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Director: Mary M. Breaux, Ph.D.

Polluted Confinement: A Nationwide Analysis of Toxic Releases near Prisons

Elisa Toman, Ph.D.

Each year billions of pounds of toxic chemicals are released into U.S. air, waterways, and land (Environmental Protection Agency [EPA], 2019). In 2019, based on approximately 21,000 facilities reporting to the EPA, 2.16 billion pounds (lbs.) of chemical waste were released onto land, 580 million lbs. were released into the air, and another 201 million lbs. were discharged into U.S. waterways (EPA, 2019). Exposure to pollutants has negative consequences for human health, which can range from acute symptoms such as headaches and temporary effects on the central nervous system to increased risk of cancer and premature death (Gilderbloom et al., 2020; Kiaghadi et al., 2021; Manisalidis, et al., 2020).

Exposure to chemical waste and its attendant health effects are not equally distributed across the U.S. Individuals who fall victim to high exposure levels tend to be of low socioeconomic status and cannot afford to relocate to less polluted areas (Evans & Kantrowitz, 2002). Incarcerated individuals constitute another group which lacks the ability to relocate. Scholars have found that in Oklahoma areas with prisons are disproportionately exposed to toxic chemicals (Leon-Corwin, 2020). A report by the Human Rights Coalition, the Center for Coalfield Justice, and the Abolitionist Law Center (2014) found that a prison in Pennsylvania is surrounded by approximately 40 million tons of coal mining waste. This led many individuals incarcerated at State Correctional Institution (SCI) Fayette to develop acute health problems like blurred vision and headaches, and some to develop chronic health conditions, including cancerous tumors.

The aim of the current study is to examine the relationship between toxic releases and prisons at a nationwide level. The data utilized for this study come from the EPA's toxic release inventory (TRI) and cover a 5-year time span, from 2015 to 2019. Specifically, this study will examine whether zip codes across the U.S. that contain a prison experience higher levels of toxic releases than zip codes that do not contain prisons. Broadening the focus of this line of research is critical for at least three reasons. First, the U.S. incarcerates approximately 1,430,800 individuals in state prisons (Minton et al., 2021). If patterns found in Oklahoma and Pennsylvania are identified across other states, this has potential implications for many people, who are already disadvantaged across several social and economic spectra (Kreager & Kruttschnitt, 2018). Second, exposure to toxic chemicals for a group of individuals with no ability to relocate may constitute a collateral consequence of mass incarceration that has received little scholarly attention to date. Yet, such studies branch traditional penal research with environmental justice scholarship and constitute a critical step in broadening our understanding of the wide-reaching effects of imprisonment. Third, the health effects of continuous and long-lasting exposure to toxic chemicals are detrimental. Prisons, however, are ill-equipped to manage chronic and acute health problems. While the cost of health care across prison systems is high, averaging around $5,700 per person, care provided is considered inadequate, representing a "floor-standard" rather than a high standard of care (The PEW Charitable Trusts, 2017; Potter & Rosky, 2014). Prison budgets across the U.S. are tight with little room to expand health care funding. This may leave an already unhealthy population exposed to disproportionate levels of toxic releases with inadequate care. In addition, scholars have recently linked poor physical health with lower re-entry success (Link et al., 2019). Thus, a cycle may be perpetuated wherein people are incarcerated in areas with high toxic releases, develop or have exacerbated negative health consequences, face inadequate health care, and may be at increased risk of recidivism, and reincarceration, upon release. Exposing a population that already is characterized with bad health (Maruschak et al., 2021) to additional risk of chronic and acute illness would constitute a humanitarian crisis.

Environmental Health Risks: Exposure and Consequences

Environmental health risks, including pollution, low air quality, and hazardous waste, primarily affect individuals of low socioeconomic standing (Evans & Kantrowitz, 2002). In fact, a major contributor to health inequalities in the U.S. can be tied directly to disproportionate exposure to environmental pollutants (Brulle & Pellow, 2006). Racial and ethnic inequalities emerge as well. Elliott and colleagues (2004) find that counties with large Black populations and with high levels of income inequality are also more likely to have facilities that experience chemical accidents. Similarly, a study by Stretesky and Hogan (1998) concludes that Black and Hispanic persons are more likely to live close to hazardous waste sites than white individuals. Fegadel (2020) identifies the practice of uranium mining specifically as having adverse, even genocidal, consequences for Native American populations.

Harris county, which encompasses Houston, Texas, serves to illustrate these patterns. With high levels of income inequality and racial/ethnic diversity, the county has also faced numerous chemical spills and is home to nearly 300 facilities that are not in compliance with EPA standards (EPA, 2021; U.S. Census Bureau, 2019). A chemical spill in 2014 near the Houston ship channel killed four workers and another accident in 2021 left several individuals dead and 30 in the hospital (Olsen, 2015). One potential explanation for the pattern identified in existing literature is the notion that individuals who cannot afford to relocate become trapped in areas with high toxic discharge and fall victim to corporations' hazardous environmental practices.

Like these communities, incarcerated individuals are also unable to leave their environment. And prisons too, are in some cases disproportionately located in areas fraught with environmental hazards and toxic waste (Abolitionist Law Center and Human Rights Coalition, 2014; Leon-Corwin et al., 2020). A comprehensive study of facilities emitting toxic waste in Oklahoma, for example, identified proximity to a prison as a salient predictor of elevated toxic emission levels (Leon-Corwin et al., 2020).

As such, individuals, incarcerated or not, rarely have the choice to leave areas with high levels of toxic emissions. This has long lasting consequences. For instance, living in toxic communities and prisons can increase the risk of cancer and cardiovascular disease, cause neurological damage, birth defects, and even genetic damage (Chi et al., 2016; Gill & Picou, 1989). Poor health has been linked to unemployment, lower educational attainment, lower family income, and increased recidivism risk (Link et al., 2019; Rijn et al., 2013; Sturm & Gresenz, 2002). A cyclical relationship between poverty, exposure to toxic emissions, poor health outcomes, and incarceration may emerge, which can be near impossible to break out of.

In sum, air, water, and land pollution are inextricably linked to poor health outcomes. In a capitalist economy, those who cannot afford to move out of the area or fight corporations that emit toxic chemicals fall victim to disproportionate exposure to pollution and unduly suffer the consequences (Brulle & Pellow, 2006; Elliott et al., 2004; Evans & Kantrowitz, 2002; Fegadel, 2020; Stretesky & Hogan,1998). Scholars have documented that low socioeconomic status communities and communities of color bare the brunt of this phenomenon. Studies suggest too that those who work and live within U.S. prisons are subject to disproportionate exposure to toxic chemicals. However, these studies are narrow in scope – examining only one state or one facility – and there is little known about the state of prisons across the U.S. broadly. Placing focus on the approximately 1,830 state prisons constitutes a critical next step in both the environmental justice literature and in the examinations of collateral consequences of mass incarceration. Given that nearly 50% of individuals are incarcerated in the southern U.S., a specific focus on this geographic location is needed as well (Minton et al., 2021).

Methods

Data for this study come from the EPA's Toxic Release Inventory (TRI), the American Community Survey (ACS) 5-year estimates (2015-2019), and each state's correctional department website. The TRI collects information from industrial facilities across the U.S. that release toxic chemicals and pollutants that impact ecological and human health. Specifically, chemicals that cause cancer, chronic illness, acute illness, or that have adverse environmental impacts are covered. Examples include zinc, lead, manganese, arsenic, copper, and ammonia (for a full list see: https://www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals). Moreover, the TRI covers air, water, and land releases. Facilities that fall under manufacturing, mining, or power generation are mandated to report toxic release information to the EPA if they employ more than 10 individuals and if they release toxic chemicals at or above an assigned threshold on a yearly basis. For the current study, the following information was collected from the TRI data archive: facility location and pounds of toxic chemicals released on a yearly basis. The ACS is a yearly survey that collects information on demographic, economic, and housing characteristics across the U.S. Data from the ACS are utilized to control for potential confounding factors, such as median income and racial/ethnic make-up of the community. Finally, the correctional department websites for all 50 U.S. states were used to collect location information for prisons in operation during the examined time period. The analyses include all state prisons, including private state prisons, but exclude federal prisons and county jails.

Dependent Variable. The dependent variable is pounds of toxic chemicals released, captured at the zip code level for each year between 2015 and 2019. For each facility and for each year, the amount of released toxic chemicals was summed such that each facility had one amount released per year. The amount released by facilities in the same zip code was then summed to create one release amount measure per zip code per year (see e.g., Leon-Corwin et al., 2020). Zip codes that had 0 values for emissions were dropped from the analyses[1]. The final zip code level emissions variable was log transformed due to skewness (original variable skew = 68.72, log transformed variable skew = -0.95).

Independent Variable. The independent variable is a dichotomous indicator of whether a zip code contains a prison or neighbors a zip code with a prison. Zip codes are coded as "1" if there is a prison in the zip code or if a neighboring zip code contains a prison (see e.g., Leon-Corwin et al., 2020). Those zip codes that do not contain a prison and that are not adjacent to a zip code with a prison are coded as "0". To create a list of neighboring zip codes, zip code boundaries were imported into ArcGIS software and a polygon neighbor analysis was conducted. Zip codes that did not contain a TRI facility were removed from the analysis.

Control Variables. At the zip code level, control variables include percent Black, percent Asian, percent American Indian, percent Hispanic/Latino[2], total population, median income, and percent employed in manufacturing. At the state level, the following controls are included: size of the state to account for density, percent republican leaning, and percent democrat leaning. Political leanings of a state may impact pollution levels – studies find that left-leaning countries, for example, are associated with lower pollution levels (Neumayer, 2003). Not least, reporting year is included as a control variable.

Analytic Technique. The analyses proceed in two steps. First, descriptive statistics and bivariate differences between prison and non-prison zip codes are examined. Robust tests for equality of variances are conducted followed by a series of t-tests. Second, multilevel mixed-effects linear regression models are estimated due to the nature of the dependent variable and the nesting of zip codes within states. Two models are estimated, one for the U.S. (n = 33,511) and one for states in the South (n = 12,927) only[3]. For both, a multilevel model is estimated and compared to a single level model. To determine if multilevel modeling is appropriate Akaike's Information Criteria (AIC) and Bayesian Information Criteria (BIC) are compared and the intraclass correlation coefficient (ICC) is produced.

Results

Descriptive Statistics and Bivariate Differences. There are 33,511 zip code level observations across the five-year period (2015-2019). As shown in table 1, across the examined time period, an average of 582,799 pounds (lbs.) of toxic chemicals were released. Prison zip codes have lower emission numbers than non-prison zip codes, but this difference is not significant as shown in table 2. In Southern states, an average of 399,245 lbs. of emissions occurred. While the amount in prison zip codes is higher, about 401,218 lbs., there are no significant differences at the bivariate level[4].

Table 1. Descriptives Statistics 2015-2019

Full Sample (n = 33,511)	Mean	S.D.	Min	Max
Dependent Variable				
Emissions	582799.20	11200000.00	0.00	1080000000.00
Ln(Emissions)	8.41	4.43	-12.21	20.80
Independent Variable				
Prison Zip	0.23	0.42	0.00	1.00
Control Variables – Zip Level				
Total Population	20281.73	17388.30	44.00	118291.00
% Black	11.83	18.12	0.00	100.00
% Latinx	13.10	17.68	0.00	98.93
% American Indian	0.77	3.80	0.00	96.84
% Asian	3.00	6.15	0.00	75.24
% in Manufacturing	13.40	7.64	0.00	62.30
Median Income	59977.73	21959.15	7784.00	240507.00
Control Variables – State Level				
Land Mass	70036.92	85841.21	1034.00	570641.00
% Republican	39.78	7.50	27.00	57.00
% Democrat	42.36	7.31	25.00	57.00
Southern States (n = 12,927)	**Mean**	**S.D.**	**Min**	**Max**
Dependent Variable				
Emissions	399821.20	1907037.00	0.00	68900000.00
Ln(Emissions)	8.27	4.90	-8.52	18.05
Independent Variable				
Prison Zip	0.29	0.45	0.00	1.00
Control Variables – Zip Level				
Total Population	20726.47	16894.02	80.00	118291
% Black	20.39	21.34	0.00	100.00
% Latinx	14.03	18.18	0.00	98.93
% American Indian	0.74	2.90	0.00	69.60
% Asian	2.00	3.73	0.00	50.73
% in Manufacturing	12.34	7.43	0.00	60.95
Median Income	53874.44	20182.38	12676.00	240507.00
Control Variables – State Level				
Land Mass	54272.25	57796.34	1949.00	261232.00
% Republican	41.69	5.76	29.00	52.00
% Democrat	42.00	5.72	35.00	55.00

Note: S.D. = standard deviation

In terms of zip code level control variables, the total population averages around 20,281 persons. Twelve percent of the population is Black, 13% is Hispanic, less than 1% is American Indian, and 3% is Asian. About 13% of the population is employed in the manufacturing sector and the median income is just under $60,000. Southern state zip codes have an average of 20,726 persons per zip code. Twenty percent of the population is Black, 14% is Hispanic, less than 1% is American Indian, and 2% is Asian. Twelve percent work in manufacturing, and the median income is $53,874.

Across the U.S., prison zip codes have a significantly higher percentage of Black and American Indian residents, a lower percentage of Hispanic, Asian, and manufacturing sector employed residents, and significantly lower median income. Southern state prison zip codes have significantly more Black residents and residents employed in the manufacturing sector. The total population in prison zip codes is lower than in non-prison zip codes, and there are fewer Hispanic and Asian residents. The median income in prison zip codes is significantly lower than in non-prison zip codes.

Table 2. Bivariate Comparisons

Note: D.f. = degrees of freedom, Sig. = significance

Full Sample (n = 33,511)	Prison Zip	Non-Prison Zip	T-test		
	Mean	Mean	t	D.f.	Sig.
Emissions	616974.70	465865.80	1.04	33509	0.300
Total Population	20361.91	20007.38	1.56	33509	0.118
% Black	10.79	15.40	-19.60	33509	0.000
% Latinx	13.43	11.95	6.41	33509	0.000
% American Indian	0.73	0.89	-3.29	33509	0.001
% Asian	3.29	2.00	16.11	33509	0.000
% in Manufacturing	13.50	13.05	4.50	33509	0.000
Median Income	61076.25	56219.06	17.01	33509	0.000

Southern States (n = 12,927)	Prison Zip	Non-Prison Zip	T-test		
	Mean	Mean	t	D.f.	Sig.
Emissions	399245.40	401217.70	-0.06	8686.67	0.953
Total Population	21287.01	19367.02	5.88	12925	0.000
% Black	18.79	24.28	-13.39	12925	0.000
% Latinx	15.35	10.82	12.96	12925	0.000
% American Indian	0.76	0.70	1.11	12925	0.266
% Asian	2.23	1.44	10.91	12925	0.000
% in Manufacturing	12.12	12.88	-5.28	12925	0.000
Median Income	55377.05	50230.18	13.27	12925	0.000

Multilevel Results – Full Sample. Table 3 depicts the results of a mixed effects multilevel regression model of prison zip codes on the natural log of emissions. The ICC value is 0.03 and the AIC and BIC values of the multilevel model are smaller than those of the single level model, indicating that a multilevel model is appropriate.

Table 3. Mixed effects multilevel regression of prison zip codes on natural log of emissions (n=33,511)

Note: 2015 serves as reference; S.E. = standard error; * p<.05, **p<.01, ***p<.001

	b	S.E.	Exp(b)
Prison or Adjacent Zip	0.400***	0.058	1.492
Zip-Level			
Total Population	-0.000004*	0.000	1.000
% Black	0.006***	0.002	1.006
% Latinx	0.011***	0.002	1.011
% American Indian	0.030***	0.007	1.030
% Asian	-0.016**	0.005	0.984
% in Manufacturing	0.074***	0.004	1.077
Median Income	-0.00002***	0.000	1.000
State-Level			
Land Mass	0.000004*	0.000	1.000
% Republican	0.040	0.043	1.040
% Democrat	-0.002	0.046	0.998
Reporting Year			
2016	-0.138	0.079	0.871
2017	-0.159*	0.079	0.853
2018	-0.134	0.079	0.875
2019	-0.171*	0.079	0.843
Constant	6.992	3.659	1088.288

Several trends emerge when examining table 3. First, prison zip codes are positively associated with the natural log of emissions (*b* = 0.400). More specifically, emissions in prison zip codes are 49% higher than in non-prison zip codes. Second, several control variables are significant and in the predicted direction. For example, for every 1,000 person increase in total population, emissions decrease by 4%. The racial and ethnic makeup of zip codes also influence emission levels. For example, a 10-point increase in the percentage of Black residents yields a 6% increase in emissions while a 10-point increase in the percentage of Asian residents results in a 16% decrease. Not least, as median income increases by $100, emissions decrease by 2%.

Multivariate Results – Southern States. A similar pattern emerges when examining southern states, the model for which is depicted in table 4. In comparison to a single level model, the multilevel model fits the data better. The ICC value is 0.04 and the AIC and BIC values for the multilevel model were smaller than for the single level model.

Table 4. Mixed effects multilevel regression of prison zip codes on natural log of emissions, Southern states only

	b	S.E.	Exp(b)
Prison or Adjacent Zip	0.574***	0.095	1.775
Zip-Level			
Total Population	-0.00002***	0.000	1.000
% Black	0.010***	0.002	1.010
% Latinx	0.019***	0.003	1.019
% American Indian	0.050**	0.017	1.051
% Asian	-0.063***	0.013	0.939
% in Manufacturing	0.103***	0.007	1.109
Median Income	-0.00002***	0.000	1.000
State-Level			
Land Mass	0.000	0.000	1.000
% Republican	0.120	0.115	1.128
% Democrat	0.090	0.121	1.094
Reporting Year			
2016	-0.190	0.137	0.827
2017	-0.178	0.137	0.837
2018	-0.116	0.137	0.890
2019	-0.176	0.137	0.838
Constant	-0.484	9.834	0.616

Note: 2015 serves as reference; S.E. = standard error; * p<.05, **p<.01, ***p<.001

Discussion

The release of toxic chemicals into the air, water, and land has implications for global, public, and personal health. While as a society we have come to accept (regulated) polluting as a means to an end, we must also face the reality that not all communities suffer the consequences of this custom equally. Groups with little to no ability to relocate suffer the brunt of environmental pollution. Traditionally, environmental justice scholars have focused on community factors like poverty, income inequality, and race/ethnicity to shed light on who is most affected by toxic releases. Here, the characteristic of interest was the presence of prisons and how this relates to toxic emissions. Incarcerated individuals have no ability in deciding where they will reside while under supervision of the state. Understanding if and how such groups are differentially exposed to environmental toxic chemicals thus constituted a critical next step in bridging environmental justice and prison literature.

There are three findings that deserve reiteration here. First, the results confirmed and extended earlier work by Leon-Corwin and colleagues (2020). Patterns identified by the authors in Oklahoma emerged across the U.S. It is thus likely that of the over 1.4 million individuals housed in state prisons, many will be (perhaps unknowingly) exposed to toxic releases and attendant environmental pollution while under the care of the state. As discussed, such exposure can have detrimental effects on individuals' physical health, which prisons are ill equipped to deal with (Potter & Rosky, 2014). Because approximately half of the prison population already suffers from existing chronic health conditions (Maruschak et al., 2021), this pattern exposed an additional layer of harm levied on the incarcerated population. And this harm is not without consequence as physical health problems can lead to increased risk of recidivism via its effect on employment status and social bonds (Link et al., 2019). Thus, our current practices may contribute to the cycle of reoffending that plagues U.S. correctional programs (Durose & Antenangeli, 2021). Beyond that, and as noted by Leon-Corwin and colleagues (2020), exposing persons with no ability to relocate to high levels of toxic emissions may constitute a human rights violation.

Second, findings showed that this pattern was especially pronounced in states in the South. This is particularly troublesome as southern states incarcerate a large portion of the total U.S. prison population. For example, Texas alone holds 11% of the total imprisoned population, which constitutes more individuals than are incarcerated in some entire countries (BBC, 2005; Minton et al., 2021). Prisons located in the southern U.S. are also known for being under-staffed, underfunded, and dangerous (Clarke, 2018; Jones, 2019; Wagner, 2014). Thus, this amalgamation of factors highlights a worrying practice in a region of the U.S. already known for problematic prison practices.

Third, and not least, findings showed that in zip codes with high percentages of Black, Hispanic, or American Indian residents emission levels were high. Income levels too predicted emissions, such that higher income zip codes were likely to have lower toxic releases. This finding falls in line with existing environmental justice work and highlights that underserved communities must grapple with a combination of negative experiences that can leave them entrenched in poverty, poor health, and without the ability to leave or fight corporations (Elliott et al., 2004; Fegadel, 2020; Stretesky & Hogan,1998).

This study is not without limitations. Perhaps most important is the fact that the emission levels are self-reported by facilities and there may well be reason to underreport the levels of toxic emissions. Thus, the numbers examined here may paint an incomplete picture. In addition, this study focused on zip code level emissions. Zip codes do not constitute a geographic region to which emissions are limited to. It is certainly possible that toxic chemicals released into the waterways in one zip code, for example, have impacts on areas that are much farther than a neighboring zip code. More nuanced studies of released toxic chemicals are necessary.

Given these limitations, it is critical for future research to continue examining this line of work. This study highlighted the importance of considering collateral consequences of mass imprisonment that intersect with the environment. Scholars can build upon this work in several ways. For example, here the focus was on the U.S. as whole and the south specifically. Other regions of the U.S. should be examined, and inter-region differences explored. In addition, more nuanced distance-based analyses should be explored to determine not only zip code level differences, but proximity to correctional facilities and emission level differences.

Taken as a whole, this study identified a critical area of concern when it comes to collateral consequences of mass incarceration. Individuals in U.S. prisons may be disproportionately exposed to toxic chemicals that can have long term effects on their health. Genetic damage caused by such toxic chemicals can also be passed down to children, which can lead to poor health outcomes and further entrenchment in a low socioeconomic status (Lloyd-Smith & Sheffield-Brotherton, 2008; Rijn et al., 2013; Sturm & Gresenz, 2002). Human rights include the right to a healthy and adequate environment. Subjecting individuals to forced residence in unhealthy and polluted environments may not only be morally questionable, but it could also constitute a violation of our basic human rights. It is time for us to consider the ethical and moral consequences of our current practices of mass imprisonment and wide-spread environmental pollution that occurs largely without consequence.

[1] Some facilities reported 0 emissions. Whether this is accurate, or a data entry error is unknown.

[2] Racial/ethnic group names are derived from the ACS.

[3]Utilizing the U.S. Census Bureau categorization of States, the South includes Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

[4]Note, bivariate differences were examined using the non-transformed emissions variable.

References

Abolitionist Law Center and the Human Rights Coalition. (2014). *No escape: Exposure to toxic coal waste at state correctional institution Fayette*. Retrieved from: https://abolitionistlawcenter.org/wp-content/uploads/2014/09/no-escape-3-3mb.pdf

BBC. (2005, June 20). *World prison populations*. BBC News. http://news.bbc.co.uk/2/shared/spl/hi/uk/06/prisons/html/nn2page1.stm

Brulle, R., & Pellow, D. (2006). Environmental justice: Human health and environmental inequalities. *Annual Review of Public Health, 27*, 103-124.

Chi, G., Hajat, A., Bird, C., Cullen, M., Griffin, B., Miller, K., Shih, R., Stefanick, M., Vedal, S., Whitsel, E., & Kaufman, J. (2016). Individual and neighborhood socioeconomic status and the association between air pollution and cardiovascular disease. *Environmental Health Perspectives, 124*(12), 1840-1847.

Clarke, M. (2018, October 12). Low pay, high staff turnover drive Texas prison guard shortage. *Prison Legal News*. https://www.prisonlegalnews.org/news/2018/oct/12/low-pay-high-staff-turnover-drive-texas-prison-guard-shortage/

Durose, M., & Antenangeli, L. (2021). *Recidivism of prisoners released in 34 states in 2021: A 5-year follow-up period (2012-2017)*. Bureau of Justice Statistics.

Elliott, M., Wang, Y., Lowe, R., & Kleindorfer, P. (2004). Environmental justice: Frequency and severity of U.S. chemical industry accidents and the socioeconomic status of surrounding communities. *Journal of Epidemiol Community Health, 58*, 24-30.

Environmental Protection Agency (2019). 2019 Toxics release inventory national analysis complete report. Retrieved from: https://www.epa.gov/sites/default/files/2021-01/documents/2019_tri_national_analysis_complete_report.pdf

Environmental Protection Agency (2021). Enforcement and compliance history online. Retrieved from: https://echo.epa.gov/

Evans, G., & Kantrowitz, E. (2002). Socioeconomic status and health: Potential role of environmental risk exposure. *Annual Review of Public Health, 23*, 303-331.

Fegadel, A. (2020). Toxic colonialism and green victimization of Native Americans: An examination of the genocidal impacts of uranium mining. [Doctoral dissertation, University of South Florida]. Scholar Commons.

Gilderbloom, J., Meares, W., & Squites, G. (2020). Pollution, place, and premature death: Evidence from a mid-sized city. *Local Environment, 6,* 419-432.

Jones, A. (2019, June 18). Cruel and unusual punishment: When states don't provide air conditioning in prison. *Prison Policy Initiative*. https://www.prisonpolicy.org/blog/2019/06/18/air-conditioning/

Kiaghadi, A., Rifai, H., & Dawson, C. (2021). The presence of superfund sites as a determinant of life expectancy in the United States. *Nature Communications, 12*, 1-12.

Kreager, D., & Kruttschnitt, C. (2018). Inmate society in the era of mass incarceration. *Annual Review of Criminology, 1*, 261-283.

Leon-Corwin, M., McElroy, J., Estes, M., Lewis, J., & Long, M. (2020). Polluting our prisons? An examination of Oklahoma prison locations and toxic releases, 2011-2017. *Punishment & Society, 22*, 413-438.

Link, N., Ward, J., & Stansfield, R. (2019). Consequences of mental and physical health for reentry and recidivism: Toward a health-based model of desistance. *Criminology, 57*(3), 544-573.

Lloyd-Smith, M., & Sheffield-Brotherton, B. (2008). Children's environmental health: Intergenerational equity in action – a civil society perspective. *Annals of the New York Academy of Sciences, 1140*, 190-200.

Manisalidis, I., Stavropoulou, E., Stavropoulos, A., & Bezirtzoglou, E. (2020). Environmental and health impacts of air pollution: A review. *Frontiers in Public Health, 20*.

Maruschak, L., Bronson, J., & Alper, M. (2021). *Medical problems reported by prisoners*. Bureau of Justice Statistics.

Minton, T., Beatty, L., & Zeng, Z. (2021). *Correctional populations in the United States, 2019 – statistical tables*. Bureau of Justice Statistics.

Neumayer, E. (2003). Are left-wing party strength and corporatism good for the environment? Evidence from panel analysis of air pollution in OECD countries. *Ecological Economics, 45*(2), 203-220.

Olsen, L. (2015, November 13). A year of lessons from the DuPont tragedy of Nov. 2014. *Houston Chronicle*. https://www.chron.com/news/houston-texas/article/A-year-of-lessons-from-the-DuPont-tragedy-of-Nov-6629893.php

Potter, R., & Rosky, J. (2014). The healthy prison. In F. Cullen, C. Jonson, & M. Storh (Eds.), *The American prison: Imagining a different future* (p. 151-170). Sage Publications, Inc.

Rijn, R., Robroek, S., Brouwer, S., & Burdorf, A. (2013). Influence of poor health on exit from paid employment: A systematic review. *Occupational and Environmental Medicine, 71*(4), 232-233.

Stretesky, P., & Hogan, M. (1998). Environmental justice: An analysis of superfund sites in Florida. *Social Problems, 45*(2), 268-287.

Sturm, R., & Gresenz, C. (2002). Relations of income inequality and family income to chronic medical conditions and mental health disorders: National survey. *BMJ, 324*, 20-23.

The PEW Charitable Trusts. (2017). *Prison health care: Costs and quality*. Retrieved from: https://www.pewtrusts.org/-/media/assets/2017/10/sfh_prison_health_care_costs_and_quality_final.pdf

U.S. Census Bureau. (2019). *ACS 2019 – 5-year estimates*. Retrieved from: https://www.socialexplorer.com/tables/ACS2019_5yr

Wagner, P. (2014, May 28). Tracking state prison growth in 50 states. *Prison Policy Initiative*. https://www.prisonpolicy.org/reports/overtime.html

Elisa Toman, Ph.D., is an Assistant Professor in the Department of Criminal Justice and Criminology at Sam Houston State University. Her research interests include theories of punishment, trends in criminal sentencing, and implications of individuals' experiences with the criminal justice system. She has published recently in *Journal of Research in Crime and Delinquency, Justice Quarterly*, and *Crime and Delinquency*.