# BERKELEY PUBLIC POLICY JOURNAL

## EQUITY

*Equal access to parks in America, over prescription of psychotropic medication of foster youth*

## WATER CONSERVATION

*Water use in Minnesota*

## SECURITY

*The connection betweeen home-land security and health, Japanese marintime safety*

*... and interviews with Ian Haney López and Monica Bickert*

# Berkeley Public Policy Journal

# Editors Note

Welcome to the Fall 2017 edition of the Berkeley Public Policy Journal. This year so far has been a rollercoaster of ups and downs, and we are back with exciting research, writing and thoughts from the vibrant GSPP network.

This year has been challenging and promising for us. With major shifts in democratic, policy, and public discourse, we find ourselves thinking critically and rethinking our approach on a personal and professional level. As policy analysts, advocates, implementers, and decision makers, this is a defining juncture for us. As we charge forward, we remind ourselves of our faith in the evidence based and non-partisan policy process. With that, BPPJ makes another small contribution to the ocean of work shared by our esteemed policy community.

Our editorial team discussed at length about the theme of our journal and the roster of articles to publish in this edition. The one principle that brought us together was that every policy issue is important, devoid of any qualifications attached to it in the mainstream. Therefore, as a team, we made methodical selections based on the quality of writing and analysis, and the uniqueness of approach. Congratulations and thank you to all the contributors!

In this issue, we explore the racial, economic, and social implications of the 2016 through three interviews and five articles.

Our first interview is with Ian Haney Lopez, a leading thinker on racial divisions in society and the growing wealth inequality in the United States. Our second interview was with Monika Bickert, who shared with us the role of Facebook today and the ability of technology to 'redefine social questions as engineering problems'. Finally, Arlie Russel Hochschild spoke to us about the racial divide before and after Trump's victory.

We also have a wide array of articles focusing on public health, park access, physical infrastructure, and drug policy. We are proud to present a platform for these works, adding tremendous value to academic research and policy dialogue.

Finally, all of us on the editorial board of the Berkeley Public Policy Journal would like to offer our sincerest gratitude to GSPP and its students, staff, and faculty that support our work, especially Larry Rosenthal and the ever kind and selfless Martha Chavez. The journal would not be possible without the skill and effort of our fellow Editorial Board members, and we thank them for their hard work and commitment to the journal. We look forward to welcoming the 2018 incoming cohort and a great new academic year, continuing the vibrant tradition of the Berkeley Public Policy Journal.

Sincerely,

Manasa Gummi and Anna Radoff

# PARK ACCESS EQUITY

# IN AMERICAN CITIES

## Park Access Equity in American Cities

### Andrew Wilson and Minh Nguyen

EDITED BY: ELIZABETH LEUIN AND MANASA GUMMI

The creation and maintenance of public open space, especially park land, is a key feature of land use and urban planning. As a public good, open space is theoretically non-rival and non-excludable; its proximity and spatial extent, however, are primary determinants of its use. Given the importance of parks for physical and mental health, social performance, leisure, and play, city planners must be cognizant of park access equity. This paper develops a novel block-level dataset of park access scores for 17 major American cities and explores their relationship with various urban and demographic characteristics. It concludes that between-city characteristics do not predict citywide access inequality (aggregated as a Gini coefficient). However, it shows that within-city block-level characteristics bear a strong relationship to block-level access, though the direction and magnitude of this relationship differs between cities—an observation underscoring the heterogeneity of urban form and the mechanisms and histories through which groups are prevented from accessing municipal public goods.

## PARK ACCESS EQUITY IN AMERICAN CITIES

As American cities developed and expanded in the 19th century, the countryside became less accessible to urban dwellers. Throughout the following century, urban reformers pushed for the establishment of spaces of urban refuge—playgrounds, open spaces, recreation facilities, and manicured public gardens (henceforth described generally as "parks"). Though they lacked rigorous epidemiological research, these reformers nonetheless recognized the importance of green space access to physical and mental health. Recent studies have confirmed their intuitions:

• Physical activity is one of the most important components of general health,[1] [2] but the vast majority of people are not meeting daily exercise recommendations.

• People living in communities with more parks exercise more[3][4][5] and people living closest to parks exercise the most.[6][7][8]

• Exercise is especially important in low-income communities of color because it is as effective as medication in managing and preventing chronic diseases disproportionately experienced by residents of these communities.[9]

• People who live close to high-quality parks report better mental health outcomes.[10][11][12][13][14]

• Park access can significantly improve educational outcomes and reduce violent behavior in children.[15][16]

Though parks are in theory a public good—non-rivalrous and non-excludable—they function in practice as quasi-public goods: research shows that one's use of a park is largely determined by the physical size of the park and its distance from one's home or place of work. (Other,

less relevant factors include a park's aesthetics,[17][18][19] size,[20][21] facility diversity,[22] and signage.[23]) Given the relative importance of parks to physical and mental health and their ostensible publicness, policymakers ought to be concerned about achieving a horizontally equitable distribution of parks. Even disregarding equity claims, parks are also more cost-effective than reactive, triage intervention (such as treatment for diabetes or obesity) at achieving improvements to health outcomes.[24][25] Policymakers should be cognizant of this indirect method of improving community health and social cohesion. This article makes such an outcome-based argument for improving park access.

Research Questions:

Research on the distribution of parks is very limited and the particularity of cities tends to prevent meaningful cross-city comparisons; existing research, though limited, shows that neighborhood income bears little relationship to the number, size, and proximity of green spaces.[26] This claim appears initially specious, especially given hedonic valuation studies that place a relatively high value on access to high-quality urban green space.[27]

To better identify the problem, this paper explores between-city relationships (in part I) and within-city relationships (in part II), concluding with a discussion that seeks to explain potentially contradictory findings. In particular, this paper explores the following questions:

● In part I:

❖ Is green space access more unequal in cities with higher income inequality?

❖ Is green space access more unequal in cities with more conservative political leadership?

❖ Is green space access more unequal in cities with higher population density?

● In part II:

❖ Is green space access lower for neighborhoods with a higher proportion of people of color?

❖ Is green space access lower for neighborhoods with a higher median age?

❖ Is green space access lower for neighborhoods with a higher proportion of renters?

● In part III:

❖ Are park maintenance standards, or park quality, dependent on neighborhood income?

Though data on park quality and maintenance standards are extremely limited, cursory research and our personal experiences with park maintenance and

community organizing seem to provide a probable reconciliation of the divergence between income–park access and house value–park access scores: lower land prices in lower-income areas translate to a lower opportunity cost of green space, but weak political organization against municipal-level underfunding in these places means the land set aside for green space is poorly maintained.[28] [29] The discussion concluding this paper will address this reconciliation further.

Method and Results I

The main innovation of this paper is the introduction of a novel set of block group-level park access scores for a diverse collection of 17 American cities accounting for 10% of the total U.S. population. The following cities are analyzed:

- Austin
- Boston
- Chicago
- Dallas
- Denver
- Houston
- Los Angeles
- Seattle
- District of Columbia
- Miami
- New York City
- Pheladelphia
- Phoenix
- Portland
- San Antonio
- San Diego
- San Francisco

For each city, county-level shapefiles (data files in blocks) of 2010 Census block groups (groups of individual Census tracts, as determined by the U.S. Census Bureau) were established as a baseline geographic extent. For non-city-counties, block group shapefiles were trimmed to fit within the municipal boundary and sliver polygons (small blocks with no useful data) were eliminated by dissolving them with their nearest neighbor polygon.[30] Finally, block groups containing no people were dropped from the analysis.

For each geography, municipal, county, state, and national park shapefiles, as applicable,[31] were merged to generate a composite open space layer. This step took extreme care, as the municipal areas within this analysis contained anywhere between 4 and 9 distinct open space jurisdictions.

Next, centroids (average spatial location) were calculated for each block group polygon, and those falling within or on the border of any open space region in the step above were subsequently dropped.

Finally, a park access score for each block group centroid was generated according to the relationship:

$$score_x = \sum_{i=1}^{n} \left[ \frac{A(\widetilde{P}_i) * 250}{A(\widetilde{P}_i) + 250} \right] * \left[ \frac{1}{D(\vec{x}, \widetilde{P}_i) + 0.02} \right]$$

where $S_x$ is the park access score at block group centroid x and $P_i$ is park polygon i. The area of each park polygon was calculated in acres—with diminishing returns above 250 acres—and the minimum

distance from each centroid to each park was calculated in kilometers, with an added correction factor of 0.02 km to account for division by near-zero distances. This park access measure follows methods similar to the existing literature.[32] For reference, this function generates a park access map for San Francisco is shown
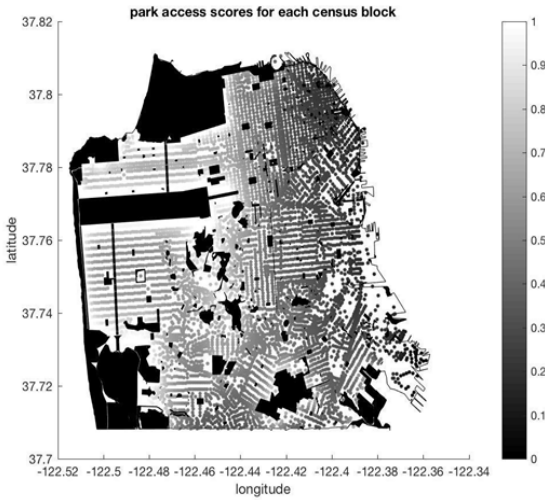


Figure 1: Park Access Scores for Each Census Block

To quantify the degree of park access inequality for each city, Gini coefficients were generated according to:

$$G = \frac{1}{n}\left[n + 1 - 2\left(\frac{\sum_{x=1}^{n}(n+1-i)S_x}{\sum_{i=1}^{n}S_x}\right)\right]$$

where values Sx are indexed in non-decreasing order {$S_x \leq S_{x+1}$}. Gini coefficients are values from 0 to 1 where a value of 1 is a perfectly unequal distribution and a value of 0 is a perfectly equal distribution. We also gathered data on income inequality,[33] a single-axis politics score for each city's leadership,[34][35] and municipal

population density.[36] The resulting Gini coefficients, political scores, and density values by city are shown in tables 1 and 2.

Table 1: City-level Characteristics

| City | Park Gini | Income Gini | Pol. score | Pop. density |
|---|---|---|---|---|
| Austin | 0.1632 | 0.4643 | 0.53 | 3359 |
| Boston | 0.1119 | 0.4772 | 0.81 | 13321 |
| Chicago | 0.1097 | 0.4724 | 0.63 | 11868 |
| Dallas | 0.1313 | 0.4625 | 0.23 | 3469 |
| D.C. | 0.1311 | 0.4372 | 0.93 | 9856 |
| Denver | 0.1045 | 0.4560 | 0.48 | 3950 |
| Houston | 0.2118 | 0.4802 | 0.17 | 3515 |
| Los Angeles | 0.1269 | 0.4894 | 0.49 | 8092 |
| Miami | 0.0865 | 0.5020 | 0.43 | 11136 |
| New York City | 0.0788 | 0.5050 | 0.66 | 27016 |
| Philadelphia | 0.1166 | 0.4738 | 0.52 | 11234 |
| Phoenix | 0.0996 | 0.4546 | 0.04 | 2967 |
| Portland | 0.0940 | 0.4471 | 0.59 | 4375 |
| San Antonio | 0.1250 | 0.4562 | 0.01 | 3393 |
| San Diego | 0.1988 | 0.4617 | 0.36 | 4024 |
| Seattle | 0.0762 | 0.4458 | 0.87 | 6717 |
| San Francisco | 0.1381 | 0.4845 | 1 | 17246 |

Table 2: Relationship between city characteristics and degree of park access inequality

| | (1) Park access inequality |
|---|---|
| Density | -0.00000437 |
| | (-1.61) |
| Politics score | 0.0175 |
| | (0.38) |
| Income inequality | 0.854 |
| | (1.15) |
| Constant | -0.248 |
| | (-0.72) |
| Observations | 17 |
| Adjusted $R^2$ | 0.055 |

*t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The insignificance observed above is partially driven by the small amount of data available, but is also likely representative of the simultaneous path dependence and particularity of the iterative relationship between urban history and social change. This complex process of urban development does not bear summary through a single-axis politics score or income inequality measure. As such, the focus was

Method and Results II

Looking within cities, park access scores were generated using the above method, but using Census blocks (a smaller unit) rather than block groups. Because of its increased computational complexity, this analysis was completed only for Los Angeles, New York City, and San Francisco—a heterogeneous collection of large cities with diverse developmental and spatial characteristics. For reference, block-level scores were generally normally distributed, with consistent means across these three cities; a kernel density map of scores for New York is included below:
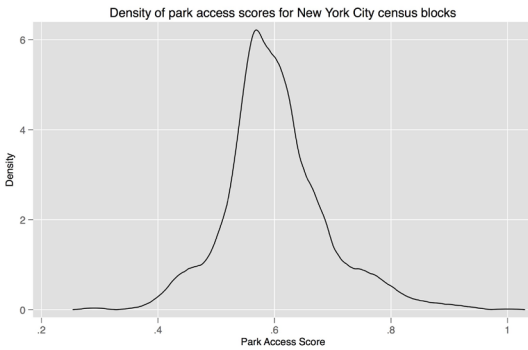


Figure 2: Park Access Density Score for New York City

A model relating Census block access scores and these demographic characteristics was estimated as

$$score_b = \square + \beta\,\square race_b + \gamma\,\square age_b + \delta\,\square renter_b + \text{\textbullet}$$

where raceb is the percent of the block that was other than non-Hispanic white, ageb is the median age of block residents,

and renterb is the percent of the total housing units within the block that are renter-occupied (excluding unoccupied units).[37] The results are below:

Table 3: Relationship between demographics and park access, Los Angeles

|  | Log LA score |
| --- | --- |
| LA age | 0.00461** |
|  | (2.76) |
| Log LA race | -0.141*** |
|  | (-8.16) |
| Log LA rent | 0.00765 |
|  | (0.54) |
| Constant | 11.52*** |
|  | (227.35) |
| $N$ | 958 |
| $R^2$ | 0.167 |

$t$ statistics in parentheses

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

In Los Angeles, above, neighborhood age and ownership characteristics do not exhibit a statistically significant relationship to park access. Census blocks with a larger population of non-Hispanic white residents have significantly better park access. The log-log regression of LA park score on non-Hispanic white residents indicates that a 1% increase in non-Hispanic white residents correlates to a 0.141% decrease in park score.

Table 4: Relationship between demographics and park access, San Francisco

|  | Log SF score |
| --- | --- |
| SF age | -0.00617* |
|  | (-2.21) |
| Log SF race | -0.145*** |
|  | (-4.30) |
| Log SF rent | -0.171*** |
|  | (-4.80) |
| Constant | 11.58*** |
|  | (104.71) |
| $N$ | 175 |
| $R^2$ | 0.179 |

*t* statistics in parentheses

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

Table 5: Relationship between demographics and park access, New York City

|  | Log NYC score |
| --- | --- |
| NYC age | 0.00299*** |
|  | (5.24) |
| Log NYC race | -0.0260*** |
|  | (-5.94) |
| Log NYC rent | 0.145*** |
|  | (20.46) |
| Constant | 11.50*** |
|  | (606.75) |
| $N$ | 2041 |
| $R^2$ | 0.180 |

*t* statistics in parentheses

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

In San Francisco, a block's density of people of color and renters exhibits a strong negative relationship with park access. Median age, interestingly, does not exhibit a significant relationship. Further studies should examine the relatively high concentration of lower-income, older households in the park-rich Richmond neighborhood and the park-poor Bayview–Hunter's Point neighborhood.[38][39] The log-log regressions of SF park score on non-Hispanic white residents and on SF rent indicates that a 1% increase in non-Hispanic white residents correlates to a 0.141% decrease in park score and that a 1% increase in rent correlates to a 0.171% decrease in park score, respectively. a 1% increase in rent correlates to a 0.171% decrease in park score, respectively.

In NYC, park access is strongly predicted by Census block median age, ownership characteristics, and racial composition. Notably, the renter composition–park access relationship seen elsewhere does not hold in New York City, as shown above in Table 4, but the apparent contradiction of direction and magnitude across comparison cities conforms with the earlier discussion: heterogeneities in early urban development generate path dependent relationships between demographic characteristics and access to public goods, exemplified by parks and open space. The log-log regressions of NYC park score on non-Hispanic white residents and on NYC rent indicates that a 1% increase in non-Hispanic white residents correlates to a 0.026% decrease in park score and

narrowed to look within cities.

a 1% increase in rent correlates to a 0.145% decrease in park score, respectively. The log-level regression of NYC park score on age indicates that a 1 year increase in the mean age of residents correlates to a 0.29% increase in park score.

Figure 3: Estimated Linear Relationship Between Rental Rate and Park Accss Score (New York CIty)
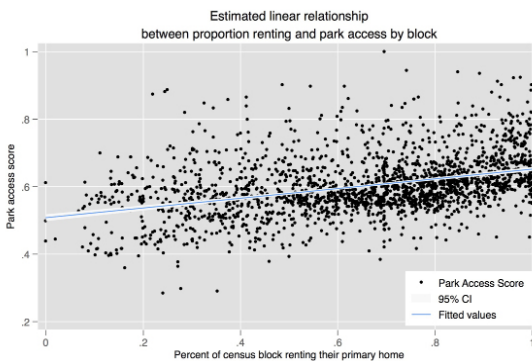


Discussion

A key dimension missing from the above analysis is a discussion of the relative quality and maintenance standards of parks. Unfortunately, data on park maintenance standards are relatively sparse: only San Francisco occasionally publishes quantified park maintenance scores, and their methodology suffers from a number of biases, including their generation by staff responsible for maintaining the parks they evaluate. As such, this component of the analysis is ultimately untenable without a substantial data collection effort.

While this data is limited, our experience working in community organizing in San Francisco lends us some insight into the importance of this dynamic to further research: parks in District 10 (22 in total, with a total area around 200 acres) have three dedicated maintenance workers, while parks in District 5 (18 in total, with a total area around 50 acres) have 12 dedicated maintenance staff. This, importantly, excludes the maintenance staff devoted to Golden Gate Park, a very large and well-maintained park that abuts and is partially contained within District 5. This observation presents an alternate hypothesis: municipalities and other jurisdictions establish persistent green spaces in lower-income neighborhoods in excess of what one might expect because land there is cheaper. This is an optical calculation; it allows governments to meet basic standards of equity and to increase overall green space provision at least cost. For further research, policy analysts and city planners can create new models of where green spaces are built—and what factors drive their maintenance.

However, inequities arise in the long-run as affluent neighborhood groups deploy their resources to advocate for better maintenance; in this way, parks in lower-income neighborhoods become relatively poorly maintained, while parks in higher-income neighborhoods become relatively better maintained. For instance,

the Noe Valley Town Square involved "more than four years of collaboration between the San Francisco Recreation and Parks Department, the community group Residents for Noe Valley Town Square (RNVTS), Supervisor Scott Wiener's office, and the San Francisco Parks Alliance (SFPA)."[40] This is an exemplary case of the potential of community efforts in favor of parks. As policy makers, we should enable such collective action for more communities.

Parts I and II of this analysis may also confirm elements of this hypothesis, albeit indirectly: though income bears little relationship to park access, the presence of a high proportion of groups that are often politically marginalized—people of color, renters, younger people—is strongly connected to poor green space access in some cities. We propose that municipalities are incentivized to establish parks in poor neighborhoods because of lower land prices, but levels of political organization and engagement (or political power) are what matter elsewhere. In other words, socially powerful (often higher-income) neighborhoods use their political voice to demand that municipalities establish parks and allow parks to persist in their neighborhoods at rates similar to low-income neighborhoods, but their continued engagement means that the maintenance of these parks adheres

to very different standards (at least in the case of San Francisco).

For this reason, we may be able to reconcile hedonic valuation studies that place a high value on access to high quality urban green spaces and related studies that show similar levels of park access across the income spectrum.

Park access is an important issue, one that bears on broader discussions of inequality happening across the country. Access to green space is a critical element of public health; moreover, it is one that is often ignored in deference to over-medicalization or triage. While park access is more equitably distributed than income, green space is, after all, a public good and should behave as such.

Finally, as urban design moves in the direction of Singapore's "City in a Garden,"[41] we will need ways of measuring the equity implications of our ecologically conscious city plans; park equity—in maintenance and access—is a first step toward one such metric.

## ENDNOTES

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[27] This relationship has been extensively studied and holds true in a wide variety of urban settings worldwide, including Cologne; Dublin; London; Gainesville, Florida; Marion County, Indiana; Castellón, Spain; Los Angeles; and Waco, Texas. See:

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[30] For those unfamiliar with spatial data, shapefiles contain rasters or vectors, often with associated feature data. In our analysis, we used non-overlapping polygons with associated demographic data. Unfortunately, Census blocks (which span the national map) do not perfectly align with city boundaries. For instance, a block could contain parts of San Francisco and parts of Daly City, an adjacent municipality. We "cut" these blocks to include only San Francisco data. However, this 'cut' frequently left very small polygons for those blocks that were contained mostly in cities adjacent to our area of study—sliver polygons. As these shapes contain essentially no useful information, we dropped them from our analysis.

[31] Defined as being within 100 miles of the city centroid.

[32] See one application at http://www.sustainablecommunitiesindex.org/indicators/view/91

[33] U.S. Census Bureau. Metro area household income inequality tables. 2010.

[34] Tausanovitch, Chris, and Warshaw, Christopher. Representation in Municipal Government. Cambridge University Press, 2014. http://hdl.handle.net/1721.1/88528.

[35] These scores are a single-axis spectrum where 1 is most liberal and -1 is most conservative. Notably, no cities in this analysis were very conservative, likely because large cities very frequently elect relatively liberal leadership.

[36] Data gathered by the U.S. Census Bureau, but archived at http://www.demographia.com/db-2000city50kdens.htm

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[39] According to HOPE SF, http://hope-sf.org/health.php.

[40] See: http://sfrecpark.org/park-improvements/acquisitions-future-park-sites/noe-valley-town-square-future-park-site/

[41] Early interest in urban green space is crystallized in Sir Ebenezer Howard's 1898 "Garden City" movement, which conceptualized livable cities as those that tightly integrated green space into planned, self-contained communities. Singapore is notable for expanding on this idea: it aims to deeply embed urban form in managed and unmanaged green space. Specifically, the Singaporean Ministry of National Development outlines six objectives for transforming Singapore from a "Garden City" to a "City in a Garden": "Establish world-class gardens; rejuvenate urban parks and enliven our streetscape; optimise urban spaces for greenery and recreation; enrich biodiversity in our urban environment; enhance competencies of our landscape and horticultural industry; engage and inspire communities to co-create a greener Singapore."

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A CONVERSATION
WITH

MONIKA BICKERT

## A Conversation with Monika Bickert
## Edited by Manasa Gummi

Monika Bickert is Facebook's head of policy management. Her global team manages the policies for what types of content can be shared on Facebook and how advertisers and developers can interact with the site. Monika originally joined Facebook in 2012 as lead security counsel, advising the company on matters including child safety and data security. Prior to joining Facebook, Monika served as Resident Legal Advisor at the U.S. Embassy in Bangkok, Thailand, where she specialized in Southeast Asian rule of law development and response to child exploitation and human trafficking. She also served as Assistant United States Attorney for 11 years in Washington, DC, and Chicago, prosecuting federal crimes ranging from public corruption to gang-related violence.

*BPPJ: The drive to 'redefine social questions as engineering problems' is a central aspect of Facebook's work. You previously talked about the limitations of algorithm and how it cannot be the silver bullet that addresses social problems. In that context, what do you see as the limitations to this approach to define everything as an engineering problem?*

MB: Technology can help us address social issues in new ways and there are many examples of that, from crowd-sourcing and fundraising, to raising awareness of social issues. But, the core of the Facebook community is people. People communicate and act online, as well as offline, which is why we know that addressing safety in today's world goes beyond technology. An example would be bullying. To address bullying, we have to think about things like 'what makes people become bullies', 'what makes people feel more comfortable to stand up for their friends, and 'what are the offline behaviors that are leading to harm'. Yes, we are focused on

the technology that will help us address bullying, but we are also engaging with safety group educators, parents, and young people who will help us understand the issue and the real world implications more broadly. And that is true across the spectrum when we think about our policies.

*BPPJ: What are the challenges with creating a single technological product that functions in very diverse socio-economic, and cultural settings? How to do you make the platform work for people in politically and socially volatile situations?*

MB: More than four out of five people using Facebook are based outside the US. We have people in our community from a variety of backgrounds and ages. They have very different views about what can be shared online and very different expectations as to what they want to see online. Accommodating different perspectives is always challenging. We try to do that by focusing our content standards and policies on what is important to maintain a safe community

rather than focusing on content that might offend a specific group. If there are other things on the site that a particular group or person finds disagreeable or offensive, we provide tools - such as blocking content, or unfollowing and unfriending people - to address those nuances.

*BPPJ: Looking at global standards, cultural and legal standards are varied in different countries and regional contexts. In such a diverse environment, would an approach that is region specific be more effective than the existing global standards?*

MB: Facebook is a borderless product. Content is constantly moving - and being shared - across borders. In order to facilitate that, we need to have one set of standards, at the core of which is the safety of our community. Safety is something that we won't compromise on. .

At the same time, we want to understand how different safety issues manifest themselves in distinct cultures and regions. For example, we have a policy that prohibits hate speech, but that can look very different in India and in Canada. For that reason, we work hard to account for and incorporate local context in the application of our standards. We regularly engage in  dialogue with civil society groups around the world, and provide guidance to our content reviewers on a weekly basis.

*BPPJ: The Pew Research Center recently found that 62% of adults get news from social media, and Facebook is the leading source among that group. In light of this, how can technological innovations made by Facebook frame the course for ongoing changes in the social media/tech industry? What is Facebook's role in informing and setting the standard for addressing a company's impact on access to quality journalism?. Does Facebook see this as a social responsibility?*

MB:We are not content creators, however we do want our platform to be a place where people can come to address social issues. That is an important part of the connections and sharing we see on Facebook. Sometimes that means we will work with activists and civil society groups around the world to make sure they know how to best use Facebook to reach their target audiences. One way we are doing that is with the Online Civil Courage Initiative (OCCI), which was launched in Germany about a year and a half ago, and works to , onboard civil society groups who are focused on combating  hate and extremism online. Not only are we sharing our own research with them on the best ways to reach audiences, we are  also facilitating sharing among and between the 80 or so civil

society groups that make up OCCI. We focus on onboarding these organizations as opposed to training them because the aim is that the collaboration and information sharing persist and result in the development of an online community.

Another way in which we work with organizations to address important social issues is through our peer to peer program, which is one of my personal favorites. In partnership with EdVenture Partners, Peer to Peer: Challenging Extremism, enlists student teams from over 200 universities around the world in a semester long course that gives them the tools and resources to create and run an online campaign that counters hate and extremism. Teams present their results and metrics at the end of the semester, and compete for a prize and funding to follow through with their proposed project. The program encourages students to use social media as a way of talking about and addressing social issues.

With both these programs, we aren't the speakers; rather, we are focused on helping people use Facebook in a way that allows them to engage with their target audiences.

*BPPJ: With programs like these, is Facebook focusing on local solutions to global problems?*

MB: Yes. A few years ago, for example, a student team from the Lahore University of Management in Pakistan won the Peer to Peer competition for their campaign titled, "FATE: From Apathy to Empathy." The goal was to encourage people to speak up more freely against terrorism and hate. Another interesting campaign was from the Turku School of Economics in Finland, which focused on helping migrants resettle successfully, and acclimatize to their host communities by providing them with information on housing, healthcare and a connection to local families.

These are all local solutions to problems that are global. We are learning about what works where, and are deploying resources to support local programs.

*BPPJ: One of the biggest criticisms of regulators of technology is that regulation often fails to keep up with technological advancements. From your background in government and the private sector, what are your thoughts on managing the tension between regulation and innovation? How can government do a better job of responsibly regulating technologies coming out of Silicon Valley without hindering innovation? (net neutrality, self-driving cars, blockchain, cybersecurity*

MB: I have been on both sides of the aisle. One thing I have seen is that it is tremendously useful to understand where other

stakeholders are coming from, and think about the unintended consequences of the decisions you are making on those stakeholders. For instance, when we are crafting community standards, we have to think about the consequences of our policies on the people who use Facebook. For example, we may identify a word that is associated with self harm trends, and create policies to take down posts that use that word. In doing so, however, we should also consider whether the word can and/or is being used to provide support or raise awareness about the issue. We have to understand all the different dimensions to this problem, and what ways the content is being expressed on our platform.

*BPPJ: Governments shutdowns of the internet and particularly Facebook has been a frequent occurrence recently, particularly in emerging markets such as India. In your experience engaging with governments across the world, do you think politics comes in the way of policy, and how would you handle that?*

MB: An important part of my job is talking to government and ensuring that our dialogue is ongoing, open and transparent. This allows us to better understand their priorities and concerns and explain to them the challenges we face. Often times, our priorities are aligned, as is the case with safety - both parties want

to ensure that the general public is safe. The key in these instances is to come to the table with an open mind so that we can figure out where we're aligned and how we can both serve our communities. The Government Transparency Report that Facebook puts out, for example, is our way of telling people when we receive requests from the government and how we respond to them.

*BPPJ: Finally your advice on important principles/ values that future policy analysts, advocates, activists, leaders, and policymakers must keep in mind?*

MB: I find real value in listening to different perspectives - whether it is inside your organization or outside in a multi-stakeholder environment. My advice would be to be open minded, listen to the stakeholders involved, assume good intentions, and find areas where incentives are aligned. It can and must be a positive process where we help one another.

MINNESOTA WATERSHED POLITICS
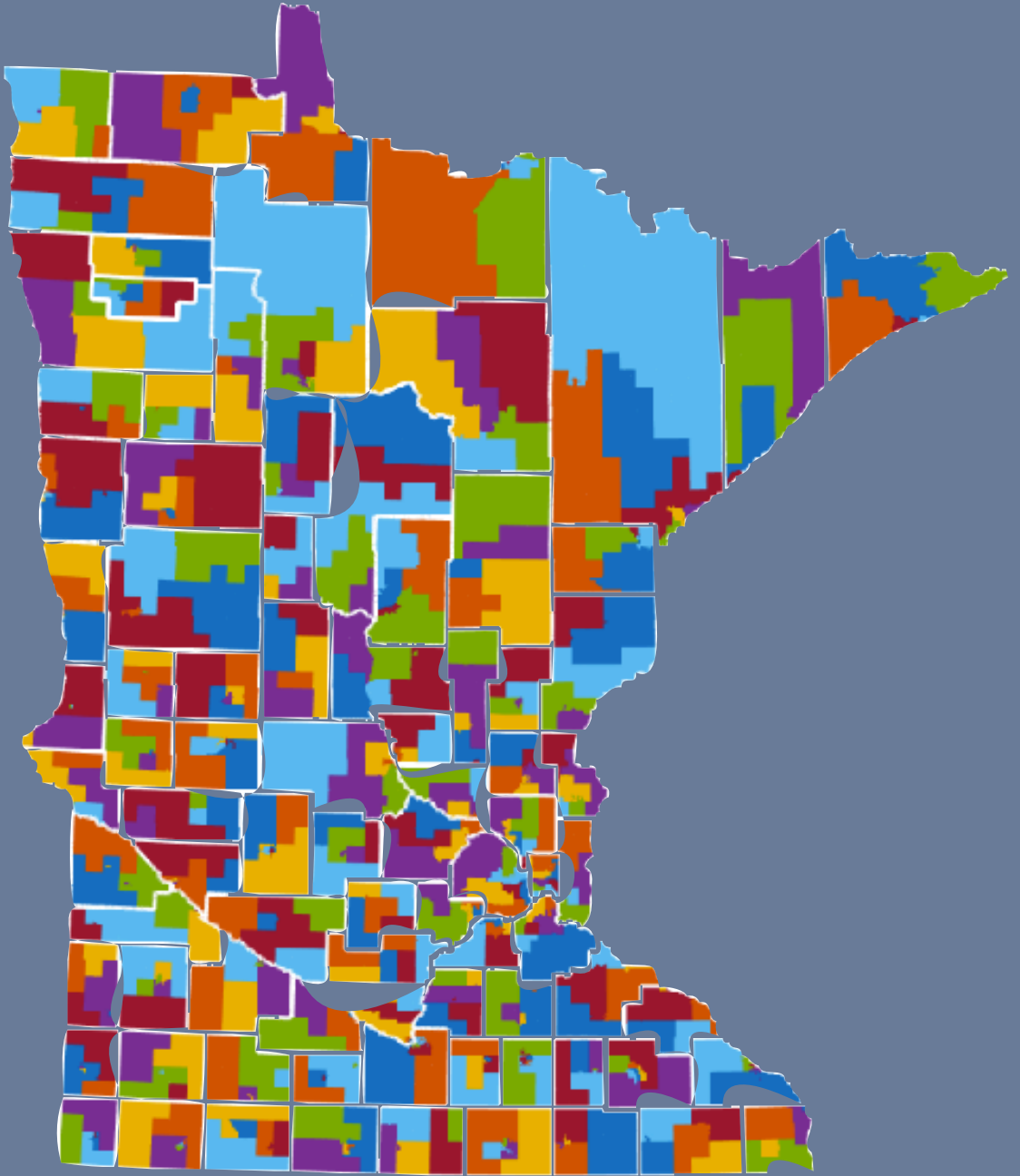
# Minnesota Watershed Politics
## TERIN MAYER

EDITED BY: ANNA RADOFF AND SEAN NEWLIN

How can you understand the implementation and administration of natural resource policy without a clear picture of the special political districts explicitly drawn around natural resources? This article presumes that you cannot. To demonstrate the usefulness of a spatial data approach focusing on these special districts, this article presents an exploratory analysis of 32 of Minnesota's watershed districts, mapping the districts and illustrating diagnostic data on water quality and electoral politics.

Market failures are endemic to human use of natural resources and have long justified public policies that steward and protect these resources against pollution and misuse. This is the underlying justification for Minnesota's watershed districts, which are drawn around the catchment of many, but not all, streams and rivers in the state. Each of the 32 watershed districts in this analysis was formed through citizen petition and has the power to plan, tax, and regulate within the watershed boundaries they have been assigned. Their decision-makers are picked by the county boards that have land within their boundaries. Together, they cover about 27% of the state's land area and are clustered most heavily in the state's agricultural areas.

This article imagines that there is some consensus among advocates and policy-makers about best practices of water and land stewardship in the upper midwest. At issue is where to invest limited resources, be they funding, administrative support, or grassroots and electoral organizing. This prompts two questions:

- How does water quality compare across Minnesota's watershed districts?

- How do watershed districts compare on the underlying electoral politics that determine their management?

An analysis like this is especially important given the onset of climate change, which is likely to disrupt existing land and water use patterns and increase the viable growing range of agricultural commodities. If agriculture production moves north as some projections suggest (Houser, Hsiang, Kopp, Larsen, Delgado, Jina, & Steyer 2015), county regulatory authorities and local watershed districts will have to adjust existing regulations to adapt to the changes ahead

## LAND AREA AND WATER QUALITY

Whether policy-makers want to protect existing stewardship policy or advance new initiatives, they'll need some estimate of the impact that implementing policy in a particular watershed district may have. On the one hand, watershed districts differ in their coverage area, which is readily seen by mapping. On the other hand we would want some evaluation of

which districts seem to be fulfilling their statutory role to manage the quality of the water. This is a complicated question and, absent a more detailed analysis, a proxy must be used.

This analysis uses the Minnesota Pollution Control Agency's (MPCA) 2012 survey of streams, in which meters of stream length are assessed for impairments. A segment of stream can be impaired in one of four ways: unsuitable for consumption of aquatic life, unable to sustain aquatic life, unsuitable for aquatic recreation, or unsuitable for drinking water. As we see in the illustration, MPCA categorized 54% of the 16,748 stream meters they assessed as impaired in at least one of these ways, but the proportion of impairment varies significantly across watershed districts.
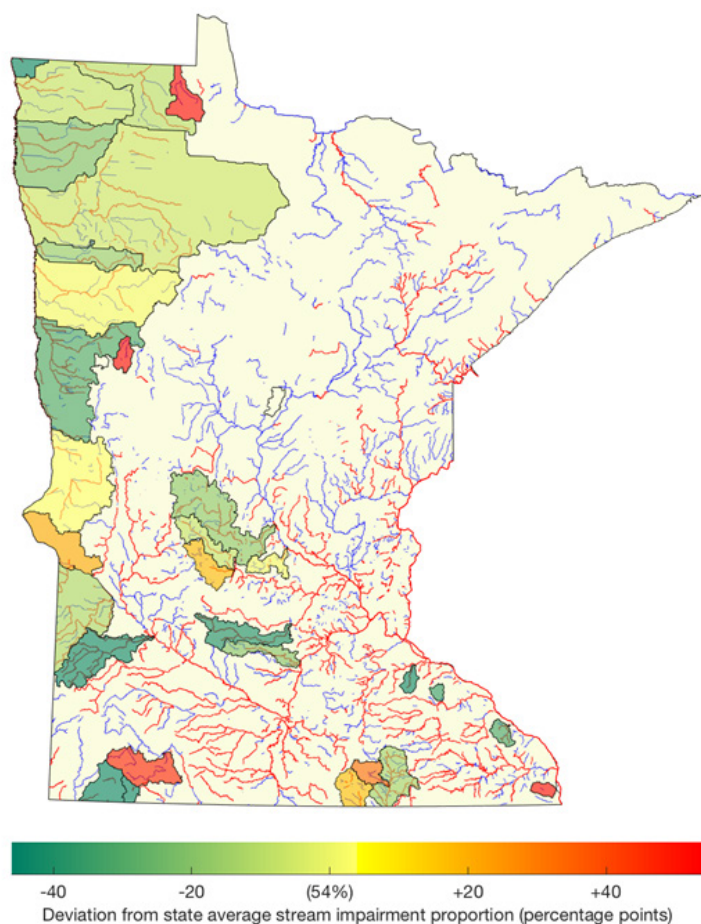


Figure 1: Deviation From State Average Stream Impairment Proportion
Pictured above are the streams and watershed districts of Minnesota. Assessed streams are depicted in blue while impaired streams are in red. Streams have been attributed to watershed districts and an impairment proportion calculated. Each watershed district's ratio is then subtracted from the state average to give a deviation from the statewide average in percentage points.

What are the implications of these findings? Districts that show relatively low proportions of stream impairment may be more effective units of government and represent better opportunities for effective policy implementation. Alternatively, areas that lag behind the state average may stand to improve the most and deserve special attention. We may also question the data: perhaps there is some correlation between stream impairment and likelihood of being assessed by MPCA that biases these estimates? While these questions fall outside the scope of this article, they underline the usefulness of a spatial analysis of watershed districts.

## POLITICAL CHARACTERISTICS

Looking at Minnesota's watershed districts from the lense of electoral politics requires an understanding of how elections determine the management of each district. Watershed district managers are appointed by the county boards that overlap with district boundaries. Each district can be characterized by aggregating nonpartisan county commissioner electoral data up to the level of the watershed district. Outside of the Twin Cities metropolitan region, county boards are made up of 5 commissioners. Counties set their commissioners' term limits, which are generally 4 years. For simplicity, it is assumed that watershed managers are

determined by a majority of the county boards that overlap with the district's jurisdiction and that a county board will take the position of a ☐ majority of its members. This methodology links voters to watershed managers through two layers of representative politics.

The two measures of the county electoral contests that drive the resulting political characterization of watershed districts are:

- Voter Surplus. By what number of voters did each prevailing county commissioner win his or her election? This number is equal to the total number of voters for the prevailing commissioner minus 50%+1 of the total number of voters who participated in the commissioner's election.

- Untapped Voters. How many eligible voters did not participate in the election for county commissioner? This number is approximated by calculating the voting-age population of the commissioner district and subtracting the number that actually cast a vote in the election.

These measures are calculated for each election between 2010 and 2016 and then averaged across those years for each district that elects a county commissioner. This method suppresses idiosyncratic elections and candidate particularities and

instead emphasizes the political character of the commissioner district as such. Watershed district figures are aggregated from the underlying data at the commissioner district level.

What characterizes the electoral politics that determine watershed distric management? Below we see county commissioner election data averraged accross all elections between 2010-2016, then aggregated to the watershed distric level. At left, voter surpluses are illustrated, wehere 0 means that all of the underlying comissioner elections were highly competitive. At right, votes untapped are illustrated, wehre 0 means that all eligibile voters voted in the underlying county commissioner eletions.
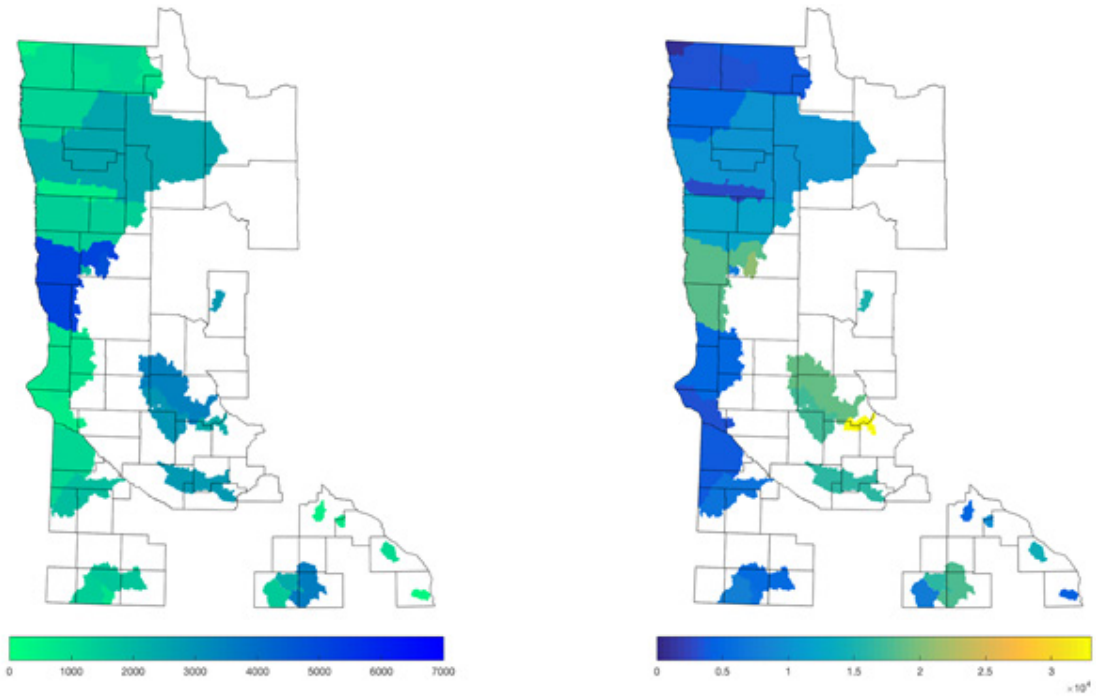


Figure II: Voter surplus and untapped voter figures aggregated to the watershed district level

What are the implications of these political characterizations? Voter surplus tells us how contested each county's elections are for each watershed district. If one assumes a fixed electorate, the watershed-level vote surplus represents the total number of voters that must be persuaded to defect from incumbent county commissioners to allow for a replacement of the watershed district management. Votes untapped, on the other hand, reflects the low proportion of voter turnout

for these county comissioner elections. High values for votes untapped represents the districts with the largest number of untapped voters available to potentially mobilize to swing county commissioner elections and, by extension, change the management of the watershed.

## DISCUSSION AND FURTHER RE-SEARCH

The maps contained in this analysis provide a set of starting diagnostics for policy-makers and advocates who are deciding whether and where to invest in policy-implementation at the watershed district level. They illustrate the intuitive notion that location matters a great deal when considering implementing natural resource stewardship policy. More profoundly, they relate voter data to a form of local government whose boundaries are drawn chiefly with respect to a natural resource, as opposed to a human population. Linking voter data to an administrative structure not chiefly concerned with voters enhances the political analysis of natural resource policy implementation. Centering policy analysis on a special political district such as a water district offers a novel view on environmental policy.

Further research and analysis remains to be done with this data, particularly in the investigation of associations between political and environmental measures. Spatial data allows for statistical analysis

to be done conditioned on location, where values for the predictor variables are drawn from the neighboring counties, for example. This prompts the following questions for future research:

- Does the proportion of stream impairment within a watershed district predict how contentious its underlying county politics are? elections predict stream impairment in each watershed district?

## METHODOLOGY APPENDIX

The diagnostic maps in this article were produced by gathering and interlinking geospatial data using computational algorithms. This appendix directly addresses the data methodology and known computational errors.

Phase 1: Summing the stream lengths within a given watershed district proved to be a challenging coding puzzle and the data on stream impairment is likely an overestimate. An algorithm was written to count only the stream meters within a watershed, but could not be developed sufficiently within time constraints to be implemented dependably. The final calculations instead use the stream lengths included in the state's geospatial data. It is assumed that a watershed district fully contains any stream that passes through it. This turns out to be not entirely true, resulting in some streams being counted multiple times. Given that a stream is

more likely to be impaired than not, this multiple counting likely skews the data too high. However, unlike the imperfect algorithm, it does so in a way that won't matter in the proportion calculations.

Phase 2: Very little centralized data exists on Minnesota counties. A main contribution of this study was creating and attaching data to polygons for the outlines of the commissioner districts. Commissioner district polygons were first created from the underlying wards and precincts by building an algorithm to search through all 4,120 voting districts for a set with unique county district identifiers, draw that set's outline, and report back the unique IDs of the voting districts contained. Running that routine on the whole set of precincts and wards produced 447 county commissioner seats.

Phase 3: Electoral data was then cleaned and organized before being associated with each corresponding commissioner district. Finally, to associate the population data needed for each county board district, an algorithm was created to take the voting district lists of each of the county board districts and search for matches through all of Minnesota's census blocks, aggregating the data from the smaller polygons to the larger ones.

Phase 4: Finally, to associate the county level political data with watershed districts, an algorithm was written to identify which of Minnesota's 87 counties intersected with which of the watershed districts. This created the relevant associations to allow for data to be aggregated upwards.

## ENDNOTES

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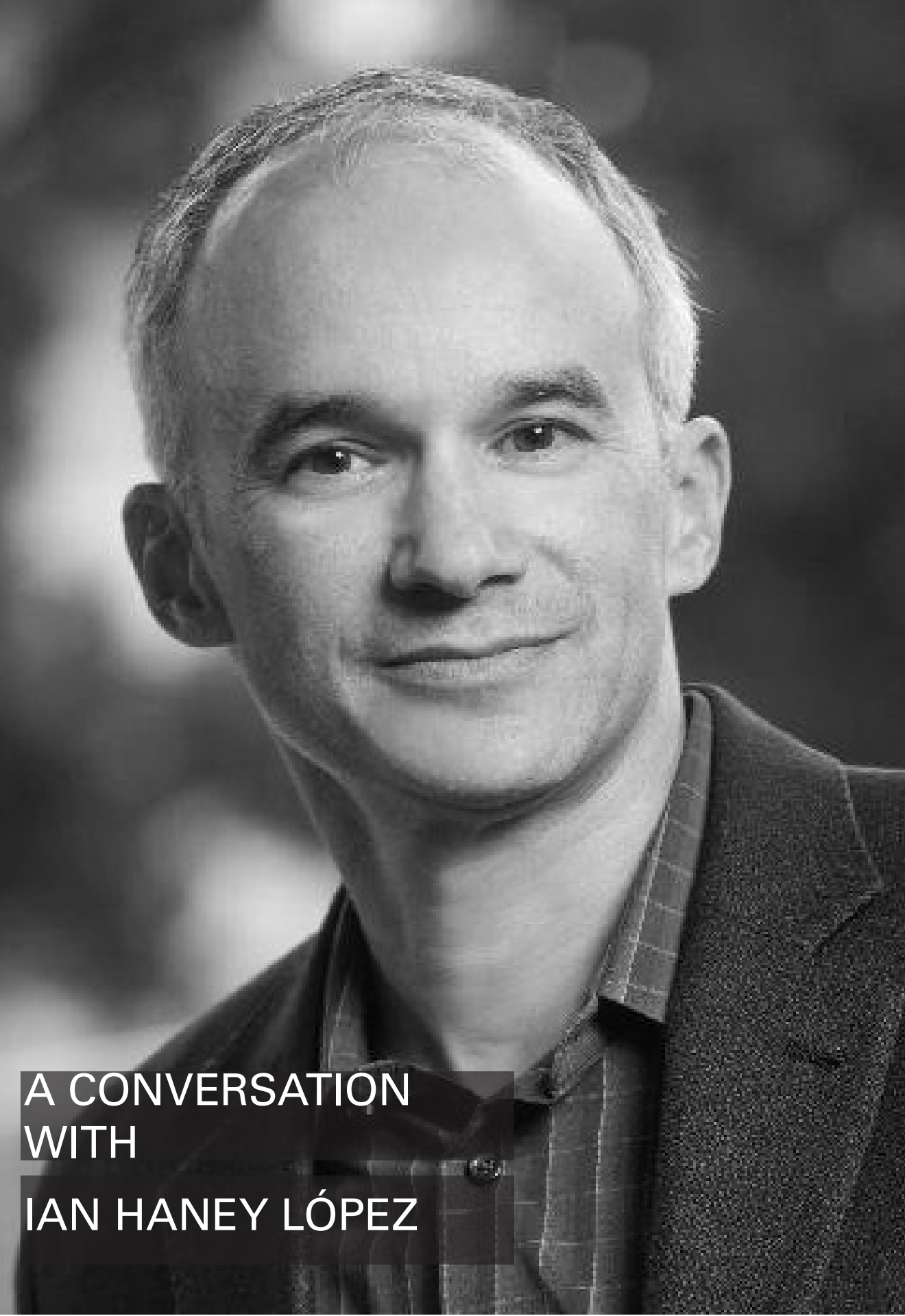
A CONVERSATION
WITH

IAN HANEY LÓPEZ

## A Conversation with Haney Lopez

### Edited by Courtney Colburn and Mathias Gibson

Ian Haney López is an Earl Warren Professor of Public Law at Berkeley Law at the University of California at Berkeley. He is also the Director of the Racial Politics Project at the Haas Institute for a Fair and Inclusive Society and a Senior Fellow at Demos. Haney López's research focuses on racial division and politics. His most recent book is Dog Whistle Politics: How Coded Racial Appeals Have Reinvented Racism and Wrecked the Middle Class. Haney López holds a law degree from Harvard, a Master's in Public Policy from Princeton, and a Master's in History from Washington University.

*BPPJ: I know a little bit about your research and what you call dog whistle politics. Can you define the term and describe your research about it?*

IHL: The idea of dog whistle politics is that certain politicians are speaking in code. A literal dog whistle blows at such a high frequency the human ears can't hear but dogs can. That suggests a metaphor of politic speech that's coded and that's operating on two levels. One on level, without any surface level to race, but underneath, designed, intended to trigger strong racial reactions. That's the stock understanding of dog whistle politics.

I think there are two clarifications that are incredibly important when you want to understand how it works particularly with respect to race. The first is that dog whistling as used in the United States is not simply designed to win votes through appeals to racial anxiety. Instead, and most dangerously, it's designed to change people's orientation towards government. This isn't just a story about race, it's a story about convincing many whites that government is actually an enemy in their lives. So reductively expressed, the message of dog whistle politics in the United States is: one, fear people of color; two, hate government because it's government that coddles people of color through welfare or that refuses to control them through lax criminal law enforcement or lax border enforcement; and, three, if you hate government, you should trust instead the marketplace, you should trust the very rich.

It's this connection between dog whistle politics and race and government which helps us understand what's happening in the United States over the last fifty years. Not just a racial polarization in our political parties, and not just government tactics that have targeted communities of color, for example through mass incarceration or mass deportation, but broad popular support for policies that essentially hand over government to the very rich and transfer billions and trillions of dollars to the very rich. That's one thing about dog whistle

politics, the way in which it's geared towards changing views of government.

Here's the other, most people understand dog whistle politics as a secret handshake. That is the intended audience is in on the secret, that the politician is trying to transmit a message in code. The code is designed to try and hide the message from the general audience but the specific intended audience actually understands the message. There you think of it as a secret handshake. When dog whistle politics is seeking to provoke reactions along lines that are culturally illegitimate, like racism, or sexism, or homophobia, the secret handshake metaphor is wrong. The intended audience does not fully understand the racism, or the sexism, or the homophobia. In fact, what you see is that the code is designed to hide the racism from two audiences, the liberal critic, but much more importantly, the intended audience itself.

Dog whistle politics is a double manipulation of its intended audience. It's manipulating people to get them to support policies that are only going to help the rich. But, it's also manipulating its intended audience by telling them stories that are designed to trigger unconscious subliminal fears about race. This is very important to understand about Donald Trump for example.

Yes, probably 10-15% of his supporters are outright bigots in the sense that they know they're bigots, they're white nationalists, they own it, they believe in it, they're proud of it. The vast majority of his supporters insist that they are not racist. I think that they are not in their own mindsets. They do not believe they are animated by racism. Nevertheless, they see the world in terms of underlying racial narratives of vulnerability and innocence versus threat, aggression, violence, and laziness. What Trump is doing is he's manipulating those people's underlying racial anxieties while speaking in sufficient code to allow them to believe they're not racist when they vote for someone who promises to ban Muslims and build a wall to keep out Mexicans.

*BPPJ: You talk a lot about what dog whistle politics is and the way that it's motivated, what are somethings we can do to combat it?*

IHL: To combat dog whistle politics has to occur on a couple of different levels. On the most immediate level, you can't combat something unless you name it. So it becomes very, very important to say this is dog whistle politics, this is how it works, this is an effort to use racism, or sexism, or ability, or religion as a divide and conquer weapon. To simply name what's going on, that's step one.

But more fundamentally, dog whistle politics is part of a larger strategy of eschewing social solidarity, of convincing the people generally that our greatest enemies are other people like us, rather than concentrated wealth and power. And so in that sense, the deeper response to dog whistle politics is a renewed commitment to build social solidarity, to promote the idea that we are all in this together. That we do best when we recognize each other's shared humanity. It's only by overcoming these destructive social divisions that we can come together with sufficient power and in sufficient number to actually stand up against concentrated wealth and to insist that government begin working for people rather than for concentrated wealth and power, for the big corporations, or the wealthy family dynasties.

*BPPJ: How do you think that we would build that social solidarity or return to a time when there was more social solidarity?*

IHL: I don't think we return to a time when there was more social solidarity. I think that if we look back historically we can see for example, after the Great Depression, in the era of the New Deal, and the Great Society, and the New Frontier, there was sufficient social solidarity among whites to build a very effective, activist government. A government that reigned in the power of the marketplace,

that redistributed resources downward, that pushed political power outward, and that led to the greatest expansion of the middle class the country and the nation has ever seen.

So we see what's possible when you expand social solidarity. But we also see that during that era that social solidarity and that activist government was fatefully linked to race and also to gender in ways that limited its actual reach. It excluded many people of color. It excluded women. And that in a way race and gender then became this vulnerable spot. So that once Lyndon Johnson started talking about ending poverty in a way that might include people of color, the whole program, the whole sort of liberal commitment, was subject to attack as giveaways to these undeserving groups.

So I don't see us as going back, I see us as going forward. We have long held this deep, and I think fundamentally correct ideal, of social solidarity, of we the people, of this notion that democracy is really about all of us coming together to govern ourselves for the benefit of all of us. That ideal has never been realized. It's always been fatefully damaged, limited in important ways, and vulnerable, because of those limitations. So I see us really as being at a point where we can push forwards once more toward that ideal. Continue to use it as an aspiration,

as a guide for what we must do. But really take it seriously and say okay we the people. That has to mean all of us, undivided by race, undivided by national origin, by language, by accent, by sexuality, by gender, by sexual gender identity. Undivided, indivisible, we the people. That's the ideal and that's the social solidarity that we need to promote.

*BPPJ: Do you see things like the women's' march that happened in January 2017 as helping to promote social solidarity?*

IHL: Absolutely, absolutely. I think there's a tremendous energy in the street that is going under the heading "love trumps hate" that is incredibly powerful and really revolutionary. That is the ideal of we the people. You can express it as love, it's the sort of love that sees our shared humanity in each other. That trusts other people with the sense that they want what's best for them, their communities, and their children, and that working together, we can help each other. That's the core of it.

I would say that that ideal needs to be supplemented because right now the expression love trumps hate is really focused on social divisions without connecting up how social divisions have been used to hijack government and to skew the economy so that it helps the very rich. So it's really love trumps hate and that's how we're going to get government back

on the side of all of us. For me, that's the more complete message.

But these efforts to repudiate social division, to stress that we're all human and we all deserve dignity. We should not just tolerate each other. I hate that language of tolerance. We should trust each other, we should esteem each other, we should see ourselves in the eyes of others. That has to be one of the fundamental commitments of a renewed progressive movement coupled with the demand that government serve people. That the way we get government to serve people is by overcoming social divisions, coming together as an undivided people, and by demanding that government help us.

*BPPJ: Do you think people when they hear dog whistle politics realize that by voting certain ways they are handing the government over to the rich and powerful?*

IHL: Yes and no. Again, the basic narrative through line of right wing dog whistle politics is fear people of color, hate government, trust the rich. We should unpack this trust the rich, why trust the rich. Partly because there is a story that the rich, that corporations, the so called job creators are going to be the source of economic prosperity in society. It's the story of trickle-down economics. It's the story that says, if we cut taxes for the very rich, they'll open up more factories,

that'll lead to more employment, really the biggest source of jobs and prosperity in the country is the unfettered marketplace. There is this line of trusting the rich in the economic sense.

But we should be clear that in right wing narrative, trusting the rich also has a strong moral dimension. Many conservatives, even working class conservatives understand the purpose of the market not simply as a mechanism for job creation and the distribution of wealth, but they see the market as a moral force. It enforces morality. It rewards good behavior like hard work and it punishes bad behavior like laziness. Many working people on the right, understand the economy in this moral way as rewarding people who are virtuous, hardworking, and disciplined and punishing people who are undeserving. This has deep roots in American culture, this is sort of the protestant ethic, but it also has deeply racial roots.

The notion that the market is rewarding the virtuous and punishing the wicked only makes sense in a racial context where whites are saying to themselves and it's because I'm virtuous and I live in a nice neighborhood and my kids go to a good school and I've got a good job and those brown and black people live in junk housing in ghettos in crappy schools and don't deserve a place in my job. This basic story of the market as a moral force can only make sense in a racial context in which people are looking for a story which explains why they as whites have had better jobs, better schools, and better neighborhoods and minorities have suffered the reserve. And so we have to understand that trust the rich makes sense in the rhetoric of the right, maybe not even most importantly as an economic message, but as a moral message.

The big challenge for many whites is how do they think about themselves when it turns out that they're suffering, when it turns out that their jobs have gone away that they've lost their homes, that they've moved into neighborhoods which are down at the heel. That's where it becomes so important that there be an alternative story that's available to people. Because if they remain trapped within this right wing story, then you end up with a process in which downwardly mobile whites become even angrier at government because supposedly it's government that's taking their tax dollars and wasting it. It's not helping them, it's helping these undeserving people. But they also become deeply angry at themselves because somehow it's their fault. They failed, they're a failure. We're talking about this new dynamic of deaths of despair among whites. Deaths of despair, yeah that's opioids, yeah that's job

31

loss, but more than anything else, that's neoliberalism. That's a story that says to people, if you're rich it's because you're virtuous, if you're poor it's because you're immoral, you're a failure, there's something wrong with you as an individual. It disempowers people and people can't see that it's structural that they can join together, that they can take action. Instead they're trapped in the hate that they apply to people of color, they now have to apply to themselves and that's incredibly destructive.

So this is where we need a story that says to people, that replaces the story of fear people of color, hate government, trust the rich, that we replace it with trust each other, fear concentrated wealth, demand that government serve us. Or I would say mobilize with others to demand that government serve us. Then if we can push that story out, we can say to whites, who's really the big enemy in your life. If you think about what's happened, if you think about fears, if you think about, yeah you're worried about getting mugged, is that real? What happened to your job, is that real? What happened to your pension, is that real? What happened to the equity in your home? What's happening to your neighborhoods? Is your city bankrupt? Who's the real threat in your life? It's probably not other brown and black working people who are struggling

along with you to take care of their families and their kids. It's much more likely concentrated wealth, it's the very rich, it's corporations that have hijacked the government and that have made government captive to their interests and have rigged the system.

Turn away from fearing people who are different from you, instead turn towards those other people and recognize your shared humanity. Not that we're all the same, but that we're all decent, we're all human, we all want to take care of our families and our communities and that by joining together, we can do that. Do realize that there's an enemy out there, it's concentrated wealth, it's concentrated power. Do realize there's something you can do about it. Join together with other people to stand up to that concentrated power and demand that government stand up to that concentrated power and help defend and serve all of us.

*BPPJ: Do you see that story starting to be told?*

IHL: I see, I think we have a lot of work to do on the progressive side. Both halves of that story are being told separately. We tell the two halves of that story separately, we're going to remain divided and we're going to lose. You've got a set of people that we should call the class left. People on the class left are saying, we should really focus on economic populism, we

should really focus on taking care of people economically because so much wealth and power has been siphoned off to the very rich. And that couldn't be more right. You have what you might call the equality left, or you can think about it as the race left, as the race justice movement is a lot of the energy. I think it's a broader, it's about gender, about sexuality, about religion. The equality left is saying we've got to address these social divisions. That's the principle energy in the streets. Demographically, that's the future of the country, it's certainly the future of the Democratic party and the progressive movement.

We want to say both, but right now these two groups repulse each other. The class left believes that if you talk about equality issues, if you talk about race, if you talk about gender, you're going to alienate, you're going to antagonize the white working class or white working class men. They want an economic populism only argument, exclusively focused on economics. The equality left turns around and feels betrayed by that. They say, I think completely correctly, we are talking about human rights at home, we're talking about liberation movements. You're contributing to our oppression when you ask us to subordinate our issues to an economic only analysis when we care at least as much about racial equality, about access to abortion, about reproductive rights. Worse, when you try and suppress those conversations, you actually create more space for racial demagoguery and for misogyny in politics.

These two groups, this division is widening. I think that what we need is to combine the messages and to say that it is only through understanding social divisions as a divide and conquer weapon that we can see that if you're focused first and foremost on economics, fantastic, but the route forward is to build social solidarity by addressing these ugly divisions. If you're focused on equality, racial justice, what have you, the route forward is to see that social divisions are being manipulated politically to divide people in terms of class and you've got to work on those issues too.

So we really need both halves of the left to come back and say that we have a unified message, a single message, which is divide and conquer politics is hurting us economically and it destroyed efforts at equality. Only by social solidarity can we achieve equality and a broad and shared prosperity. We can only achieve those simultaneously. We cannot let this message of solidarity as an antidote to concentrated wealth and as the basis for demand that government help all of us, only with that as the message can we

make progress in terms of economics or in terms of equality.

*BPPJ: Do you think those two halves will come together?*

IHL: I think those two halves have to come together, eventually. It's not clear when they'll come together. I actually think that the grassroots left is going to have to fight like hell to bring those two messages together. I think what you're going to see is certainly in the fall, by the spring, an increasing focus on the 2018 campaigns. Politicians are conservative by their nature, they need to get to 50 plus one. They don't want to try new conversations, they don't want to risk difficult conversations, I think you're going to get a lot of people pushing even harder on the message that we can't afford to talk about equality issues. Then on the equality side, you're going to get people who are madder, and madder, and madder about this idea that our concerns and our demands for human rights are somehow trivial and unimportant and should be subordinated so that we can go and recruit the people who voted for a racial demagogue and a misogynist.

We're going to have to fight like hell to avoid that sort of a splinter. I think it's going to come from the grassroots, from activists, from advocacy organizations because politicians are so risk averse. It's all of us who are going to have to demand that our political leaders in the run up to 2018 talk about race and class simultaneously, or sorry class and equality simultaneously. The message has to be, we are fighting for a broad and shared prosperity and we are fighting for equality and human rights at home. Those two are inextricably linked because social divisions have been used as a way to turn people against government and hand it over to the rich. If we're going to achieve a fair and share prosperity and equality, we're going to do both simultaneously. We're not supporting anybody in 2018 who isn't both an economic populist and a strong defender of equality and human rights at home. You don't get to pick and

# SAFETY, SECURITY, AND RESILIENCE:

# BRIDGING HOMELAND SECURITY

# AND POPULATION HEALTH

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A broad, all-hazards definition of homeland security is imperative to understanding the various factors that threaten American society, and creates a plausible pathway to incorporate a population health perspective. Homeland security and public health have a shared mission to maintain social and economic stability as well as government functioning. The shared objectives of these two disciplines generate vital opportunities for collaboration at the systemic level. To strengthen existing security infrastructure and enhance adaptability to threats, it is critical for homeland security practitioners to understand population health.

*The success or failure of any government in the final analysis must be measured by the well-being of its citizens. Nothing can be more important to a state than its public health; the state's paramount concern should be the health of its people.*

–Franklin Delano Roosevelt[1]

It is critical that the field of homeland security includes a population health approach to building community resilience. A broad, all-hazards definition of homeland security is imperative to understanding the various factors that threaten American society, and creates a plausible pathway to incorporate a population health perspective. Homeland security and public health have a shared mission to maintain social and economic stability as well as government functioning. The shared objectives of these two disciplines generate significant opportunities for collaboration at the systemic level.

The need for collaboration between public health and homeland security is not a new concept.[2] In 2002, the Federal Emergency Management Agency and various resources within the Department of Health and Human Services (HHS) transferred to the newly created Department of Homeland Security (DHS).[3] Under the DHS, the field of public health comprises several functions across different agencies. For example, the Department of Veterans Affairs is the largest integrated healthcare provider in the country. Established in 2007, the DHS's Office of Health Affairs (OHA) contains the National Bio-surveillance Integration Center, among other divisions.[4] Lastly, HHS created an Office of the Assistant Secretary for Preparedness and Response as well as a Critical Infrastructure Protection Program. As depicted in Figure 1, these examples demonstrate that there is an acknowledgement and agreement - at least at the conceptual level - that the fields of public health and homeland security are interconnected. However, further integration of both fields will maximize collaboration between public health and homeland security, in order to create a safe, secure, and resilient nation.

*Figure 1:Homeland Security and Public Health: Overlapping Fields*
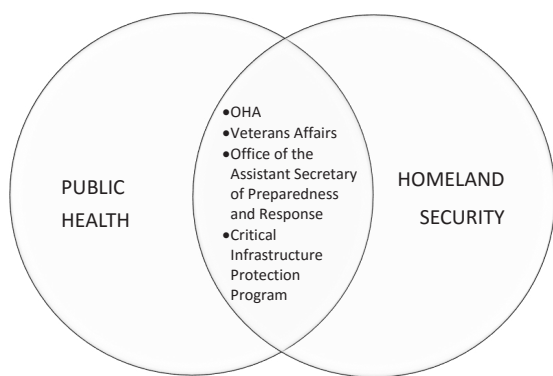


Public health practitioners are continuously working to understand the factors influencing the health of a population and to use that understanding to improve the nation's health. Population health is transforming the way policy makers and practitioners across various disciplines think about the vital role that health plays in citizens' ability to be productive, engaged members of society. The field of public health is not static, and the framework for which public health is applied to improve health outcomes is rapidly moving toward the direction of population health.[5] Public/population health concepts such as Buckets of Prevention and the Levels of Prevention provide frameworks that are applicable to topics within the realm of homeland security.

This article uses theoretical and exploratory research to examine the relationship between homeland security and public health's emerging focus on population health. The fields of homeland security and public health must collaborate; both have a shared mission to maintain social and economic stability as well as government functioning. Population health plays a key role in ensuring that the population is safe, secure, and resilient in the face of both domestic and international threats. When homeland security practitioners understand foundational population health concepts, they will be able to apply the same frameworks to security topics and ultimately improve the nation's resilience.

## HOMELAND SECURITY, PUBLIC HEALTH, AND POPULATION HEALTH

Health and security are two of the largest expenditure categories driving the federal budget of the United States.[6] In 2010, the U.S. Department of Homeland Security defined homeland security using an all-hazards approach in its Quadrennial Homeland Security Review Report as "a concerted national effort to ensure a Nation that is safe, secure, and resilient against terrorism and other hazards where American interests, aspirations, and way of life can thrive."[7] Homeland security expert Dr. Nadav Morag points out that although there are various definitions of homeland security, they all essentially address the same problem of "maintaining social and economic stability and governmental functioning in the face of events that threaten to overwhelm the capacity of government

and society to cope."[8] This all-hazards framework for conceptualizing the definition of homeland security allows flexibility to address new threats and leaves room for other fields, such as public health, to have a greater role in collaboration.

Like homeland security, the definition of population health is still evolving. The United States healthcare system is currently undergoing a critical transformation.[9] In 2010, President Obama signed the Patient Protection and Affordable Care Act (ACA), promoting a shift toward population health, including infrastructure to support the shift.[10] Population health refers to "the health outcomes of a group of individuals, including the distribution of such outcomes within the group."[11] By identifying systemic variations in health equity, population health is a way of assessing why some groups of people are healthier than others as well as the policy development that arises from this framework.[12] The current Administration's attempt to repeal and replace the ACA may undermine population health approaches. In 2017, the Numerof State of Population Health Survey of healthcare executives revealed that in 2016, healthcare providers reported a decrease in expectations for the continued momentum of population health advances under the 2017 Administration.[13]

The discourse surrounding the topic of how to define homeland security is missing a conversation about how the United States defines the concepts of safety, security, and resiliency. Specifically, most definitions of homeland security include the word 'resiliency,' but rarely is there a discussion about what this word means when operationalized. In a resilient community, citizens are adaptable, are connected to one another, and collaborate to function in the face of changes in the physical, social, or economic environment. What makes a nation resilient? What role does the homeland security enterprise play in its promotion?

## APPLYING PUBLIC AND POPULATION HEALTH THEORIES TO HOMELAND SECURITY

The disciplines of homeland security and public health already interact on an international level, as is evidenced by the shift toward human security due to globalization. In order to understand the domestic implications, it is important to understand the relationship between public health and homeland security in the global context.

The rapid globalization occurring across the planet is increasingly forcing the issue of global health security as a prominent topic in foreign policy.[14] Global health security refers to a state of preparedness ensuring that citizens are prepared for, protected from, and resilient in the face of

health threats that have the potential for economic or homeland security implications.[15] According to the Centers for Disease Control and Prevention (CDC), less than 20 percent of countries are prepared to detect and respond to disease threats.[16] This matters because a disease threat does not just pertain to quarantining epidemics; it also refers to newly emerging microbes, antibiotic-based multidrug resistance, and the potential release of dangerous microorganisms from laboratories.

In response, the Global Health Security Agenda, an international partnership, aims to build countries' capacity to make the world safe from infectious disease threats and prioritize the elevation of global health security by focusing on the three pillars of prevention, detection, and response.[17] Social determinants of health demonstrate that health inequalities are not naturally occurring in and of themselves. Rather, as the World Health Organization claims, they are the result of a "toxic combination of poor social policies and programmes, unfair economic arrangements, and bad politics."[18]

An example of the integration between public health and homeland security through the emerging field of global health security is evident every four years at the Olympics. The 2016 Olympic Games in Rio de Janeiro, Brazil took place in the fifth largest and most populated country,

presenting an array of threats to health, public safety, the environment, and security.[19] The Olympics occurred during a Zika virus outbreak, a mosquito-borne virus associated with microcephaly in fetuses born to mothers infected with the virus.[20] Pathogens do not comply with manmade political boundaries. Thus, while the Olympics typically take place internationally, many Americans are present for the games, presenting a risk for international transmission of pathogens.

Emerging infectious disease threats such as Zika are important to U.S. domestic homeland security. Any disease threat has the potential to destabilize American communities. Even the fear alone has impacts on citizens' psychological and emotional well-being, ultimately affecting resilience.[21] A disease threat like Zika works to destabilize communities' sense of safety. Beyond physical health, a poorly maintained disease containment breaks down trust in the systems meant to protect communities.

Communities need the right resources and access to services to mitigate the risk for a breakdown of social welfare in the face of threats. If a disease lands in the U.S. and the country is not prepared with strong healthcare services, social networks, and appropriate systems in place to stop the spread of disease, significant morbidity and mortality may ensue, as was

demonstrated by the CDC failure to manage an emerging Ebola threat.

In 2014, the U.S. was facing the threat of Ebola, a deadly virus that had made its way into the country. The CDC's slow response to this threat was a failure plagued by poor communication to the public, the release of incorrect treatment protocols, and a hubristic approach that led citizens to distrust the CDC. The incident revealed deficiencies in the country's healthcare system as well as its ability to monitor and contain pathogens, ultimately demonstrating that the U.S. may not be capable of controlling a larger-scale threat in the future.[22] Research has established that maintaining trust through internal coordination of crisis communication is critical to building resilience.[23] The 2014 Ebola crisis eroded the public's trust in the capability of the federal government to provide safety and security.

These examples demonstrate the need to promote cross-sector collaboration between population health and homeland security. In the future, this overlap will become more salient and necessary in the wake of current trends such as climate change, new drug epidemics, and technological disruption as devices increasingly join the internet of things. The shared objectives of homeland security and population health suggest real opportunities for collaboration at the systemic level, as will

be demonstrated by applying the Buckets of Prevention framework and the Levels of Prevention model to homeland security.

## BUCKETS OF PREVENTION FRAMEWORK

The field of population health uses the Buckets of Prevention framework to understand healthcare, as demonstrated in Figure 2.[24] This conceptual framework combines public health, population health, and traditional healthcare into one model to enhance community wellness. As a brief overview, the first bucket, Traditional Clinical Prevention, refers to an individual's health practices based in solid evidence and usually covered by insurance such as flu vaccines, tobacco cessation programs, and routine colonoscopies.[25] The second bucket, Innovative Clinical Prevention, refers to public health interventions, which go beyond individual encounters and affect communities. An example of an intervention in this category is housing policies in a city that reduce environmental triggers, leading to a decrease in asthma symptoms. Finally, the third bucket, Total Population or Community-Wide Prevention, contains health interventions that target whole populations such as cities, counties, or states. An example of an intervention in this category is the passing of ordinances banning smoking in public spaces.

An ideal approach to healthcare utilizes all three methods simultaneously. For

# The "Buckets" of Prevention Framework



*Figure 2: Buckets of Prevention Framework[26]*

instance, population health practitioners with a goal of decreasing morbidity and mortality due to lung cancer could institute physician-based tobacco cessation counseling (bucket 1), create a public service campaign to encourage individuals to quit smoking (bucket 2), and enact policies to ban smoking in public spaces (bucket 3). Homeland security practitioners can add value to their field when they adapt this framework to enhance community resilience. The role of the third bucket, Total Population or Community-Wide Prevention, is especially applicable to homeland security. Homeland security practitioners can integrate community-level strategies from the discipline of population health to promote resilience.

Promoting prevention to counter domestic terrorism demonstrates how the Buckets of Prevention framework has utility in homeland security. To understand violence, decrease radicalization, and counter violent extremism, homeland security practitioners should utilize a population health approach. There is no single path to violent extremism. Rather, this type of violence arises from a myriad of political, historical, social, and cultural factors.[27] Studies to understand radicalization pathways often conclude that a sense of community victimization and a fundamental shift in cognitive frames are usually present during the radicalization process.[28]

To counter violent extremism effectively, homeland security practitioners should use a multidisciplinary approach that applies population health programs and policies across an ideological spectrum. Relevant programs and policies include

population health policies focused on decreasing community violence, increasing access to mental health services, decreasing racial profiling, and utilizing community policing. Population health approaches empower community participation in civic engagement, leading to a decrease in ostracizing of individuals. The analysis of violence must take place from a population health and social justice lens, not only from a law enforcement perspective as typical in homeland security.[29]

The Buckets of Prevention framework demonstrates how the field of public health approaches community health. The framework focuses on the levels of individual, community, and population. Likewise, domestic homeland security concerns stem from societal drivers operating at the individual, community, and societal level. Individually, factors such as substance use disorders, poor education, prior exposure to violence, poverty, and/or unstable housing may contribute to one's decision to engage in violence (bucket 1). For instance, studies of violent white supremacist group members have shown that 45 percent of members are the victim of childhood physical abuse and 72 percent suffer from substance use disorders.[30] At the community level, there may be a lack of socioeconomic opportunities (bucket 2). Finally, at the societal level, marginalization and discrimination targeted toward certain racial

and ethnic groups can contribute to one's decision to engage in violence (bucket 3). Population health provides a framework for homeland security to understand risk factors across the three buckets to ameliorate potential threats such as violence.

## LEVELS OF PREVENTION MODEL

The discipline of public health uses the Levels of Prevention model to frame interventions to tackle health issues by addressing social determinants. These refer to the complex, integrated social structures and economic factors that are responsible for most inequalities in health.[31] Primary prevention refers to preventing morbidity or mortality before it even occurs. These types of interventions work by preventing exposure to hazards known to cause disease or affect health. Two examples of primary prevention are laws banning the use of products containing asbestos and immunization programs to prevent measles. Secondary prevention aims to reduce the impact of harm that has already occurred. In this realm, the focus on disease and injury detection is critical in order to slow progress. An example of secondary prevention is the use of dieting and exercise to slow the progression of a patient with high body mass index from progressing to obesity. Finally, tertiary prevention aims to lessen the impact of a chronic disease or condition. Pain management
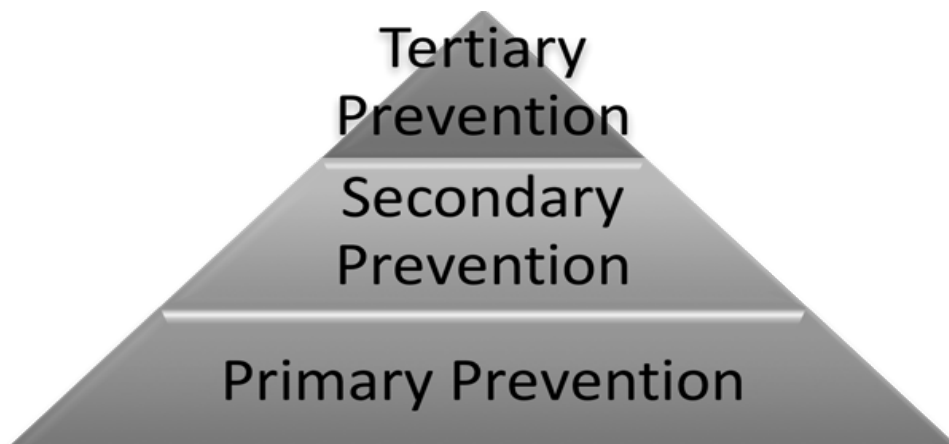
*Figure 3: Levels of Prevention[32]*

clinics provide an example of this type of intervention as they help patients manage long-term pain and improve the ability of individuals to function with a high quality of life. When most people think of healthcare, they think of visits to see a physician, indicating that they are entering the system at the secondary and/or tertiary level. However, primary prevention is critical to improve overall health and well-being while also decreasing healthcare costs.

The Levels of Prevention model is applicable to homeland security practitioners. For example, this framework can be applied to preventing extremist terrorist violence following radicalization. The media often depicts the tertiary level, where individuals are already radicalized and engaged in violence. At the secondary level are at-risk individuals who have not yet committed violence. They may have plans to acquire weapons; they may also have started thinking about the violence they would like to commit. Finally, at the primary level are individuals who have not begun to engage in behaviors leading to radicalization. By understanding the levels or prevention, homeland security practitioners can create interventions across all three levels of prevention to target all individuals across the radicalization spectrum. Understanding this framework also explains why some interventions to combat violent extremism will be ineffective when applied to certain groups.

At the primary prevention level, homeland security practitioners can implement community-level strategies to alleviate risks. Programs and policies that prevent social isolation among certain racial or ethnic groups will decrease the likelihood that individuals feel so excluded from society that they develop animosity. Practitioners can reduce risk factors by creating counter-narrative campaigns. Such campaigns can focus on positive protective factors like integrated cultural identity, strong social support, and community tolerance.

In Indonesia, strategies to intervene at the primary prevention level include teaching youth about the complexities of Islam and by celebrating Islam in order to combat stigmatizing radical propaganda.[33]

At the secondary prevention level, homeland security practitioners can develop strategies to counter extremist ideologies and prevent at-risk individuals from moving further along the radicalization pathway. Homeland security practitioners can implement interventions targeting individuals attending certain religious institutions known to be a hub for radicalization. These types of interventions must be conscious of democratic principles of religious freedom; citizens should not feel as though they are being watched simply for practicing their faith. In Saudi Arabia, the Sakinah Campaign engages in online dialogue with at-risk individuals to combat internet radicalization.[34] Other strategies can aim to decrease feelings of victimization, a component commonly found amongst radicalized individuals.[35]

Finally, at the tertiary level of prevention, homeland security practitioners can create strategies directed at individuals who have already adopted extremist ideologies. An example is Denmark's Danish Security and Intelligence Service's successful creation of a strategy to counter radicalization using a population health approach at a time when significant numbers of radicalized youth were leaving the country for Syria and Iraq.[36] Starting in 2012, 34 radicalized young people traveled from Denmark to Syria and Iraq. Throughout the anti-radicalization intervention, 18 of the 34 returned to Denmark and another 330 disenfranchised youth in various stages of radicalization walked into the Security and Intelligence Service office for help.[37]

Denmark police identified the problem: disenfranchised youth were being radicalized and fleeing the country to fight in Syria and Iraq. Second, they identified risk and protective factors. Risk factors included unemployment and social discrimination while protective factors included family support and community cohesion. The Danish Security and Intelligence Service developed a new way to approach youth and tested their model. Law enforcement individuals engaged in direct contact with youth, and police officers trained specifically in the initiative used judgment-free disengagement talks with youth returning to the country. Rather than focusing on prosecution, officers promoted mentoring, family engagement, life skills, community capacity building, democratic cohesion, community dialogue, job training, and health resources.[38] The Danish anti-radicalization model was successful because it used an adaptable approach focused on stabilizing youth in their community.

Likewise, this approach was successful in Yemen with the Committee for Religious Dialogue, a religious rehabilitation program that helped 364 Al-Qaeda militants return to normal life.[39] A public health prevention framework applied to combating violent extremism will simultaneously work at the primary, secondary, and tertiary levels of prevention.

## DISCUSSION

Health is the cornerstone of ensuring a population is safe, secure, and resilient in the face of threats. Moreover, a healthy society is critical to boosting the economy, productivity, and overall development.[40]

The homeland security enterprise aims to protect the nation by promoting safety, security, and resilience. War, terrorism, epidemics, and unstable governments lend themselves to destabilized communities. Health allows people to be resilient; people are not resilient when they are destabilized. It is not surprising, then, that armed conflict and natural disasters threaten population health.[41]

The McKinsey Global Institute claims that there are four forces transforming the global economy: 1) the rise of emerging markets; 2) the accelerating impact of technology on the natural forces of market competition; 3) an aging world population; and 4) accelerating flows of trade, capital, and people.[42] Accordingly, there is a global

accountability to build up capacity of public health infrastructure in the highly mobile and interdependent modern world. In light of this, the World Health Organization states that failure to build international health security can and will affect demographic stability as well as "economic or political stability, trade, tourism, [and] access to goods and services."[43] Urbanization provides a good example of the need for close collaboration between the fields of public health and homeland security due to the pressure on infrastructure, government, and health effects such as rapidly spreading infectious diseases. The social determinants of health provide myriad areas for intervention that can minimize collective vulnerability from events threatening health security.

The U.S. Department of Homeland Security Office of Health Affairs (OHA) is the principal authority for all medical and health issues related to homeland security. OHA's mission is to "advise, promote, integrate, and enable a safe and secure workforce and nation in pursuit of national health security."[44] This broad directive does not include initiatives to understand health disparities through the social determinants of health. The World Health Organization has repeatedly stated, "Functioning health systems are the bedrock of health security."[45] Through OHA, the field of homeland security should engage in

cross-disciplinary training with the field of population health.

OHA should hire population health practitioners to promote a health systems approach by collaborating on various initiatives such as projects to de-escalate radicalization in other countries. For example, what social determinants are occurring in Lebanon that contribute to an individual's decision to join Hezbollah? This level of cross-sector collaboration would provide invaluable intelligence into developing a more thorough understanding of the radicalization process.

Population health is at the center of environmental stability and security. It is not the role of homeland security to tackle population health and the social determinants of health. Rather, its role is to understand and apply population health approaches to the mission of homeland security. If homeland security practitioners understand how the social determinants of health promote safety, security, and resilience in the United States, they will be able to apply the same lens to understand the social determinants in other countries.

## CONCLUSION

There is an unmistakable relationship between population health and homeland security. Homeland security maintains social and economic stability as well as government functioning. Population health

works to stabilize these same domains. Socio-environmental factors are key drivers in understanding individual behavior. The social determinants of health are a critical tool as intelligence analysts investigate how groups and individuals become disenfranchised and/or radicalized. Homeland security leaders understanding public and population health will help ensure stabilization, adaptability, and resiliency in the nation. Future directions for research include but are not limited to building population resilience, using social determinants of health to promote health security, securing affordable healthcare for all citizens, and understanding behavioral health aspects within population health security.

Security threats are not static. As the United States faces new threats such as climate change expanding vectors such as mosquitos, cybersecurity hacking coercion, or surges in new drug epidemics, it is imperative that the homeland security enterprise remains adaptable. Security is an asset that should be approached from an all-hazards framework and strengthened systemically. The best way to strengthen the existing security infrastructure is to promote cross-sector collaboration among domestic and international stakeholders working in the field of population health. If the United States fails to take population health seriously, it will make no difference what the defense and security agencies do to protect

the nation, because large numbers of citizens will suffer unnecessary morbidity and mortality.

Innovator and scholar Clayton Christensen recognized that, "almost always, great new ideas don't emerge from within a single person or function, but at the intersection of functions or people that have never met before."[46] Accomplishment of progressive work entails focusing on the intersection of a comprehensive approach using best practices from the fields of both population health and homeland security.

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*Title image: Under the auspices of the American Forces Network®, AFN®, a registered trademark of the U.S. Department of Defense, this photograph was created October 30, 2014, by U.S. Air Force Staff Sgt. and photojournalist, Christopher Hubenthal, and depicts United States Army Medical Research Institute of Infectious Diseases (USAMRIID), Director of Biosecurity, U.S. Army Lt. Col. Neal Woollen (Cntr), and USAMRIID combat medic, U.S. Army Sgt. Daniel Vita (Lt), showing students how to don personal protective equipment (PPE) with the help of USAMRIID combat medic, U.S. Army Pfc. Kaiya Capuchino, (not seen here), during a hazardous material training session, which took place at Tripler Army Medical Center (TAMC), Hawaii. Retrieved from https://phil.cdc.gov/PHIL_Images/18338/18338_lores.jpg.*

A CONVERSATION WITH

ARLIE RUSSELL HOCHSCHILD

## A Conversation with Arlie Russel Hochschild
### Edited by Mathias Gibson

Arlie Russell Hochschild is a professor emerita of sociology at the University of California, Berkeley. Her research interests include family, market culture, global patterns of care work, and social psychology, but most recently she has focused on the intersection of culture, politics and emotion. In her latest book, Strangers in Their Own Land: Anger and Mourning on the American Right, Arlie conducted intensive interviews of Tea Party enthusiasts in Louisiana over the last five years.

*BPPJ: To what degree do you feel like the people you spoke to were representative of Trump supporters as a whole, and how would you attribute the deep story that you identified?*

ARH: Well, this is exploratory analysis, and I think that the [people] that I profile are certainly typical of the 40 that over five years I came to know pretty well, and that was corroborated by the 20 extra interviews that I did; so 60 in all. My hypothesis is that different versions of the deep story are pretty widespread. But that will depend on future research to see if that's true.

*BPPJ: Do you see the kind of occasional and momentary exposure like you had with the people you interviewed having a lasting effect on their political reality?*

ARH: I don't think I altered it. I think the effect of our acquaintanceships and friendships is that they got to know someone who was very interested in their experience and then we got to really like each other. But did I alter how they saw the world? I don't believe I did.

*BPPJ: In terms of the larger reception of your work, what is it like to become a translator of conservative ideology?*

ARH: Well the book has sold upwards 120,000 copies already and it's been really interesting for me to see the different ways the book has been received. I meant it for both red and blue state readers; both red and blue voters. I addressed it to both left and right. But I have been mainly picked up and read by the left as an interpreter of the right. They ask, "Who could have voted for Donald Trump?" I think I provide one answer to that question. But it's really interesting. Just yesterday I was talking with students in Athens, West Virginia at Concord University, a very conservative part of the country, and they were saying, "Well what you're saying about oil in Louisiana really resonates with us in the sense that Louisiana oil is like coal in West Virginia, you know it's declining, it's left people without work, people are anxious, especially white men being reduced in status." So they felt a parallel. So that's one kind of reader. I haven't run across very many hostile readers. Some are liberals and

say, "Oh you were way too sympathetic with these people. You know they're really racist." Actually, I would say that the vast majority of responses have been, "thank you for doing this". And quite a lot are from the south, from Louisiana: "You know well I'm from New Iberia and you got our number, and if I get up to Berkeley we should have coffee." It was really sweet.

*BPPJ: Have you heard anything about how the media is covering the book?*

ARH:No. I've heard from the people that I wrote about. I went back there; I've been back twice since the book. But the conservative media? Oh well, I've heard two. One was Rush Limbaugh himself. So he was talking about my book on his program: "Well you know it took her five years to discover we're nice people." But he then said, "but it's a fascinating read." So that was one. And then there was a review in Fortune Magazine by a Tea Party person who was very positive and said, "I think she's got the story; she puts the key in the hole but she doesn't turn it all the way." He added to what I said; that it's not only that conservatives feel ashamed of government aid, it's that they want jobs. That's what he thought my mantra should have been; I should have emphasized that more forcefully.

*BPPJ: Have you encountered anyone else that's trying to do the same work moving in the opposite direction: Trying to understand the liberal perspective?*

ARH: I've been asked that and to tell you the truth, I don't. I would welcome it, but I don't know of such a thing. I have, by the way, invited some Tea Party people from Louisiana as my house guests. There was a woman who was mentioned in the introduction. Her name is Sharon Galicia, and she was also featured in a cover story from Mother Jones Magazine that I did last year called No Country for White Men. She's Tea Party and Trump, but her 17 year-old son loves Bernie Sanders. He was looking at colleges, so I said, "Well look, if he's really interested in Bernie Sanders, maybe he would be interested in looking at Berkeley as a place to go to college. So come on up and I'll show you around." So that's what we did about a month ago. It was a great experience. And the two of them are amazing; they have a really warm relationship and they see the world in completely different ways and are very interested in each other's perceptions. That's really a model for how I think the country should handle differences.

*BPPJ: Given that you saw people voting against their self-interest, what part of their story did you find the most compelling?*

ARH: If we take the issue of not wanting government regulation of industrial polluters while they are suffering the effects of pollution, that's the absence of self-interest part of this, I came to understand why they didn't like the state government. In other words, I think there were three basic reasons why they were suspicious of government. The first was "Well it's the north, you know, always wagging a moral finger." And I can get that, but I wouldn't give it very much weight if I'm trying to explain why they are suspicious of government, because after all, Trump is from the north too. But the second one, this is where I really learned something, is that they don't like the state government. And I understand why they don't. Because Louisiana is an oil state, and oil interests control the state government, and so they set up environmental agencies to do the moral dirty work of oil; that is to pretend to protect the people, but not really protect them. So the very existence of these agencies, like the Louisiana Department of Environmental Quality or the Natural Resource Board, their very existence makes you think, "Oh gosh, well the state's really doing something." But in fact they give out permits to pollute and permits to import the hazardous waste from other states; permits to put hazardous waste in waterways, create injection wells that hold

dangerous chemicals. Arkansas, for example, has stricter regulations than Louisiana and exports its hazardous waste to Louisiana. All of those easy permits suggest that people are not protected from pollution. So when a guy like Mike Schaff, who begins the book, tells me "I don't want to pay taxes" to support local environmental agencies, at first that seemed perplexing, but when I see that actually they're just there for decoration, you know, as window display, then I agree with him and I understand. And, he then thinks that Federal government is just a bigger, badder version of Louisiana state government.

*BPPJ: That reflects on "the captive state" and also aligns with the "astroturfing" companies can do with advocacy campaigns.*

ARH: This is not "astroturf", but you're saying it's a similar kind of fakeness...

*BPPJ: A similar type of "wolf in sheep's clothing" scenario...*

ARH: Yes. Right, right. And they were close to it; they saw it in action, and it made them sick at heart. And all the environmentalists feel the same way about the Louisiana Department of Environmental Action, and they actually don't feel much better about the federal EPA. They wanted the EPA to come down and force the state to live up to

and enact the Clean Air Act and Clean Water Act, and they didn't. So there's some disappointment with government that's well-founded, I'm sad to say.

*BPPJ: In terms of the storytelling, the abundance of information and misinformation available that really makes the notion of letting the facts of a policy speak for themselves seem naive, if not irresponsible and misguided. What lessons did your research teach you about how government has failed at communicating the purpose or intention of its policies?*

ARH: That's a great question, and probably that should be the basic question that government has to ask. First of all, we have to ask honestly, "how are the states doing in protecting people?", in terms of environmental protection. It's probably true, I don't know for a fact, that the red states have a worse record. In North Dakota, for example, there is a lot of environmental damage being done, and it is fracking and oil interests that are powerful there. There, too, it is the state that is doing the moral dirty work of industry, and someone needs to do a study to compare red states with blue states and the effectiveness of the government in protecting the people. There is some research done by a man named Arthur O'Connor that I mention in Appendix 2, and he found that red states were dirtier than blue states. But,

is that because the state is purposefully not trying to regulate polluters? Is it a bad state story, is it moral dirty work? That I don't think we know. That's the first thing any student of this who wants to get good policy on the ground needs to look at–which states are bought and which are not.

The second thing, I think, is that the deep story tells us that there are some things people want to know, and other things they don't want to know. We have to speak to that level of wanting to know. We have to appeal to people's' self-interest. The people I talked to in Louisiana actually want good health, they want to live long lives, they want to have clean water. So, I think those interests have to be appealed to, through the symbols of red state thinking. In other words, what this book does is point to the kinds of ways you can get across your idea to people, even though they don't want to know it. I'll give you an example. I was interviewing General Russel Honore, and was watching how he talked, how he got his point across, to people who were resistant to the point he wanted to make. He did it like this, speaking to a group of businessmen who were always talking "freedom, freedom, freedom", Honore began his talk to them by saying "You know, I looked out this morning and saw a man had a

boat out on Lake Charles, and he had his line out in the water and his bucket was ready, but that man is not free to lift out an uncontaminated fish." And I thought, "you genius," he's talking to these men in their language, and I think that people who want to make a case for good government improving the environment need to learn to talk in that way.

I'll give one more example, my son, David, is an environmental activist and a member of the energy commission here in California in charge of renewable energy, and he came with me the last time I went down to speak with Mike Schaff, the man whose profile opens the book. He was born on a sugar plantation, worked in oil all his life, big Tea Party voter, voted for Trump. David was saying "look, if you want to get rid of pollution why don't you use sources of energy that don't pollute in the first place, you don't like regulation—you wouldn't even have to regulate it, it's clean there's nothing to clean up." So, Mike said "oh yeah, that's true." David responded "so would you like solar energy here in Louisiana?" Mike replied "yes, it would be great, we're running out of oil anyway." So they did have common ground on that, but then David said "and if you had solar energy, it would help mitigate the effects of global warming." But to that, the conservative

Mike said they don't believe in global warming, and told David "if you want to sell renewable energy to conservatives, put it in terms of freedom, that you are independent of Saudi Arabia, and all of these volatile hotspots in the world, and that you're a free entrepreneur, feeding clean energy back into the grid." In the end it was funny, the conservative was telling my son the progressive democrat state worker how to persuade people like himself on the right to do what's been defined as a left-wing thing.
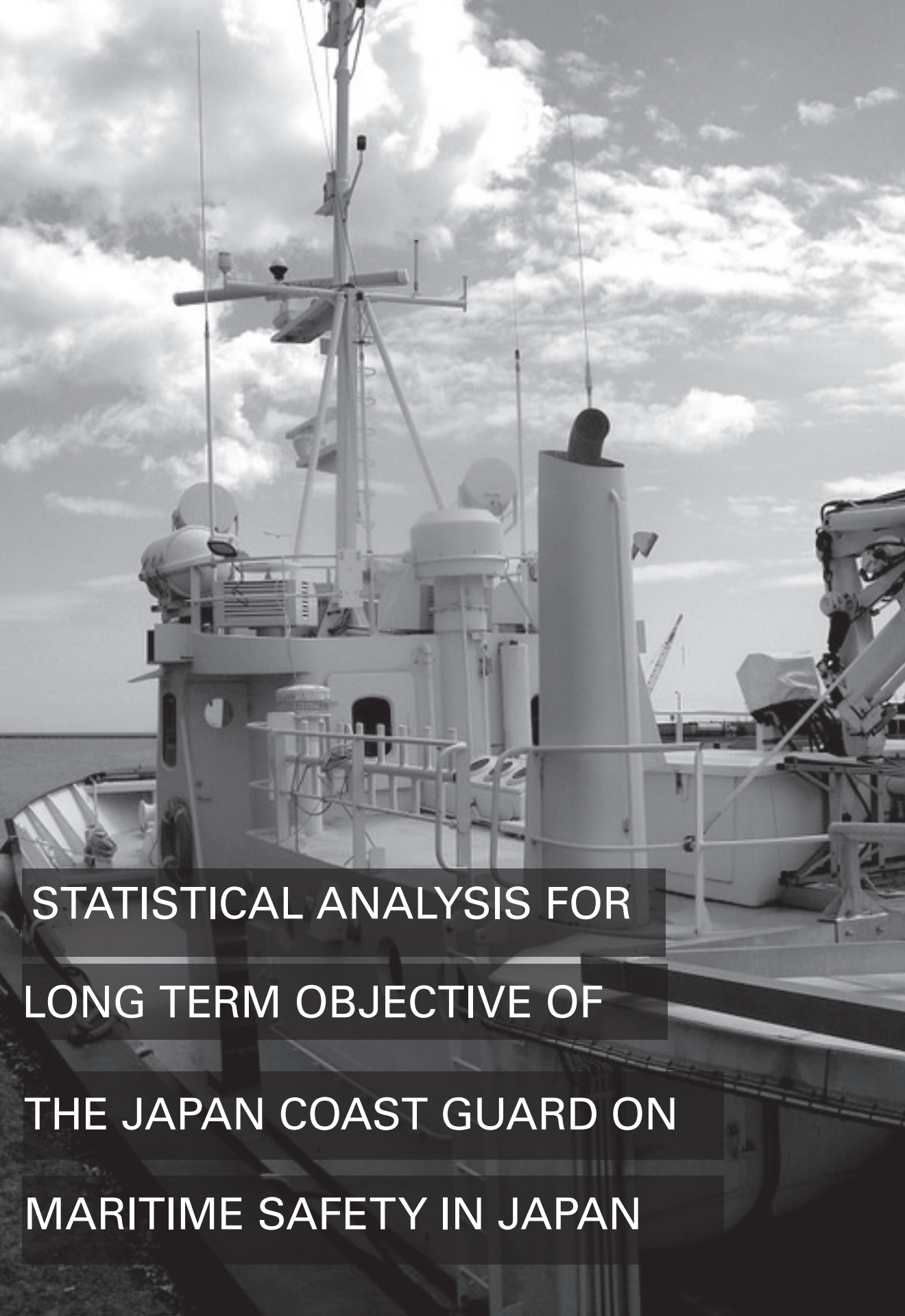
STATISTICAL ANALYSIS FOR

LONG TERM OBJECTIVE OF

THE JAPAN COAST GUARD ON

MARITIME SAFETY IN JAPAN

## KINJI TAKEUCHI

### EDITED BY: COURTNEY COLBURN

### INTRODUCTION

The Japan Coast Guard (JCG) is a government agency of Japan that is in charge of maritime safety in the Japanese territorial sea. Since its foundation in 1948, the JCG has been trying to reduce the number of maritime accidents. In order to further increase maritime safety around Japan, the JCG has set a long-term objective for 2030 in its five-year plan for the period of 2013-2018: to halve the number of maritime accidents in the Japanese territorial sea from the average annual number of maritime accidents in the period of 2008-2012.

Despite the hard effort of the JCG for maritime safety to reach this ambitious goal, there are some concerns about the feasibility of the objective. One of the main concerns is the declining budget of the JCG for maritime safety. If the reduction of the JCG's budget for maritime safety continues, it may be difficult for the JCG to maintain its maritime safety facilities. In fact, the number of those facilities, which are named Aids to Navigations (ATONs), has been decreasing in Japan since early 2000s due to the budgetary shortcomings of the JGC.

There has not been any academic work that quantitatively analyzes the relationship between the budgetary problem of the JCG and its effect on maritime safety in Japan, although maritime safety is crucial for the island country whose economy heavily relies on marine activities. If there is a statistically significant causal

relationship between the number of maritime accidents and the amount of JCG's budget for maritime safety, it would give the Japanese government a good opportunity to reconsider the budget allocation for ensuring maritime safety in Japan.

This paper investigates the statistical characteristics of the annual number of maritime accidents based on time series data analysis, in order to evaluate the feasibility of the JCG's long-term objective in the context of decreasing budgets. The result of the analysis in this paper indicates that the annual number of maritime accidents in Japanese territorial sea decreases year by year regardless of the amount of JCG's budget or the number of the JCG's ATONs.

Additionally, this paper conducts an analysis that focuses on the maritime accidents caused by pleasure boats, a group which includes yachts and motor boats. Reducing maritime accidents caused by pleasure boats could be a key factor to accelerate the rate of reduction in the number of maritime accidents. The result of the supplemental analysis shows that some policies of the Japanese government have had significant effects on the number of pleasure boat accidents.

### THE JAPAN COAST GUARD AND ITS EFFORT FOR MARITIME SAFETY

The Japan Coast Guard (JCG) was established in May 1948. The main purpose of its establishment as a government agency was to promote

the maritime safety around Japan. One of the duties of the agency is to provide maritime safety information for ships. Maritime safety information includes weather information on the sea, information about dangerous waterways for navigation, and information that can be a clue for ships to know their own positions.

In the provision of maritime safety information, ATONs have a crucial role. ATONs include lighthouses and buoys, which give signals to ships by their visual design and light. Vessel Traffic Service (VTS) is also considered an ATON. A VTS monitors maritime traffic and gives advice to ships when they face some danger. The JCG builds, operates, and maintains ATONs in the Japanese territory.

Since its foundation, the JCG has introduced new technologies into its ATON operations; for example, the original purpose of the development of solar cell battery modules was for the power sources of marine ATONs in Japan. In 2014, the JCG installed the 14GHz solid-state radars into its VTS centers for the first time in the world.[1] Additionally, the JCG is always conducting research and development for new technologies in order to promote safe ship navigation; for instance, in the early 2010s, it developed a conspicuous flashing light of ATONs by using LED light in order for ships to detect the light from ATONs more easily than usual.[2,3] Recently, the JCG is studying whether it can provide maritime safety information from buoys by utilizing a digital wireless technology.[4]

Moreover, the JCG is also a law enforcement agency in Japan that is in charge of maritime traffic rules. The JCG has changed the maritime traffic rules in the Japanese territorial sea in accordance with the change of environment in the maritime traffic around Japan. Since July 2008, the International Convention for the Safety of Life at Sea (SOLAS) has required large tonnage[5] ships to carry an Automatic Identification System (AIS). By using AIS, ships can share their real time information with other ships and shore stations. Following the enactment of the convention in 2009, the JCG has changed the maritime traffic regulation for large ships.
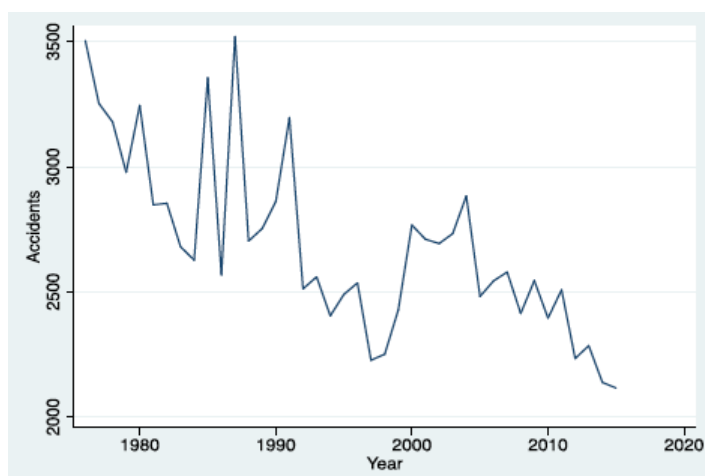


Figure 1: The annual number of maritime accidents in Japan in the period of 1976-2015
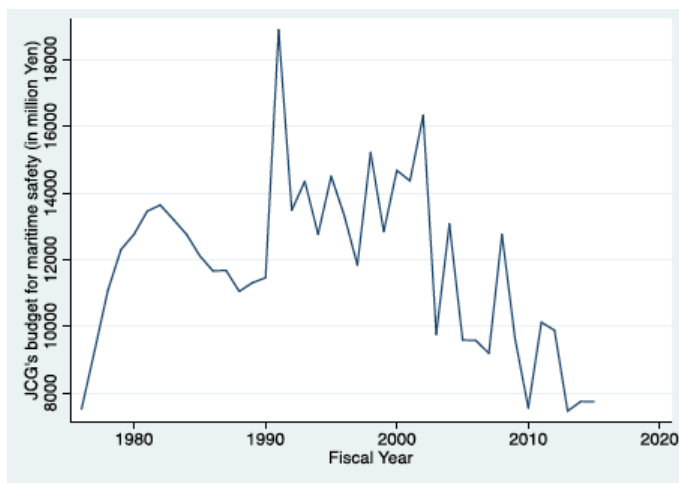
Figure 2: The annual budget of the JCG for maritime safety in the period of 1976-2015

Those efforts of the JCG are decreasing maritime accidents around Japan in recent years. Figure 1 shows the number of maritime accidents around Japan. As the figure shows, the number of ship accidents reduced from 3504 in 1976 to 2116 in 2015. In order to further promote maritime safety, in its five-year plan of 2013-2018, the JCG has set a long term objective for 2030 to halve the annual number of maritime accidents in the Japanese territorial sea from the annual average number of the period of 2008-2012: resulting in less than 1210 accidents in 2030.[6]

However, there are some concerns on the possibility of accomplishing the goal. The main reason for concern is the recent trend of the declining budget of the JCG for maritime safety. Figure 2 shows the JCG's annual budget for maritime safety in the period of FY 1976 to FY 2015. The graph shows that the budget of the JCG for maritime safety decreased from about 16 billion yen in FY 2002 to about 8 billion yen in FY2015.[7] A possible consequence of this budgetary difficulty is that if the budget keeps decreasing, it would be difficult for the JCG even to maintain the function of the existing ATONs, which means they cannot conduct new programs, like installing new equipment into JCG's facilities for maritime safety, in the near future.

## LITERATURE REVIEW

Maritime traffic safety is not only a challenge for Japan but also a challenge for other countries; there are a number of academic efforts studying maritime safety all over the world. Luo and Shin (2016) summarize the studies on maritime accidents by reviewing 572 publications on the subject written in English from 1965 to 2014.[8,9] They report that the relationship between navigation and maritime accidents has been one of the most popular topics in the study of maritime accidents. These kinds of studies can be classified into the three categories: analyses on the navigational conditions that could cause maritime accidents;[10] analyses on navigation and maritime safety in particular waterways;[11] and analyses on the common types of maritime accidents.[12,13]

Luo and Shin (2016) mention that the studies on human factors as a main cause of maritime accidents have become popular topic in academic study.[14] Yamazaki et.al (1999) statistically investigate the mutual influences among human factors that relate to maritime accidents.[15] Takemoto et.al (2003) investigate the factors that are behind human errors.[16] Hisamune et.al (2005) analyze the fatal maritime accidents in the Japanese territorial sea from the perspective of human engineering.[17] Shinoda and Tamura (2011) evaluate the effect of facilities or devices on avoiding the collision between fishing vessels and cargo vessels, which are caused by human errors.[18]

In addition, from the result of their survey of the relating publications, Luo and Shin (2016) also report that the focuses of the research are expanding into the relationship between maritime accidents and socio-economic factors.[19] Baniela and Ríos (2010) examine the relationship between the safety standard of cargo vessels and maritime accidents of cargo vessels.[20] Inoue and Ma (2002) focus on the relationships between the safety standards of countries and their earliness of ratification of the international conventions on maritime safety. [21] Heij and Knapp (2014) investigate the relationship between the number of maritime accidents around Australia and South East Asia, and the economic activities.[22] Jin et.al (2001) use a Poisson regression to explain the number of accidents of the U.S. commercial fishing vessels by using various types of independent variables including navigational conditions and social factors.[23]

Although there are number of studies on maritime safety from the perspective of ship operators, there are only few studies on maritime safety in terms of public policy in Japan. Igarashi (2000) is the study on maritime safety in terms of public policy; the paper examines the effect of VTS centers on the maritime traffic safety in the nearby area of the centers by utilizing binomial tests. The paper mentions that the establishment of the VTS centers contributed to the reduction of maritime accidents after some time lag.[24]

There are also very few studies on time series analyses that investigate the annual number of maritime accidents around Japan over 20 years. One of the reasons for the few number of studies is the lack of sufficient time series data relating to the maritime safety policy of the Japanese government; although the Japanese government annually reports the trend of maritime accidents in the White Papers on Traffic Safety, the data contained in each White Paper is too limited in terms of time period to conduct the time series analysis on maritime accidents in Japan.[25] This author has found only one study that handles the long-term time series data on maritime accidents: Tanaka and Sato-Ilic (2004) analyze the change of the main causes of maritime accidents around Japan in the period of 1975-2002 by using the fuzzy clustering technique. From their analyses, they conclude that the main causes of maritime accidents have changed since 1982.[26]

## BUDGET, ATONS, AND MARITIME ACCIDENTS IN JAPAN

As mentioned previously, there is concern about accomplishing the JCG's long term goal for 2030: the decreasing trend of its budget for maritime safety in the Japanese territorial sea. However, as mentioned in the literature review, the effect of the decreasing budget on the maritime safety in Japan has never been considered by rational evidence-based techniques, such as statistical analyses. In the following part of this section, the time series trend of maritime accidents is statistically analyzed. In addition, the causal relationship between the number of maritime accidents and the JCG's budget for maritime accidents are also discussed in order to verify the concern described above.

## 4.1 METHOD OF ANALYSIS

The effect of a policy would appear with some time lag from the allocation of the budget for the policy; for example, if budget to install an ATON is allocated, the time for installing the ATON is required and it can sometimes takes up to a year. Although the government's budget for a fiscal year should be spent within the fiscal year in Japan, it is sometimes spent in the next fiscal year due to some unexpected delays; thus it is possible for ATON operations to be started two years after the budget allocation.

Moreover, the time lag between the fiscal year and the calendar year should be considered: the fiscal year starts in April in Japan; on the other hand, the yearly number of accidents is counted in accordance with the calendar year. For these reasons, the following model, which is called Finite Distributed Lag (FDL) model, is selected as the statistical model for the analysis in this section:

$$y_t = a + B_1 t + d_0 x_{0t} + d_1 x_{0t-1} + d_2 x_{0t-2} + B_2 x_{1t} + e_t$$

Equation 1

This model can analyze the yearly time trend of maritime accidents, the influence of the number of ATONs on the number of maritime accidents, and the influence of the amount of budget allocations of consecutive three years on the number of maritime accidents.

In equation 1, variable t indicates the year (from 1978 to 2015). The dependent variable, $y_t$, is the number of accidents in a calendar year t. Variable $x_{0t}$ is the amount of JCG's budget for maritime safety in a fiscal year t. Variable $x_{1t}$ is the number of ATONs in the Japanese territory in a calendar year t. Figure 3 shows the number of the JCG's ATONs in each year in the period of 1978-2015. All the data used in the statistical analyses in this section is provided by the maritime traffic department of the JCG.[27]

## 4.2 RESULT AND DISCUSSION

The result of the regression is shown in Table 1. The table indicates that only the time trend variable has a statistically significant relationship with the annual number of maritime accidents with the coefficient of -26.4. Thus, with a statistically significant result for the t variable, it could be said with high certainty that the total number of maritime accidents around Japan is decreasing by about 26 year by year.[28] There is also an important finding for the JCG's objective: the amount of the budget or the number of ATONs

does not have a statistically significant causal relationship with the number of maritime accidents.[29]

The decreasing trend of maritime accidents in Japan against the budgetary difficulty might be partly explained by the JCG's effort for efficient budget spending. The JCG is trying to decrease the number of ATONs following the emergence of new digital wireless technologies in order to use its budget efficiently without adversely affecting maritime safety in Japan. The result of the analysis also indicates that the number of ATONs may not have seriously affected the number of maritime accidents in Japan. Hence, even if the declining of its budget continues, it may be possible for the JCG to decrease the number of maritime accidents.

However, although the number of maritime accidents has a decreasing trend, it may be difficult to conclude that the pace of decrease is enough to accomplish the goal by 2030; factors that could accelerate the pace of the reduction should be found. Detailed analysis that focuses on the time trend of maritime accidents in each type of ship would be helpful to find those key factors. Figure 4 shows the annual number of maritime accidents caused by each type of ship from 1976-2015. As the graph indicates, only the number of accidents caused by pleasure boats, such as yachts or motor boats, has an increasing time trend. Statistical analyses give us more detailed characteristics of the number of maritime accidents in each category. In these analyses, the same model as in equation 1 is used.[30] As can be seen in figure four, the results show that, in every category except for passenger ships, the number of maritime accidents has a statistically significant decreasing time trend. Among the statistically significant categories, only the number of maritime accidents caused by pleasure boats has an increasing time trend, while those caused by the other types have decreasing time trends.

These time trends seem to match the focus of the JCG for accelerating the pace of the reduction in the number of maritime accidents. The JCG has set a middle term objective for 2018: to reduce the annual number of maritime accidents caused
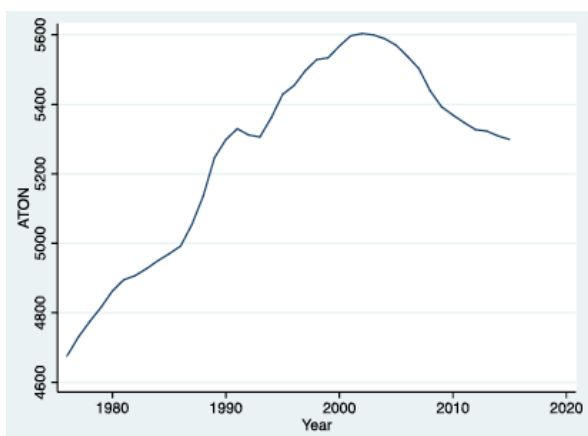


Figure 3: The number of JCG's ATONs in the period of 1976-2015

Table 1: The result of the FDL regression

|  | Accidents$_t$ |
| --- | --- |
| t(year) | -26.40* |
|  | (-2.57) |
| budget$_t$ | 0.0114 |
|  | (0.46) |
| budget$_{t-1}$ | -0.0323 |
|  | (-1.40) |
| ATONs | 0.251 |
|  | (0.63) |
| a | 54369.6** |
|  | (2.86) |
| N | 38 |
| adj. R$^2$ | 0.422 |
| p | 0.000313 |
| F | 6.411 |

t statistics in parenthesis
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

by fishing boats and pleasure boats to less than 940, from their current level of 1343.[31] Among the two types of ships, the JCG focuses more on pleasure boats than on fishing boats.[32] The JCG assumes that the effective programs for the maritime safety of pleasure boats may have a crucial role to reach the JCG's long-term goal for 2030. Thus, it seems to be worth analyzing pleasure boat accidents. The next section analyzes the maritime accidents caused by pleasure boats in Japan.

## MARITIME ACCIDENTS OF PLEASURE BOATS IN JAPAN

### 5.1 METHOD OF ANALYSIS

The number of pleasure boats accidents may be related to the popularity of pleasure boat activities in Japan; in other words, the more pleasure boat activities in the Japanese territorial sea, the greater number of accidents could be caused by pleasure boats. The popularity of the pleasure boat accidents could be estimated by the number of pleasure boat drivers. Thus, the analysis in this section uses the annual number of people who have boat driving licenses as an independent variable to explain the number of pleasure boats accidents.

The Japan Marine Industry Association (JMIA) and the Ministry of Land, Infrastructure, Transportation and Tourism of Japan (MLIT) separately provide the data on the number of people who have driving licenses for small boats.[33,34,35] The data of JMIA covers the period of 1985-2013 in units of one thousand persons; on the other hand, that of MLIT covers the period of 2012-2015 in units of one person. In the analysis below, the combined data for the period of 1985-2015 in units of one thousand people is used. Figure 5 shows the number of people who have a driving license for small boats.

The activities of JCG for maritime safety could have some impact on the safety of pleasure boats as well. In order to reduce pleasure boat accidents in Japan, the JCG has provided maritime safety information on its website since 2002. Additionally, some emergency information for
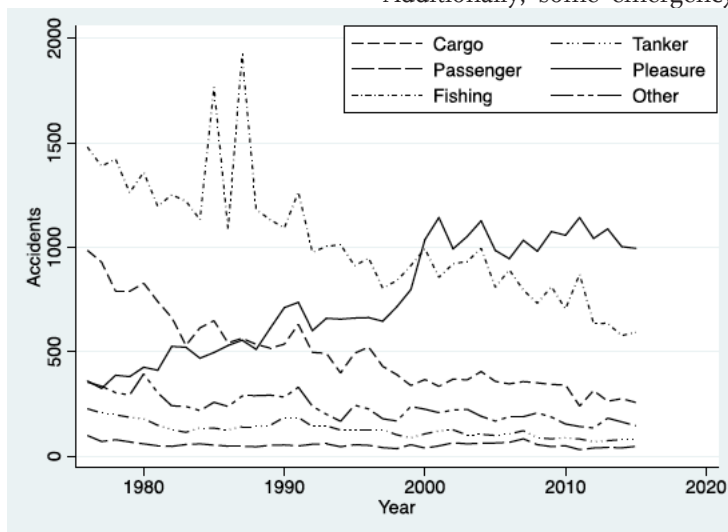


Figure 4: The annual number of maritime accidents caused by each type of ship
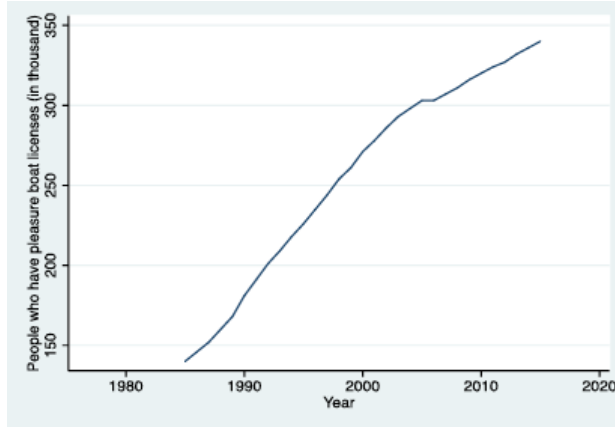
Figure 5: The number of people who have licenses for small boats in the period of 1985-2015

maritime safety has been sent to mobile phones as text messages by the JCG since 2011.

Moreover, the JCG is a law enforcement agency of maritime safety regulations in Japan. It can be considered that active law enforcement relating to the violation of maritime safety regulations would make pleasure boat drivers refrain from dangerous driving. Thus, the JCG's law enforcement actions could be a factor that is impacting the number of pleasure boat accidents. In the analysis in this section, the annual number of referrals from the JCG to the prosecutors is used to estimate the JCG's attitude on its law enforcement actions about violations of maritime safety regulations.

In its publications, the JCG provides the annual number of referrals to the prosecutors relating to the violation of maritime safety regulations by pleasure boats. The annual number of referrals in the period of 1985-2000 is collected from the JCG White Papers, which were issued in the same period; the number of referrals in the period of 2001-2015 is gathered from the annual statistics reports of JCG, which were issued in

the same period.[36] Figure 6 shows the annual number of referrals from the JCG to the prosecutor relating to the violation of maritime safety regulations by pleasure boats.

In the analysis in this section, the following static time regression model is constructed:

$$y_t = a + b_0 x_{0t} + b_1 \log(x_{1t}) + b_2 x_{2t} + b_3 x_{3t} + e_t$$

Equation 2

In equation 2, $y_t$ is the annual number of pleasure boat accidents in a calendar year. The independent variable $x_{ot}$ is the number of people who have driving licenses for small ships in a calendar year t. The independent variable $\log(x_{1t})$ is the number of referrals in a calendar year t from the JCG to the prosecutor, relating to violations of maritime safety regulations.[38] The independent variable $x_{2t}$ is the dummy variable that indicates whether the JCG's information provision service is on its website in a calendar year t: the value is 1 if t>=2002. The independent variable $x_{3t}$ is the dummy variable that shows whether information provision service via email from the JCG is operated in a calendar year t: the value is 1 if t>=2011.

A supplemental investigation found that the estimated value of the error term et in equation 2 is significantly correlated with the estimated value of $e_{t-1}$; this significant correlation is called autocorrelation. Autocorrelation in a time-series regression model causes an overfitting of the data, which could impair the versatility of an analysis. In order to deal with the autocorrelation, the Feasible Generalized Least Square (FGLS) is utilized in this analysis. Another supplemental investigation found that the capability of estimation of the time-series model becomes weak as $\log(x_{1t})$ increases. Since this result would affect the interpretation of the analysis in this section, further discussion on this relationship, which is called heteroscedasticity, is made in the next subsection. Except for the heteroscedasticity, the time-series model is found to be theoretically trusted by the other supplemental analyses.[39]

## 5.2 RESULT AND DISCUSSION

The result of the regression is shown in Table 2. The table indicates that the independent variables $x_{0t}$, $\log(x_{1t})$, and $x_{2t}$ have statistical significances and may have causal relationships with the dependent variable. These three significant independent variables in the equation 2 can be interpreted as factors to explain the causal relationship with pleasure boat accidents in Japan.

The first factor is the number of people who have driving licenses for pleasure boat: $x_{0t}$. It is straightforward to guess that the greater the number of people in pleasure boat activities, the more probable it is that those people would cause pleasure boat accidents. The number of people

who have the licenses has been increasing since the Japanese government focused a policy to encourage marine activities in the late 1980s.

The second important factor is the number of referrals from the JCG to the prosecutors regarding the violations of maritime regulations: $\log(x_{1t})$; the percentage change of the number of referrals has a significant and negative causal relationship with the annual number of pleasure boat accidents; this can be interpreted that a smaller number of law enforcement actions by the JCG could bring more pleasure boat accidents. The number of JCG's law enforcement actions for maritime safety could be related to its resource allocation, which is not only the budget allocation but also the allocation of personnel and the allocation of ships and aircraft. Since the setting of the 200-Mile fisheries zone of Japan in 1977 followed by the setting of the Exclusive Economic Zone (EEZ) in 1996, the relative importance of the territorial security has been increasing. It is possible that the increasing relative importance of the territorial security has changed the priority of JCG's resource allocation from maritime safety to territorial security. Thus, the relationship between the JCG's policy priority and the number of the JCG's law enforcement for maritime safety should be investigated as a future study.

In addition, the heteroscedasticity caused by the annual number of referrals in the regression brings another important result for pleasure boat safety: a decrease in the number of referrals would likely lead to an increase in the number of pleasure boat accidents because of the low variance in the residuals. On the other hand, an

Table 2: The result of the FGLS regression

| | $pleasure_t$ |
|---|---|
| $license_t$ | 3.332*** |
| | (3.94) |
| $log(referral_t)$ | -232.7** |
| | (-2.87) |
| $web_t$ | -172.9 |
| | (-2.72) |
| $mail_t$ | -9.787 |
| | (-0.13) |
| a | 1844.3* |
| | (2.62) |
| N | 30 |
| adj. $R^2$ | 0.464 |
| p | .000159 |
| F | 8.649 |

t statistics in parenthesis
*p < 0.05, **p < 0.01, ***p < 0.001

increase in the number of referrals would bring an unpredictable effect on the number of pleasure boat accidents due to the high variance in the residuals. Thus, it can be said that if the JCG improves the number of referrals relating to the maritime safety regulations, the effect on the number of pleasure boat accidents would be unpredictable.

The last important factor is the JCG's information provision for maritime safety: x2t. There is a significant difference in the annual number of pleasure boat accidents before and after the start of the information provision service on the JCG's website. In general, the drivers of pleasure boats do not have the necessary devices to get maritime safety information at sea because those devices are costly. The JCG's service has given the pleasure boat drivers a cost effective way to get maritime safety information.

Nevertheless, there is not a significant causal relationship between the annual number of pleasure boat accidents and the JCG's email information provision service. One of the possible

reasons for this insignificance is the lack of data for a sufficient period of time to evaluate from the start of the service in 2011. The JCG started a new information provision service that targets smartphone users in 2014. Further study in the future is needed to analyze the effect of new services of the JCG on pleasure boat safety.

## CONCLUSION

This paper conducts time series analyses on the number of maritime accidents in the Japanese territorial sea, in order to evaluate the feasibility of the long term objective of the JCG for 2030. The result of the FDL regression brings the following major findings:

• The number of maritime accidents around Japan is significantly decreasing year by year;

• There is no ceteris paribus relationship between the annual number of maritime accidents in Japan and the JCG's annual budget for maritime safety;

• There is no ceteris paribus relationship between the annual number of maritime accidents around Japan and the number of JCG's ATONs.

Those findings mentioned above refute some concerns about the feasibility of the JCG's long-term objective for 2030. However, another concern still remains: although the number of the maritime accidents keeps decreasing, it is unclear that the pace of the reduction is enough for the JCG to accomplish its long term objective.

In order to find the factors that could dramatically reduce the number of maritime accidents in Japan, this paper also analyzes the annual number of pleasure boat accidents by using the Feasible Generalized Least Square (FGLS) regression. The result of the regression indicates that some policies of the Japanese government led to an increase of pleasure boat accidents.

Further, the heteroscedasticity caused by the number of referrals shows an interesting phenomenon: a decrease in the number of referrals simply reduces the number of pleasure boat accidents, while increases in the number of referrals brings an unpredictable effect on the number of pleasure boat accidents. The decrease in the number of referrals for maritime accidents in Japan might be explained by the change of the JCG's priority on resource allocation from the late 1970s, although more study is needed to verify the relationship between the JCG's policy priority and the number of referrals.

Moreover, the result of the analysis also demonstrates the possible impact of the information provision on maritime safety in Japan. The information provision service on the JCG's website has a significant impact on the reduction of pleasure boat accidents. However, this paper could not statistically prove the impact of the maritime safety information service via email, partly because the lack of sufficient period of data to evaluate. The JCG have implemented a new information provision service for smartphone users in 2014. As of February 2017, it is difficult to predict the possible impact of the services on pleasure boat safety. Further study with more data in the future would make the impacts of those services clear.

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[27] In order to verify the analyses in this section can be trusted, the CLM assumptions in the time series regression, the autocorrelation, the heteroscedasticity, and the multicollinearities among the independent variables are examined as supplemental investigations. The Breusch-Godfrey LM test for autocorrelation resulted in the p-value of 0.8183 >0.05. The p-value of the Breusch-Pagan / Cook-Weisberg test for heteroscedasticity is 0.3453 > 0.05. The highest VIF value of the independent variables is 8.52. For these results of the tests, it can be assumed that the time series regression satisfies the CLM assumptions.

[28] The impact of JCG's activities on the number of maritime accidents is included in the error term. Thus, it cannot be said that the number of maritime accidents is decreasing regardless of what the JCG does.

[29] In order to analyze the relationship between the decreasing budget and the number of maritime accidents without the influence of inflation, the analysis that targets the period of 2002-2016 was also conducted as a supplemental analysis by using the same statistical model. The result of this supplemental analysis was not able to find any significant causal relationship between the two factors.

[30] Since serial autocorrelations are detected in the regressions for the number of accidents of some types of ships, the Feasible Generalized Least Square regression through the Cochrane-Orcutt iterative process is used in this examination to remove the autocorrelation.

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[35] The data of the JMIA was provided with the association by the MLIT in the past. Thus, the source of both datasets are the same: MLIT.

[36] The JCG White Papers in the period of 1997-2000 are available at the JCG's website: http://www.kaiho. mlit.go.jp/doc/hakkou/report/top.html

[37] The reports are available at the JCG's website: http://www.kaiho.mlit.go.jp/doc/hakkou/toukei/toukei. html

[38] A pre-investigation for this analysis shows that the log form of the independent variable $\log(x\_1t)$ is more appropriate than a linear form of the independent variable $x\_1t$ in terms of statistical significance to have the causal relationship with the dependent variable. Hence, the log form is selected in the equation (2).

[39] The Durbin-Watson score for the adjusted model is 2.08, whereas the score for the pre-adjusted model is 1.27. Thus, it can be considered that the serial autocorrelation in the model is relieved in the adjusted model. As for the homoscedasticity assumption in a linear regression, the result of the Breusch-Pagan / Cook-Weisberg test is $p=0.01<0.05$, which means that there is a heteroscedasticity in the regression. Regarding the multicollinearity, the max value of the VIF is 5.44, which means there is no serious multicollinearity in this analysis.

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# DRUG COMPANY PAYMENTS TO PHYSICIANS TIED TO HARMFUL PRESCRIPTIONS FOR FOSTER YOUTH

*Drug Company Payments to Physicians tied to Harmful Prescriptions for Foster Youth*

## NOAH LEHMAN

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Across the United States, youth in foster care services are prescribed psychotropic medication at a rate greater than three times that of Medicaid-insured youth as a whole. Instances of polypharmacy, wherein multiple medications are simultaneously prescribed to a single patient, are especially problematic and unfortunately common among foster youth. The negative consequences of polypharmacy are worse still when youth are prescribed concurrent antipsychotics, the riskiest class of psychotropic drugs. Some of the more harmful side effects of antipsychotics include seizures, rapid weight gain, heart murmurs, high cholesterol, and kidney problems. Although the concurrent prescription of antipsychotics is outside of medically recommended guidelines, this practice continues.

In order to end these harmful prescription practices, the National Center for Youth Law (NCYL) seeks to understand what motivates some physicians to engage in these practices. As such, this report, undertaken on behalf of NCYL, hypothesizes that physicians are more likely to prescribe inappropriately to foster youth when they receive payments from pharmaceutical companies.

This analysis of prescribing patters of physicians to foster youth confirms that across specalities such as psychiatry, neurology, and pediatrics, physicians who were paid by drug companies promoting antipsychotic than doctors who did not receive payments. In the specialty of pediatrics, for example, concurrent prescriptions of antipsychotics increased nearly tenfold among physicians who were paid by pharmaceutical companies.

To address this problem, this report recommends increased transparency and oversight through the passage of data and oversight bills concerning the prescriptions of psychotropic drugs to foster youth. Additionally, recommendations include academic detailing and training for prescribers practicing outside of safety parameters for children, and restrictions on pharmaceutical company payments to physicians. California Senate Bill 1174 (Mike McGuire-D) is an example of a good legislative starting point. This bill establishes a process to collect and analyze data, and to conduct investigations of physicians who frequently prescribe outside recognized safety parameters for children.

BACKGROUND

Foster youth are prescribed psychotropic medications at a rate greater than three times that of Medicaid insured youth as a whole nationwide.[1] This includes nearly 30 percent of all 400,000 foster youth across the country.[2] While appropriate prescriptions of psychotropic medication at recommended doses can be an important component of mental health care, foster youth are often prescribed too many medications with excessive dosages to treat symptoms for which the efficacy of these medications

is unsubstantiated by scientific evidence and unsupported by prescription guidelines.[3] When youth are prescribed multiple medications at once, the potential for harm due to medical interactions and compounding side effects is especially high. As a result, polypharmacy is against medical guidelines. Unfortunately, for foster youth prescribed any psychotropic medication, this prescription pattern is not rare; about 41 percent are prescribed three psychotropic drugs at the same time.[4] Up to 19 percent are prescribed two or more antipsychotics concurrently.[5][6]

Any type of medication that alters mental processes is a psychotropic medication. For foster youth with mental health problems, it is sometimes within medical guidelines to prescribe a psychotropic medication, and in rare instances such as with a diagnosis of schizophrenia it is within medical guidelines to prescribe antipsychotics. No scientific studies, however, provide any evidence for the efficacy of either polypharmacy or concurrent antipsychotics.[7] Moreover, the health problems and complications from polypharmacy, especially with antipsychotic usage, are profound. The resulting side effects can be debilitating and include: diabetes, metabolic disruption, seizures, rapid weight gain, heart murmurs, high cholesterol, and kidney problems.[8] Despite that the vast majority of foster youth lack necessary laboratory tests, monitoring, and follow up services required for patients placed on these drugs, about 24,000 foster youth each year are prescribed two or more concurrent antipsychotics, and about 48,000 are prescribed three or more psychotropic medications.[9]

Due to the gravity of this problem, it is essential for policymakers to use their authority and expertise to intervene. Thankfully, policymakers in many states have already instituted legislative and policy reforms aimed at reducing such harmful prescribing practices. Oversight mechanisms such as judicial review, prior authorization—the authorization of a court appointed psychiatrist—and the review of data on psychotropic prescription patterns have demonstrated considerable success.[10] Notably, Ohio and New York have seen 25% reductions in the rate of psychotropic medication prescribed to foster youth.[11] States such as Arkansas and Maryland reported 13.5 percent to 85.7 percent declines (depending on age group) in prescriptions of antipsychotic medication.[12] Many more states will need to take action before foster youth nationwide are adequately protected from unsafe prescription practices.

PHYSICIAN MOTIVATION

If the goal of appropriate prescription of psychotropic medication to foster youth is to be achieved, it is essential to understand what motivates some physicians to prescribe inappropriately to begin with. Thankfully, multiple evidence-informed explanations already exist to explain this type of inappropriate prescribing. These explanations include lack of proper physician education, involuntary hospitalization laws, and even perverse financial incentives, in the form of payments from pharmaceutical companies, for physicians to prescribe drugs rather than provide therapy.[13] There is, however, another possible explanation: Physicians are more likely to prescribe inappropriately to foster youth when they receive payments

from drugs companies. This hypothesis is drawn from the results of recent studies, which show that physicians are much more likely to prescribe medication promoted to them by drug companies.[14] One such study, published in the Journal of the *American Medical Association*, found that even a single meal purchased for a physician by a drug company resulted in significantly higher prescription rates of the drugs being promoted by the drug company in question.

Another study by *ProPublica*, using the Dollars for Docs Database,[15] echoed these results. The study found that physicians prescribed higher rates of brand-name medication after just one payment from a drug company. Psychiatrists, for example, were 40 percent more likely to prescribe brand-name medication when paid $5,000 or more by drug companies than those who were not paid at all.[16]

This phenomenon is not only an academic question, but also an issue with far-reaching legal implications. Drug companies have paid hundreds of millions of dollars in lawsuits and settlements as a result of these promotion practices.[17] However, they have continued to engage in these practices, including the promotion of antipsychotics to treat symptoms and disorders without evidence of efficacy, and despite evidence of severe side effects.[18] To date, these studies and lawsuits have focused on prescriptions from physicians to the population in aggregate, and have not exclusively examined prescriptions to foster youth.

ANALYSIS

Previous research indicates there is a problem of overprescription of psychotropic medication to foster youth. Research also reveals the unfortunate reality that physicians are more likely to prescribe medication promoted to them by drug company payments. As a result, the NCYL has undertaken an analysis to determine a relationship between payments from pharmaceutical companies to doctors and the inappropriate prescription of psychotropic medications.

The reason this study focuses on the use of concurrent antipsychotics, rather than psychotropic prescription patterns as a whole, is because concurrent antipsychotic prescriptions are only appropriate in limited circumstances, specifically when used during a period called "cross-tapering." Groups such as the American Academy of Child and Adolescent Psychiatry recommend using concurrent antipsychotics only in this instance. In this study, "concurrently" is defined as over a period of more than thirty days, which is beyond the period of cross-tapering. Consequently, all instances of concurrent antipsychotic prescription reviewed in this study are definitively outside medically-recommended guidelines.[19]

METHODS AND DATA

This investigation uses two primary data sources. The first consists of data on each prescriber of psychotropic medication to foster youth in California, and details their total number of prescriptions of different types of psychotropic drugs,

as well as their name, location, and specialty. It was provided by the California Department of Health Care Services (DHCS), and spans a five-year period from July 1, 2009, to June 30, 2014.

The second dataset includes aggregate totals of payments to physicians from drug companies in the promotion of all brand-name antipsychotics and was drawn almost entirely from *ProPublica's* Dollars for Docs database. It uses publicly-available data about payments to physicians from pharmaceutical companies as a result of the Physician Payments Sunshine Act, which required data collection to begin in 2010. These two data sources were merged and analyzed to determine the statistical relationship between payments to physicians for antipsychotics and the prescription of two or more concurrent antipsychotics to foster youth.

Additionally, the NCYL took measures to make sure that the results of this study were robust. To do this, the NCYL analysis controlled for physician classification, specialty, and work location. Prescription patterns were examined in the following three different ways:

The total number of prescriptions of concurrent antipsychotic medication as a percentage of prescriptions of all psychotropic drugs. The likelihood a physician would demonstrate a pattern of prescribing concurrent antipsychotics. A pattern is defined as "ten or more times" due to the fact that observations under ten times are masked in health data used by this study.

RESULTS

The results of this analysis demonstrate that physicians who are paid by drug companies promoting an antipsychotic are more likely to prescribe concurrent antipsychotics to foster youth. Over the five-year period in the DHCS data set, the top five percent of physicians with the highest prescription rate of two or more antipsychotics at once made up nearly 50 percent of the total instances of polypharmacy.[20][21] Of the 1,115 physicians who prescribed any psychotropic medication at least ten times during this five-year period, just over 75 percent never appear in the data as having ever prescribed concurrent antipsychotics.[22] This means that just under 25 percent of the prescribers account for all instances of concurrent antipsychotics prescribed to foster children in the DHCS dataset. Moreover, 70 percent[23] of this top five percent received payments from drug companies for antipsychotics compared to just 35 percent from the sample overall.

Across all specialties, doctors paid by pharmaceutical companies for an antipsychotic prescribed 3.2 times more concurrent antipsychotics to foster youth. Even after controlling for the fact that some prescribers just prescribe more psychotropics overall, being paid by pharmaceutical companies for an antipsychotic predicted a 2.5 times higher total prescription rate of concurrent antipsychotics. Finally, physicians paid by a pharmaceutical company for any antipsychotic medication were 2.4 times as likely to demonstrate even one instance of prescribing antipsychotics to foster youth at all.

Below are three graphs expressing the above results in more detail. All instances are broken down by payment and physician specialty.
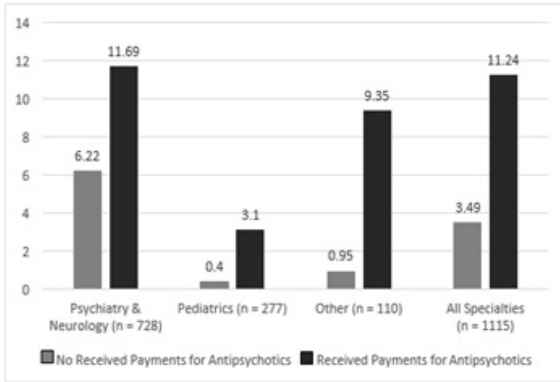


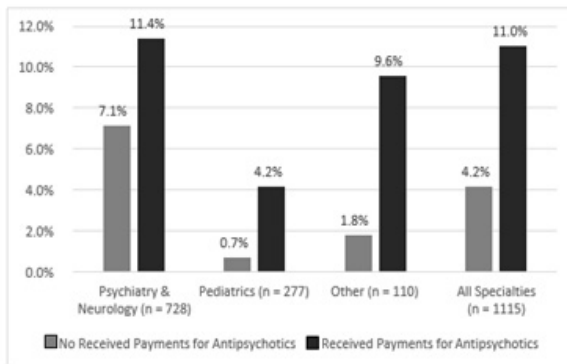Figure 1: Average Total Number of Concurrent Antipsychotic Prescriptions



Figure 2: Concurrent Antipsychotic Prescriptions as a Percent of Total Prescriptions
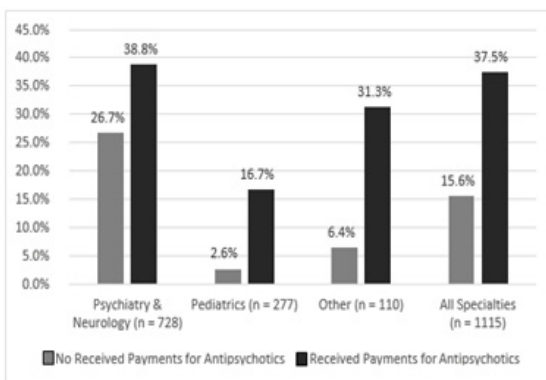


Figure 3: Likelihood a Physician Would Demonstrate a Pattern[24] of Prescribing Concurrent Antipsychotics

LIMITATIONS While these results are robust, certain limitations still persist in this analysis due to a lack of available data. To begin with, DHCS only provided NCYL with information through 2014, despite requests for more recent information. This could mask more recent trends in prescription practices to foster youth. Additionally, individualized data is only available when a prescriber engages in a given prescription pattern more than ten times. This applies to both the total number of psychotropics and to the total number of two or more concurrent antipsychotic prescriptions, meaning that both the number of prescribers who prescribed psychotropic medication is greater than listed as well as the number who prescribed more than two concurrent antipsychotics.

Furthermore, this data only includes information on antipsychotics. Additional studies on inappropriate prescriptions of antidepressants and ADHD medications are crucial for oversight purposes. Publicly-available antidepressant and ADHD prescription data could be matched with physician payment data in the same manner. In addition to the study of concurrent medication, studying dosage information is essential for oversight purposes. In attempting to circumscribe inappropriate prescriptions to foster youth, it is essential to examine complete data on instances where high dosages—rather than polypharmacy—resulted in overprescription.

Finally, data analysis did not find any link between the amount of money paid and the total, percentage, or likelihood of prescribing multiple concurrent antipsychotics. For example, the

model used in this analysis did not predict any difference in prescribing patterns for a physician being taken out to dinner once by a drug company compared to receiving ten free meals. This demonstrates the possibility that simply being paid by large pharmaceutical companies for antipsychotics is enough to alter behavior, and that the amount itself is relatively unimportant.

## DISCUSSION AND RECOMMENDATION

This report recommends both oversight and more transparent data surrounding the prescriptions of psychotropic drugs to foster youth. A small handful of prescribers (just five percent) appear to account for the majority (almost 50 percent) of inappropriate prescriptions toward foster youth in the form of concurrent antipsychotic prescription. Better oversight at all levels of government is needed to address this harmful behavior.

More timely, accurate, and centralized data is needed to truly understand the depth of this problem and to see how it changes over time. Many state agencies obligated to protect this vulnerable population of foster youth are unprepared and unable to provide true oversight due incomplete or unreliable data collection. More transparency is necessary in order to alter the behavior of physicians who prescribe inappropriately.

This report recommends that state legislatures pass laws to provide Health and Human Services departments with the funding and authority to collect, distribute, and analyze data surrounding prescription patterns to foster youth. We recommend passage of legislation

and regulations that allow those same state agencies, or other agencies such as the Medical Board, authority to appropriately educate and discipline (if necessary) the small handful of physicians who prescribe inappropriately to foster youth. Finally, this report recommends that state legislatures pass laws to curtail pharmaceutical company gifts and payments to physicians.

## CURRENT PROGRESS

Many states are already beginning to implement effective laws and policies to both acquire necessary data and properly oversee prescribers. In California, legislative champions and NCYL have taken the lead to solve these problems through the implementation of model legislation that increases data transparency on prescription practices and oversight mechanisms to address harmful patterns.[25]

California State Bill 1174 (Mike McGuire-D), for example, codifies a data use agreement between California Department of Health Care Services and its Medical Board, wherein the DHCS provides information about inappropriately prescribing physicians to the Medical Board and gives the Medical Board authority to discipline those physicians. Another California bill, SB 1291 (Jim Beall-D), calls for annual county data sharing to improve foster youth's access to mental health services. States such as Washington, Ohio, and Vermont have taken other approaches to oversee the influence of pharmaceutical company payments to physicians and to oversee prescribing to foster children. Washington has a consultation line for providers,[26] Ohio trains prescribers who

prescribe at rates much higher than other physicians,[27] and Vermont has a ban[28] on pharmaceutical company payments to physicians.[29]

Current efforts in California and other states demonstrate both progress and potential. Bills such as SB 1174 and SB 1291 show promise to be effective in reducing the overmedication of foster youth.

However, a concerted effort on the part of policy advocates and policy makers is required, and policy change is essential to ensure that the 400,000 foster youth across the country receive the responsible mental health care they require and deserve.

APPENDICES

*APPROVED LEGISLATION*

SB 1174 (McGuire)

*Issue*: Prescriber Oversight

*Content*: SB 1174 would establish a process for the Medical Board of California to review and investigate psychotropic medication prescription patterns among California children. Specifically, this bill enables the Medical Board of California to collect and analyze data, and, where warranted, conduct investigations of physicians who frequently prescribe outside recognized safety parameters for children. Treatments with the greatest risks to children's health would be flagged and analyzed in a physician's prescribing history.

SB 1291 (Beall)

*Issue*: Data Transparency—Availability of Mental Health Services for Children in Foster Care

*Content*: SB 1291 would improve the ability of the State and counties to oversee mental health services for foster children and youth and to track outcomes related to those services. Specifically, this bill calls for annual reviews that detail services, access, timeliness, and quality for children's mental health services and needs.

SB 319 (Beall)

*Issue*: Data Transparency and Prescriber Oversight—Public Health Nurses, Psych Drug Monitoring, and Medical Records

*Content*: This bill will give public health nurses the authority to receive medical records directly from physicians serving foster children and highlights their role in the oversight of screening and monitoring appointments for psychotropic medications. With these changes public health nurses will be able to ensure that lab tests, other screenings, evaluations and assessments meet reasonable standards of medical practice in a more timely manner.

SB 484 (Beall)

*Issue*: Group Home Oversight—Utilization of Psych Drugs

*Content*: This bill will identify group homes that rely excessively on psychotropic medication, use such medications as the primary intervention for behavior problems, or employ other high-risk practices.

When problem practices are found a corrective action plan will be formulated for safe and appropriate care for the children and youth in those homes.

SB 238 (Mitchell)

*Issue*: Data Transparency and Prescriber Oversight—Psych Drug Data, Alerts, Training, JV-220 form

*Content*: This bill will identify group homes that rely excessively on psychotropic medication, use such medications as the primary intervention for behavior problems, or employ other high-risk practices. When problem practices are found a corrective action plan will be formulated for safe and appropriate care for the children and youth in those homes.

*PROPOSED LEGISLATION*

SB 253 (Monning)

*Issue*: Prescriber Oversight—Support for the Courts

*Content*: This bill aims to strengthen the court authorization process for foster children. The bill would establish the following:

Judges, in making their determination to authorize psychotropic medications, will be provided comprehensive treatment information, alternatives, and treatment history.

Second opinion criteria for the most extreme prescribing cases such as for use with children ages up to five, multiple antipsychotics, and three or more psychotropic medications at the same time.

Follow up monitoring requirements reported to the courts to clarify the safety and impact of the medication treatment.

ENDNOTES

[1] Psychotropic Medication Patterns Among Youth in Foster Care, Julie M. Zito, Daniel J. Safer, Devadatta Sai, James F. Gardner, Diane Thomas, Phyllis Coombes, Melissa Dubowski, Maria Mendez-Lewis, Pediatrics Jan 2008, 121 (1) e157-e163; DOI: 10.1542/peds.2007-0212

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[4] Psychotropic Medication Patterns Among Youth in Foster Care, Julie M. Zito, Daniel J. Safer, Devadatta Sai, James F. Gardner, Diane Thomas, Phyllis Coombes, Melissa Dubowski, Maria Mendez-Lewis, Pediatrics Jan 2008, 121 (1) e157-e163; DOI: 10.1542/peds.2007-0212

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[9] U.S. Department of Health and Human Services. (n.d.). Use of multiple concurrent antipsychotics in children and adolescents: percentage of children and adolescents 1 to 17 years of age who were on two or more concurrent antipsychotic medications. | National Quality Measures Clearinghouse. Retrieved from https://www.qualitymeasures.ahrq.gov/summaries/summary/49749/use-of-multiple-concurrent-antipsychotics-in- children-and-adolescents-percentage-of-children-and-adolescents-1-to-17-years-of-age-who-were-on-two-or-more- concurrent-antipsychotic-medications

[10] Mackie, T. I. (2014). Extending psychotropic medication oversight for children in foster care: A sociological and econometric examination of state monitoring mechanisms (Order No. 3622244). Available from ProQuest Dissertations & Theses A&I. (1548007824). Retrieved from http://search.proquest.com/docview/1548007824?accountid=14496

[11] National Center for Youth Law. (n.d.). Curbing the high rates of psychotropic medication prescriptions among children and youth in foster care. Retrieved from http://youthlaw.org/wp-content/uploads/2016/02/curbing-high-rates.pdf

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[20] 54 out of the 1,115 physicians in the data set.

[21] 3,258 of the 6,975 instances this occurred.

[22] 854 physicians.

[23] 38 of the top 54 prescribers.

[24] A pattern is defined as, "10 or more times" for the purposes of this study due to the fact that observations under 10 times are masked in health data.

[25] For a full list of bills sponsored by NYCL that address this problem, as well as other problems related to foster youth, please see the appendices.

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[29] For more information on prescriber oversight practices in various states visit https://youthlaw.org/publication/3405/

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