France and increasing discrimination in the Netherlands. These trends hold across the groups in France and Netherlands with enough data to support group-by-country analysis. In short, the combined country-group results are highly consistent with results in the separate country and group analyses.

Discussion

Racial-ethnic discrimination in callbacks for job offers has not declined significantly over the last 20 to 40 y in five of
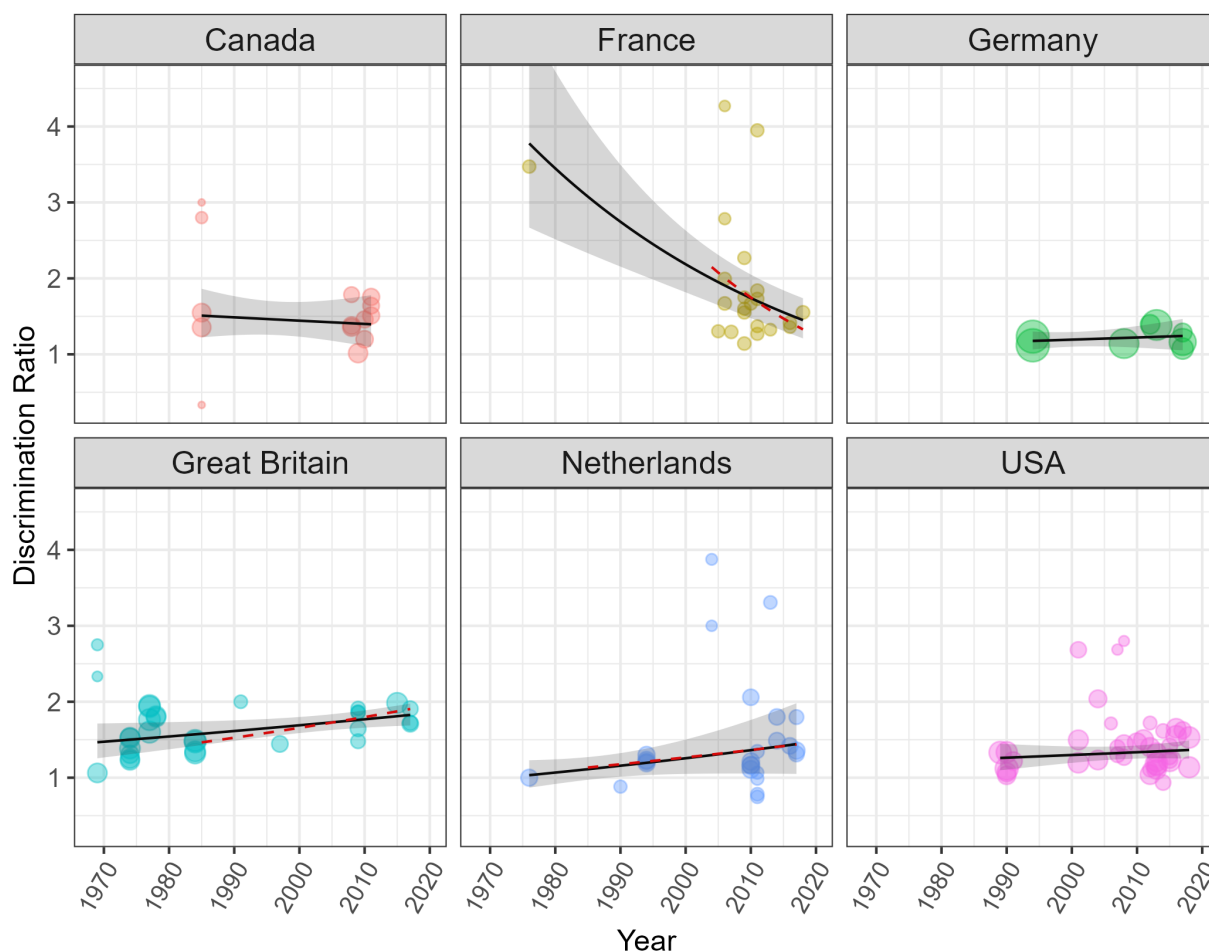
Fig. 5. MENA hiring discrimination by decade. Notes: Dots represent the point estimates, lines represent the 95% CIs. Model estimates are shown in *SI Appendix,* Table S4.

the six countries we examine. In pooled analyses and four of the six countries—Canada, Germany, Great Britain, and the United States—we find relative stability over time in the level of racial-ethnic hiring discrimination.

There are three exceptions to stability over time. The first is an increase in hiring discrimination against ethnic groups with origins in Middle Eastern and North-African countries and Muslim-majority countries after 2000. The most plausible explanations for this sudden shift include: the terrorist attacks carried out by Al-Qaeda in the early 2000s (notably, the attacks of September 11, 2001, and bombings in Madrid in 2004 and London in 2005); the subsequent Western response of military interventions in the "War on Terror"; and the increasing politicization of immigration from Muslim-majority countries. Our results suggest that the backlash normalized biases against MENA ethnic groups and groups with origins in other Muslim-majority countries, leading to more hiring discrimination beginning in the 2000s. This result adds to the literature indicating that significant political events can impact levels of hiring discrimination.

The second exception to the pattern of stability is a decline in hiring discrimination in France. The decline holds for both of the two non-White groups with sufficient data for separate trend analyses in the French data: African/Black and MENA. However, while a downward-sloping trend is always present, the decline is not statistically significant under some alterations of the sample or model (see *Results*). Notably, this decline was from a very high level relative to other countries to a "merely" high level. This decline meant that native White French applicants "only" received 50 to 70% more callbacks than similarly qualified Black

Fig. 6. Discrimination ratios over time by country. Notes: Black solid lines are from Column 1, *SI Appendix,* Table S5. The shaded area is the 95% confidence region. Lines and CIs are based on country-specific models with no controls. Red dashed lines are from models excluding data before 1985. The size of the symbol is proportional to meta-analysis weight. One point is outside the range.
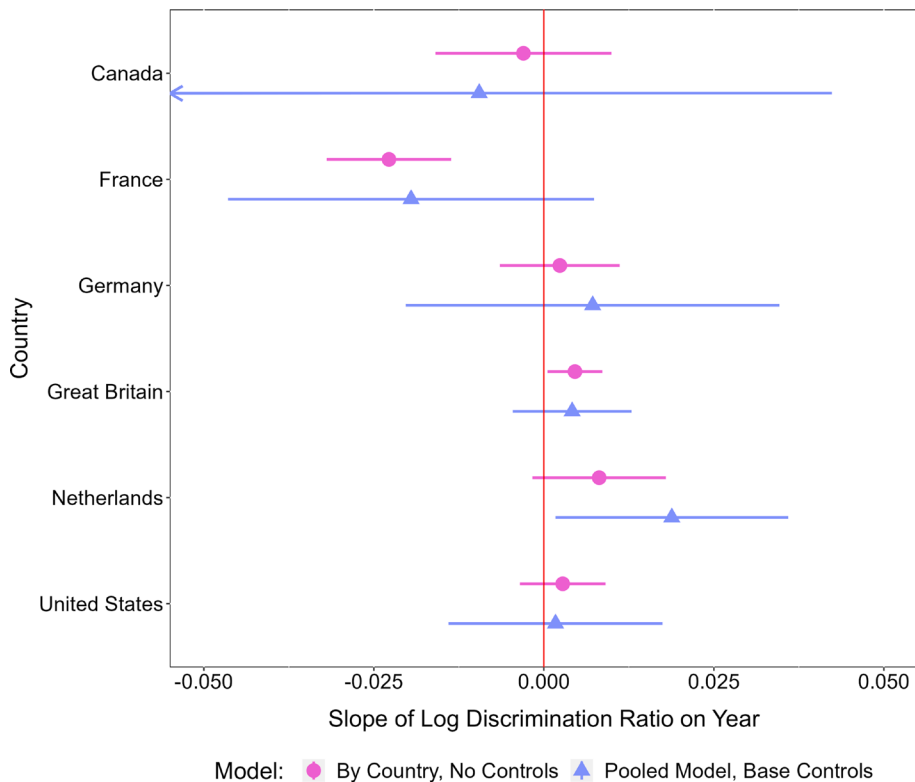
Fig. 7. Trends in hiring discrimination by country. Notes: Dots represent the point estimates, and lines represent the 95% CIs. Data from all years used. The arrow indicates that the 95% CI exceeds the plot limit. Model estimates are shown in *SI Appendix*, Table S5. "By Country, No Controls" models are the slopes of the black solid lines in Fig. 6.

and MENA applicants after 2010. The decline in hiring discrimination in France suggests a convergence in France to a level of hiring discrimination similar to that of Great Britain.

The third exception is that we find some evidence of an increase in discrimination in the Netherlands. The upward trend in the Netherlands is a slightly sharper version of an upward (but not statistically significant) trend in several countries. We suspect that this does not represent a unique social trend for the Netherlands but instead represents a slightly stronger version of an upward drift in discrimination present in many countries that may be tied to growing far-right politics.

The lack of decline in discrimination in five of the six countries we examine, despite new anti-discrimination legislation, adoption of hiring practices aiming to increase diversity in many large corporations, and some evidence of attitudinal changes, is disturbing. It suggests that hiring discrimination results from enduring stereotypes, prejudices, or racist ideologies. Perhaps legal and social changes have been offset by a political backlash against immigration and ethnic groups. Our results contradict the expectation of classical modernization and taste-based discrimination theories and widespread public beliefs that there are elements of Western societies or economies that will "naturally" produce gradual reductions in discrimination over time. Yet, persistent labor market discrimination is not inevitable, as demonstrated by our results for France and evidence of reductions in labor market discrimination in the United States in the 1960s (56, 57).

The lack of decline in discrimination holds across most countries despite notable differences in how racial and ethnic population diversity evolved. For many European societies, postcolonial migration is an important stream of entry by non-White persons. Labor migration, guest worker programs, and refugees have played a role

in diversifying populations on both sides of the Atlantic. Black Americans are primarily descendants of enslaved persons, weakening the association between immigration and population diversity compared to Europe and Canada.

We lack the data to determine why discrimination declined in France. It could be that an increase of second-generation immigrants in France led to more non-Whites gaining hiring authority and acceptance in recent years, which could have reduced hiring discrimination. It is also possible that attitude and institutional changes in France began later than the other countries in our analysis, producing a decline visible in our time frame for France that occurred earlier for other countries. We have no reason to expect the decline in France will be a continuing trend rather than a trend that flattens now that it has reached a level similar to the rest of Western Europe.

Our study has several limitations. The data we use to estimate time trends has many more studies from more recent years (especially after 2000) than earlier years (except in Great Britain). For Canada and Germany, our trends analysis is based on fewer than 10 studies, and for Germany, our time series of studies only begins in 1994. Our studies mostly use broad samples of entry-level jobs available in public sources; ethnic job submarkets and positions that primarily recruit through social networks are mostly not included in our sample. Our results cover groups included in field experiments of racial-ethnic discrimination, generally groups that are larger and thought to be more likely to be victims of discrimination. Finally, declines in hiring discrimination against non-Whites before our data begin are possible. Discrimination declined in the United States during the 1960s and early 1970s with antidiscrimination legislation (56, 58, 59). Changes for other countries before the beginning of our time series are possible as well.

Without confronting racial discrimination in hiring, persistent gaps in employment and earnings in Western nations between non-White groups and White majority populations—so-called "ethnic penalties" (4)—are likely to persist. Discrimination impedes the economic incorporation of immigrants in ways that are likely to contribute to further White backlash. Because of a lack of data on race and ethnicity in Europe, relatively little is known about how racial and ethnic inequality has evolved in European societies. Still, our results provide no reason to support the hope that racial and ethnic inequalities have decreased. An important question for future research is how we can revamp hiring procedures and antidiscrimination legislation to yield sustained declines in hiring discrimination.

Materials and Methods

Study Search and Coding . We used three methods to identify relevant field experiments: searches in bibliographic databases, citation searches, and an e-mail request to corresponding authors of field experiments on racial-ethnic discrimination in labor markets and other experts on field experiments and discrimination. Details of the procedures are in *SI Appendix,* Appendix A.

We coded effects that measure discrimination based on counts of applications and callbacks by racial or ethnic group. Most studies included these counts in their research report. When the study report did not have counts of callback outcomes, we requested counts from the authors and excluded the study if we did not receive the counts. We also coded other study characteristics such as the occupations covered, the level of education of the applicants, and the gender of the applicants (60). *SI Appendix*, Table S7 shows descriptive statistics for these characteristics. For more details on coding procedures, see *SI Appendix*, Appendix A.

Outcome: The Discrimination Ratio. Our outcome is the ratio of the callback rate for native White applicants to the callback rate for a non-White group. A callback is a request for more information or an invitation to interview and is the primary outcome used in the large majority of field experiments of hiring. Suppose c^w is the number of callbacks received by White natives, c^m is the number of callbacks received by a non-White racial or ethnic group, n^w is the number of applications submitted by White native applicants, and n^m is the number of applications submitted by non-White applicants. The discrimination ratio is $(c^w/n^w)/(c^m/n^m)$. We calculated this ratio based on the results reported in the studies or provided by the study authors. Ratios above 1.0 indicate that the White group received relatively more positive responses than the non-White group, with the amount above one multiplied by 100 indicating the relative scale of the advantage enjoyed by native White applicants. The discrimination ratio may be interpreted as the number of applications a non-White applicant must submit to have an equal chance of receiving a callback as an otherwise similar native White applicant. With a discrimination ratio of 2.0, for example, a non-White candidate has to send out two applications for every application submitted by the White candidate to expect to receive the same number of positive indications of employer interest.

Place of Birth. To assess discrimination, we contrast the non-White applicants to White, native-born applicants in the country of the study. Most often, applicants in field experiments of hiring are native-born, as indicated by a place of birth on the resume or cover letter or by place of education. To account for the studies with foreign-born non-White applicants, we control in meta-regressions for the place of birth, place of education, and citizenship status.

Meta-Analysis Model. To examine time trends, we model the discrimination ratio as a function of fieldwork year and other study characteristics using meta-regressions (61, chapter 20). The field experiments in our analyses have some similar design features, such as using the "callback" outcome and selecting jobs from public listings.

We use two procedures to deal with potential noncomparability across studies. First, as discussed above, we code many characteristics of field experiments and control for them in the model, allowing us to account for potential changes in attributes of studies over time that may confound the time trend. Second, we use a model with a random component at the study level, as is common in meta-regression studies (62). The random effects specification incorporates a variance component capturing unexplained variation in the outcome across studies. The random effect increases SEs to reflect additional uncertainty from unaccounted-for study-level characteristics.

We use meta-regressions to model the discrimination ratio, y, as a function of a vector of characteristics of the studies and effects, x, plus residual study-level heterogeneity (between-study variance in the outcome not explained by the covariates). We use two related meta-analysis models.

We estimate standard random-effect meta-regression models for specific non-White groups, countries, or country-group combinations. In these cases, the model is:

$$ln\left(y_{ij}\right) = \alpha t_i + x_{ij}\boldsymbol{\beta} + u_i + e_{ij}, \text{ where } u_i \sim N\left(0, \tau^2\right) \text{ and } e_{ij} \sim N\left(0, \sigma_{ij}^2\right),$$

where t is the year the study's fieldwork was conducted, α is the slope of change over years, β is a $k \times 1$ vector of coefficients (including a constant), and x_{ij} is a $1 \times k$ vector of control covariate values in study i and effect size j (k is the number of covariates including a 1 for a constant). Following standard practice in the meta-analysis literature, we log the discrimination ratio to reduce the asymmetry of the ratio. Residual between-study variance is τ^2, estimated as part of the meta-analysis model. The logged discrimination ratio variance for the jth effect size in the ith study, σ_{ij}^2, reflects sampling variation for estimating each

discrimination ratio for each study and is calculated from counts of applications and callbacks (formulas are in *SI Appendix*, Appendix C). The model is estimated by constrained maximum likelihood.

This model has a single time-trend (α) and a single variability parameter estimated. Because of the small sample sizes of models estimated for individual countries or groups, we often omit controls in models estimated separately by country or group.

We can incorporate controls by pooling, assuming that the slopes of the controls are the same over countries. In models that pool data from multiple countries, we use a meta-regression with a random effects structure of subgroup correlated effects from Pustejovsky and Tipton (55). We estimate a single meta-regression with country-specific year slopes and country-specific residual variance (τ_c^2).

The subgroup correlated meta-analysis model is:

$$ln(y_{ij}) = \alpha_c t_i + x_{ij}\boldsymbol{\beta} + u_i + e_{ij}, \text{ where } u_i \sim N(0, \tau_c^2) \text{ and } e_{ij} \sim N(0, \sigma_{ij}^2),$$

where parameters are as above, except α_c is the slope of change over years in country c, and residual between-study variance for country c is $\tau_{c'}^2$ estimated as part of the meta-analysis model. We find significant differences in the slope of year for distinct countries and also highly different residual variability of the discrimination ratio by country, which this model incorporates. We constrain the slopes of the controls to be the same over countries, allowing us to include controls in countries with too few cases to estimate slopes separately by country, which are most countries in our analysis. We estimate the models using the "metafor" package in the R statistical language (63) with procedures from Pustejovsky and Tipton (55) to estimate the subgroup correlated effects models.

SEs. To account for the correlation of effect estimates from the same study, we use robust SEs clustered at the study level. The SEs are calculated with the "robust" command in "metafor" and the "clubSandwich" module (64).

Significance Testing and Multiple Comparisons. We show significance test results at significance levels (α) of 0.1, 0.05, and 0.01. In tables with tests for multiple countries and/or groups, we also show results of the Benjamini–Hochberg (B.H.) adjustment for multiple comparisons with a false discovery rate (FDR) of 0.2. We discuss results when they are significant at the relatively high levels of $\alpha = 0.1$ and FDR = 0.2 because we believe that the problems caused by false negatives in our analysis (concluding there is no trend when in fact there is a trend) are no less significant than are false positives; in contrast, for causal-effects analyses, the problems of false positives often exceed false negatives. We calculate CIs and hypothesis tests with the "clubsandwich" procedure in R employing small-sample adjustments using the t-distribution (64).

Nonlinearity. In some models, we also replace the single linear year trend with dummy variables representing decade categories to capture potential nonlinear trends in discrimination. We also estimated models with a squared term (*SI Appendix*, Table S9 shows results from the pooled single-trend model). Except for changes in discrimination for MENA groups, we find no clear evidence of nonlinearity.

Odds Ratio Outcome. We estimated basic models using odds ratios of a callback in place of the risk ratio of a callback. This produced similar general conclusions to the risk ratios. See *SI Appendix*, Table S10.

Publication Bias. Publication bias is examined in *SI Appendix*, Appendix D. Some tests, but not all, suggest publication bias. Importantly, none of the tests indicated that the extent of publication bias changed over time or showed significant changes to trend estimates after adjusting for publication bias.

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