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Who Collects the Data? A Tale of Three Maps

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ABSTRACT

Who makes maps and who gets mapped? Using a comparative reading of three maps, this case study introduces the idea that data may be useful, but they are not neutral. Rather, they represent the interests and goals of the groups and institutions that are doing the data collection. These interests and goals may be liberatory, discriminatory, or something in between. In all cases, we argue that an analysis of social inequality is essential to understanding the ethical impacts of data collection and use. To aid such analysis, we introduce a model of power out of sociology called the *matrix of domination*. This model helps us understand why collecting data is political, why *not* collecting data is also political, and what actions we can take to address unequal social relations using data science.

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Learning Objectives

- Learners will consider examples of how data science risks reinforcing existing oppression and inequality in society, as well as ways to mitigate that risk
- Learners will compare three maps that exemplify mapping and the collection of data from different perspectives and in the service of distinct interests, goals, and incentives
- Learners will practice analyzing distinct types of power relations and their impacts on data collection and map-making practices

- Learners will consider how the act of collecting data is political, and how *missing data*—the act of *not* collecting data—is also political
 - Learners will start to ask *who questions* about data science: Who creates the map? Who is mapped? Who does the map benefit? Who does it harm?
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In 1971, the Detroit Geographic Expedition and Institute (DGEI) released a provocative map, *Where Commuters Run Over Black Children on the Pointes-Downtown Track*. The map ([figure 1](#)) uses sharp black dots to illustrate the places in the community where the children were killed. On one single street corner, there were six Black children killed by white drivers over the course of six months. On the map, the dots blot out that entire block.

The people who lived along the deadly route had long recognized the magnitude of the problem, as well as its profound impact on the lives of their friends and neighbors. But gathering data in support of this truth turned out to be a major challenge. No one was keeping detailed records of these deaths, nor was anyone making even more basic information about what had happened publicly available. “We couldn’t get that information,” explains Gwendolyn Warren, the Detroit-based organizer who headed the unlikely collaboration: an alliance between Black young adults from the surrounding neighborhoods and a group led by white male academic geographers from nearby universities.¹ Through the collaboration, the youth learned cutting-edge mapping techniques and, guided by Warren, leveraged their local knowledge in order to produce a series of comprehensive reports, covering topics such as the social and economic inequities among neighborhood children and proposals for new, more racially equitable school district boundaries.

Figure 1. Where Commuters Run Over Black Children on the Pointes-Downtown Track (1971) is one image from a report, “Field Notes No. 3: The Geography of Children,” which documented the racial inequities of Detroit children. The map was created by Gwendolyn Warren, the administrative director of the Detroit Geographical Expedition and Institute (DGEI), in a collaboration between Black young adults in Detroit and white academic geographers that lasted from 1968–1971. The group worked together to map aspects of the urban environment related to children and education. Warren also worked to set up a free school at which young adults could take college classes in geography for credit. Courtesy of Gwendolyn Warren and the Detroit Geographical Expedition and Institute.

Compare the DGEI map with another map of Detroit made thirty years earlier, the “Residential Security Map” ([figure 2](#)). Both maps use straightforward cartographic techniques: an aerial view, legends and keys, and shading. But the similarities end there. The maps differ in terms of visual style, of course. But more profound is how they diverge in terms of the worldviews of their makers and the communities they seek to support. The latter map was made by the Detroit Board of Commerce, which consisted of only white men, in collaboration with the Federal Home Loan Bank Board, which consisted mostly of white men. Far from emancipatory, this map was one of the earliest instances of the practice of *redlining*, a term used to describe how banks rated the risk of granting loans to potential homeowners on the basis of neighborhood demographics (specifically race and ethnicity), rather than individual creditworthiness.

Redlining gets its name because the practice first involved drawing literal red lines on a map. (Sometimes the areas were shaded red instead, as in the map in [figure 2](#).) All of Detroit’s Black neighborhoods fall into red areas on this map because housing discrimination and other forms of structural oppression predated the practice.² But denying home loans to the people who lived in these

neighborhoods reinforced those existing inequalities and, as decades of research have shown, were directly responsible for making them worse.³

Explore this Interactive Map from American Panorama

Visit the web version of this article to view interactive content.

Mapping Inequality: Redlining in New Deal America
1935-1940
<https://dsl.richmond.edu/panorama/>

Early twentieth-century redlining maps had an aura very similar to the “big data” approaches of today. These high-tech, scalable “solutions” were deployed across the nation, and became one method among many that worked to ensure that wealth remained attached to the racial category of whiteness.⁴ At the same time that these maps were being made, the insurance industry, for example, was implementing similar data-driven methods for granting (or denying) policies to customers based on their demographic characteristics. Zoning laws that were explicitly based on race had already been declared unconstitutional; but within neighborhoods, so-called covenants were nearly as exclusionary and completely legal.⁵ The effect of these policies, bolstered by maps like the example in [figure 2](#), exacerbated racial inequality and have led to long-lasting, intergenerational impacts.⁶

Who makes maps and who gets mapped? The redlining map is one that secures the power of its makers: the elite white Christian heterosexual men on the Detroit Board of Commerce, their families, and their communities. This particular redlining map is even called *Residential Security Map*. But the title reflects more than a desire to secure property values. Rather, it reveals a broader desire to protect and preserve home ownership as a method of accumulating wealth, and therefore status and power, that was available—preferentially and unfairly—to white people. In far too many cases, data-driven “solutions” are still deployed in similar ways: in support of the interests of the people and institutions in positions of power, whose worldviews and value systems differ vastly from those of the communities whose data the systems rely upon.⁷

The DGEI map, by contrast, challenges this unequal distribution of data and power. It does so in three key ways. First, in the face of missing data, DGEI compiled its own counterdata. Warren describes how she developed relationships with “political people in order to use them as a means of getting information from the police department in order to find out exactly what time, where, how and who killed [each] child.”⁸ Second, the DGEI map plotted the data they collected with the deliberate aim of quantifying structural oppression. They intentionally and explicitly focused on the problems of “death, hunger, pain, sorrow and frustration in children,” as they explain in the report.⁹ Finally, the DGEI map was made by young Black people who lived in the community, under the leadership of a Black woman who was an organizer in the community, with support provided by the academic geographers.¹⁰ The identities of these makers matter, their proximity to the subject matter matters, the terms of their collaboration matter, and the leadership of the project matters.¹¹

For these reasons, the DGEI exemplifies one of the core principles of what we have termed “data feminism”: *challenge power*. Challenging power requires mobilizing data science to push back against existing and unequal power structures and to work toward more just and equitable futures. To challenge power means we must take action against an unjust status quo. In this case study, we discuss one starting point for challenging power: Collecting counterdata—in the face of missing data or institutional neglect—offers a powerful starting point.

Power and the Matrix of Domination

What do we mean by *power*? We use the term *power* to describe the current configuration of structural privilege and structural oppression, in which some groups experience unearned advantages—because various systems have been designed by people like them and work for people like them—and other groups experience systematic disadvantages—because those same systems were not designed by them or with people like them in mind. These mechanisms are complicated, and there are “few pure victims and oppressors,” notes influential sociologist Patricia Hill Collins.

In her landmark text, *Black Feminist Thought*, first published in 1990, Collins proposes the concept of the *matrix of domination* to explain how systems of power are configured and experienced.¹² It consists of four domains: the structural, the disciplinary, the hegemonic, and the interpersonal ([figure 3](#)). Her emphasis is on the intersection of gender and race, but she makes clear that other dimensions of identity (sexuality, geography, ability, etc.) also result in unjust oppression, or unearned privilege, that become apparent across the same four domains.

The four domains of the matrix of domination

Structural domain Organizes oppression: laws and policies.	Disciplinary domain Administers and manages oppression. Implements and enforces laws and policies.
Hegemonic domain Circulates oppressive ideas: culture and media.	Interpersonal domain Individual experiences of oppression.

Chart based on concepts introduced by Patricia Hill Collins in *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment*.

Figure 3. The four domains of the matrix of domination. Chart based on concepts introduced by Patricia Hill Collins in *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment* (New York: Routledge, 2008 [1990]).

The *structural domain* is the arena of laws and policies, along with organizations and institutions that implement them. This domain organizes and codifies oppression. Take, for example, the history of voting rights in the United States. The US Constitution did not originally specify who was authorized to vote, so various states had different policies that reflected their local politics. Most had to do with owning property, which, conveniently, most women could not do. But with the passage of the Fourteenth Amendment in 1868, which granted the rights of US citizenship to those who had been

enslaved, the nature of those rights—including voting—were required to be spelled out at the national level for the first time. More specifically, voting was defined as a right reserved for “male citizens.” This is a clear instance of codified oppression in the structural domain.

It would take until the passage of the Nineteenth Amendment in 1920 for many (but not all) women in the United States to be granted the right to vote.¹³ Even still, many state voting laws continued to include literacy tests, residency requirements, and other ways to indirectly exclude people who were not property-owning white men. These restrictions persist today, in the form of practices like dropping names from voter rolls, requiring photo IDs, and limits to early voting—the burdens of which are felt disproportionately by low-income people, people of color, and others who lack the time or resources to jump through these additional bureaucratic hoops.¹⁴ This is the *disciplinary domain* that Collins names: the domain that administers and manages oppression through bureaucracy and hierarchy, rather than through laws that explicitly encode inequality on the basis of someone’s identity.¹⁵

Neither of these domains would be possible without the *hegemonic domain*, which deals with the realm of culture, media, and ideas. Discriminatory policies and practices in voting can only be enacted in a world that already circulates oppressive ideas about, for example, who counts as a citizen in the first place. Consider an antisuffragist pamphlet from the 1910s that proclaims, “You do not need a ballot to clean out your sink spout.”¹⁶ Pamphlets like these, designed to be literally passed from hand to hand, reinforced preexisting societal views about the place of women in society. Today, we have animated GIFs instead of paper pamphlets, but the hegemonic function is the same: to consolidate and reinforce ideas about who is entitled to exercise power and who is not.

The final part of the matrix of domination is the *interpersonal domain*, which influences the everyday experience of individuals in the world. How would you feel if you were a woman who read that pamphlet, for example? Would it have more or less of an impact if a male family member gave it to you? Or, for a more recent example, how would you feel if you took time off from your hourly job to go cast your vote, only to discover when you got there that your name had been purged from the official voting roll or that there was a line so long that it would require that you miss half a day’s pay, or stand for hours in the cold, or ... the list could go on. These are examples of how it *feels* to know that systems of power are not on your side and, at times, are actively seeking to take away the small amount of power that you do possess.¹⁷

The matrix of domination works to uphold the undue privilege of dominant groups while unfairly oppressing other groups. This remains true even as women constitute a majority of the world’s population. What does this mean? With respect to gender, for example, men constitute the dominant group, while all other genders experience structural oppression, which is evident in any research that

studies wage gaps, wealth gaps, political representation gaps, and more. *Sexism* is the term that names this form of oppression. In relation to race, white people constitute the dominant group (racism); in relation to class, wealthy and educated people constitute the dominant group (classism); and so on.¹⁸

Using the concept of the matrix of domination and the distinction between dominant and oppressed groups, we can begin to examine how power unfolds in and around data. This often means asking uncomfortable questions: who is doing the work of data science (and who is not)? Whose goals are prioritized in data science (and whose are not)? And who benefits from data science (and who is either overlooked or actively harmed)?¹⁹ These questions are uncomfortable because they unmask the inconvenient truth that there are groups of people who are disproportionately benefitting from data science, and there are groups of people who are disproportionately harmed. Asking these *who questions* allows us, as data scientists ourselves, to start to see how privilege is baked into our data practices and our data products.²⁰

Using Counterdata to Challenge the Matrix of Domination

As we saw with the DGEI example, collecting counterdata can be a powerful strategy for exposing the differential harms of an unequal world, particularly when institutions run by dominant groups neglect to quantify or investigate such harms. Lacking comprehensive data about women who die in childbirth in the United States, for example, ProPublica decided to resort to crowdsourcing to learn the names of the estimated seven hundred to nine hundred US women who died in 2016.²¹ As of 2019, they've identified only 140. Or, for another example: in 1998, youth living in Roxbury—a neighborhood known as “the heart of Black culture in Boston”—were sick and tired of inhaling polluted air. They led a march demanding clean air and better data collection, which led to the creation of the AirBeat community monitoring project.²²

Scholars have proposed various names for these instances of ground-up data collection, including *counterdata* or *agonistic data* collection, *data activism*, *statactivism*, and *citizen science* (when in the service of environmental justice).²³ Whatever it's called, it's been going on for a long time. In 1895, civil rights activist and pioneering data journalist Ida B. Wells assembled a set of statistics on the epidemic of lynching that was sweeping the United States.²⁴ She accompanied her data with a meticulous exposé of the fraudulent claims made by white people—typically, that a rape, theft, or assault of some kind had occurred (which it hadn't in most cases) and that lynching was a justified response. Today, an organization named after Wells—the Ida B. Wells Society for Investigative Reporting—continues her mission by training up a new generation of journalists of color in the skills of data collection and analysis.

A counterdata initiative in the spirit of Wells is taking place just south of the US border, in Mexico, where a single woman is compiling a comprehensive data set on femicide: gender-related killings of

women and girls.²⁵ María Salguero, who also goes by the name Princesa, has logged more than five thousand cases of femicide since 2016.²⁶ Her work provides the most accessible information on the subject for journalists, activists, and victims' families seeking justice.

The issue of femicide in Mexico rose to global visibility in the mid-2000s with widespread media coverage about the deaths of poor and working-class women in Ciudad Juárez. A border town, Juárez is the site of more than three hundred *maquiladoras*: factories that employ women to assemble goods and electronics, often for low wages and in substandard working conditions. Between 1993 and 2005, nearly four hundred of these women were murdered, with around a third of those murders exhibiting signs of exceptional brutality or sexual violence. Convictions were made in only three of those deaths. In response, a number of activist groups like Ni Una Más (Not One More) and Nuestras Hijas de Regreso a Casa (Our Daughters Back Home) were formed, largely motivated by mothers demanding justice for their daughters, often at great personal risk to themselves.²⁷

These groups succeeded in gaining the attention of the Mexican government, which established a Special Commission on Femicide. But despite the commission and the fourteen volumes of information about femicide that it produced, and despite a 2009 ruling against the Mexican state by the Inter-American Human Rights Court, and despite a United Nations Symposium on Femicide in 2012, and despite the fact that almost all Latin American and Caribbean countries have now passed laws defining femicide or femicide—despite all of this, deaths in Juárez have continued to rise.²⁸ In 2009 a report pointed out that one of the reasons that the issue had yet to be sufficiently addressed was the lack of data.²⁹ Needless to say, the problem remains.

How might we explain the missing data around femicide in relation to the four domains of power that constitute Collins's matrix of domination? As is true in so many cases of data collected (or not) about women and other oppressed groups, the collection environment is compromised by imbalances of power.

The most grave and urgent manifestation of the matrix of domination is within the interpersonal domain, in which cis and trans women become the victims of violence and murder at the hands of men. Although law and policy (the structural domain) have recognized the crime of femicide, no specific policies have been implemented to ensure adequate information collection, either by federal agencies or local authorities. Thus, the disciplinary domain, in which law and policy are enacted, is characterized by a deferral of responsibility, a failure to investigate, and victim blaming. This persists in a somewhat recursive fashion because there are no consequences imposed within the structural domain. For example, the Special Commission's definition of femicide as a "crime of the state" speaks volumes to how the government of Mexico is deeply complicit through inattention and indifference.³⁰

Of course, this inaction would not have been tolerated without the assistance of the hegemonic domain—the realm of media and culture—which presents men as strong and women as subservient, men as public and women as private, trans people as deviating from “essential” norms, and nonbinary people as nonexistent altogether. Indeed, government agencies have used their public platforms to blame victims. Following the femicide of twenty-two-year-old Mexican student Lesvy Osorio in 2017, researcher Maria Rodriguez-Dominguez documented how the Public Prosecutor’s Office of Mexico City shared on social media that the victim was an alcoholic and drug user who had been living out of wedlock with her boyfriend.³¹ This led to justified public backlash, and to the hashtag #SiMeMatan (If they kill me), which prompted sarcastic tweets such as “#SiMeMatan it’s because I liked to go out at night and drink a lot of beer.”³²

Figure 4. María Salguero's map of femicides in Mexico (2016–present) can be found at <https://femicidiosmx.crowdmap.com/>. (Top) Map extent showing the whole country. (Bottom) A detailed view of Ciudad Juárez with a focus on a single report of an anonymous transfeminicide. Salguero crowdsources points on the map based on reports in the press and reports from citizens to her. Courtesy of María Salguero.

It is into this data collection environment, characterized by extremely asymmetrical power relations, that María Salguero has inserted her femicides map. Salguero manually plots a pin on the map for every femicide that she collects through media reports or through crowdsourced contributions ([figure 4, top](#)). One of her goals is to “show that these victims [each] had a name and that they had a life,”³³ and so Salguero logs as many details as she can about each death. These include name, age, relationship with the perpetrator, mode and place of death, and whether the victim was transgender, as well as the full content of the news report that served as the source. [Figure 4 \(bottom\)](#) shows a detailed view for a single report from an unidentified transfeminicide, including the date, time, location, and media article about the killing. It can take Salguero three to four hours a day to do this unpaid work. She takes occasional breaks to preserve her mental health, and she typically has a backlog of a month's worth of femicides to add to the map.

Although media reportage and crowdsourcing are imperfect ways of collecting data, this particular map, created and maintained by a single person, fills a vacuum created by her national government. The map has been used to help find missing women, and Salguero herself has testified before Mexico's Congress about the scope of the problem.

Salguero is not affiliated with an activist group, but she makes her data available to activist groups for their efforts. Parents of victims have called her to give their thanks for making their daughters visible, and Salguero affirms this function as well: “This map seeks to make visible the sites where they are killing us, to find patterns, to bolster arguments about the problem, to georeference aid, to promote prevention and try to avoid feminicides.”

It is important to make clear that the example of missing data about femicide in Mexico is not an isolated case, either in terms of subject matter or geographic location. Femicide is a widespread problem that occurs globally in all countries that normalize violence against women, including the United States. And the phenomenon of missing data is a regular and expected outcome in all societies characterized by these unequal power relations, in which inequality and oppression are maintained through willful disregard, deferral of responsibility, and organized neglect for data and statistics about those members of oppressed groups who do not hold power. So too are examples of individuals and communities using strategies like Salguero’s to fill in the gaps left by these missing data sets—in the United States as around the world.³⁴ If “quantification is representation,” as data journalist Jonathan Stray asserts, then collecting counterdata offers one way to hold those in power accountable.³⁵ Collecting counterdata demonstrates how data science can be enlisted on behalf of individuals and communities that need more power on their side.

Suggested Discussion and Activity Questions

- How are the three maps depicted in this case study similar? How are they different?
- Analysis of power: Use the matrix of domination to analyze the practice of redlining. Here you might ask students to create a 2 x 2 table like the one in [figure 3](#) and fill in their thoughts. What aspects of redlining fall into the structural domain? What aspects fall into the disciplinary domain? The hegemonic domain? The interpersonal domain? Which domain(s) would you place the redlining map into?
- Peer share: Reflect on your own identity, background, and life experience. What aspects of the world do you have unique insight into because of your identity? What aspects of the world do you understand very little about because of your identity and life experience?
- What *who questions* would you ask of a new data-driven technology to assess whether it is equitable across different social groups? For a specific example, you can ask students to reflect on facial recognition as it’s deployed in:
 - Public space surveillance to try to detect criminals
 - Installed in public housing by landlords to let tenants into their homes
 - Boarding an airplane to match your name to your face

Footnotes

1. Gwendolyn Warren, “About the Work in Detroit,” in *Field Notes No. 3: The Geography of Children, Part II* (East Lansing, MI: Detroit Geographical Expedition and Institute, 1971), 12. The report also included data that Warren and her team collected—and quantified—on factors as specific as amount of broken glass found on playgrounds in white versus Black neighborhoods, as well as essays from other members of the DGEI. ↵
2. Paul Szewczyk, a historian of Detroit, has created a map that overlays demographic information on top of the redlining map to show how all of Detroit’s majority Black neighborhoods were colored red. See the blog post authored by Alex B. Hill, “Detroit Redlining Map 1939,” *Detroitography*, December 10, 2014, <https://detroitography.com/2014/12/10/detroit-redlining-map-1939/>. ↵
3. And that’s not the end of the cycle: those who could not buy in those neighborhoods but still wanted to own their homes were required to look elsewhere, depriving those neighborhoods of higher-income individuals, as well as those committed to the neighborhood’s long-term growth. Fewer higher-income individuals and prospects for long-term growth made those neighborhoods less desirable as locations for business or other developments, and so the cycle continued on, as it does into the present. For a summary of these and other pernicious effects, including their impact into the present on homeownership rates, home values, and credit scores, see Daniel Aaronson, Daniel Hartley, and Bhash Mazumder, “The Effects of the 1930s HOLC ‘Redlining’ Maps,” Working Paper No. 2017-12 (2017), Federal Reserve Bank of Chicago; and Emily Badger, “How Redlining’s Racist Effects Lasted for Decades,” *New York Times*, August 24, 2017. ↵
4. We use the term *whiteness* here and throughout our work to refer to the social category of whiteness and to distinguish it from any biological or otherwise essentialist conception of race. The concept of whiteness has a long history, just as the concept of Blackness does. Indeed, many have argued that the two are co-constructed. In the early twentieth century, James Weldon Johnson, James Baldwin, and W. E. B. Du Bois devoted significant attention to the relationship between Blackness and whiteness, emphasizing how Black people needed to understand whiteness for their very survival. In more recent years, scholars from across the humanities have taken up this category, offering additional historical context and theoretical importance. See, for example, David Roediger, *The Wages of Whiteness: Race and the Making of the American Working Class* (New York: Verso, 1991) and Toni Morrison, *Playing in the Dark: Whiteness and the Literary Imagination* (New York: Vintage, 1993) for two early works in this tradition; or, more recently, Nell Irvin Painter, *The History of White People* (New York: Norton, 2010). ↵
- 5.

Buchanan v. Warley, 245 U.S. 60, 38 S. Ct. 16 (1917).

Buchanan v. Warley, a 1917 legal case heard before the US Supreme Court, declared that a race-based zoning ordinance in Kentucky was unconstitutional. But many states and cities, as well as private communities, continued to implement other laws and covenants that would effectively exclude certain inhabitants on the basis of race. See Christopher Silver, “The Racial Origins of Zoning in American Cities,” in *Urban Planning and the African American Community: In the Shadows*, ed. June Manning Thomas and Marsha Ritzdorf (Thousand Oaks, CA: Sage, 1993), 23–42. [↵](#)

6. This is a phenomenon that political philosopher Cedric Robinson famously termed *racial capitalism*, and it continues into the present in the form of algorithmically generated credit scores that are consistently biased and in the consolidation of “the 1 percent” through the tax code, to give only two examples of many. What’s more, the benefits of whiteness accrue: “Whiteness retains its value as a ‘consolation prize,’” civil rights scholar Cheryl Harris explains. “It does not mean that all whites will win, but simply that they will not lose.” Along similar lines, transgender activist and writer Dean Spade and computational biologist Rori Rohlf, following Michel Foucault, theorize these effects in terms of “life chances.” Sorting techniques like redlining distribute life chances differently for different populations, they explain. This “distribution of life chances” is key. Under the matrix of domination, life chances for majoritized bodies are enhanced, multiplied, and secured by new technologies, whereas life chances for minoritized bodies are diminished, divided, and imperiled by new technologies. Spade and Rohlf, “Legal Equality, Gay Numbers and the (After?) Math of Eugenics.” On racial capitalism, see Cedric Robinson, *Black Marxism: The Making of the Black Radical Tradition* (1983; Chapel Hill: University of North Carolina Press, 2000); and Jodi Melamed, “Racial Capitalism,” *Critical Ethnic Studies* 1, no. 1 (2015): 76–85. On the links between whiteness and property see Cheryl I. Harris, “Whiteness as Property,” *Harvard Law Review* 106, no. 8 (1993): 1758. On credit scores, see Mikella Hurley and Julius Adebayo, “Credit Scoring in the Era of Big Data,” *Yale Journal of Law and Technology* 18, no. 1 (2017), 148–216. On the tax code, see Michael Leachman, Michael Mitchell, Nicholas Johnson, and Erica Williams, “Advancing Racial Equity with State Tax Policy,” Center on Budget and Policy Priorities, November 15, 2018. [↵](#)

7. Redlining is still present with us in numerous ways. In late 2018, the US Department of Housing and Urban Development charged Facebook with discrimination for, among other things, enabling housing advertisers to draw a red line around geographic areas where they did not want their housing ads to appear. See Russell Brandom, “Facebook Has Been Charged with Housing Discrimination by the US Government,” *Verge*, March 28, 2019, <https://www.theverge.com/2019/3/28/18285178/facebook-hud-lawsuit-fair-housing-discrimination>. Scholars have also proposed the concepts of *technological redlining*, to describe the ways that technology reinforces oppression and engages in racial profiling (see Safiya Umoja Noble

in *Algorithms of Oppression: How Search Engines Reinforce Racism* [New York: New York University Press, 2018]); *digital redlining*, to refer to the unequal distribution of digital services across different geographies, such as the lack of *Pokémon Go* stops in neighborhoods of color (see Allana Akhtar, “Is Pokémon Go Racist? How the App May Be Redlining Communities of Color,” *USA Today*, August 9, 2016); and *discursive redlining*, in which online characterizations of physical places, such as Yelp reviews, directly contribute to gentrification processes (see S. Zukin, S. Lindeman, and L. Hurson, “The Omnivore’s Neighborhood? Online Restaurant Reviews, Race, and Gentrification,” *Journal of Consumer Culture* 17, no. 3 [2017]: 459–79). ↵

8. Warren, “About the Work in Detroit,” 12. ↵

9. Warren, “About the Work in Detroit,” 10. ↵

10. In fact, Warren had previously led numerous community actions, including school walkouts and protests, before beginning her collaboration with the DGEI. ↵

11. The work of the DGEI inspired a generation of critical cartographers—geographers who would go on to interrogate the role of power in maps and the potential of counterdata and countermapping to challenge that power. But progressive, “critical” people have their own sexism and racism to negotiate. In academic geography, the DGEI’s work is almost exclusively portrayed as the work of the progressive academics who worked on the project. Gwendolyn Warren is rarely credited with leading the work; or, if credited, she is used as an example of how the elite academics were successfully able to collaborate with and transfer knowledge to “the disadvantaged Blacks,” to quote geographer Ronald Horvath’s account of DGEI (“The ‘Detroit Geographic Expedition and Institute’ Experience,” *Antipode* 3, no. 1 [November 1971]: 74). Warren herself challenged this misattribution of the project and mischaracterization of the community in *Field Notes* No. 3. But the white male savior narrative persists to this day: the DGEI map included in this chapter was referred to as “Bill Bunge’s map” (which it definitively is not!) as recently as 2018 in a scholarly paper. Feminist geographers like Cindi Katz have worked to restore credit to Gwendolyn Warren. See, for example, Gwendolyn Warren, Cindi Katz, and Nik Heynen, “Myths, Cults, Memories, and Revisions in Radical Geographic History: Revisiting the Detroit Geographic Expedition and Institute,” in *Spatial Histories of Radical Geography: North America and Beyond*, ed. Trevor Barnes and Eric Sheppard (New York: Wiley, 2019), 59–85. In addition, a video of Katz and Warren in conversation at the City University of New York is available here: <https://vimeo.com/111159306>. ↵

12. Patricia Hill Collins, *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment* (New York: Routledge, 2008), 21. ↵

13.

Even then, Native Americans of all genders were still legally excluded from voting since they had yet to be granted US citizenship. The Fourteenth Amendment explicitly excluded Native Americans from US citizenship—another instance of oppression being codified in the structural domain of the matrix of domination. In 1924, the passage of the Indian Citizenship Act granted joint US citizenship to all Native Americans (without their consent—many did not desire to be US citizens), clearing the path for enfranchisement. But it would take until 1962 for the last US state (New Mexico) to change its laws so that all Native Americans could vote. Even then, obstacles abounded, and many Black women were prevented from exercising their right to vote through voter suppression measures. The 1965 Voting Rights Act offered additional legal language to contest disenfranchisement, but that act is in the process of being dismantled by the Supreme Court (as of 2013, with *Shelby County v. Holder*), which threatens many of its protections. On the subject of voting rights in the United States, it's also worth pointing out that Puerto Rico did not have universal suffrage until 1935, and like other US territories, still does not have voting power in the US Congress or representation in the electoral college.

See also:

Shelby Cnty. v. Holder, 43 F. Supp. 3d 47 (D.D.C. 2014).

Voting Rights Act of 1965, Pub. L. 89-110, 79 Stat. 437.

☐

14. Other disenfranchisement methods devised over the years have included undue wait times for registering to vote, having to pay a tax to vote, or having to take a test about the Constitution. Well through the passage of the Voting Rights Act of 1965, Black and brown people seeking to vote faced threats of bodily harm. Note that the history of voter suppression perpetrated by white people on people of color is not over. One need only consider the 2018 gubernatorial election in Georgia, in which Brian Kemp, secretary of state and a white man, presided over his own gubernatorial race against Stacey Abrams, a Black woman. In his capacity as secretary of state, his actions included purging voter rolls and putting fifty-three thousand voter registrations on hold, 70 percent of which were for voters of color. Long lines and technical problems plagued the election day efforts, and the NAACP and ACLU sued the state of Georgia for voting irregularities. In short, voter suppression—enacted in the disciplinary domain of the matrix of domination—is alive and well. See German Lopez, “Voter Suppression Really May Have Made the Difference for Republicans in Georgia,” *Vox*, November 7, 2018, <https://www.vox.com/policy-and-politics/2018/11/7/18071438/midterm-election-results-voting-rights-georgia-florida>. ☐

15. Note that the disciplinary domain does not just have to do with government power and policy, but also with corporate, private, and institutional policies. A particular company prohibiting its workers

from leaving early to vote or penalizing those who distribute information about voting on the factory floor is an example of the disciplinary domain. [↵](#)

16. Eleanor Barkhorn, “‘Vote No on Women’s Suffrage’: Bizarre Reasons for Not Letting Women Vote,” *Atlantic*, November 6, 2012, <https://www.theatlantic.com/sexes/archive/2012/11/vote-no-on-womens-suffrage-bizarre-reasons-for-not-letting-women-vote/264639/>. [↵](#)

17. This is a point that Collins underscores: “Oppression is not simply understood in the mind—it is felt in the body in myriad ways,” she writes (*Black Feminist Thought*, 293). [↵](#)

18. We use the term *minoritized* to describe groups of people who are positioned in opposition to a more powerful social group. While the term *minority* describes a social group that is comprised of fewer people, *minoritized* indicates that a social group is actively devalued and oppressed by a *dominant* group, one that holds more economic, social, and political power. For further explanation of why *minoritized* makes more sense to use than *minority*, see I. E. Smith, “Minority vs. Minoritized: Why the Noun Just Doesn’t Cut It,” *Odyssey*, September 2, 2016, <https://www.theodysseyonline.com/minority-vs-minoritize>; and Yasmin Gunaratnam, *Researching Race and Ethnicity: Methods, Knowledge and Power* (London: Sage, 2003). [↵](#)

19. This role often entails what Sara Ahmed has described as being a “feminist killjoy.” As she writes in the first post on her blog, you might be a feminist killjoy if you “have ruined the atmosphere by turning up or speaking up” or “have a body that reminds people of histories they find disturbing” or “are angry because that’s a sensible response to what is wrong.” The feminist killjoy exposes racism and sexism, but “for those who do not have a sense of the racism or sexism you are talking about, to bring them up is to bring them into existence.” In the process of exposing the problem, the feminist killjoy herself becomes a problem. She is “causing trouble” or getting in the way of the happiness of others by bringing up the issue. For example, a personal killjoy moment from the book-writing process happened when Catherine shared the topic of the book with a former professor, who responded that she should stay focused on data literacy and not become one of those “grumpy feminists” who were uncomfortable with their sexuality and sought to make problems for people. For the record, Catherine is not grumpy, feels confident in her sexuality, and is working on the killjoy skills of making more feminist problems for people. Read more about how to navigate being or becoming a feminist killjoy at feministkilljoys.com, or see Sara Ahmed, *Living a Feminist Life* (Durham, NC: Duke University Press, 2017). [↵](#)

20. Feminist methods involve continually asking *who questions*, as AI researcher Michael Muller has observed: By whom, for whom, who benefits, who is harmed, who speaks, who is silenced. Muller articulated what some of the *who questions* are for human–computer interaction in his article

“Feminism Asks the ‘Who’ Questions in HCI,” *Interacting with Computers* 23, no. 5 (2011):447–49, and in our work we articulate what some of the *who questions* are for data science. [↵](#)

21. See Adriana Gallardo, “How We Collected Nearly 5,000 Stories of Maternal Harm,” *ProPublica*, March 20, 2018, <https://www.propublica.org/article/how-we-collected-nearly-5-000-stories-of-maternal-harm>. [↵](#)

22. Penn Loh, Jodi Sugerman-Brozan, Standrick Wiggins, David Noiles, and Cecelia Archibald, “From Asthma to AirBeat: Community-Driven Monitoring of Fine Particles and Black Carbon in Roxbury, Massachusetts,” *Environmental Health Perspectives* 110 (April 2002): 297–301. [↵](#)

23. On counter-data, see Morgan Currie, Britt S. Paris, Irene Pasquetto, and Jennifer Pierre, “The Conundrum of Police Officer-Involved Homicides: Counter-Data in Los Angeles County,” *Big Data & Society* 3, no. 2 (2016): 1–14. On data activism, see Stefania Milan and Lonneke Van Der Velden, “The Alternative Epistemologies of Data Activism,” *Digital Culture & Society* 2, no. 2 (2016): 57–74. On statactivism, see the introduction to the special issue of *Partecipazione e conflitto: The Open Journal of Sociopolitical Studies* on the topic, edited by Isabelle Bruno, Emmanuel Didier, and Tommaso Vitale: “Statactivism: Forms of Action between Disclosure and Affirmation,” *Partecipazione e conflitto: The Open Journal of Sociopolitical Studies* 7, no. 2 (2014): 198–220. There is a large body of literature on citizen science; a good starting point is Sara Ann Wylie, Kirk Jalbert, Shannon Dosemagen, and Matt Ratto, “Institutions for Civic Technoscience: How Critical Making Is Transforming Environmental Research,” *Information Society* 30, no. 2 (2014): 116–126. [↵](#)

24. See Ida B. Wells, “A Red Record: Tabulated Statistics and Alleged Causes of Lynchings in the United States, 1892-1893-1894: Respectfully Submitted to the Nineteenth Century Civilization in ‘the Land of the Free and the Home of the Brave,’” New York Public Library Digital Collections, accessed July 24, 2019, <http://digitalcollections.nypl.org/items/510d47df-8dbd-a3d9-e040-e00a18064a99>. [↵](#)

25. *Femicide* is a term first used publicly by feminist writer and activist Diana Russell in 1976 while testifying before the first International Tribunal on Crimes Against Women. Her goal was to situate the murders of women in a context of unequal gender relations. In patriarchal societies, men use violence to systematically dominate and exert power over women. And the research bears this out. While male victims of homicide are more likely to have been killed by strangers, a 2009 report published by the World Health Organization and partners notes a “universal finding in all regions” that women are far more likely to have been murdered by someone they know. Femicide includes a range of gender-related crimes, including intimate and interpersonal violence, political violence, gang activity, and female infanticide. Such deaths are often depicted as isolated incidents and treated as such by authorities, but those who study femicides characterize them as a pattern of underrecognized and underaddressed systemic violence. Latin American feminists have shifted the

term to *femicide*, which augments the definition by directly accusing the state of indifference, negligence, and complicity in the deaths of women. See World Health Organization, *Strengthening Understanding of Femicide: Using Research to Galvanize Action and Accountability* (Washington, DC: Program for Appropriate Technology in Health [PATH], InterCambios, Medical Research Council of South Africa [MRC], and World Health Organization [WHO], 2009), 110. [↵](#)

26. See María Salguero's map at <https://femicidiosmx.crowdmap.com/> and https://www.google.com/maps/d/u/0/viewer?mid=174IjBzP-fl_6wpRHg5pkGSj2egE&ll=23.942983359872816%2C-101.9008685&z=5. [↵](#)

27. Indeed, Marisela Escobedo Ortiz, the mother of one such victim, was herself shot at point-blank range and killed while demonstrating in front of the Government Palace of Chihuahua in 2010. [↵](#)

28. The toll now stands at more than fifteen hundred. Three hundred women were killed in Juárez in 2011 alone, and only a tiny fraction of those cases have been investigated. The problem extends beyond Ciudad Juárez and the state of Chihuahua to other states, including Chiapas and Veracruz. [↵](#)

29. *Strengthening Understanding of Femicide* states that “instances of missing, incorrect, or incomplete data mean that femicide is significantly underreported in every region.” See World Health Organization, *Strengthening Understanding of Femicide*, 4. [↵](#)

30. After three years of investigating, the commission, chaired by politician Marcela Lagarde, found that femicide was indeed occurring and that the Mexican government was systematically failing to protect women and girls from being killed. Lagarde suggested that femicide be considered, “a crime of the state which tolerates the murders of women and neither vigorously investigates the crimes nor holds the killers accountable.” See World Health Organization, *Strengthening Understanding of Femicide*, 11. [↵](#)

31. See Maria Rodriguez-Dominguez, “Femicide and Victim Blaming in Mexico, Council on Hemispheric Affairs, October 2, 2017, <http://www.coha.org/wp-content/uploads/2017/10/Maria-Rodriguez-Femicidio-Mexico-.pdf>. [↵](#)

32. Mara Miranda (@MaraMiranda25), “#SiMeMatan es porque me gustaba salir de noche y tomar mucha cerveza ...,” Twitter, May 5, 2017, 11:17 a.m., <https://twitter.com/MaraMiranda25/status/860559096285720581>. For an in-depth study of hashtags and their use in social and political organizing, see Elizabeth Losh, *Hashtag* (New York: Bloomsbury, 2019). [↵](#)

33. Fundación Carolina. 2020. “Entrevista a María Salguero.” Fundación Carolina (blog). December 7, 2020. <https://www.fundacioncarolina.es/entrevista-a-maria-salguero/>. [↵](#)

34. Missing data is not a new problem; the fields of critical cartography and critical GIS have long considered the phenomenon of missing data. Contemporary examples of missing data and counterdata collection include “The Missing and Murdered Indigenous Women Database,” created by doctoral student Annita Lucchesi, which tracks Indigenous women who are killed or disappear under suspicious circumstances in the United States and Canada (<https://www.sovereign-bodies.org/mmiw-database>). Jonathan Gray, Danny Lämmerhirt, and Liliana Bounegru also wrote a report that includes case studies of citizen involvement in collecting data on drones, police killings, water supplies, and pollution. See “Changing What Counts: How Can Citizen-Generated and Civil Society Data Be Used as an Advocacy Tool to Change Official Data Collection?,” 2016, <https://dx.doi.org/10.2139/ssrn.2742871>. Environmental health and justice is an area in which communities are out front collecting data when agencies refuse or neglect to do so. The MappingBack Network (http://mappingback.org/home_en/aboutus/) provides mapping capacity and support to Indigenous communities fighting extractive industries, and Sara Wylie, cofounder of Public Lab, works with communities impacted by fracking to measure hydrogen sulfide using low-cost DIY sensors. See Sara Wylie, Elisabeth Wilder, Lourdes Vera, Deborah Thomas, and Megan McLaughlin, “Materializing Exposure: Developing an Indexical Method to Visualize Health Hazards Related to Fossil Fuel Extraction,” *Engaging Science, Technology, and Society* 3 (2017): 426–63. Indigenous cartographers Margaret Wickens Pearce and Renee Pualani Louis describe cartographic techniques for recuperating Indigenous perspectives and epistemologies (often absent or misrepresented) into GIS maps. See Margaret Pearce and Renee Louis, “Mapping Indigenous Depth of Place,” *American Indian Culture and Research Journal* 32, no. 3 (2008): 107–26. All that said, participatory data collection efforts have their own silences, as Heather Ford and Judy Wajcman show in their study of the “missing women” of Wikipedia: “‘Anyone Can Edit,’ Not Everyone Does: Wikipedia’s Infrastructure and the Gender Gap,” *Social Studies of Science* 47, no. 4 (2017): 511–27. [↵](#)
35. Jonathan Stray, *The Curious Journalist’s Guide to Data* (New York: Columbia Journalism School, 2016). [↵](#)