



Contents

Rising to Meet the Central Challenge of Our Time.....	8
<i>Vice President Joe Biden</i>	
2018 Seoul Case Study Experience	10
<i>Eileen Young</i>	
Hardening Soft Targets	14
<i>Daniel Henne</i>	
A Critical Review of Emergency and Disaster Management in the United Arab Emirates	23
<i>Abdulhadi A. Al Rumaithi</i>	
Civic Hackathons as Deliberative Democracy: Reflections from Participation in the 2018 Delaware Open Data Challenge	36
<i>Eli Turkel, Elizabeth Suchanic, and Randy Neil</i>	
The Syrian Crisis: Failed Mediation and Implications for Conflict Resolution	48
<i>Meagan Eisner</i>	
Connected and Automated Vehicles: Urbanization Versus Suburbanization	63
<i>Brett Swan</i>	





The Biden Institute, established at the University of Delaware's Joseph R. Biden, Jr. School of Public Policy and Administration, is a world-class intellectual center and destination for scholars, activists, policymakers, and national leaders.

Our mission at the Biden Institute is to influence, shape, and work to solve the most pressing domestic policy problems facing America. We are a research and policy center working to bring together the sharpest minds and the most powerful voices to address our nation's toughest problems.

The Institute is focused on the issues that have animated Vice President Biden's public career and it is rooted in two guiding principles he has long embraced: Economic opportunity and social justice.

The Institute explores such issues as:

- Strengthening the middle class
- Income inequality
- Preventing violence against women
- Ensuring LGBTQ equality
- Civil liberties and criminal justice reform
- Expanding access to quality, affordable health care
- Increasing environmental sustainability
- American politics and democracy



@UDBidenInst



Biden Institute

2019 NVPA EDITORIAL BOARD



Delaney Luman, MPA '19, Editor-in-Chief

Delaney Luman is a second year Master of Public Administration student and research fellow for the Center for Community Research and Service, working with Westside Family Healthcare in Wilmington. Her interests focus in health policy, food policy and the role social determinants of health play in healthcare outcomes. She received her B.S. in Animal and Food Sciences from the University of Delaware in 2015. When not working, she loves to spend her time running and hiking with her dog, trying new recipes and reading.



Jeffrey Martindale, MPA '19, Executive Director

Jeffrey Martindale is a second year Master of Public Administration student at the Joseph R. Biden, Jr. School of Public Policy and Administration who is also a graduate research assistant for the Institute of Public Administration researching various finance and technology changes and opportunities in Delaware. His interests primarily revolve around economic development, international relations, and technological innovation. In 2016, he received his B.S. in Political Science from Towson University in Baltimore, Maryland.



Davis Braun, MPA '19

Davis Braun is a second year Master of Public Administration student at the Joseph R. Biden Jr. School of Public Policy and Administration. He is currently a Legislative Fellow, affiliated with University of Delaware's Institute for Public Administration, working in Delaware's State Legislature. His interests include international relations, economic development, and public finance. Davis received his Bachelor of Arts with majors in International Relations and German Studies in 2016 from the University of Delaware.



Chris Czepiel, MPA '19

Christopher Czepiel is a second year Master of Public Administration student specializing in quantitative policy analysis. Currently, he is a Fellow with the Institute for Public Administration, focusing on projects related to land use and economic development. His personal research focuses on public finance and intergovernmental relations. Christopher received his B.A. in Political Science and Communication from the University of Massachusetts Amherst in 2017.



Logan Gerber-Chavez, PhD

Logan is a Ph.D. student in the Disaster Science and Management program who is also a graduate research assistant at the Disaster Research Center. Her interests include climatology, climate-related disasters (especially hurricanes), and environmental justice. She received her Master's degree in Geography from the University of Oklahoma focusing on disasters as a catalyst for international climate policy change. She also holds a Bachelor's degree in Geography from Texas A&M University with a minor in Meteorology and a certificate in Comparative National Governments.



Ruby Harrington, MPA '19

Ruby Harrington is a second year Master of Public Administration student. Affiliated with UD's Institute for Public Administration, she is a Judicial Fellow working with the Administrative Office of the Courts of the Delaware Supreme Court, researching pressing government and legal issues and helping to implement solutions for the statewide judicial branch. She is particularly interested in the intersection of health policy and economic development. Ruby completed her Bachelor's at UD in 2014 with a major in Political Science and minors in History, Political Communication, and Sociology.



Rachael LaBattaglia, MPA '19

Rachael LaBattaglia is a second year Master of Public Administration student at the Joseph R. Biden Jr. School of Public Policy and Administration. She currently works as a graduate research assistant at the Institute for Public Administration, focusing on education projects. Her interest areas include education, program compliance, performance management, and evaluation. She recently completed a summer internship with the US Dept. of Health and Human Services Office of the Inspector General, focusing on data retention and storage practices. Prior to graduate school, Rachael had various roles within the public and nonprofit sectors, including teaching, serving as an AmeriCorps VISTA member in NH and SC, and working as a Programs Officer at Volunteer NH. Rachael received her Bachelor's

degree in Earth-Space Science in 2011 from Towson University in Maryland, with a focus on Secondary Education and minors in Spanish and Astronomy.



Danielle Littman, MPA '20

Danielle Littmann is a first year Master of Public Administration student. Currently, she is a graduate research assistant for the Institute for Public Administration. Her primary areas of interest are legal issues and gun control. Danielle received her Bachelor of Arts from the University of Massachusetts Amherst in Legal Studies in May 2018, while also taking a semester abroad studying Italian in Siena, Italy.



Diego Otegui, PhD

Diego is a doctoral candidate in the Disaster Science and Management Program. Born in Argentina in 1974, he also holds a degree in Economics, a specialization in Nonprofit Organizations Management and a Master's degree in Strategic Studies. The purpose of his doctoral research is to understand the logic behind the decision to deploy personnel in the aftermath of international disasters. He has also focused his attention on the linkages between disasters and public security, decision making, international convergence and the role of gangs and violent groups in post-disaster contexts. In his private practice he is an international consultant and board member of The International Emergency Management Society (TIEMS) and the International Humanitarian Studies Association (IHSA) With almost 25 years of experience, he participated in missions in East Timor, Democratic Republic of Congo, India, Mozambique, Trinidad and Tobago and Spain. He has lectured in numerous international conferences in the Netherlands, South Korea, Japan, Canada, Mozambique, Ethiopia and the United States among others. He has 7 years of experience as university professor and more than 15 years of experience as an instructor in various courses related to disaster management, humanitarian response and related topics. He currently lives in the United States with his wife and three-year-old daughter. He plays the guitar, enjoys running and swimming and is a member of the United Methodist Church.



Antonina Tantillo, MPA '19

Antonina Tantillo is a second year Master of Public Administration student at the University of Delaware's School of Public Policy and Administration. Antonina is a research assistant for the University of Delaware Center for Community Research and Service and is placed as an Urban Policy Fellow with Wilmington City Council. Antonina received a Bachelor of Arts in Public Policy and Political Science from the University of Delaware. Antonina has served numerous nonprofits such as the In Trust Center for Theological Schools, the University of Delaware Center for Community Research and Service, Catholic Charities USA and Commonwealth Catholic Charities and has policy interests in immigration, education and homelessness.



Eli Turkel, PhD

Eli is a third year doctoral student studying public sector innovation. His dissertation explores the diffusion of civic technology in the United States. Prior to graduate school, Eli worked at the Delaware State Legislature and Delaware politics. His experience in applied policy and politics drives his research. Outside of work, Eli enjoys sports, movies, and the outdoors.



Eileen Young, MA '19

Eileen Young is a second year Masters student in the Disaster Science and Management program. A research assistant at the Disaster Research Center, her research revolves around computer simulation of evacuation from fire and focuses on social aspects and group dynamics. Eileen received her Bachelor of Science in Liberal Studies from the University of Wisconsin at Whitewater in 2016.



Elizabeth (Betsey) Suchanic '19 – Media Outreach Lead

Betsey is a second year Master of Public Administration student specializing in social enterprise. She is currently a Public Administration Fellow in the Institute for Public Administration, where she conducts transportation outreach and develops tools to assist local governments with urban planning. Betsey received her Bachelor's degree in Marketing Communication and Studio Art from Mary Baldwin University in 2016.

FACULTY ADVISORY BOARD

MARIA P. ARISTIGUETA, PHD

JONATHAN B. JUSTICE, PHD

JOHN G. McNUTT, PHD

LELAND WARE, JD

Thank you to our generous sponsor!



UNIVERSITY OF DELAWARE
BIDEN INSTITUTE

NEW VISIONS FOR PUBLIC AFFAIRS (NVPA) is an interdisciplinary, student-produced, peer-reviewed journal that publishes scholarly material offering new perspectives on public affairs. We operate as a student organization within the Joseph R. Biden, Jr. School of Public Policy and Administration at the University of Delaware.

INSTRUCTIONS FOR SUBMISSIONS

New Visions for Public Affairs produces an annual volume, which is made publicly available at www.sites.udel.edu/cas-nvpa. Individuals interested in submitting manuscripts to NVPA should abide by our “Guidelines for Submission and Publication,” which can be downloaded from www.sites.udel.edu/cas-nvpa. Submissions may include scholarly essays, position papers, commentaries, opinion pieces, book reviews and policy briefs. Submission should be no longer than 25 pages in length, should define clear research objectives, and provide a summary of findings and conclusions. All papers must be submitted in APA style and include in-text citations, a full reference list, and an abstract of no more than 250 words.

After review, authors are notified of the publication decision. Accepted submissions then receive comments from the NVPA Editorial Board. The Board will require each author to sign a publication agreement, and may return articles for multiple rounds of revision. The publication agreement may be rescinded if changes made during the editing process are determined to be unsatisfactory by either the Board or the author.

Please address all correspondence to:

ATTN: New Visions for Public Affairs
Biden School of Public Policy & Administration
University of Delaware
186 Graham Hall
Newark, DE 19716

Email: nvpajournal@gmail.com

Website: www.sites.udel.edu/cas-nvpa

COPYRIGHT

The author retains the copyright of all articles published with NVPA. NVPA has the exclusive right of first publication of all articles. NVPA also has the non-exclusive, royalty-free right, in perpetuity, to publish, print, reprint, photocopy, post and/or otherwise disseminate articles, and to authorize others to do the same, in any format or medium now known or hereinafter developed, at any time after the article’s first publication with NVPA.

A Note from the Editors

We are honored to present the eleventh volume of *New Visions for Public Affairs*. The articles in this volume were authored by current or former students of the University of Delaware's Joseph R. Biden, Jr. School of Public Policy and Administration (Biden School), with a guest author from Towson University. The content of this journal is reflective of a wide range of topics and methods that students are exposed to during their academic programs. Selections this year reflect the growing importance of international politics, as students researched conflict, emergency management and terrorism across the globe. Please note that the articles shown in this publication do not represent the opinions or values held by neither the Biden School of Public Policy nor the Biden Institute.

Last year we began a collaboration with the Biden Institute. We are pleased to continue our partnership this year under the newly named Joseph R. Biden, Jr. School of Public Policy and Administration. This arrangement allows the journal to draw in a higher volume of quality submissions, as well as expand our readership. The current volume not only provided students with a platform to share their research with the university and beyond, but it also features a blog post from the Biden Institute written by Vice President Biden.

We would like to thank our exceptional editorial board for helping our authors transform their hard work into structured policy briefs and analytical papers. The collaborative efforts of the authors and editors have ensured that the research featured in this issue truly embodies the integration of theory and practice that has long defined the 'Delaware Model' of public affairs education. Finally, we sincerely thank Drs. Maria Aristigueta, Jonathan Justice, John McNutt, and Professor Leland Ware for their faculty support of the journal.

Enjoy the read!

Delaney Luman
Editor-in-Chief

Jeffrey Martindale
Executive Director

Policy Blog

Rising to Meet the Central Challenge of Our Time

Vice President Joe Biden

*Founding Chairman, Biden Institute
University of Delaware*

Part of the reason that I created the Biden Institute at the University of Delaware is because I believe that universities do more than just educate students—they also serve as powerful platforms for solving real problems. When it comes to generating big ideas, America’s universities have always led the way. That has been especially true at moments of national upheaval and uncertainty.

Take the 1960s, for example. When the Johnson Administration faced a litany of social and economic challenges, it turned to our universities to help turn things around. The Great Society was a triumph of big thinking—and it relied heavily on task forces made up largely of academics to take on the major problems of the day.

That effort helped transform the Civil Rights movement into durable law: the Civil Rights Act; the Voting Rights Act; bans on housing discrimination; an end to racial quotas in our immigration laws. It brought us Medicare and Medicaid, strengthened Social Security, raised the federal minimum wage, made unprecedented investments in public education, and created the Head Start program. And that’s before you even get to other big ideas like the Clean Air Act, the Consumer Product Safety Commission, NPR, and PBS.

It was in that spirit of big thinking that I recently invited representatives of our nation’s research universities to take on what I see as the signature challenge of our time: to create policy solutions that help ensure America has a growing, thriving middle class for generations to come. On September 28, hundreds of university-affiliated scholars, researchers,

students, and faculty gathered with the Biden Institute team at the University of Delaware to take me up on that challenge.

It’s not hyperbole to say that revitalizing the middle class is the single most important challenge of our time. The consequences of getting it right or wrong will be felt not only by families sitting around 100 million kitchen tables, but on a global scale as well. Solving it isn’t just about economic success, or about the social stability that comes from having a strong middle class; it’s more than that. Our aspirational character as Americans is at stake—the very thing that makes us who we are.

There used to be a basic bargain in America, supported by business and labor, Democrats and Republicans—everybody. It said that if you worked hard and played by the rules, you’d share in the benefits that your work helped create. That basic bargain worked because it turns out that when the middle class does well, everybody does well—the wealthy stay wealthy, and the poor have a ladder up.

That bargain built our middle class. And what it did for Americans wasn’t just felt in their pocketbooks. It allowed millions of parents to raise their children in a safe neighborhood. When their kids did well in school and got into their dream college, it gave them the peace of mind to know that they would find a way to send them there. It kept families from having to worry that an accident or an illness would bankrupt them. For so many families, including my own, it gave us that little bit of breathing room we needed to pursue our dreams. But for far too many families today, that promise has been hollowed out. A new study from the Urban Institute shows that

nearly 40 percent of working-age people are struggling to make ends meet. Ten percent have missed a rent or mortgage payment. Nearly a quarter worry about how they'll pay for food. About 20 percent have passed up medical care because of the cost.

Some of this is due to technology and automation—in addition to the well-known job losses in our factories, we've also lost about 140,000 retail jobs in the last two years alone.

Some of it is due to globalization. Competition from low-wage workers overseas has lowered the price of our goods, but it has cost us millions of good-paying manufacturing jobs in turn.

Some of it is due to the declining power of unions. And we've seen coordinated, well-funded efforts to undermine unions for years—making it harder for workers to bargain for the better wages they deserve.

But some of it is due to a fourth root cause: declining labor market competition. If you want to see how tough it is for workers to negotiate these days, just take a look under the hood of our labor market.

One major symptom of that is the way in which the gap between productivity and income has spiked over the last 45 years. Between 1948 and 1973, productivity and income rose together in lockstep—productivity increased by 96 percent, while worker incomes climbed by 91 percent. But since 1973, productivity is up 77 percent, while workers' hourly pay has only risen 12 percent.

There are a number of reasons for it, but here are a couple of the major culprits.

First, nearly 40 percent of workers will at some point be subject to a non-compete clause. These are legal contracts that prohibit workers from taking another job. Of course, if you're the scientist who knows the formula for Coke, it's understandable that maybe you shouldn't be allowed to go work for Pepsi. But what about fast food employees? Folks who stock shelves in a warehouse? What possible rationale could there be to prevent low-wage workers from taking a better job if they can get it?

Second, we also have a complete lack of wage transparency—most workers have no idea

what others are making. That's not an accident. It's intentional policy designed to prevent them from discussing their pay, and punishing them if they do. The problem with that is that you can't ask for a raise if you don't know you're being underpaid.

There is a whole arsenal of tricks in play: mandatory arbitration clauses; needlessly onerous occupational licensing requirements; misclassifying line workers as "managers" in order to deny them overtime pay. What are these tactics for, other than to depress wages?

We know that the challenges facing the middle class have a lot of roots: bad policies and bad politics; failures to adapt quickly to global realities and technological progress; small thinking and failures of imagination. There are so many reasons why the American middle class is taking a beating—and that's why we need a collaborative, multidisciplinary approach to fix it.

This problem couldn't be more urgent. There are families out there with two working parents who still can't make the mortgage. There are single moms working two shifts who still have to choose between a trip to the doctor and a trip to the grocery store. These folks can't work any harder—they've fulfilled their end of the bargain. We cannot let that middle class dream slip away from them. The ideas that have fortified America through the years didn't arrive, fully formed, in Congress or on the desks of presidents. They grew out of conversations in the seminar room, in the cafeteria, and in the faculty lounge—conversations like the one we convened last week. I was incredibly impressed by the energy, creativity, and big thinking of our guests, and I look forward to sharing some of the best ideas we came up with throughout our day together.

Because even though our middle class has been eroded, I believe with all my heart that it only takes one idea to begin restoring and revitalizing it. We owe it to families across the country to keep thinking big, keep engaging with one another, and keep offering solutions to ensure that we can once again make good on the essential promise our nation was built on.

Highlight: A Culture of Collaboration at UD

2018 Seoul Case Study Experience

Eileen Young

University of Delaware

The Seoul Case Study Program is one of the more informative and fun ways to see South Korea in a week of Sunday-to-Friday programming. The University of Seoul hosts American graduate students who have public policy interests and provides a series of lectures and site visits to illustrate the ways in which the Seoul Metropolitan Government (SMG) executes policy. As a requirement of participation, visiting graduate students produce a policy recommendation for the SMG based on their experience after returning to their respective universities.

These policy recommendations, typically in the form of a policy brief or short paper, are useful to the SMG because the city is willing to adopt sweeping changes that would be more difficult to implement in other metropolitan areas. While some of this is due to the cultural and political atmosphere in South Korea, a great deal is attributed to the history of Seoul itself. Seoul is a large city that developed incredibly quickly, from the devastation that followed the Korean War, to one of the more technologically developed metropolises in the world. Just under 10 million people live in the city, up from just over 1 million in 1950, meaning that 20% of the total population of South Korea lives in .6% of the land area. This makes for incredible density in an area that has developed very rapidly. Throughout and despite this sustained boom, Seoul preserved one-third of the city as green space. This was managed through a combination of city-owned parks and regulation of private property to create green space. Resultant of this managed development, many

parts of Seoul don't feel as one would expect of a city so densely populated. The University of Seoul's campus has generous open space liberally dotted with trees, and the renovated Cheonggyecheon stream-front walk is an oasis of green that stretches miles through the city. The renovation of the stream, though, is a prime example of the dramatic steps SMG has taken over the years, and one with beautiful results. The story of the renovation was presented during one of the lectures at the University, and later a site visit to the museum on the stream illustrated the story more pointedly.

During the Japanese occupation, the Cheonggyecheon became a de facto border between a Japanese neighborhood and a Korean one. Population pressures drove the construction of numerous makeshift houses on the Korean side, and the stream itself became intensely polluted. Due to its location in such a populous area, it was paved over in the burst of development after the war. In 1968, the SMG added an elevated highway, which contributed to Cheonggyecheon's status as a major thoroughfare. Thus it stayed until 2003, when SMG pulled down the entire highway structure as part of an urban renewal project. The whole project cost upwards of \$900 million and included the mass relocation of businesses that relied on the roadways in the area for large portions of their custom. More than five miles of highway is now a public recreation area. Due to the enormous scope of change the SMG is willing to enact, Seoul is an exciting place to study public policy.

The first day of the Case Study program, Sunday, October 21, did not dive into policy at all: it focused on the cultural background of Korea, and Seoul in particular, to provide context for the rest of the week. It helped set the stage for the sheer volume of information that was conveyed during the lectures, presentations, and site visits. The afternoon consisted of a field trip to, and walking tour of, Gyeongbokgung Palace, the sprawling former imperial residence in Seoul. Its popularity as a tourist destination for Koreans is a testament to the emphasis on continuity, history, and innovation that pervade and influence Korean culture, as well as the policy developed in service to that culture. One of the more prized and emphasized legacies of the Korean royal family we encountered on the walking tour was a cleverly engineered sundial that also functioned as an accurate calendar, demonstrating the historic value of technology and innovation in both Korea and Seoul.

Monday morning's discussion of energy policy in Seoul touched on the modern incarnation of the value of technology and innovation—specifically the One Less Nuclear Power Plant program. Seoul is responsible for only 4.2% of all electricity consumption in South Korea, largely because there is little industry in the city itself. In 2011, there was a significant impetus to raise awareness of and reduce energy consumption, despite the relatively small electrical footprint the city has. This was influenced in part by the Fukushima disaster, which sharply raised awareness, not just due to geographic proximity, but also because South Korea is sixth in the world in terms of nuclear energy production, with 24 active reactors. Another large part of the impetus stemmed from a heatwave in October 2011 that led to unexpected power demands for air conditioning and thus rolling blackouts in the city. A third impetus was a landslide which killed 32 people that year—the first deaths from a landslide since the Japanese occupation—raising more awareness of and concern about climate change and its impact. So, in an attempt to move away from nuclear and other non-renewable energy sources, the people of Seoul

pushed for the One Less Nuclear Power Plant (OLNP) program. The OLNP initiative set a goal to reduce energy consumption by 2 million tons of oil equivalents. The goal was reached in June 2014, six months ahead of schedule.

Seoul's response to waste and the policies surrounding waste management is also influenced by an awareness of the importance of climate change, as well as the space limitations of the city. The Mapo Resource Recovery Facility was the Tuesday site visit and is one of the site visits that occurs during most Case Studies. The site visits are not repeated identically in every iteration, but they're a central focus of the Case Study since they are one of the aspects that would be inherently irreproducible without being physically present in Seoul. When walking the city, the lack of trash cans in public areas is very apparent; visiting Mapo Resource Recovery Facility explained the reason behind that. Recycling a variety of different materials is easy in Seoul, though it requires sorting recyclables. Compared to the single-stream recycling common in many areas of the United States, Seoul has strict waste sorting requirements. Compliance with this sorting is high, however, because residents are charged for food waste and garbage by weight and volume, respectively, and are not charged for recycling. Additionally, during the initial phase of policy implementation, surveillance was used and reporting of violations encouraged to minimize illegal dumping. This helped reduce the garbage coming out of Seoul to a manageable volume. Mapo is built atop landfills that have been bulldozed over, and is surrounded by a park built on the same. Our guide explained that the still-massive quantity of waste generated is burned. The progressive filtering and processing of the waste and heat provide both electricity and heat to the surrounding neighborhoods.

Wednesday's site visit was aesthetically very different. The group was taken to the shining glass and steel of Digital Media City (DMC), a planned commercial development centered around digital media such as television, video games, and virtual reality. The several blocks that comprise the DMC were previously

a residential area that was constructed on a former landfill. Those residents were bought out: gentrification on a precisely planned scale. Due to the official nature of most of the introductions to South Korean policy we received, gentrification was primarily spoken around and not directly of. Instead, we got to explore augmented reality games in the DMC headquarters.

Beyond the DMC, Seoul is incredibly technologically integrated. Over the course of the week, we visited two Emergency Operation Centers (EOCs): the 119 Center, the combined fire and medical emergency response line; and the center for Seoul Transport Operation and Information Service (TOPIS). Those EOCs were set up similarly to the EOCs in the United States: the control room has a long conference table where stakeholders can come together for face-to-face discussions, a screen and podium at the front for whomever is presenting, and numerous communication devices to obtain information and communicate any decisions made. These functional similarities highlighted the differences in overall priorities, concerns, and operations at both locations. The first, and one that the two locations shared, is that the EOCs were both multiple storeys underground, with secure doors between the EOC and the outside world. In New Castle County, Delaware, where flooding is one of the primary disasters that an EOC could expect to encounter, the EOC is on the second floor, to remove it from the threat of flood. Seoul's proximity to North Korea requires that the EOC have locations that could maintain operations through the threat of missiles, despite the threat of flooding from the Han river. Another difference is that firefighter

teams responding to 119 calls have a team member whose primary responsibility is filming operations, in case the surveillance cameras, which are all around the city, are unable to provide a sufficiently accurate and immediate picture. The calls themselves can be video rather than purely audio calls, providing an opportunity for the trained medical responders available to respond to the calls to observe and make recommendations, including guiding callers through CPR.

Technological integration is also an overarching policy goal, with SMG aiming to be the most technologically advanced city in the world. This means that SMG has made issues like potholes reportable via mobile phone. It has also led to 'm-voting,' the survey app used for polling to provide transparency and more immediate citizen engagement on policy issues. M-voting also lets citizens run polls - one of the examples given was a family polling where they should go on a weekend outing. There was no shortage of interesting places to go during the evenings, when nothing was scheduled as part of the official Case Study. The night markets, the parks, and the restaurants were all fun to explore, even with limited ability to speak Korean.

The Seoul Case Study Program is a great experience in a fascinating city, and the Joseph R. Biden, Jr. School of Public Policy and Administration class that encompasses this trip is highly recommended for students of public policy. The Seoul Case Study Program class is a full-semester class that can be taken for one to three credits with Dr. Jonathan Justice, and is an immersive look at comparative public policy.

Policy in Action Piece

Hardening Soft Targets

Daniel Henne

University of Delaware

Terrorism was once a scattered, intermittent concern for the global community. It is now an everyday security problem that primarily affects large urban centers that have not been secured. Proper risk assessment, intelligence collection, public awareness, organizational collaboration, and improvements in technology are key areas and points that need to be emphasized in terrorism prevention. When it comes to implementing effective counterterrorism practices, places such as New York City have made strides. The city's ability to prevent attacks can be contributed to their extensive use of surveillance systems, as well as their robust information-sharing and collaborative abilities. This paper assesses the major findings in counterterrorism literature and in practice, providing examples of advances that New York City has utilized in order to keep people safe from terrorist attacks.

Policy Problem and Historical Context

Terrorist attacks and their effects on people throughout the world have been a protracted concern for the past twenty years. Although the methods in which these types of attacks have varied, a vast majority of them have occurred in places that can be defined as soft targets (French, 2015). Soft targets are locations that are accessible to large numbers of people and that have limited security or protection methods in case of an emergency. In order to effectively keep soft targets as safe as possible from attacks, there must be a systematic aggregation of preparedness and prevention in place. Key points in soft target hardening and terrorism prevention include a proper assessment of risk, the collection of intelligence, public awareness, organizational collaboration, and improvements in technology. This paper will explore various practices that research has shown to be effective in reducing incident risk while highlighting successes in New York City, a location that continues to

keep counterterrorism and soft target hardening at the forefront of their public safety concerns. In addition to this analysis, the following paper will recommend improvements that can be made to bolster practices and procedures in developing better public safety standards and outcomes.

Terrorism and Soft Targets

There is no universally accepted definition for terrorism, but it is generally defined as: attacks that inflict a sense of fear to further a cause or political effort ("Terrorism - Our World in Data," 2018). The Global Terrorism Database lists terrorism as, "the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation" ("Terrorism - Our World in Data," 2018). This is the definition that will be used in this paper because of the amount of examples referenced from the Global Terrorism Database. The prevalence of attacks has

increased around the globe both in number and variety over recent decades. Between 1969 and 2009, there were 38,345 instances of terrorism around the world (Muhlhausen & McNeill, 2011), while in 2016 alone there were 13,488 terrorist attacks (“Terrorism - Our World in Data,” 2018). These numbers reinforce the idea that it is a necessity for countries, governments, and even local cities to take action to deter these attacks in any way possible.

As early as 1968, the Popular Front for the Liberation of Palestine held Israeli passengers on board Israeli El Al Flight 426 to coerce the release of Arab prisoners (“Terrorism - Our World in Data,” 2018). Other examples of the use of terrorism with air travel can be seen in the form of hijackings, such as the September 11th, 2001 attacks, as well as with the utilization of improvised explosive devices on airlines, like that of the attempted shoe bomber attack in December 2001 (“The Ongoing Battle against Innovative Suicide Bombers,” 2016). In the wake of these attacks, security standards were heightened and the locations were forced to harden because of their clearly exposed vulnerabilities (Stewart, 2016). A major concern regarding the location of attack targets is their occurrence in low security areas with a greater potential to harm more people. Air travel had initially been a frequent area of concentration for terror attacks. Attackers targeting softer targets, or locations where the security is weaker, illustrates a systemic shift in attack methodology. The difficulty in adapting to this methodological change is that they require a shift in resources. Many times, the money is not considered and there are not enough resources to staff the security needs or fund the protective practices that are vital to the efforts of keeping vulnerable areas safe all over the world.

These shifting trends in attack methodology must be recognized before addressing other research on the topic of soft targets. As mentioned above, there have been consistent indications of the evolution of terrorist attacks, from airplane hijackings to the use of improvised explosive devices. Even with an improvement in the capabilities of the

technology that prevents these attacks, terrorists simultaneously find ways to evade such efforts. A concern is the growing tendency of improvisation in terror attacks, which has made access to destruction easier. Rather than seeing complicated and coordinated attacks, attackers are using vehicles, random explosives, and firearms in places where they can achieve large amounts of damage in small amounts of time (Hesterman, 2014). One example of this is the increased use of improvised explosive devices, or IEDs. These devices are easy to assemble and can cause large amounts of damage when detonated. In 2015, suicide bombings utilizing IEDs occurred in over 10% of member states within the United Nations, which is more than had ever been recorded (UNODA, n.d.). While the locations of the attacks have varied, the targets have maintained a focus on their present vulnerabilities. It is worth noting that both attack methodology and use of IEDs have resulted in an increase in attacks’ lethality (Gatekeeper Intelligent Security, 2018). Since terrorism’s goal is to induce fear through the use of physical and sometimes deadly force, these trends are highly relevant to the prevention of attacks and further damage.

Research

Assessing Risks and Coordinating Plans

Although there is a plethora of locations that can be classified as soft targets, not all need be the focus of intense hardening. Terrorist organizations choose targets that not only have a large amount of people, but also ones that have high symbolic value. One example of this is from March 2004, when al-Qaeda claimed responsibility for the bombing of four Madrid commuter trains which resulted in 191 deaths and more than 1,800 injuries (Counter Extremism Project, n.d.). Another example would be the specific targeting of Chelsea, an affluent community in New York City that was subjected to a bomb explosion in September 2016. Al-Qaeda used an online propaganda journal to prompt its followers to not only attack crowded public areas, but also to target wealthy ones (“Inspire Guide,” 2016). In the

journal, the terror group had identified Manhattan as the “administrative and economic center of New York” (“Inspire Guide,” 2016). It went on to outline how the inhabitants of the Chelsea neighborhood were notably from the upper class, and therefore an attack there would be more likely to harm someone of importance (“Inspire Guide,” 2016). These locations were intentionally attacked based on the relevance they have to the citizens that use them, in respect to the train bombings, and those that reside there, in respect to the Chelsea bombings.

More standardized risk assessments are needed to improve the identification of potential targets as well as prepare the stakeholders that might be involved in a response (Waugh, 2018). A study that was conducted following an attack on the Westgate Mall in Nairobi, Kenya demonstrated an example of when a proper risk assessment would have been beneficial, because the location can be related to many shopping malls around the world (Barrett, 2014). Barrett explains how a risk assessment is necessary to create an effective security plan, and how a planning team comprised of risk managers and professional security personnel should create this security plan (2014). This planning team must ensure that the necessary personnel are trained, evaluate the current physical security facility, conduct threat assessments, implement security plans, and make sure that plans are being implemented and are effective (Barrett, 2014). Finally, Barrett insisted, the plan must align with a developed threat assessment. Although some organizations may not have the means to properly conduct such well-developed assessments, local law enforcements and governments are often willing to share and assist the organizations (Barrett, 2014).

Stepping back from risk assessments, simple coordination and information sharing are both essential in hardening of soft targets. A 2011 study by Uddin and Hossain looked at the network relationship between emergency agencies and shopping malls in regards to their preparedness to coordinate during an emergency. It found that connectedness and the

strength of soft target organizations like shopping malls directly correlated with an increase in the frequency of information sharing, as well as an increase in the degree of rehearsal between these organizations and emergency agencies. Furthermore, improvements in the training of security staff and emergency responders is one of the most important actions that a soft target organization can take to bolster their counter-terrorism preparations (Uddin & Hossain, 2011).

Surveillance

Surveillance is not only a method that is employed to protect people from imminent danger but is also used post-attack to research and evaluate what happened and, what can be improved upon. Research suggests that with the advancement of technology, the use of artificial intelligence (AI) is a growing area of consideration in regard to surveillance. Since not every municipality and local government has the assets or resources to frequently use active surveillance, increased use of artificial intelligence systems may prove to be just as effective. With implementation, agencies are able to focus their efforts on more areas of concern while using intelligent systems as a supplement to law enforcement and public safety (La Vigne et al., 2011). These AI systems have capabilities to take in more information in more places while seeing more than an employee or officer can, and then analyze the information to alert the necessary officials (Slessor, 2018). One concern surrounding the use of AI is the cost of implementation and setup; however, research shows that they can prove to be cost-effective over time. The New York Police Department’s, NYPD’s, Domain Awareness System, DAS, is an example of cost-effectiveness. From its use, it has saved the NYPD and estimated \$50 million per year (Levine et al., 2017). Systems like the DAS can also be useful for other security purposes for major sporting events such as the World Cup or the Summer Olympics.

Community Engagement

Conducting various methods of prevention is critical because, as illustrated before, terrorism is a complex and prevalent issue. Crime prevention through environmental design, or CPTED, is one possible method of terrorism prevention. CPTED is a method that focuses on the reduction of conditions that can make an area vulnerable. Some of the most common features of CPTED involve the presence of sufficient lighting, physical structures such as fences or barriers, and camera usage. One study found that CPTED encourages and strengthens territoriality and natural surveillance within communities. The study also related its findings to the demographic diversity of the neighborhoods in question (Reynald, 2011). The study looked into residents' willingness, and more so, ability to naturally survey their community for crime related or abnormal occurrences, while also looking at the likelihood of said residents to intervene if the opportunity arose. The study found that residents of low crime communities were more willing to actively supervise their neighborhoods and also intervene directly in suspicious activity, while the inverse was found to be true for high crime communities (Reynald, 2011).

In another study, the United States Department of Homeland Security made complementary findings pertaining to public awareness of suspicious activity. In this study, many people reported that they would be more likely to report suspicious activity if it were closer to home, mainly because of their ability to differentiate between normal and abnormal activity within their own communities (U.S. DHS, 2012). The study goes on to explain how the public's awareness of suspicious activity is a critical asset in community safety. There should be campaigns and efforts being consistently made to improve ease of reporting from the public, while also educating community members on what suspicious activity entails (U.S. DHS, 2012).

Funding

When examining the assortment of research that relates to counterterrorism

practices, paying for these advancements in methods is also a very important topic of research, such as surveillance and data collection. Some of the research discussed in prior sections suggested the need for extensive funding, which is not feasible everywhere. One study addressing funding limitations looks into Greece's expenditures on technology, infrastructure, and capital equipment as a policy option for counterterrorism. It found that greater spending improves the capacity for security forces to fight against terrorism, and was an overall effective measure for reducing the prevalence of terrorism (Kollias, Messis, Mylonidis, & Paleologou, 2009). The study also discusses how non-cost options such as legislation are also effective when utilized in conjunction with the spending on counterterrorism improvements (Kollias et al., 2009). These findings are extremely relevant when it comes to considering the outcomes of organizations or countries looking to invest in better technology as a method to prevent or lessen the presence of terrorism.

Intelligence

Intelligence plays a large role in the process of soft target hardening. While the motives behind each attack may vary, terror attacks all share the characteristic of aiming to kill and to send a message ("Terrorism – Our World in Data," 2018). When attempting to prevent attacks from happening, it behooves organizations to maintain relevant intelligence on threatening terror groups in order to direct their various preventive measures meaningfully. One article, with data from the National Memorial Institute for the Prevention of Terrorism's, MIPT, Terrorism Knowledge Base, examined the factors that make a terrorist organization more or less likely to attack (Asal et al., 2009). By looking at some of the motivations of multiple terrorist organizations, the study analyzed terrorist events that had occurred to see which groups have the propensity to attack. Based on their findings, a key determinant of an organization's likelihood to attack is in the presence of a religious ideology, as well as those that combined

religious and ethno-nationalistic ideologies, which points to the idea of religion as a key determinant. In addition, larger groups that have widespread influence and stronger networks were found to be more capable and likely to repeatedly attack a soft target (Asal et al., 2009). This is important when planning for what surveillance measures might need to be taken in order to protect people from organizations that have made it clear that they are threats to the safety of others.

Practice

Surveillance

There are many different organizations actively utilizing different technologies in their surveillance methods. The NYPD is one of the largest police forces in the United States, with approximately 36,000 officers (“New York Police Department,” 2018), and their use of technology in surveillance is significant. Many think of the use of surveillance cameras, otherwise known as closed-circuit television cameras, CCTVs, as one of the main pieces of technology used to accomplish surveillance. The NYPD incorporates approximately 9,000 CCTVs that are owned and operated by a mix of public and private sector entities. By integrating a subset of these cameras, gunshot spotting technology, license plate readers, and other logic-based rule sets within the NYPD, the police department developed a system that analyzes a constant influx of data. This is done by taking observations in the community with the use of sensors, informational databases, security or police software, and infrastructure, and using it to deliver tailored information to the police department. This system was originally designed for counterterrorism, but due to its effectiveness, was able to be used for every police precinct in the city for both counterterrorism and more typical law enforcement purposes (Levine et al., 2017). This system presents an extremely comprehensive way to gather situational data and share it with enough value to affect decisions the police department makes every day.

Other technological advances have been made to thwart terror plots that are not as mechanical as some of the other resources the NYPD deployed. The NYPD integrated the use of an advanced K9 unit into their Counterterrorism Bureau (Parascandola, 2018). The dogs serving in this unit go through an extensive training program to detect and pursue potential explosive threats in public spaces. They are known as Vapor Wake Dogs and can pinpoint explosive material on a moving target in a crowded place (Dunn, 2018). This addition supplements other surveillance practices and has become a great asset to active law enforcement.

Coordination Planning

As seen from the research related to coordination and information sharing, coordination planning is notably one of the highest recommended methods to prevent terrorism on all levels of government. The NYPD currently uses a program called SHIELD. This initiative seeks to improve relations between the police department and others as a public-private partnership with a continuation of information sharing (NYPD, 2018b). SHIELD partners with security managers from the private sector with a strong understanding of industry specific safety and security measures. As a result, the collaboration between these entities allows for a greater dissemination of responsibility and proper information sharing.

Counterterrorism is critical to law enforcement and public safety, and thus the federal government has made efforts to assist and better coordinate a response for local and state agencies. The Department of Homeland Security is actively organizing and compiling best practices and standards to be used for state, local, tribal, and territorial governments. Additionally, collaboration and partnership building is continually recommended for use between private and public organizations. These practices, in conjunction with a major push regarding the unity of effort, are changing the way that governments plan to handle issues and

protect crowds and soft targets (U.S. DHS, 2018).

Community Engagement

The Department of Homeland Security is an organization that, amongst many other things, strives to enhance citizen and community preparedness (U.S. DHS, 2018). The role that citizens play in assisting the detection and prevention of terrorist attacks is extremely important. Through the increased focus on integrating the public into the counterterrorism process in any way possible, programs such as “If You See Something Say Something[®],” have been utilized by the Department of Homeland Security to bridge the gap between civilians and law enforcement agencies (2014). The programs, therefore, build upon individuals’ capacities to report suspicious activity (“If you see something say something”, 2014). This program in particular was originally started in New York but has been adopted by other organizations as well. The United States Coast Guard has a public outreach program called “America’s Waterway Watch,” that looks to accomplish the same goal by urging people that notice any suspicious activity to report it to the proper authorities (2017). The Coast Guard makes it clear on their website who to contact and how to do so. This is another partnership that was set up through the Department of Homeland Security to improve coordination and boost public involvement in the surveillance and reporting process.

Analysis

According to the Department of Homeland Security, there are several areas that need further research. These areas include the lack of a standing coordinating body of knowledge; the lack of a unified picture of the department’s programs; the lack of affordability and scalability for soft target security; and the challenge of maintaining vigilance during the shift to new normal (U.S. DHS, 2018). Though the presence of these challenges allow for greater vulnerabilities, the comparisons between research and practice prove that there are ways in which these gaps can be closed.

Private and public partnerships are taken advantage of in cities such as New York, and it can be seen when it comes to access of CCTVs, or through information sharing between organizations. Additionally, the use of artificial intelligence has started in systems such as the NYPD’s DAS, and is available for immediate use by that agency. When used as a supplement to policing, rather than a replacement, AI systems allow for positive integration of conducting and implementing research in the places where it is used. The NYPD and Microsoft have been working on selling their system, but not all governments or municipalities are able afford an investment of that scale, even though issues that the City of New York faces are often similar to every other major city in the world. Not every single city needs a developed system of this magnitude. In the same way that the NYPD uses video analytics with only a subset of the cameras they have, the same could be said for an entire nation. It is vital that a thorough threat analysis is conducted and specific needs are identified before bringing in a system of that caliber. This illustrates a need for continued research and development of protective programs and software to heighten accessibility.

The public has proven to be a tremendous asset when it comes to the hardening of soft targets. CPTED and the use of public surveillance are extremely useful towards prevention through reporting suspicious activity. Findings indicate a willingness of community members to partake in surveillance, which is helpful to law enforcement agencies. With public sentiment in mind, agencies can bring in the appropriate and necessary resources in specific areas, including, but not limited to: the use of CCTVs, better placement of patrol officers, and public awareness campaigns. It further helps the government to understand the culture of a community and the public’s perceptions of their own safety.

Asal et al.’s finding that terrorist organizations with religious ideologies have a higher propensity to conduct terrorist attacks (2009) has the potential to coincide with the

highly controversial act of agencies profiling and surveying specific groups of individuals of religious similarity (Joseph & Edelman, 2016). Profiling stigmatizes people rather than behaviors, which can be inadvisable. Following the September 11th attacks in 2001, there was an enormous focus on the Muslim and Arabic communities within the United States. Profiling based on social connections and behavioral cues in conjunction with racial descriptions is considered acceptable and a more reliable form of surveillance (Smith & Mason, 2016). It becomes an issue when law enforcement officers focus solely on racial descriptions without considering the other two criteria. This is why there must be a greater emphasis on the education of community members on the behaviors to be aware of, while also using law enforcement combined with surveillance technologies to strengthen outcomes. This shift in emphasis towards a whole community and outreach approach in emergency management practices will continue to prove beneficial in the hardening of soft targets.

Terrorist attacks come at a price that is more than just a monetary cost. The price of terrorism is also paid with the fear of future attacks and with human life, which makes investing in counterterrorism a necessity. Although systems such as DAS have proven to be expensive, their implications make these investments exponentially worthwhile. Given that New York City alone was able to save \$5 million per year with the use of DAS (Levine, Tisch, Tasso, & Joy, 2017) shows how investments in improved technology can pay for themselves in the long term. In addition to that, a study that was conducted by Kollias et al. further elaborated on spending as a valuable method to reducing the number of terrorist attacks (2009). Between these two studies, it is apparent that effective investment in counterterrorism should never be considered wasted funding.

Conclusion

The threat of terror is ever-present in our world, and it has not gone unnoticed. Countries everywhere have shown advances in

ensuring their citizens are safe in as many ways as they can. Every attack that has ever occurred has caused suffering in the world, but by learning from them, we improve the fight against future treachery. There is a continued need for research to better understand our present threats, as well as a need to determine the best methods of implementation so safety responses can be personalized and applied to the communities, organizations, and individuals that need it.

References

- Asal, V. H., Rethemeyer, R. K., Anderson, I., Stein, A., Rizzo, J., & Rozea, M. (2009). The Softest of Targets: A Study on Terrorist Target Selection. *Journal of Applied Security Research*, 4(3), 258–278. <https://doi.org/10.1080/19361610902929990>
- Barrett, J. F. (2014). Soft Targets Under Fire Recent terrorist attacks in Kenya and Algeria highlight the need for better physical security plans to protect vulnerable facilities.
- Barrett, J. F. (2016). Risk Management – Soft Targets Under Fire: Attacks Highlight the Need for Physical Security Plans. *Risk Management*, 61(2), 18–22.
- Counter Extremism Project. (n.d.). *Terror Targets in the West: Where and Why*. Retrieved from https://www.counterextremism.com/sites/default/themes/bricktheme/pdfs/CEP_Terror_Targets.pdf
- Dunn, E. (2018, October 10). Vapor Wake Canines are the Best Defense Against Subway Attacks. Retrieved November 26, 2018, from <https://homeofvaporwake.com/vapor-wake-canines-best-defense-against-subway-attacks/>
- Fennelly, L. (2016). *Effective Physical Security* (5th ed.). Elsevier Science & Technology.
- French, G. (2015, June 5). Terrorist attacks: Don't be a soft target. Retrieved December 1, 2018, from <https://www.policeone.com/international/articles/6261724-Terrorist-attacks-Dont-be-a-soft-target/>
- Gatekeeper Intelligent Security. (2018, April 6). 3 Trends in Global Terrorism That We Must

- Address. Retrieved October 9, 2018, from <https://www.gatekeepersecurity.com/blog/3-trends-global-terrorism-must-address/>
- Hesterman, J. (2014). *Soft Target Hardening: Protecting People from Attack* (1st ed.). Chapman and Hall/CRC.
- If You See Something, Say Something®. (2014, December 10). Retrieved December 1, 2018, from <https://www.dhs.gov/see-something-say-something>
- Inspire Guide. (2016). *Inspire*, 1438(16), 25.
- Izuchukwu, O. J. (2016). The Myth of “Soft Target”: Understanding Media and Terror Symbiosis in Terror Groups’ Choice of Bombing Target: A focused analysis of Boko Haram bombing campaign in Nigeria from 2010 to 2015. Retrieved from http://www.academia.edu/33471643/The_Myth_of_Soft_Target_Understanding_Media_and_Terror_Symbiosis_in_Terror_Groups_Choice_of_Bombing_Target_A_focused_analysis_of_Boko_Haram_bombing_campaign_in_Nigeria_from_2010_to_2015
- Joseph, C., & Edelman, A. (2016, September 19). Trump says cops need racial profiling in counterterrorism duties. Retrieved October 31, 2018, from <http://www.nydailynews.com/news/politics/trump-cops-racial-profiling-counter-terrorism-duties-article-1.2798348>
- Kollias, C., Messis, P., Mylonidis, N., & Paleologou, S.-M. (2009). Terrorism and the effectiveness of security spending in Greece: Policy implications of some empirical findings. *Journal of Policy Modeling*, 31(5), 788–802. <https://doi.org/10.1016/j.jpolmod.2008.09.008>
- La Vigne, N. G., Lowry, S. S., Dwyer, A. M., & Markman, J. A. (2011). *Using Public Surveillance Systems for Crime Control and Prevention: A Practical Guide for Law Enforcement and Their Municipal Partners: (718192011-001)* [Data set]. American Psychological Association. <https://doi.org/10.1037/e718192011-001>
- Levine, E. S., Tisch, J., Tasso, A., & Joy, M. (2017). The New York City Police Department’s Domain Awareness System. *Interfaces*, 47(1), 70–84. <https://doi.org/10.1287/inte.2016.0860>
- McCaul, M. (2017, September 8). *McCaul Releases September Terror Threat Snapshot*. Retrieved October 7, 2018, from Homeland Security Committee: <https://homeland.house.gov/press/mccaul-releases-september-terror-threat-snapshot/>
- McKinney, L., Ryan, R. P., Toth, N., Scimone, P., Riestler, S., & Wright, E. (2017). *Report to the Committee on Finance and the Committee on Public Safety on the Fiscal 2018 Executive Budget for New York Police Department*. New York City: The Council of the City of New York.
- NYPD. (2018a). Counterterrorism - NYPD. Retrieved December 1, 2018, from <https://www1.nyc.gov/site/nypd/bureaus/investigative/counterterrorism.page>
- NYPD. (2018b). NYPD Shield. Retrieved November 1, 2018, from <https://www.nypdshield.org/public/about.aspx>
- NYPD. (2019). Counter-Terrorism Initiatives. Retrieved February 7, 2019, from <https://www.nypdshield.org/public/initiatives.aspx>
- Parascandola, R. (2018, November 20). New NYPD weapon against terror has one name, doesn’t understand English - NY Daily News. Retrieved November 26, 2018, from <https://www.nydailynews.com/new-york/nyc-crime/ny-metro-franky-nypd-dg-thanksgiving-20181120-story.html>
- Paraskevas, A., & Arendell, B. (2007). A strategic framework for terrorism prevention and mitigation in tourism destinations. *Tourism Management*, 28(6), 1560–1573. <https://doi.org/10.1016/j.tourman.2007.02.012>
- Reynald, D. (2011). Translating CPTED into Crime Preventive Action: A Critical Examination of CPTED as a Tool for Active Guardianship. *European Journal on Criminal Policy and Research*, 17(1), 69–81. <https://doi.org/10.1007/s10610-010-9135-6>
- Slessor, J. (2018, January 23). AI opens up ways to “see the unseeable” in public safety – provided it’s used responsibly. Retrieved October 9, 2018, from <https://www.accenture.com/us-en/blogs/blogs-ai-opens-up-ways-to-see-the-unseeable-in-public-safety>
- The Ongoing Battle against Innovative Suicide Bombers. (2016, June 19). Retrieved March 26, 2019, from Stratfor Worldview website: <https://worldview.stratfor.com/article/ongoing-battle-against-innovative-suicide-bombers>
- Smith, A. L., & Mason, S. E. (2016). The age of racial profiling in the context of terrorism. *Modern Psychological Studies*, 21(2), 9.
- Stewart, S. (2016, June 16). The Struggle to Harden Soft Targets. Retrieved October 9, 2018, from

- <https://worldview.stratfor.com/article/struggle-harden-soft-targets>
- Terrorism - Our World in Data. (2018). Retrieved October 17, 2018, from <https://ourworldindata.org/terrorism#empirical-view>
- Uddin, S., & Hossain, L. (2011). Disaster coordination preparedness of soft-target organisations. *Disasters*, 35(3), 623–638. <https://doi.org/10.1111/j.1467-7717.2011.01229.x>
- United States Coast Guard. (2017, June 26). America's Waterway Watch. Retrieved December 10, 2018, from <https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Port-and-Facility-Compliance-CG-FAC/Americas-Waterway-Watch/>
- UNODA. (n.d.). IEDs. Retrieved December 11, 2018, from <https://www.un.org/disarmament/convarms/ieds-a-growing-threat/>
- U.S. DHS. (2012, February). Improving the Public's Awareness and Reporting of Suspicious Activity: Key Research Findings from Literature Review, Household Surveys, Focus Groups and Interviews. United States Department of Homeland Security. Retrieved from https://www.fema.gov/media-library-data/20130726-1818-25045-6132/suspiciousactivitykeyfinding_508_.pdf
- U.S. DHS. (2018, May). United States Department of Homeland Security Soft Targets and Crowded Places Security Plan Overview. United States Department of Homeland Security. Retrieved from https://www.dhs.gov/sites/default/files/publications/DHS-Soft-Target-Crowded-Place-Security-Plan-Overview-052018-508_0.pdf
- William Waugh, Jr. (2018). Terrorism as a Hazard and Disaster. In *Handbook of Disaster Research* (Second, pp. 125–141). Springer International Publishing.

A Critical Review of Emergency and Disaster Management in the United Arab Emirates

Abdulhadi A. Al Ruwaithi

University of Delaware

The United Arab Emirates – the UAE – a small, wealthy Gulf State country, is subject to many geographical, political, and social issues that contribute to either increased risk of disaster or ineffective disaster management. This paper discusses these issues, their causes, how they impact the country’s ability to face a disaster, and how they can be fixed from a public policy perspective. In the UAE, citizens represent only 11.6% of the total population, whereas most residents are immigrant workers who enjoy many fewer advantages in the country. Such a large demographic imbalance threatens the stability of the social system and continuity of business during and after a disaster. It also impedes community engagement in disaster planning and response. A large demographic imbalance, low public representation in public policy, and low community engagement in the planning process are highlighted as the primary community-based vulnerabilities. This paper illustrates several recommendations to alleviate the impact of these issues and urges policymakers and emergency managers to be aware of 1) the drawbacks of the exclusive planning process and 2) the social vulnerabilities that are promoted by the current public policy. More public policy research and community-based research projects aiming to promote community involvement in emergency planning and response are needed.

Thank you to Dr. Joseph Trainor, Director of Disaster Science and Management Program at UD, for his feedback on an earlier version of this paper.

Introduction:

The United Arab Emirates, the UAE, is a relatively new country comprised of seven emirates, or states, that are located along the southeast shore of the Arabian Peninsula. On December 2nd, 1971, a new federation was announced among six emirates: Abu Dhabi, Dubai, Ajman, Umm Al-Quwain, Sharjah and Fujairah. The seventh emirate, Ras Al Khaimah, joined the federation two months later. The total union size is 32,278 mi², similar to the state of South Carolina’s size of 32,020 mi². Abu Dhabi, the largest emirate, covers 87% of the UAE’s mainland, Dubai covers 5%, and Sharjah covers 3.3%. About 85% of the population lives in these three emirates in the Northeast region of the country (CIA, 2017a). Abu Dhabi city, the capital city of the Emirate of Abu Dhabi, is also the capital city of the UAE.

According to a 2015 estimation, the UAE’s population is about 9.27 million people. Nearly 85% of the population lives in urban areas (CIA, 2017a), with an annual growth rate of 1.44% according to 2018 estimations (CIA, 2018). The vast majority of the population is not UAE citizens. That is, UAE citizens represent only 11.6% of the UAE’s total population (CIA, 2017a). Therefore, more than 88% of the population are non-citizens, and most of them are immigrant workers from several Asian countries; mainly South Asia (CIA, 2017a). Immigrant workers enjoy fewer advantages, and many of them have no family in the UAE due to the high cost of living. This condition forms a state of significant imbalance for this population that negatively impacts the UAE’s emergency response process.

A great deal of the country’s workforce has lower community attachment because they

are foreigners, communicate with loose-knit social networks (see Boyle, 2012), and have the least entitlements, compared to citizens. Such a workforce is needed for public health and emergency response capabilities, such as community recovery and medical surge (CDC, 2018). For instance, most physicians in Emergency Departments (EDs) in the UAE are expatriate physicians (Fares et al. 2014). The prevalence of lower community attachment within the non-citizen groups is inherently linked to social and cultural barriers, low political involvement, and lower entitlement and service accessibility level compared to citizens. Such a low community attachment minimizes community-based capabilities, like social capital, that are useful for disaster preparedness, response, and recovery. This paper discusses the nature of hazards and vulnerabilities in the UAE, the current UAE emergency management system, and how that system could be improved from a public policy perspective to cope with local hazards and vulnerabilities.

The UAE's Political State

The UAE has a federal absolute monarchy, by which the emirates are united under one federal government that mainly governs—through the Supreme Council, Federal Council, and Cabinet of Ministries—the union entities, such as the External Affairs and the Federal Armed Forces. Nevertheless, each emirate's administration is independent in ruling its internal affairs, according to the UAE Constitution. Each emirate has a capital city which has the same name; for example, Dubai is the capital city of the emirate of Dubai. Every emirate is ruled by a ruling family as a monarchy. The Ruler of Abu Dhabi is the President of the UAE, and the ruler of Dubai is the Vice President and Prime Minister of the country. The legislative power, or constitutional authority, and executive power are represented by the Federal Supreme Council and the UAE Cabinet of Ministries, respectively. Both government branches are dominated by the members of the ruling families. For example, the Federal Supreme Council consists of seven members who are also the seven emirate rulers.

Along with that ruling authority, and to some extent because of it, the ruling family members have exceptional access to the country's wealth and natural resources.

The UAE's Economy

The UAE is a wealthy country with a per capita GDP of \$73,878.50 USD as of 2017 (The World Bank, 2018). According to the Organization of the Petroleum Exporting Countries', OPEC, the total proven crude oil reserves are 97.8 billion barrels, and the total proven natural gas reserves are 6,091 billion cubic meters (OPEC, 2017). Therefore, the UAE is ranked 7th in total world oil reserves, according to 2017 estimates (CIA, 2017b). Approximately 40% of the country's gross domestic product is directly based on oil and gas output (CIA, 2017a). However, each emirate has its own economic structure and related resources. Abu Dhabi is the wealthiest emirate because of their oil and gas reserves, followed by Dubai and Sharjah.

The Abu Dhabi emirate covers approximately 87% of the UAE mainland, so most of the UAE's oil reserve is allocated in the Abu Dhabi territory. That gives Abu Dhabi abundant financial capabilities compared to other emirates. Dubai also has some financial advantages due to its diverse economic activities: ranging from oil and natural resources, to trade, to the tourism industry. The Dubai emirate has the Jabil Ali area where the largest commercial seaport in the region is located. Other emirates are less fortunate than Abu Dhabi and Dubai and they have more limited resources.

Due to this economic dependency on natural resources, location, and the sociopolitical system, the country as a whole is prone to many hazards. These hazards can be either natural hazards or human-made hazards, such as technological hazards. In the following section, an overview will be given about these hazards with some examples from past events.

Natural Hazards

In terms of geology, the UAE is located on the relatively stable Arabian Tectonic Plate. Nevertheless, that plate has major active tectonic features forming its boundaries: the Zagros fold belt and Makran subduction zone to the north and northeast; the Red Sea Rift and Dead Sea Rift to the northwest, west, and the Gulf of Aden; and Owen fracture zone to the south and southeast (Pascucci, Free, & Lubkowski, 2008). Thus, most destructive seismic activity occurs in Iran, on the opposite side of the Gulf shore, because of the Zagros fold belt.

However, the UAE is still not free from the risk of earthquakes; several earthquakes occurred in the UAE recently. The worst earthquake in recent history in the UAE was a 5.1-magnitude earthquake, which occurred in the Massafi area on March 11th, 2002 (Barakat, Shanableh, & Malkawi, 2008), and affected mostly the Emirate of Fujairah (Dhanhani, Duncan, & Chester, 2010). The risk of earthquake damage increases in the northeastern regions of the country because of the relatively higher seismic activity, and in the northern parts of the country because of the density of population, especially with cities like Dubai or Abu Dhabi (Barakat et al., 2008).

The UAE is also at risk for cyclones originating in the Indian Ocean because of its location on the Arabian, or Persian, Gulf and the Gulf of Oman which connects Persian Gulf to the Arabian Sea and Indian Ocean. Two major storms hit the UAE in recent years: Cyclone Gonu in June 2007, and Cyclone Phet in late May to June 2010. Cyclone Gonu, a Category 4 storm, hit Oman, the UAE, Pakistan, and Iran. It claimed 78 lives and left 37 missing, most from the neighboring country of Oman (Alhmodi & Aziz, 2016; El Rafy & Hafez, 2008). Cyclone Phet was also a Category 4 storm, but the power of the storm reduced to Category 3 by the time it reached the shore of Oman (NASA, 2010). In addition to Oman, Cyclone Phet significantly impacted the Emirate of Fujairah. People in the Emirate of Fujairah lost their land, crops, and boats (Alhmodi & Aziz, 2016).

Technological Hazards

Because of the major production of oil in the Gulf area, the UAE is prone to oil spills and their environmental consequences. Two cities in the UAE, Ras Al Khaimah and Fujairah, are located near the Strait of Hormuz, which is the busiest oil trade checkpoint in the world, due to 35% of the traded crude oil in the world going through it. Since 1974, there have been several major tanker spills in the strait or within the vicinity of the Arabian/Persian Gulf and the Gulf of Oman. According to the International Tanker Owners Pollution Federation, or ITOPF, the most recent major oil spill incidents in the Arabian/Persian Gulf occurred within UAE territorial waters were Seki in 1994 and Pontoon 300 in 1998 (ITOPF, 2003).

Besides the harmful effects of oil spills on the marine life, the oil spills in the Arabian/Persian Gulf could also impact the water desalination plants that supply water for major cities in the UAE as well as in Saudi Arabia. The Pontoon 300 incident, which resulted in a spill of 5,500 tons of oil, presented risk of contaminating the desalinated water (Elshorbagy & Elhakeem, 2008). The diesel oil entered the intake of a desalination plant and resulted in contamination of the water supply of 500,000 people (Elshorbagy & Elhakeem, 2008). The impacts of oily seawater include 1) increased biofouling of the entrance of the intake filters or screen, which leads to the second impact, 2) reduced water intake, and 3) lowered desalination plant performance due to the decrease in the heat transfer capacity (Elshorbagy & Elhakeem, 2008). To prevent such negative outcomes, a major shutdown for the desalination plant was necessary to perform intensive flushing and equipment cleaning in the plant (Elshorbagy & Elhakeem, 2008).

Other human-made hazards include, but are not limited to fires, wars, and terrorist attacks. Dubai and Abu Dhabi, the country's two major cities, have many skyscrapers. Dubai has the highest skyscraper in the world, the Burj Khalifa—has experienced many fire incidents. On April 3rd, 2017, a fire occurred in an under-construction skyscraper and resulted in one fatality (Aljazeera News, 2017). On New Year's

Eve 2015, a fire broke out in a 63-story luxury hotel in Dubai and caused at least 15 injuries, and one victim had a heart attack during the evacuation process (Aljazeera News, 2016; The Guardian, 2016). Even though there is no history of major terrorist attacks in the UAE, the country is still at risk of such attacks due to its political role and involvement in some ongoing conflicts in the Middle East, such as the Yemen War.

Vulnerabilities

Vulnerability can be defined as “a measure of the propensity of an object, area, individual, group, community, country, or other entity to incur the consequences of a hazard, and is the result of physical, social, economic, and environmental factors” (Coppola, 2015, p. 150). In the UAE, vulnerabilities could be exacerbated by political exclusion, social exclusion, demographic imbalance, injustice in wealth distribution, and economic injustice. As mentioned earlier, the UAE’s government is a federal absolute monarchy in which the ruling families have full authority on the decision-making process within their emirates. With that absolutism in the government system and the significant wealth sources in the UAE, a combination between absolutism and rentierism came into existence. Such a condition was well-elaborated in Michael Herb’s book *The Wages of Oil*. Herb (2014) argues that such a condition enables “the ruling families [to] adopt policies that suit their own interests” (p. 107). Consequently, public representation in the decision-making process is severely reduced because the ruling family is such a small subgroup of the population. Hence, the UAE ruling families do not reflect medium and low classes in many policies that affect those classes. This overall situation, which is rooted in the process of absolutism and extreme rentierism, leads to a further problem: demographic imbalance.

The demographic imbalance in the UAE is a major issue. It is a country where citizens are a minority group and immigrants are a majority group. Financial resources and industrialization due to oil discoveries led to a

massive immigration influx (Boyle, 2012; Al Shehabi, 2015). As an earlier study noted (Seccombe & Lawless, 1986), the dramatic oil price increases in the 1970s enhanced the international labor flow into the country and made the UAE depend more on foreign workers.

In the light of Schneider’s (2007) ‘dynamic model’, a framework that explains how histories and ecologies determine the language structure in Postcolonial Englishes, Boyle (2012) argues that the UAE represents a special case of an ‘adstrate community’ (Boyle, 2012, p. 313). The adstrate community—a term that is given by Schneider (2007) to population groups who are neither indigenous people, nor settlers—is enormous in the UAE (Boyle, 2012).

The expatriate communities, or adstrate communities, in the UAE, as well as in other Gulf States, is made of economic immigrants whose influx resulted from the rapid development of the region (Boyle, 2012). According to Boyle (2012), the adstrate community is different in the UAE than in other postcolonial societies because 1) they represent the majority of the the UAE population and 2) they are not offered an opportunity to have permanent residence in the UAE (Boyle, 2012). Boyle’s argument is that norm-enforcement is reduced, and language change might be accelerated among expatriates in the UAE because they interact with a loose-knit social network (Boyle, 2012). The argument is that expatriate communities in the UAE, as presented by Boyle (2012) could hinder effective community engagement, because of the loose-knit social interactions among them and the infeasibility of having permanent residence.

The issue of demographic imbalance could have implications on the country’s stability and ability to recover after disasters going forward. The poor community attachment, which was discussed in an earlier section of this paper, is supported by Boyle’s argument about the economic community. Boyle (2012) explains that the adstrate community “interact[s] by means of loose-knit social networks in which norm enforcement is

reduced and in which language change might well accelerate” (Boyle, 2012, p. 327-8). In other words, most of the immigrants come to the UAE as workers, so their long-term interest in developing the country is insecure because the relationship between them and the UAE is purely transactional: work for money.

A great proportion of the UAE’s working immigrants leave their families in their home countries because “many of them are not allowed to resettle their families with them” (AlShehabi, 2015 p. 18). This is an ideal way to make money for immigrant workers, who mainly come from Asia and receive low wages, as the living cost is significantly higher in the UAE compared to their home countries. Without work, they have no ties making them part of a country where they have no citizenship identity or family. If there is a war or disastrous event that threatens the residents’ safety, it is highly expected that a great proportion of the workers will leave the country, comparable to what happened in Kuwait in the second Gulf War in 1991 (Shah, 1994; Abella, 1991). Such a sudden massive exodus of workers would increase the impact of a disastrous situation like war, because of the high dependency of the country’s economy on the productivity of those immigrants.

Besides politically and economically rooted vulnerabilities, the UAE is subject to other vulnerabilities that are in geological in nature and are exacerbated by various aspects of the UAE society. An excellent example of such vulnerabilities is the issue of water and food security. The UAE is a country that depends heavily on seawater desalination and is ranked 2nd in the world in producing desalinated water after Saudi Arabia (Sawe, 2017). Despite the heavy use of desalination, the UAE has a severe shortage of fresh water because it is a desert country with no rivers or lakes (Sawe, 2017). All the Gulf Cooperation Council, or GCC, states are within the top five countries dependent on seawater desalination.

Even though the UAE uses its financial capabilities for desalinating seawater and importing food to overcome their vulnerability in water and food security, these are both

temporary solutions that can contribute to long-term negative impacts. Depending on desalinated water allows for more urbanization and population density than can be met in the a time of crisis. One limiting factor to unsustainable overpopulation, however, is that the only water the UAE can access for desalination is the Persian Gulf water: a body of water full of oil fields. The Persian Gulf is prone to oil spills that could quickly cease water desalination. As previously discussed, in 1998, a desalination plant in the UAE was shut down when diesel oil entered its intake. According to Elshorbagy & Elhakeem (2008), that threatened the water supply for half a million people.

Emergency Management in the UAE

The UAE’s emergency management system reflects the country’s absolute monarchy. The police department, Civil Defense, the UAE Armed Forces, National Emergency Crisis and Disasters Management Authority (NCEMA), and ambulance services are all centralized government agencies that dominate emergency response efforts. Also, several non-governmental volunteer organizations help in the emergency response in the UAE, such as the Red Crescent and Sanid, which is a program for the national emergency response volunteers (Alhmoudi & Aziz, 2016). Table 1 summarizes the primary roles of the above organizations.

Table 1: Emergency agencies

Agency	Location	Major Role	Level of Operation
GOs*			
<i>NCEMA</i>	Abu-Dhabi	Coordinating and legislative Planning at national level	National
<i>Emirate Police</i>	Each emirate	Local area	Local
<i>Civil Defense</i>	Each emirate	Warning system First responder Planning at local level	Local
<i>Emirate medical Services</i>	Each emirate	Pre-hospital medical services	Local
<i>The UAE Army</i>	The UAE	Middle East Region	Local/national/international
NGOs*			
<i>Emirate Red Crescent</i>	The UAE	Humanitarian work	National/international
<i>International Humanitarian City (IHC)</i>	Dubai	Humanitarian organization hub Warehouse for all non-profit organization (airlifts transport aid evacuation for the staff)	International

Source: Data were retrieved from the official websites of NCEMA, government.ae, Emirate Red Crescent, and IHC.

*GOs are governmental organizations; NGOs are non-governmental organizations; Local refers to within each emirate or state.

The local emirate governments vary noticeably regarding resource availability and prioritization of emergency policies. Dhanhani et al. (2010) conducted a cross-sectional study to compare the emergency system and preparedness capabilities in two emirates: Dubai and Fujairah. Dubai is a wealthy emirate that has a diverse economy, while Fujairah has limited resources and is more exposed to natural hazards, such as earthquake and cyclones, due to its location (Dhanhani et al., 2010). Dhanhani et al. (2010) concluded that the rich emirates possess the resources necessary to handle the impact of disaster and they can provide other emirates and countries with some of these resources, while the smaller emirates are reliant on the federal government for support when they need to respond to a large event.

Fares and his colleagues reached the same conclusion when they explored emergency medicine in the UAE (Fares et al., 2014). Fares et al. (2014) concluded that the wealthiest emirates (Abu Dhabi and Dubai) have advanced and well-organized pre-hospital emergency care as compared to the rest of emirates. Among those five other emirates, Sharjah has the best operational state regarding pre-hospital emergency medicine (Fares et al., 2014). There are 103 pre-hospital care providers in Sharjah, compared to just 17 in Ajman, 21 in Ras Al Khaimah, 13 in Fujairah, and none in Umm Al Quwain (Fares et al., 2014).

From a political ecology perspective, Martins (2017) developed a conceptual model that guides the analyses of vulnerabilities from a political ecological approach. The political ecology framework recognizes the environmental process within the broader frame of political and economic factors as a core for most ecological analyses (Martins, 2017). Martins' framework investigates the vulnerability within four dimensions: social, political economy, environmental, and sociocultural adaptation (Martins, 2017, p. 60). Contrary to other ecological frameworks of vulnerability, such as Hewitt's (1997) theoretical perspective and Blaikie et al.'s (1994) Pressure and Release Model, Martins' framework acknowledges the historical dimension as an

important factor in analyzing the local vulnerabilities from a political, economic and environmental approach (Martins, 2017).

Including the historical dimension when analyzing vulnerabilities relevant to political and economic factors is also supported by Oliver-Smith (1996). For example, the most highlighted vulnerability in this paper is demographic imbalance in the UAE, which resulted from public policies that enhanced economic immigration to help the country develop after the discovery of oil. At the same time, the UAE naturalization process is very long and demanding. Most immigrant workers who come from non-Arabic speaking countries need to spend 30 years of residency in the UAE and become proficient in the Arabic language in order to be considered for UAE citizenship (UAE Government, 2018). As a result of this, the country suffers a significant ongoing demographic imbalance level, which threatens its stability and recovery after a disaster.

As the concept of vulnerability is associated with weaknesses or disadvantages inherent to a community or a place (Hewitt, 1997), the concept of resilience is associated with the capabilities that a community or a nation possesses. Hewitt (1997) stresses lack of resilience as an area of vulnerability by defining the lack of resilience as "limited or no capability to avoid, withstand [,] or offset and recovery from disaster" (p. 27). Vulnerability and resilience are neither similar, nor opposite to each other. It is possible to find a community that inherits several vulnerabilities due to its geographic location or its political economy yet has abundant resources that build effective emergency capabilities and improve the resilience process. Resilience factors are "characteristics that help to cushion or mitigate the effects of disasters" (Tierney, 2007, p. 288). Even though Tierney (2007) discusses business resilience factors, the concept of resilience in business remains similar across other areas as long as it is tied to the recovery capabilities.

Due to location, political economy, and financial capacity, different emirates have different vulnerabilities and capacities for resilience. Table 2 illustrates the variations

among emirates regarding their vulnerabilities and resilience to disaster.

Table 2: The variation among emirates regarding vulnerabilities and resilience

Resilience	(More resilient, Less vulnerable) None	(More resilient, More vulnerable) <ul style="list-style-type: none"> • Dubai • Abu Dhabi
	(Less resilient, Less vulnerable) <ul style="list-style-type: none"> • Sharjah • Ajman • Umm Al-Quwain • Ras Al-Khaimah 	(Less resilient, More vulnerable) <ul style="list-style-type: none"> • Fujairah
Vulnerability		

Cooperation in time of disaster is offered under the umbrella of the Emirate Federation. Three UAE constitutional articles - 118, 142, and 143 - shape such cooperation and the relations between the Federation and the seven emirates, as shown in Box 1. Those articles confirm the administrative collaboration as well as military assistance among the seven emirates when a

situation calls for it. It is worth noting that the UAE Constitution of 1971 and its amendment through 2009 never mention the terms emergency, crisis, or disaster even once in the constitutional articles (Constituteproject.org, 2018). However, the word “danger” in 143 may imply an emergency or other relevant term.

Box 1: Articles 118, 142 and 143 of the UAE Constitution

Article 118

All the member Emirates of the UAE shall seek to harmonize their legislation in the different fields to unify that legislation as far as possible.

Two or more Emirates may, subject to the approval of the Supreme Council, gather together in a political or administrative unit, or unify all or part of their public services, or establish a single or joint administration to run any such service.

Article 142

The state alone has the right to establish armed land, naval, and air forces.

Article 143

Any Emirate shall have the right to request the assistance of the Federal Armed Forces or the Security Forces in order to maintain security and order within its territories whenever it is exposed to danger. Such a request shall be submitted immediately to the Federal Supreme Council for decision.

The President of the UAE and the Federal Council of Ministers collectively, may, if the Supreme Council is not in session, take any immediate measure which cannot be delayed and considered necessary and may call the Supreme Council into immediate session.

Source: (Constituteproject.org, 2018).

According to the above constitutional articles, police and civil defense will be utilized in a different location under the umbrella of the federal government when there is a need for them, even though the management and ownership of these resources is a local affair for each emirate. Because the UAE has not experienced a large-scale disaster in its recent history, there has not been an opportunity to test how the constitutional interpretation

regarding the use of local resources at the national level would be implemented.

Non-Governmental Organizations

Some of the non-governmental organizations, such as the Emirates Red Crescent and Sanid, that are active in the UAE are mainly funded by the government, and the chairs of these two organizations are members of the ruling family in Abu Dhabi. Such organizations are recognized both nationally and internationally as the arm of humanitarian work in the UAE. In Dubai, there is the International Humanitarian City, or the IHC, which is considered a warehouse for international and national humanitarian organizations. The IHC covers an area of more than 120,000 m², and established a authority-free zone for humanitarian actors (IHC, 2017). There are many offices for international and national humanitarian organizations, such as UNHCR, UNICEF, OCHA, CARE Foundation, etc., that are considered IHC members (IHC, 2017).

Essentially, allocating humanitarian organizations in one place facilitates humanitarian work and promotes the logistic services that help humanitarian organizations. The major drawback here is that having all the resources or a great deal of the resources in one place is a significant vulnerability. If a disaster hits the region, it could also hit the IHC zone, which is highly probable due to the small size of the country. In such a case, the humanitarian organizations would require assistance in lieu of providing it for others.

Past Emergency Management

Both non-governmental and governmental organizations in the UAE have some experience with disaster in neighboring countries, such as the Bam earthquake in Iran in 2003 and Pakistan earthquake in 2005 (Dhanhani et al., 2010). Some governmental departments, such as the Dubai police, were able to respond to both events effectively and gained some experience regarding how to respond to similar events (Dhanhani et al., 2010). Additionally, the UAE has participated in

and become a member of many international and regional conventions and committees. The UAE is a member of the Gulf Disaster Center in Kuwait and the regional office of the United Nations International Strategy for Disaster Reduction, or UNISDR, in Cairo.

Recent Developments

In the last 10 years, the UAE government started recognizing the importance of coordination in the disaster response process. Besides being a co-founder of the Gulf Disaster Center that operates under the umbrella of the Gulf Cooperation Council, the UAE Federal government initiated NCEMA as a joint authority that coordinates the disaster management among the seven emirates. According to the UAE Supreme Council for National Security, under which NCEMA was established, NCEMA's mission is "to enhance the UAE's capabilities in managing emergency, crisis and disaster by setting the requirements of business continuity, enabling quick recovery through joint planning, and coordinating communication both at the national and local level" (UAE Supreme National Security Council, 2017, p. 27). NCEMA promotes the supportive and authoritative roles of the UAE federal government in disaster management. Such roles include but are not limited to building a strategic emergency plan; coordinating operations among emergency agencies; defining bodies' responsibilities; and overseeing and controlling emergency committees (Dhanhani et al., 2010, p. 76).

Unfortunately, neither enhancing community attachment, nor improving community involvement in emergency planning and response seems a goal of NCEMA. NCEMA's terms of reference (Dhanhani et al., 2010, p. 76) indicate that NCEMA emphasizes the paternalistic role of the government, rather than empowering community roles. Such emphasis on a centralized emergency management role of the federal government or local government of different emirates is not recommended by the disaster research community (Wenger, Quarantelli, & Dynes, 1990; Dynes, 1994). The strategy of enhancing

government control during a disaster reflects the perspective that disaster is social chaos and that preserving social control can prevent disaster (Dynes, 1994).

Strengths and Weaknesses

Emergency management in the UAE has many advantages and capabilities that strengthen the process of rapid and effective response to disaster. It benefits from being a small country with generous natural resources and excellent diplomatic and cooperative relations with neighboring countries, like Saudi Arabia and Bahrain, who can rapidly deploy needed resources if any disaster occurs. The UAE also maintains good relations with countries that have advanced and well-developed emergency response capabilities, such as the U.S. The political and financial state of the UAE enables it to receive assistance from those countries when it is needed. Such cooperation can be seen in some previous events, such as the help provided by the U.S. Coast Guard in cleaning the oil spill that resulted from the *Seki* vessel accident in 1994.

One weakness that the UAE experiences is not having much experience with disaster management. Lack of experience may reduce the emergency officials' and public's' ability to deal with future disastrous events. The country has not suffered from significant disaster impacts that could result in fatalities and great social disruption since its foundation. Table 3 summarizes the major emergency management strengths and weakness in the UAE.

Table 3: Strengths and weaknesses

Strengths	Weaknesses
Financial resources (natural resources)	Low public engagement (political system)
Strong federal relationship (size of the country)	Reactivity (functionalist perspective)
Strong regional relationship (shared strategic goals, GCC)	International Humanitarian City (location)
International Humanitarian City (logistic Services and facilitating the coordination)	Emergency Plans (no information sharing)
	The absence of clarity in the planning process (bureaucracy; reactivity)
	Central Management approach (absolute monarchy regime)

As illustrated in Table 3, the UAE’s strengths are inherent to their financial capabilities and political relationships. Also, having a national disaster response agency (NCEMA) enables different emirates to communicate, coordinate, and support each other in disasters. Given that disasters are usually considered local issues, each emirate can tailor their disaster response policies to fit their resources and context, and in the same way, that emirate can reach out to the other emirates for resources when demand overwhelms their capacities. That is mainly because of the limited number of decision makers influenced by the Supreme Council that contains only seven rulers.

On the other hand, the country’s weaknesses are inherently linked to the political system in place and the demographic imbalance, which reduces public interest and public inputs in the emergency planning process. The emergency system was built by UAE policymakers into government institutes, such as Civil Defense and NCEMA; hence, it is usually influenced by the administrative structure and government policies. The UAE emergency system seems to be a well-defined,

centralized system that mimics the federal absolute monarchy system of the country. That is, the emergency system may give the appearance of having covered most of the demands with a high level of cooperation and communication among emirates, while it is an exclusive system that is concentrated around a few stakeholders. Having poor public inputs, acting on a reactive basis, and not having a clear public planning process or community involvement are just a few symptoms of such an exclusive system.

Conclusion

The UAE is a wealthy country that has an excellent opportunity to strengthen its emergency management system using its financial resources. However, the government needs to focus on local vulnerabilities and act on improving community capabilities; such improvements require political solutions rather than mere economic improvement. The most noticeable vulnerability is the demographic imbalance, with most of the country’s workforce being economic immigrants who have minimal community engagement. Also, the low community-level participation in the

emergency planning process, associated with the low public representation in the policy-making process, is a major politically-created vulnerability that impacts the disaster management process. Engaging the community in the emergency planning process, balancing social capabilities by providing immigrants more well-defined rights, strengthening their bonds to the country, educating and training for all social classes, and conducting emergency training programs that are tailored to the local, natural, and technological perils are some of the many recommendations to the UAE emergency managers. Generally, this paper urges the emergency managers and policymakers be aware of 1) the drawbacks of the exclusive planning process and 2) the social vulnerabilities of the UAE. More research is needed to reveal issues that affect emergency management in the UAE and develop innovative solutions or test their applicability in the UAE context. Public policy research and community-based research projects aiming to correct and enhance the community involvement in emergency planning and response could be beneficial in the case of UAE's emergency management.

References

- Abella, M. I. (1991). *International Migration in the Middle East: Patterns and Implications for Sending Countries*. Bangkok: International Labour Organisation, Bangkok.
- Aljazeera News Agency (2017, April 2). Fire Breaks out at Under-Construction Dubai Skyscraper. Retrieved from <http://www.aljazeera.com/news/2017/04/fire-breaks-construction-dubai-skyscraper-170402055044120.html>
- Aljazeera News Agency (2016, January 1). Dubai Investigates Luxury Hotel Skyscraper Fire. Retrieved from <http://www.aljazeera.com/news/2016/01/dubai-investigates-luxury-hotel-fire-160101172850702.html>
- Alhmoudi, A. A., & Aziz, Z. (2016). Integrated framework for early warning system in the UAE. *International Journal of Disaster Resilience in the Built Environment*, 7(4), 361-373.
- AlShehabi, O. (2015). Histories of Migration to the Gulf. In Khalaf A., AlShehabi O., & Hanieh A. (Eds.), *Transit States: Labour, Migration and Citizenship in the Gulf* (pp. 3-38). London: Pluto Press. doi:10.2307/j.ctt183p1j8.5
- Barakat, S., Shanableh, A., & Malkawi, A. (2008). A comparative earthquakes risk assessment approach applied to the United Arab Emirates. *Jordan Journal of Civil Engineering*, 2(2), 139-151.
- Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (2004). *At risk: natural hazards, people's vulnerability and disasters*. London: Routledge.
- Boyle, R. (2012). Language contact in the United Arab Emirates. *World Englishes*, 31(3), 312-330.
- Brito Martins, V. N. (2017). *The historical construction of vulnerability and disasters on Madeira Island, Portugal (1800-2015): Power, economy, society, and adaptation* (Order No. AAI10270852). Available from PsycINFO. (1968544587; 2017-43825-204). Retrieved from <https://search.proquest.com/docview/1968544587?accountid=10457>
- CDC (October 2018). Public Health Emergency Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Public Health. (Updated January 2019). Retrieved from <https://www.cdc.gov/cpr/readiness/capabilities.htm>
- CIA (2017a) The Fact Book: United Arab Emirates. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/geos/ae.html>
- CIA (2017b) The Fact Book: Country Comparison, Crude oil_ Proved Reserves. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2244rank.html>
- CIA (2018) The Fact Book: United Arab Emirates (updated as December 4, 2018). Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/geos/ae.html>
- Constituteproject.org (2018, July 27). United Arab Emirates's Constitution of 1971 with Amendments through 2009. *Oxford University Press, Inc*. Retrieved December 21, 2018, from https://www.constituteproject.org/constitution/United_Arab_Emirates_2009
- Coppola, D. P. (2015). *Introduction to International Disaster Management*. Retrieved from <https://ebookcentral.proquest.com>
- Dhanhani, H. A. G., Duncan, A., & Chester, D. (2010). United Arab Emirates: Disaster management with regard to rapid onset natural disasters. In *Advanced ICTs for Disaster*

- Management and Threat Detection: Collaborative and Distributed Frameworks* (pp. 65-79). IGI Global.
- Dynes, R. R. (January 01, 1994). Community Emergency Planning: False Assumptions and Inappropriate Analogies. *International Journal of Mass Emergencies and Disasters*, 12, 2, 141.
- El Rafy, M., & Hafez, Y. (2008). Anomalies in Meteorological Fields Over Northern Asia and Its Impact on Hurricane Gonu. In *28th Conference on Hurricanes and Tropical Meteorology*.
- Elshorbagy, W., & Elhakeem, A. B. (2008). Risk Assessment Maps of Oil Spill for Major Desalination Plants in the United Arab Emirates. *Desalination*, 228(1-3), 200-216. doi:10.1016/j.desal.2007.10.009
- Fares, S., Irfan, F. B., Corder, R. F., Al Marzouqi, M. A., Al Zaabi, A. H., Idrees, M. M., & Abbo, M. (2014). Emergency Medicine in the United Arab Emirates. *International journal of emergency medicine*, 7(1), 4.
- Herb, M. (2014). *The Wages of Oil: Parliaments and Economic Development in Kuwait and the the UAE*. Cornell University Press.
- Hewitt, K. (1997). *Regions of risk: A geographical introduction to disasters*. Harlow: Longman.
- ITOPF (2003). A Summary of the Risk of Oil Spills & State of Preparedness in UNEP Seas Region: Gulf Region. Retrieved December 3, 2018, from http://www.itopf.org/fileadmin/data/Documents/Country_Profiles/gulf.pdf
- NASA (2010, June 4). Tropical Cyclone Phet. *Earth Observatory*. Retrieved from <https://earthobservatory.nasa.gov/images/44189/tropical-cyclone-phet>
- Oliver-Smith, A. (1996). Anthropological research on hazards and disasters. *Annual Review of Anthropology*, 25(1), 303-328.
- OPEC (2017). OPEC Annual Statistical Bulletin. Retrieved December 22, 2018, from https://www.opec.org/opec_web/en/publications/202.htm
- Pascucci, V., Free, M. W., & Lubkowski, Z. A. (2008). Seismic Hazard and Seismic Design Requirements for the Arabian Peninsula Region. In *The 14th World Conference on Earthquake Engineering*. Ras Al Khaimah government (n.d.).
- Sawe, B. E. (April 25, 2017). Countries Who Rely on Desalination. World Atlas.com. Retrieved December 26, 2018, from <https://www.worldatlas.com/articles/countries-who-rely-on-desalination.html>.
- Schneider, E. W. (2007). *Postcolonial English: Varieties around the World*. Cambridge: Cambridge University Press.
- Secombe, I. J., & Lawless, R. I. (1986). Foreign Worker Dependence in the Gulf, and the International Oil Companies: 1910-50. *International Migration Review*, 20(3), 548-574.
- Shah, N. M. (January 01, 1994). Arab Labour Migration: A Review of Trends and Issues. *International Migration*, 32, 1, 3-28.
- Tierney, K. J. (2007). Businesses and Disasters: Vulnerability, Impacts, and Recovery. In Rodríguez, H., Quarantelli, E. L., & Dynes, R. R. (Eds.). *Handbook of disaster research*. (275-296). New York: Springer. (Springer e-books).
- The International Humanitarian City (IHC) (2017, April 4). <http://www.ihc.ae>
- The Guardian (2016, January 1). Dubai: Massive Fire at Dubai Skyscraper Interrupts New Year's Eve fireworks. Retrieved from <https://www.theguardian.com/world/2015/dec/31/dubai-skyscraper-fire-ablaze-new-years-eve-fireworks>
- The World Bank (2018, November 15). GDP per capita, PPP (current international \$). World Bank, International Comparison Program database. Retrieved December 12, 2018 <https://data.worldbank.org/indicator/NY.GD.P.PCAP.PP.CD>
- The UAE Government (2018, October 24). The UAE Nationality. Retrieved from <https://government.ae/en/information-and-services/passports-and-traveling/the-UAE-nationality>.
- The UAE Supreme National Security Council (2017). National Emergency and Disaster Management Authority (NCEMA) Retrieved from <https://www.ncema.gov.ae/en/about-ncema.aspx>
- Wenger, D., Quarantelli, E. L., & Dynes, R. R. (1990). Is the incident command system a plan for all seasons and emergency situations? *Hazard Monthly*, 10(3), 8-12.

Civic Hackathons as Deliberative Democracy: Reflections from Participation in the 2018 Delaware Open Data Challenge

Eli Turkel
University of Delaware

Elizabeth Suchanic
University of Delaware

Randy Neil
Squatch Creative

The “hackathon” is one of the primary events that civic technology groups organize. A civic hackathon is an event designed to improve a public service either through innovative software programming, data analysis, or graphic and web design. Hackathons are criticized for lack of productivity and sustainability. Due to such criticism, civic technology organizations have introduced reforms to the format of hackathons - stretching their length, incorporating human centered design and the influence of client direction. Open Data, Delaware’s 2018 Open Data Challenge is an example of a hackathon that experimented with these different reforms. In this paper, the authors share their reflections on participation in the Open Data Challenge. The main question explored by the paper is, what is the value of the civic hackathon and what research questions should be asked about hackathons? The paper finds that the value of civic hacking events is that they provide an opportunity to engage citizens in a civic process. From this vantage point, civic hackathons should be studied as deliberative democratic events and evaluated on their design and their ability to increase participants’ civic engagement.

Introduction

The term “hacking” often carries a malicious connotation associated with the willful destruction, theft, or manipulation of property or information through remotely accessing operating systems or private servers. Cybercrime such as ransomware or data stealing comes to mind as examples of such activity. This, however, is a narrow understanding of the term. Hacking, in broader terms, is an approach to problem-solving that can apply in a multitude of settings (Snook, 2014). In the realm of public affairs, Carl Malamud’s work in the 1990s collecting government information without express authorization is an early example that inches closer to the type of activity this paper has in mind. Through the mid-1990s Malamud purchased access to government databases and then released the data to the public. He would build up a base of users and then close the database, creating an angry constituency now unable to access data. He did this with Security

and Exchange Commission data in 1995 (Brito, 2010). Then, in 1998 he wrote to Vice President Al Gore and told him that he planned to do the same with patent and trademark data, but the Vice President rectified the situation before Malamud followed through.

In the late 1990s and early 2000s, individuals started to use the technology to improve public services through unauthorized means. For example, in 2008, Harper Reed, Barack Obama’s Chief Technology Officer on the 2012 Reelection campaign, built an unofficial Application Programming Interface for the Chicago Transit Authority. The difference, however, between Reed’s work and Malamud’s is that Reed did not apply pressure to an organization to take action that they otherwise would not have taken. The problem he solved was a lack of transparency in the Chicago Transit Authority’s Bus Tracker data. Reed’s work was unobtrusive; he figured out how to separate the data on the website from

the site itself. In doing so he opened the possibility for developers to build applications that are useful for themselves and others. This is the essence of civic hacking. It is not about conducting clever, yet dastardly deeds; nor is it about activism that pressures governmental actors into complying with specific demands (though this certainly has its place); civic hacking is a form of civic activism that uses technology to solve problems in mutually beneficial ways.

Civic hackathons attempt to bottle the type of energy Harper Reed demonstrated by holding formal events with financial incentives. The first civic hackathon -- Apps for Democracy -- was held in Washington, D.C. in 2007. The event was organized by then Washington D.C. Chief Technology Officer Vivek Kundra. Kundra asked iStrategyLabs -- a digital marketing firm with offices in D.C. and New York -- how the city could make use of the Data Catalog. The Data Catalog is a website that individuals can visit to view and download data made publicly available by the District of Columbia. The District of Columbia heralded the event as a tremendous success because it produced 47 applications and the equivalent of \$2,300,000 worth of software for the city (Howard, 2011). Others have followed up on the success of Apps for Democracy and found that of the 47 applications developed during Apps for the Democracy, the District of Columbia did not adopt any of the applications after the event concluded (Howard, 2011). It would be easy to conclude based on this evidence that civic hackathons do not live up to the spirit of civic hacking - that they are ineffective ways of solving civic problems. That is the argument this paper evaluates.

In order to address this issue, this paper conducts a literature review on civic technology and civic hacking. Subsequently, this paper details the authors' involvement in a hackathon that took place in the spring of 2018. Then authors reflect on their experience and explain the importance of event design in conducting a hackathon. Finally, the authors conclude that effectiveness is not the optimal lens for studying civic hackathons. Rather, these events should be

studied as deliberative democratic exercises and evaluated on their design and ability to increase civic engagement among participants.

There are tensions in studying hackathons as a deliberative democratic exercise, namely barriers to participation in the form of demographics and technology. Young white men sitting behind computers with desks stacked with coke cans and pizza boxes is the image that comes to mind when the word hacking is mentioned. Such an image is not unjustified, if stereotypical ("[#MoreThanCode Full Report](#)," 2018). A 2017 Pew survey reported that 80% percent of women and 66% of men responded that there is gender discrimination in the tech sector (Pew Research Center, 2018). The [#MoreThanCode](#) report, published in the summer of 2018, focuses on the non-profit tech sector. The report asked if there are gender disparities within the the non-profit tech field, to which respondents answered affirmatively. Neither the tech or non-profit tech sector are fully representative of the civic hackathon population, but they certainly suggest that there are gender, racial, and age imbalances in participation. Such issues are exactly what should be addressed in the design of civic hackathons. Evaluations of civic hackathons should focus on whether participants found the events to have non-representative design features and ask if participants feel a sense of increased civic engagement and capacity (Boulianne, Chen, & Kahane, 2018).

Survey research finds that similar disparities are present in the composition of hackathon participants. Briscoe reports on the findings of a survey of 150 hackathon participants from the United States. The survey finds that participants are overwhelmingly male, between the ages of 25 and 34, and attribute their attendance at a hackathon to learn and network. Finally, according to the survey, 70% of hackathon attendees were not attending their first hackathon. Based on this, Briscoe argues that there is a hackathon circuit in which attendees are interested in more than just the individual results of a single hackathon (Briscoe, 2014).

Literature Review

Civic Technology

This research focuses on hacking and hackathons, a dimension of civic technology advanced by McNutt and his colleagues (McNutt et al., 2016). The concept of civic technology includes the following: open civic data and transparency; civic and service apps; and organizational innovations such as civic hacking and hackathons, Code for America fellowships, and similar arrangements (McNutt et al., 2016). Civic hackathons organized or sponsored by local governments often use open government data and center on the creation of civic and service applications. Civic and service applications are applications that involve the use of government data and can streamline a government service, this could include a transit tracking application or a streamlined food-stamp enrollment form. While open government data and civic and service applications are aspects of civic hackathons, the authors of this paper choose to focus on the organizational innovation of civic hacking in relation to civic technology because the other aspects of civic technology are tangential to the present issues. It is interesting to note the relatedness of the various dimensions of McNutt's concept in a single instance of civic technology.

Civic Hacking

Civic hacking is a subset of hacking activity. Quite often civic technology applications are free and open source. Coleman argues that norms among hackers vary regarding what type of activity falls within the bounds of ethical behavior; a narrower bound is found within civic hacking related to which types of projects are undertaken and the way in which they are conducted (2013). While the boundary of definition is narrower for civic hacking, the ethics Coleman describes brings to mind the type of activism conducted by Harper Reed. Reed's work exposing the endpoints of Chicago's transit data perhaps caused frustration and a quick glance of Mr. Reed's website (<https://harperreed.com/>) conveys the sense

that he is a person who takes joy in what he does. His website states that a requirement for the projects he works on must be fun.

Civic hacking is a overlapping, but distinct activity from free and open sourcing hacking, as Stepasiuk's work demonstrates. Much of the work civic hackers conduct is to establish open data sets and write open source civic applications, such as sites that streamline government information for public use (Schrock, 2016). This is a way in which the activities overlap. One of the distinctions between these two activities is that not everyone involved in civic hacking considers themselves a hacker (Stepasiuk, 2014). Participants in civic hacking could consider themselves volunteers, activists, or hackers. Stepasink finds that participants have varied motivations based on the identity to which they bring to civic hacking (2014).

In a study about free and open source software, "F/OSS", hackers critique contemporary liberalism's commitment to property rights, by arguing that individuals have a right to free speech (Coleman, 2013). In this case, hackers consider coding software to be speech, which Coleman terms "productive freedom." Coleman argues that hackers are committed to an idea of freedom and liberty; and derive pleasure from creating free software (Coleman, 2013; Snook, 2014). Coleman's argument is just as devoted to the idea that f/oss hackers conduct their work motivated by the idea that copyright law should not restrict the projects they wish to work. Coleman's work posits that eating junk food, drinking Red Bulls, and staying up all night to write computer software are all superficial stereotypes of a process that involves confronting a daunting technical task and overcoming frustrations that occur along the way. This stereotype, Coleman argues, provides an inaccurate picture of hackathons that could diminish involvement. Paired with a commitment to free software, Coleman illustrates that the hacking aesthetic is an expression of unalienated labor (Coleman, 2013). The concept of unalienated labor is derived from Marx's theory of alienation,

estrangement from individuals as a result of stratified social classes.

Andrew Schrock has crafted the term “data activism” (Schrock, 2016). By this, Schrock is referring to individuals who use open government data to reprogram or create government software in order to improve its effectiveness (Lessig, 2006; Schrock, 2016).

Building on Schrock’s concept, this paper includes design work under the banner of data activism. Whether it is graphic design or web design, so many aspects of public programs are implemented by communication tools that it is vital to ensure those communication devices are effective.

Civic Hackathons

Research on civic hackathons disputes Coleman’s notion that hacking constitutes unalienated labor. Traditionally, a hackathon is a two- to three-day contest in which participants attempt to solve a problem by writing computer software (Briscoe, 2014; Johnson & Robinson, 2014). Hackathons begin with a presentation to participants which discusses the details of the challenge as well as the prizes for winning. Participants are then given a fixed amount of time to work on the project. At the end of that time period, participants typically present their work to a panel of judges and a winner is chosen.

Hackathons are a phenomenon in the arenas of music, design, fashion, and open data, as stated by Briscoe. Briscoe, citing others, defines a hackathon as a “problem-focused computer programming event” (Briscoe, 2014, p. 1). Hackathons exert considerable cultural significance in technological innovation because many IT organizations, such as software development companies, host these events on an annual basis, invite the public to participate, and offer monetary rewards. Briscoe draws a helpful distinction between tech-centric hackathons and focus-centric hackathons. Intuitively, tech-centric events focus on improving a single application, platform, or the use of a specific language or framework. A tech-centric event could be a user-testing event for a new application targeting a community

problem, while a focus-centric event could be a town hall meeting discussing a community challenge. Focus-centric events are much more issue-, demographic-, or organization- oriented.

Johnson and Robinson (2014) attempt to evaluate hackathons as citizen engagement and government procurement events. The authors argue that there is a need to track the outputs of hackathons over time to see if meaningful work is being done. If meaningful work is not being done, government sponsors risk the possibility of citizen fatigue and a lack of interest. The argument of civic hackathon advocates is that the benefits of these events are not found in any one event, but rather in the community and the knowledge gained in conducting these events (Headd, 2011). For instance, individuals participating in Apps for Democracy provided the Washington, D.C. municipal government with numerous hours of labor and only some of them received compensation, underscoring the authors’ questions regarding whether participants feel exploited or impactful.

Gregg provides a broad overview of the rise of hacking as a mainstream societal phenomenon (2015). She distinguishes between “white” and “black” hat hackers, white meaning good and black meaning malicious, but does not distinguish between those who release government data without authorization and those that use authorized open government data. Gregg offers penetrating analysis of the societal events and rhetoric that emanate from hackathons. She argues that participation is characterized as a political good in order to distract from cuts to government services. Moreover, she argues that political rhetoric venerating governmental performance masks the inevitable downgrade in service that assuredly accompany such cuts (Gregg, 2015). Gregg has referred to hackathons as events which fuse “youthful energy of Obama-era digital participation with Silicon Valley’s own Peter Pan triumphalism” (Gregg, 2015).

Deliberative Democracy

Much of the criticism of civic hackathons accepts the frame provided by event organizers and evaluates hackathons based on performing

a social good. Event organizers submit that hackathons are a way for local governments to purchase information technology services. While critics accept this frame, they argue that hackathons are not an effective method to purchase IT services and point out the speculative labor issues involved. Another way to put this is that event organizers argue that hackathons are an instrumental mechanism to the production of government services. Critics disagree. This paper agrees that hackathons are not effective for producing government services, but that they are important events because they have the potential to increase civic engagement among those who participate.

In a recent journal article, Zandbergen questions the authenticity of the open-source collaborations due to concerns regarding corporation co-option of such arrangements (2017). Zandbergen attends Meetup events in Amsterdam organized around the creation of a Air Quality Egg, which is sponsored by a company that owns a platform used by participants in completion of the project. The author experiences conflicts within the group yet concludes that the event kept participants engaged in a project larger than themselves (Zandbergen, 2017). The argument presented here is similar; hackathons may not produce effective government services, but they can function to engage citizens. In this regard, they function as deliberative democratic events.

In Zandbergen's words, "prototyping, in this sense, is about the facilitation of horizontal social collaboration as an end goal in itself" (Zandbergen, 2017, p. 51). In hackathon events, participants work in collaboratively on an issue of community importance. In doing so, they learn about the experiences of their neighbors and brainstorm possible ways to improve the daily lives of those who live in close proximity to themselves. Therefore, they are engaged in community dialogues and quite possibly are improving their efficacy as citizens.

Deliberative democracy is a concept that states that well-structured events based on dialogue have the ability to produce a democratic legitimacy. As Fishkin and Luskin (2005) argue, there are five elements of

deliberative democracy: informed, balanced, conscientious, substantive, and comprehensive. Research on deliberative democratic proceedings finds that, keeping in mind the design of the event, individuals who participate are more likely to be engaged in civic matters after the fact (Boulianne et al., 2018; Brady, Verba, & Schlozman, 1995; Nabatchi, 2012; Gilman, 2016). Panel survey research finds that deliberative democratic event participants who felt that an event had diverse viewpoints, fair treatment, and informed opinions increased their likelihood of civic engagement in the long run and increased perceived public speaking abilities, political attention, and knowledge in the short run (Boulianne et al., 2018). In this regard then, the design of civic hackathons is important to ensure participants increased perceptions of their engagement and efficacy are realized.

The difference between civic hackathons and what is traditionally thought of as deliberative democracy, is that civic hackathon participants are asked to build a product. In fact, the collaborative building of a product - whether it is a map, a search function, or a website - is exactly why proponents of civic technology prefer it to deliberation (Noveck, 2010). The aspect of deliberative democracy that civic hackathon event organizers need to consider is ensuring that participants have an experience that deepens their engagement with their community and teaches them skills that make them feel as if they can make a difference. Put another way, civic hackathon organizers should spend less time praising the cost savings of these events for governments and more time investing in recruiting diverse participants and community partners able to provide concrete problems for hackathons to work on.

Element	Description
Informed (and thus informative)	Arguments should be supported by appropriate and reasonably accurate factual claims
Balanced	Arguments should be met by contrary arguments
Conscientious	The participants should be willing to talk and listen, with civility and respect.
Substantive	Arguments should be considered sincerely on their merits, not how they are made or who is making them
Comprehensive	All points of view held by significant portions of the population should receive attention

Project

Given the criticisms of hackathons, reforms to hackathon events have been introduced in Pennsylvania and Delaware. The authors of this paper participated in a hackathon to explore whether the efficacy and exploitation frameworks are appropriate for understanding these events. The authors participated in the 2018 Open Data Challenge facilitated by Open Data Delaware. This statewide hackathon sought to address accessibility, in the sense of mobility, in Delaware, particularly as it relates to transportation and natural resources. The partner state agencies, who were the beneficiaries of the created products, were the Delaware Department of Transportation, DelDOT, and the Delaware Department of Natural Resources and Environmental Control, or DNREC. Participants leveraged open data and created technologies to address these accessibility challenges throughout the state. Teams selected with exceptional products shared \$35,000 in grant funding for their contributions. The grant funding and program costs were covered by the participating state agencies, and all the code created for the event was published under open-access licenses. Teams were made up of two to six individuals

Adapted from Fishkin & Luskin, 2005

of varying backgrounds and ages, with diverse professional backgrounds encouraged.

Modified Hackathon Format

The primary difference between the hackathon format used for the 2018 Open Data Challenge and the more common format for hackathons, was the timeline. Most hackathon-style events are typically 24 to 48 hours in length, while teams in the Open Data Challenge had a month to develop a concept and a prototype. The month-long model was adapted from Code for Philly’s Civic Engagement Launchpad event, which used this longer-term structure. Throughout the month-long challenge, events were held to support participants and provide structure, including an ideation session, launch event, workshops, and a culminating pitch event.

Ideation Session

The ideation session was held the month prior to the Open Data Challenge launch and provided participants a time to gather concepts and frame the challenge of “accessibility.” Facilitated by University of Delaware’s Horn Program for Entrepreneurship, the event involved groups brainstorming with DelDOT and DNREC representatives and community members on what accessibility challenges exist in Delaware, as well as what approaches could be helpful to address said challenges. The

ideation session concluded with a collection of team notes and informal concept pitches.

Launch Event

The launch event of the 2018 Open Data Challenge marked the first day of the actual hackathon challenge and built upon concepts introduced in the ideation session. The hackathon facilitators and Open Data Delaware founders, Ryan Harrington and David Ginzberg, worked with agency partners to create sets of fictional profiles of individuals with a variety of accessibility challenges which were distributed to participating teams. These individual profiles sought to showcase needs of a variety of residents, from a retired, disabled individual from southern Delaware, to a tourist vacationing at the Delaware beaches. With partner agencies present, teams were created, and across the eight-hour event, concepts emerged through a flurry of activity.

Educational Workshops

In order to support teams through the technical challenges and capture a wider array of technical skill levels, weekly workshops were offered. These workshops were not restricted to Open Data Challenge participants, but rather were open to anyone. The material covered in these workshops included mapping, web designing, and pitching ideas.

Facilitator Check-Ins

To further support teams and concept development, hackathon facilitators Harrington and Ginzberg maintained weekly contact with a core team member from each group, offering additional feedback on the challenge process and connecting them with resources as needed. This personal support, paired with the educational workshops, emphasized the hackathon event as not strictly a civic engagement event, but rather as an educational opportunity. Individuals that sought to design and contribute to community technology solutions would also be motivated by the desire to build technical skills through building applications.

Pitch Event

The culminating pitch event gave each competing team an opportunity to introduce their concepts and prototype to the judges through a formal, five-minute pitch. The judging panel included a representative from DelDOT, a representative from DNREC, and a community member from AAA Mid-Atlantic. The three judges heard all the pitches and had fifteen minutes for deliberation for the disbursement of grant funding. The final pitches represented the broad challenge of “accessibility” and referenced the user profiles provided at the launch event.

MobiliDE: Delaware’s Paratransit Portal

The authors of this paper participated in the hackathon by conceptualizing, building a working prototype, and pitching a paratransit portal for the State of Delaware, MobiliDE. The state of Delaware’s universal paratransit service, offering service beyond federal ADA (Americans with Disabilities Act) requirements, has resulted in high demand and costs (Institute for Public Administration, University of Delaware, 2013; Scott & Tuttle, 2007; Turkel, 2015; Tuttle & Falcon, 2003). MobiliDE sought to reduce paratransit costs by streamlining ride reservations and providing ride alternatives. From the Delaware Open Data Portal, datasets were used on bus routes, bus stops, and bus schedules. Additional sources provided an inventory of third-party service providers for inclusion by county. The completed prototype presented at the pitch night showcased a working website which allowed users to create a user profile, reserve or cancel rides, and view ride history. The website also provided advanced mapping services, reserving a ride would showcase alternate routes that were available. Figure 1 provides a visual sample of the desktop version of the prototype, which was also available in a mobile format. MobiliDE was awarded an Open Data Challenge Ideation Award and a \$1,000 award.

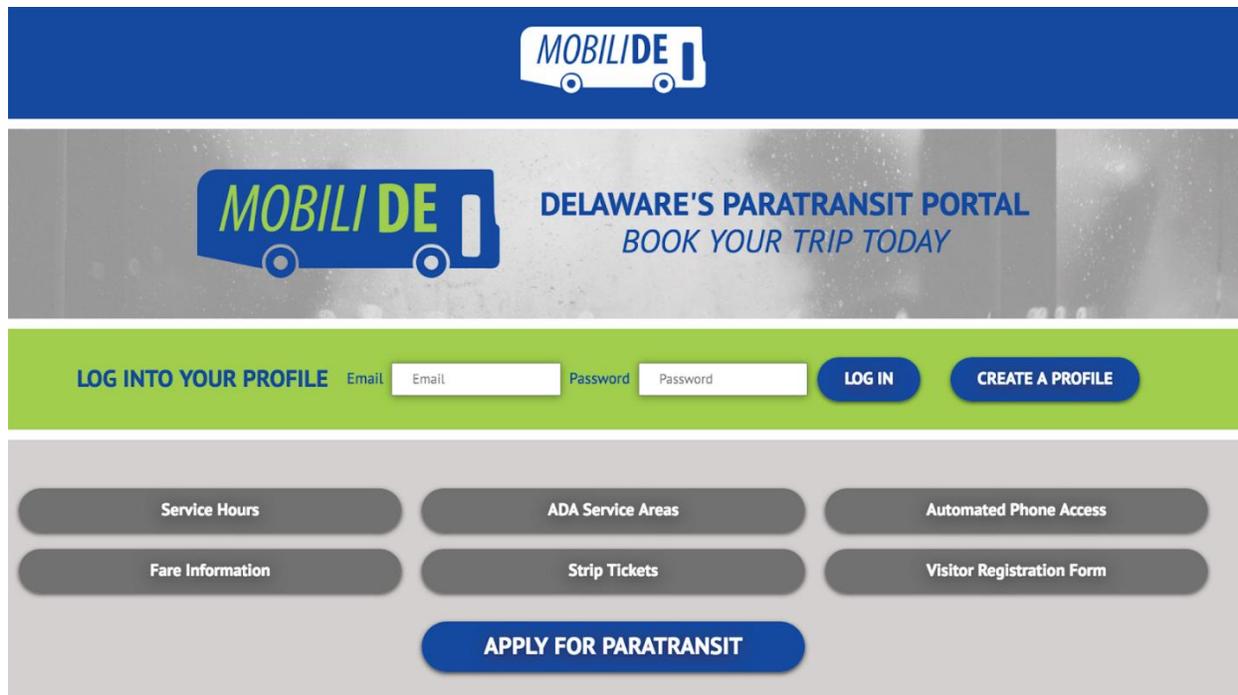


Figure 1: MobiliDE Launch Page

Reflections

Based on participant observation research, as well as the authors' participation in such processes, findings include design, participants, and timeline. These observations respond to many concerns and criticism of hackathon purpose, impact, and sustainability. These findings seek to identify structures in the hackathon format that could integrate user-centered design, needs for long-term involvement of participants, and timeline extensions.

User Centered Design

The hackathon exemplifies the increased effort to integrate user-centered design in the provision of public services (Goldsmith & Kleiman, 2018; Saksa, 2017). User-centered design is the term used to discuss Internet-based products that are themselves engaging to clients. For instance, the City of Pittsburgh built a product called Burgs Eye View that allowed citizens to view data visualizations of crime and other city statistics. Whether it is graphic design or web design, public programs are often implemented by using communication tools. This makes it vital to ensure those

communication devices are effective. Pittsburgh's service was designed with a penguin who changed hats as users navigated the website signaling that the website was for everyone to use (Goldsmith & Kleiman, 2018).

Additionally, Code for America has entire user-centered design projects. In 2015, Jake Solomon gave a presentation at the Code for America Summit on the GetCalFresh initiative launched by Code for America. Solomon noted that at that time, there were 2 million California residents eligible for food assistance, also known as SNAP, who were not receiving the benefit (Code for America, n.d.). Arguing that "implementation is a process, rather than a phase defined by user needs. Solomon defined delivery as a process of understanding and resolving user-needs (Code for America, n.d.). The GetCalFresh initiative team-built tools to help people check their SNAP account balance more easily, found no-charge ATMs and mapped them, built a new homepage that clearly stated that page was for SNAP and built an "apply" button. Then the team simplified the application process, significantly reducing the number of questions

applicants needed to answer to receive benefits.

In order for hackathons to provide long-term, effective solutions, end users of the application must be integrated from the ideation stages to the judging stages. Often hackathons are driven by the technologists who are competing, and who are often separate from the end user populations. End users may include residents in need of services, including the elderly, the disabled, or other at-risk groups. If hackathon participants do not have first-hand understanding of the challenges end users face, problematic conclusions may be drawn during the ideation phase about what these disadvantaged groups confront and how they would prefer to address them. If users are not considered at each stage of the process, from ideation to prototype creation, then the created product or prototype may be rendered useless because it does not address the actual needs of the user. Uninformed assumptions about the needs of end users frequently plague civic technologies. This points to a clear need for user-centered design and outreach during the ideation phase. For hackathons, end users should play a central role by being on teams and even judging completed prototypes.

The need for embedded, user-centered design was illustrated in the 2018 Open Data Challenge since the challenge of “accessibility” was not something most of the challenge participants faced themselves. Most participants were able-bodied and had their own vehicles; most did not have accessibility challenges themselves. While participants did seek feedback from individuals with these challenges after an idea had been generated, had users with accessibility challenges been consulted prior to the idea generation, concepts may have been designed differently. Open Data Delaware sought to integrate user-centered design through the creation of user-profiles to showcase a variety of accessibility challenges across the state. The inclusion of these user-profiles provided more context for the types of accessibility challenges that exist in the state but partnering and having actual users present could have provided a deeper understanding of the problem for teams.

Challenge Selection

Hackathons with broad goals may result a wide variety of new ideas, while a hackathon with a very specific objective may yield tailored applications that can be more immediately integrated. The challenge of “accessibility within Delaware” for the 2018 Open Data Challenge was the wide breadth of the topic when seeking to integrate both transportation and natural resources (Open Data Delaware, 2017). The broad interpretation of the challenge was obvious through the prototypes pitched, which all varied greatly. Projects ranged from a bicycle-commuting application to a tourism application for individuals with disabilities (Quinn, 2018). This broad challenge resulted in a variety of new ideas for the state agencies participating that could be further built upon but are so broad that they do not address one specific population or problem that is experienced in Delaware. A broad goal for a hackathon may be valuable to an agency or organization seeking to stimulate ideas of technological integration to create solutions or serve residents. However, a more specific goal, is beneficial because it produces much more tailored solutions to a specific problem, rather than a host of broader ideas.

Timeline

Hackathons are often known for their tight timelines and short duration, typically a sprint of activity across 24 to 48 hours with a culminating pitch. However, most projects do not see any follow-up after this sprint. This trend has resulted in concerns regarding the long-term impact of hackathon-style events. As discussed previously, the 2018 Open Data Challenge modeled its hackathon timeline on Code for Philly’s Civic Engagement Launchpad with a month-long timeline (Long, 2017). This extended timeline sought to respond to some timeliness concerns by extending the amount of time that teams would have to create their applications and conduct user-research. Ultimately, the projects presented at the 2018 Open Data Challenge reflected far more robust applications and concepts, in line with the

extended timeline. In a hackathon with a reduced timeline, opportunities to ideate and pivot to other concepts are reduced. While ideas may emerge, the resulting products may not be well developed and clear. The longer timeline of the 2018 Open Data Challenge allowed for more comprehensive concepts and prototypes.

Team Skill Cohesion

As users should be incorporated in the ideation of products in the hackathon process, teams should have a wide array of perspectives, including policymakers and direct-service providers. In the team formation stage, where individuals form groups to compete, technological skill and expertise is the primary driver to ensure that a well-rounded team can create both the back-end and front-end of the prototype. The authors' team for the 2018 Open Data Challenge included individuals who had conducted research for the Delaware Department of Transportation and could speak to the need for paratransit technologies and services. Experiences in the 2018 Open Data Challenge showed that teams need more than just technological skill. By including individuals facing the challenges they are trying to address and individuals who understand the systems of the agencies, teams can create a prototype that more deeply addresses actual needs. These diverse team members are critical at the ideation stage and in considering the many functions and uses of the application.

Sustainability

As previously mentioned, the short timeline of the typical hackathon has received criticism for its lack of long-term results and sustainability. Hackathons are structured with a hard finish line, the pitch, after which teams wash their hands of the project. However, most projects have not yet fulfilled their potential at this stage. Creating further incentives to maintain contact with participants and build the prototype to a turn-key stage for organizations and agencies to invest in would address some of the long-term sustainability concerns. The 2018 Open Data Challenge resulted in numerous ideas and prototypes for the two Delaware state

agencies that participated. Nine months after the event, however, the public has not seen full implementation of any of the proposed solutions. The remaining issue is how to implement the application.

Reflections and Recommendations

To further build upon the findings of the participant observation research, recommendations have been suggested to cultivate greater effectiveness and long-term sustainability in the hackathon format.

User Integration

Our recommendation for future hackathon-style events is to embed end-users within each stage of the hackathon event. End-users for government services should represent the communities they serve. There should also be consideration for special-need populations including the elderly, individuals with disabilities, and low-income individuals. These end-users should be present at all events and involved as "subject-matter experts" in the challenge. These users are particularly critical during the ideation stage and should be among the judges for the presented prototypes to ensure that selected projects will serve their needs. In order to reach these users, outreach to community organizations and neighborhoods will be required and will provide the tertiary benefit of raising awareness of government services and open data beyond a niche technology community.

Specification of Challenge

Our recommendation for future hackathon-style events is for hackathon organizers to be deliberate in their goals between ideation and application creation. On one hand, a broad challenge and shorter timeline is more likely to provide an agency or organization with many concepts and starting points for future exploration. On the other hand, a clear, narrow challenge with a longer timeframe will result in more comprehensive concepts with near-complete technological prototypes. Hackathons are vehicles for creating ideas and creating technological tools, therefore

it is critical for hackathon organizers, partner agencies, and organizations to have clear objectives to generate the desired results.

Sustainability

Our recommendation for future hackathon-style events to address sustainability concerns is to create sets of incentives throughout a longer-term process to encourage participants' continued involvement. Rather than a culture that is working towards a single end-point, partner agencies, users, and working teams should be encouraged to continue collaborating on projects. Additionally, putting in place group reflection gatherings and building "alumni" networks will maintain and enhance the excitement and projects generated through a hackathon event.

Conclusion and Future Research

The hackathon reforms taken by Open Data Delaware and other civic tech groups are appropriate measures that reduce unnecessary time frame requirements on participants and make events more relevant to local communities. More work needs to be done to design these events in ways that increase community involvement.

The authors' participation in these events demonstrated that single hackathon events are not necessarily going to generate promising policy proposals or public service design strategies. Yet, just as this may not be the actual outcome, promising policy proposals should not be the sole expectation of event organizers and researchers. Rather than expecting individual civic hackathons to fix community problems, civic hackathons should be held to the standard of contributing to the reinvigoration of civic life in local communities. One individual civic hackathon cannot accomplish this, but a series of well-designed events held on a regular basis will certainly contribute to the reenergizing of civic life.

This paper finds that in conjunction with the design elements of civic hackathons, an important research question moving forward is whether hackathon participants report increased levels of perceived civic engagement and

efficacy. Through survey research it should be tested whether civic hackathons are a promising new form of civic engagement or just a Silicon Valley fad. In order to adequately answer this question however, it is anticipated that the design of these events is important. Just as with deliberative democratic events, inclusion and information should be hypothesized as crucial drivers of participants' sense of engagement and efficacy. Subsequent research that examines civic hackathons as deliberative democratic events will need to explore how the elements of deliberative democracy translate to this new forum.

References

- Boulianne, S., Chen, K., & Kahane, D. (2018). Mobilizing Mini-Publics: The Causal Impact of Deliberation on Civic Participation Using Panel Data. Presented at the American Political Science Association, Boston, MA.
- Brady, H. E., Verba, S., & Schlozman, K. L. (1995). Beyond SES: A Resource Model of Political Participation. *American Political Science Review*, 89(2), 271–294. <https://doi.org/10.2307/2082425>
- Briscoe, G. (2014). Digital Innovation: The Hackathon Phenomenon. *Creativeworks London*, Queen Mary Research Online, (24). Retrieved from <http://qmro.qmul.ac.uk/xmlui/handle/123456789/11418>
- Brito, J. (2010). All Your Data Are Belong to Us: Liberating Government Data. In *Open Government: Collaboration, Transparency, and Participation in Practice*. Sebastopol, CA: O'Reilly Media.
- Coleman, E. G. (2013). *Coding freedom: the ethics and aesthetics of hacking*. Princeton: Princeton University Press.
- Goldsmith, S., & Kleiman, N. (2018). *A New City O/S: The Power of Open, Collaborative, and Distributed Governance*. Brookings Institution Press. Retrieved from <https://muse.jhu.edu/book/56200>
- Headd, M. (2011, August 24). Open government hackathons matter. Retrieved March 29, 2018, from <http://govfresh.com/2011/08/open-government-hackathons-matter/>
- Howard, A. (2011, August 19). Everyone jumped on the app contest bandwagon. Now what?

- Retrieved April 3, 2018, from <http://radar.oreilly.com/2011/08/app-contests-sustainability-usability.html>
- Institute for Public Administration, University of Delaware. (2013). *Transportation Services in Delaware for Persons with Disabilities and Senior Citizens* (pp. 1–42).
- Lessig, L. (2006). *Code*. New York: Basic Books.
- Long, A. (2017, March 10). *Civic Engagement Launchpad*. Retrieved January 2, 2019, from http://codeforphilly.org/blog/civic_engagement_launchpad
- McNutt, J., Justice, J., Melitski, J., Ahn, M., Siddiqui, S., Carter, D., & Kline, A. (2016). The diffusion of civic technology and open government in the United States. *Information Polity*, 21, 153–170.
- #MoreThanCode Full Report. (2018, August 20). Retrieved August 31, 2018, from <https://morethanocode.cc/2018/08/20/morethanocode-full-report.html>
- Nabatchi, T. (2012). Putting the “Public” Back in Public Values Research: Designing Participation to Identify and Respond to Values. *Public Administration Review*, 72(5), 699–708. <https://doi.org/10.1111/j.1540-6210.2012.02544.x>
- Open Data Delaware. (2017). 2018 Open Data Challenge. Retrieved January 2, 2019, from <https://opendatachallenge.com/>
- Pew Research Center. (2018). How bad is gender discrimination in tech? Men, women disagree. Retrieved from <http://www.pewresearch.org/fact-tank/2017/10/10/women-are-more-concerned-than-men-about-gender-discrimination-in-tech-industry/>
- Quinn, H. (2018, April). Here are the winning projects from Open Data Challenge 2018 - Technical.ly Delaware. Retrieved January 2, 2019, from <https://technical.ly/delaware/2018/05/17/winning-projects-open-data-challenge-2018/>
- Saksa, J. (2017, November 9). New PHL Participatory Design Lab hopes to nudge city bureaucracy into behaving better. Retrieved January 2, 2019, from <http://planphilly.com/articles/2017/11/09/new-phl-participatory-design-lab-hopes-to-nudge-city-bureaucracy-into-behaving-better>
- Schrock, A. R. (2016). Civic hacking as data activism and advocacy: A history from publicity to open government data. *New Media & Society*, 18(4), 581–599.
- <https://doi.org/10.1177/1461444816629469>
- Scott, M., & Tuttle, D. (2007). *Framing the Issues of Paratransit Services in Delaware*. Newark, DE: Institute for Public Administration, University of Delaware.
- Snook, T. (2014, January 16). Hacking is a Mindset, Not a Skillset: Why civic hacking is key for contemporary creativity. [Online resource]. Retrieved December 3, 2018, from <http://blogs.lse.ac.uk/impactofsocialsciences>
- Turkel, E. (2015). *Delaware’s Paratransit Policy and the Need for Innovation*. University of Delaware, Newark, DE.
- Tuttle, D., & Falcon, E. (2003). *Delaware Paratransit Services Study: A Review of Service Characteristics, Policy Implications and Options*. Institute for Public Administration, University of Delaware. Retrieved from <http://sites.udel.edu/dct/files/2013/10/Rpt.-151-Paratransit-Services-xt03pj.pdf>
- Zandbergen, D. (2017). “We Are Sensemakers”: The (Anti-)politics of Smart City Co-creation. *Public Culture*, 29, 539–562. <https://doi.org/10.1215/08992363-3869596>

External University Feature

The Syrian Crisis: Failed Mediation and Implications for Conflict Resolution

Meagan Eisner

Tomson University

This paper uses well known civil war theories to analyze the most significant mediation attempts that have occurred in the Syrian Civil War and explain why they have been unsuccessful. After reviewing the failed attempts from the Arab League and the United Nations to negotiate an end to conflict in Syria, this paper concludes that the reasons attempt have failed are the large number of parties involved in the conflict, hostilities among the parties involved, and international disunity. Ultimately, scholars have found that the number of parties in a conflict, the level of hostility among the parties, and the ability for the international community to unite around a common approach for resolution correlates with the likelihood for successful mediation. These findings offer insight and guidance for future policymakers that are involved in conflict mediation in a multi-polar world. Since previous mediation attempts have failed, this paper seeks to offer a way to restructure the post-war state so that peace and stability is achieved, and war recurrence is unlikely. Power-sharing is the most effective means to restructure the post-war state in deeply divided societies such as Syria. The conflict in Syria has real implications for the future of conflict mediation. Based on the failures of previous mediation attempts, this paper offers insight into how the United Nations can capitalize on the tools at its disposal in order to enhance its effectiveness in conflict resolution.

Introduction

The conflict in Syria has been a puzzling one to say the least, leaving many at a crossroads as to what can be done to resolve it. Mediation has plagued international actors working to implement some form of effective conflict resolution in the region. While negotiated settlements have been a popular method used to resolve and shorten civil wars since the end of the Cold War, agreeing on a settlement and signing on that settlement is no easy feat. Syria's case is a model of just how demanding the

negotiation process can be. Policymakers have had difficulty devising a plan that can be agreed upon by both the Syrian government and opposition that would end conflict. The large number of parties in the Syrian conflict has not only led to an indefinite war but has also challenged sustained resolution efforts. The complex nature of the conflict is reflective of the course of modern civil wars: they tend to become multilateral and involve foreign actors, increasing the number of stakeholders and the outcomes desired from the conflict.

Furthermore, learning from Syria's experience will help guide the course of future conflict management practices aimed at the negotiation, mediation, and prevention of civil wars.

An analysis of the Syrian crisis is of great importance to the academic community because the conflict can guide research on policies that will shorten wars and lead to enduring peace agreements. The Syrian conflict is best examined using civil conflict theories to explain what has transpired over the years and gauge what the future of the state holds. Attempts to negotiate the Syrian War have been made since it became evident that the deep-seated conflict had no real end in sight and would continue to degrade the state, cost hundreds of thousands of lives, and displace a significant portion of Syria's population. Beginning in 2011, the war is poised to continue into its eighth year during 2019. Due to the duration of the war, it is crucial to focus on the key features of conflict management: ways to reform institutions, rebuild the state, and implement the necessary power-sharing arrangements that would bring about an enduring peace. The United Nations has played an important role in conflict management, from facilitating negotiations meant to foster cooperation to administering peacekeeping operations. This paper investigates the limits of mediation in Syria, between March 2011 and the spring of 2016. In this paper, scholarly literature will be used to analyze the factors that contributed to the failed negotiation attempts, and eventually will conclude by discussing the implications of United Nations initiatives as mediation continues to be a method to resolve conflicts. Research for this paper began in September 2018 and ended in December 2018. As there is still conflict in Syria, the course of action is likely to evolve beyond the scope of this paper.

Background

The Syrian Civil War began in March 2011 amid peaceful protests against the Assad Regime that turned deadly. The protests occurred in the wake of the Arab Spring uprisings, fueled by protesters' desire for the

government to adopt more democratic practices and response to long-standing authoritarianism of the Assad regime. The government responded to the protests by firing at protesters, killing the first civilians of the war (Specia, 2018). Reports estimate that at least 38 civilians were killed in the initial protests, with that number growing as the protests continued (Slackman, 2011). It has been hard for officials to obtain exact death toll numbers as the Syrian government has blocked reporters and foreign media from entering the state (Slackman, 2011). Even within the country, different authorities issue death certificates and struggle to maintain accurate records that reflect true death tolls (Specia, 2018). The government's violent response to the protests instigated a civil war that as of spring of 2019, will have stretched on for 8 years. It is estimated that more than 400,000 casualties have occurred during the war and millions of citizens have been displaced (Akpinar, 2016). The staggering death toll and number of displaced citizens is partly explained by the protracted nature of the war, but both are also due to the involvement of numerous countries and their overlapping conflicts. Gilsinan described the Syrian War best, as a war of parts: "partly a civil war of government against people; partly a religious war pitting Assad's minority Alawite sect, aligned with Shiite fighters from Iran and Hezbollah in Lebanon, against Sunni rebel groups; and increasingly a proxy war featuring Russia and Iran against the United States and its allies" (Gilsinan, 2015).

This paper focuses mainly on the Assad Regime and its opposition, as well as the role of international actors in the negotiations. The major parties involved at the domestic level are the Assad Regime and loyalists to the regime; the rebel forces that oppose the government, which are the Syrian Democratic Forces, or SDF, and the Free Syrian Army; and the Kurds, fighting to retain autonomy in the Northern region (Gilsinan, 2015). Key parties at the international level are Russia and Iran, backing the Assad Regime; and the US, Turkey, and the Gulf States supporting the rebels (Gilsinan, 2015). The Syrian War has also evolved into a

conflict between foreign powers and the Islamic State of Iraq and Syria, also known as ISIS. The Islamic State believes in a literal interpretation of the Quran, rejects Western political concepts of democracy that place man above God, and supports the strict imposition of Islamic law, which collectively have fueled fears in the West (Jenkins, 2016, p. 9). Foreign powers are divided in their approaches to combat ISIS, despite the fact that they all agree to oppose it. Russia and Iran have maintained that the best way to combat ISIS is to keep the Assad Regime intact; while the United States and its allies maintain the best way to do this is via Assad's ouster (Jenkins, 2016, p. 9).

The involvement of ISIS and the inability of foreign powers to reconcile their differences in combating ISIS has created even more stumbling blocks during the negotiation process. External support from Russia and Iran, for example, has slowed the UN mediation process by decreasing the likelihood of opposing parties to agree to terms of a settlement (Jenkins, 2014). Iran is a long-time ally to the regime, reinforcing skeptics' view that mediations have lacked neutrality (Akpinar, 2016; Jenkins, 2014). In addition, mediators have had trouble achieving proper representation of the rebel groups during negotiations (Akpinar, 2016; Greig, 2013; Lundgren, 2016). The opposition, the SDF and the Free Syrian Army, have tried to unite their efforts under the Syrian National Council, a coalition formed to create solutions for the Syrian people in the wake of the brutal civilian attacks at the hands of Assad ("Syrian National Council Information," n.d.). However, the Council has proven to be distrustful of any promises made by the Assad regime throughout negotiations (Akpinar, 2016; Greig, 2013).

As of December 2018, the Assad regime had gained control of most of the region, in addition to holding the two most populous cities - Aleppo and Damascus. The regime has been unable to penetrate the last few rebel-held regions, but the rebels also lack the cohesion, manpower, and clear leadership to retake government-controlled territory and topple the regime (Hubbard & Patel, 2018). As of

December 2018, the regime and the rebels remained at a stalemate (Hubbard & Patel, 2018). Although the central government maintains majority control, forces have become depleted over time, leaving the regime unable to completely oust rebel strongholds (Hubbard & Patel, 2018). While the Syrian War appears unlikely to end, there is still hope that a settlement can be reached. Examining the course of failed negotiation attempts and their shortcomings will inform future mediation strategies to bring peaceful resolve to Syria.

Negotiation Attempts

The Syrian Civil War has been a case of perpetual mediation. In a most basic sense, mediation is diplomatic intervention, providing the threat of military or economic intervention if diplomatic efforts are disregarded (DeRouen, 2015). Mediation has been routinely used by the international community to address issues for all parties. Due to the fact that one-sided victories can lead to a resurgence in conflict, where violence is no longer a viable choice, mediation requires that third-party countries work with combatants to change both behaviors and perceptions (DeRouen, 2015, p. 231). By ensuring that promises are kept, timetables respected, and matching commitments fulfilled, an agreement is easier to reach (DeRouen, 2015, p. 231). Peacefully ending civil wars, DeRouen argues (2015), requires third-party peacekeepers intervene in order to build trust among the combatants and make sure that commitments to peace are kept. Third-party countries are often reluctant to put their soldiers and resources in harm's way, which makes it easy for combatants to rescind on promises made in the negotiation process, thus spurring continued violence (DeRouen, 2015, p. 231).

The likelihood that all parties involved in a conflict will agree is contingent on "ripeness theory," also known as mutually-hurting stalemate, referring to the readiness to commit to peace (DeRouen, 2015). According to this theory, parties must recognize that fighting is no longer an option. A main form of mediation is diplomatic intervention, which provides the threat of military or economic intervention if

diplomatic efforts are disregarded; by this logic, the conflict may have been resolved if military intervention were threatened (DeRouen, 2015). Parties resolve their conflict only when they are ready to do so, and when each side recognizes that they are in a costly predicament where alternative measures have reached no avail; therefore, at the ripe moment that they will accept resolution measures that have been present for some time (DeRouen, 2015).

Despite high hopes for Syrian negotiations between 2012 and 2016, progress has not been made. Russia, the United Nations, and the Arab League have been crucial actors throughout negotiation attempts, yet their efforts have not produced an end to the conflict. The continued failure to initiate a peace process in Syria begs the question: why have attempts failed? Some would argue that the combatants have not been ready to stop fighting, and that both sides have never reached a point of mutually-hurting stalemate (Hinnebusch & Zartman, 2016). Mutually-hurting stalemate refers to the point where both sides recognize the high costs incurred due to fighting and agree to negotiations and eventually peace because there is little to gain from further combat (DeRouen, 2015, p. 84). Another school of thought maintains that the large number of parties in a conflict increases the number of interests at stake, making conflicts harder to resolve (Cunningham, 2011). There are upwards of 1,000 interest groups fighting in the Syrian War and 9 countries interested in fighting ISIS, which greatly increases the complexity of the war (Gilsinan, 2015). The multi-party, or multilateral, nature of the Syrian conflict has made it hard for negotiators to develop plans upon which all parties can agree (Greig, 2013).

Still others would argue that the divisions among the fighting factions are so profoundly embedded that the only way for violence to subside is for a clear military victory from one side. This school of thought, also known as the 'Give War a Chance' theory argues that letting wars run their natural course to a military victory is more conducive to long-lasting peace and democratization (Toft, 2010). Opposing this view are those who maintain that wars

resolved through established settlements with power-sharing provisions, like those being attempted with the Syrian War, are the most stable in the long term, even though civil wars make it difficult to reach an agreement (Hartzell & Hoddie, 2003).

Several countries, such as Afghanistan, Bosnia, the Philippines, and Northern Ireland have employed power-sharing measures as part of negotiated settlements to conflict (Hartzell & Hoddie, 2003, p. 318). Power-sharing arrangements are a central feature of negotiated settlements and ensure that each party in a conflict can participate in some dimension of governance. Research has also shown that the path to democratization is not limited to certain kinds of states, and those that achieve democracy are less prone to future conflicts (Fortna & Huang, 2012). Regardless, the correlation between lasting peace and negotiated settlements should guide policymakers and encourage members of the international community to commit to third-party peace enforcement to bring peace to deadly conflicts.

To understand why attempts at mediating the conflict in Syria have failed thus far, it is important to highlight the most significant negotiation attempts and their key components. In the context of this paper, the most telling negotiation attempts are the Arab League efforts and the UN-backed peace talks. The inability to reach a settlement has real implications for the future of the state, and while the war may be at a stalemate as of 2018, the instability in the region makes it ripe for continuing resurgence. Literature surrounding war termination provides insight into the course of Syrian mediations. Hultman et. al. (2013) explores the different kinds of UN peacekeeping missions, the importance of multilateral approaches, and the effectiveness delivered by military and police troops. Doyle and Sambanis (2000) champion the peace triangle, or the ability to build peace, which is contingent on three aspects: the level of hostilities, international capacity, and local capacity. According to this logic, if one of these aspects is lacking, it can be made up for by an abundance of the other aspects, so that peace

can still be achieved (Doyle & Sambanis, 2000). Mehler (2009) maintains that including the people conflict directly affects in the negotiation process is necessary for peace to be successful. According to DeRouen, the costs suffered during war have an impact on conflict management, especially regarding civil war recurrence (DeRouen, 2015). Each of these theories can be applied to the conflict in Syria. It is imperative for peacekeeping missions to be tailored specifically to the conflict and be designed to rebuild the state if peace is to be successful.

Arab League Mediation Attempts

The first negotiation efforts of the Syrian Civil War were initiated by the Arab League, a loose confederation representing the Middle East whose goal is to elicit coordination on matters of common interest (Masters & Sergie, 2014). An important guideline among members of the Arab League is their commitment to non-aggressive decisions, which is strengthened by a pact stating that the council will determine the necessary measures to repel aggression against any party involved (Pact of the League of Arab States, March 22, 1945, Article 6). Like most international actors involved with Syria, the Arab League originally left conflict resolution in the hands of other domestic parties involved (Lundgren, 2016). As the war continued, however, the Arab League shifted their stance and tried to engage in mediation. Mediation began early in the conflict, not even a year after fighting began (Lundgren, 2016). Dispatching its Secretary General on a mediation mission from fall of 2011 to early 2012, the Arab League embarked on an “Arab Action Plan” that pushed for a cease-fire and national dialogue in Syria (Lundgren, 2016). While the plan seemed achievable, the Syrian Government never agreed to terms because of their mistrust of Qatar and Saudi Arabia, neighbors who openly wanted to undermine and dismantle the Assad regime (Lundgren, 2016).

As conflict continued, the Syrian government took steps to vehemently suppress the uprising and make mediation unnecessary

(Lundgren, 2016). The Arab League resorted to coercive measures to get the government to cooperate (Akpinar, 2016). Economic sanctions were imposed due to the regime’s reluctance to agree to a cessation of violence and were accepted on October 30, 2011 as part of the Arab Action Plan. The Action Plan also removed Syria from the Arab League. The sanctions were intended to deliver a major blow, severing trade and investment from the Arab world, when Syria was already experiencing sanctions from the European Union and the United States (MacFarquhar & Bakrinov, 2011). The sanctions were also designed to affect Syrian government officials by instituting “a travel ban against scores of senior officials, a freeze on Syrian government assets in Arab countries, a ban on transactions with Syria’s central bank, and an end to all commercial exchanges with the Syrian government” (MacFarquhar & Bakrinov, 2011).

Following these measures, the Assad regime eventually consented to the stipulations of the Arab Action Plan in December 2011 (Lundgren, 2016). As DeRouen discusses (2013), mediation often implies that ignoring diplomatic efforts will result in violence; this conflict may have been resolved if military intervention were threatened. Even though the regime consented, mediation attempts were immediately met with opposition from the Syrian National Council. The leading opposition group at the time, the Council was skeptical of the regime’s compliance and thought they would not sincerely accept the mediation (Lundgren, 2016). High levels of mistrust between the government and opposition contributed to the inability to reach an agreement. Literature points to this as a roadblock to achieving a peaceful resolution to conflict through negotiated settlement because ethnic identities are fixed and relatively non-negotiable (Gurses & Mason, 2008). Attempting to amplify trust between the factions and determine the regime’s commitment to the Arab Action Plan, the Arab League deployed 166 civilian and military observers that would carry out basic monitoring activities of the conflict (Lundgren, 2016). The mission lacked the

staffing, training, and equipment to make any significant impact, and as conflict worsened it led to disunity among the Arab League members.

Peacekeeping missions, as defined by Doyle and Sambanis (2000), encompass four different levels: monitor/observer missions, enforcement missions, traditional peacekeeping, and multilateral missions. Monitor/observer missions are the most basic: personnel are deployed to take note of what is happening on the ground and report back to the international organization. Monitor missions have no ability to protect civilians or ensure that violence stops because they only report what is happening on the ground. Enforcement missions, on the other hand, involve sending military or police personnel to the host country to impose order and protect civilians. The military threat incentivizes the fighting groups to commit to peace. In this regard, an enforcement mission would have fared better at encouraging the parties to commit to peace in Syria than the Arab League's observer mission. This indicates how imperative it is for international actors to account for the depth of hostility, the number of factions, and the level of economic development when determining how much assistance is necessary for peace (Doyle & Sambanis, 2000). On January 22, 2012, Qatar and Saudi Arabia withdrew their support, pushing for the Arab League to adopt a tougher position on the Syrian government to force cooperation and, eventually, a regime change (Lundgren, 2016). The observer mission suspended its activities on January 28, 2012 marking the failure of the first negotiation attempt (Lundgren, 2016). It is important to note that the Arab League negotiations were relatively un-inclusive of other groups, further contributing to their failure. This was also a factor that would contribute to the failure of the United Nations-led negotiations to follow. As the observer mission unraveled, the next phase of negotiations was assumed by the United Nations.

United Nations Negotiations: First Round

In February 2012, amidst escalating tensions and violence in Syria, an international initiative arose that would combine international and regional efforts through the appointment of former United Nations Secretary-General and veteran mediator, Kofi Annan, as the joint special envoy of the UN and Arab League for Syria (Akpinar, 2016). The special envoy is a high-level representative of the United Nations and the Arab League for Syria, whose mission is to bring an end to violence and promote a peaceful solution through diplomatic relations (United Nations Press Release, 2012). Prior to becoming the special envoy, Annan helped bring peace to a difficult conflict in Kenya in 2008. In late March 2012, Annan proposed a six-point plan that would end violence and make room for diplomacy. The six-point plan outlined a framework for a UN-supervised truce that would lead to a wider transformation of Syria's government (Lundgren, 2016, p. 4). On April 12, 2012, a ceasefire, a key part of the plan, was established and the UN deployed 300 observer personnel to supervise Syria in observation patrols across the country (Lundgren, 2016, p. 4). At first the ceasefire, with the help of the UN observer personnel, reduced the intensity of hostilities for about six to eight weeks. However, in early June 2012, violence reignited, and the UN observers ended operations, paving the way for the Geneva Peace Talks (Lundgren, 2016). Ceasefires alone rarely result in conflict termination and Doyle and Sambanis (2000) argue the need to adapt UN missions to each conflict. In addition, the number of deployed personnel is imperative for peace operations to be sustained, with military and police troops being the most effective in protecting civilians and signaling resolve (Hultman et. al., 2003). Military and police personnel were key components missing from the UN supervision mission in Syria.

In response to UN supervisors pulling out, Annan convened an action group for Syria, consisting of states with common interests and influence in the conflict. Meeting in Geneva in June 2012, the action group laid out a set of guidelines for a peace process in Syria, including

the establishment of a transitional government (Lundgren, 2016). The action group consisted of representatives from the UN and the Arab League, China, France, Russia, the United Kingdom, the United States, Turkey, Iraq, Kuwait, Qatar, and the European Union. (United Nations, 2012, para. 1). The outcome of the Geneva Conference was outlined in the Geneva Communique, which marked an acceleration of demands for regime change that would take place through national dialogue (Hinnebusch & Zartman, 2016). The communique particularly emphasized constitutional reform, the institution of a multi-party system, and a transitional government of which membership would be mutually agreed upon by the government and the opposition (Hinnebusch & Zartman, 2016). The disunity that had marked the Arab League's initiatives carried over to UN negotiations and infiltrated the mediation process. While the intent of the first round of Geneva negotiations was to bring the great powers together to discuss an end to conflict, the parties failed to agree on the fate of Assad (Akpinar, 2016).

In addition, the key parties of the conflict were not represented at the bargaining table. The Syrian government and the Syrian opposition were not present during the meeting—peace talks can rarely move forward without the presence of the parties to the conflict, especially because instating reform requires consent from the government and the opposition. Who is represented at the bargaining table creates problems for the peace process, and while including too many groups can convolute the mediation, it is necessary for at a minimum the fighting factions to be represented for anything to be executed (Mehler, 2009). Not only were key players unrepresented, but two major powers staunchly opposed each other on whether the regime should remain in power. The US insisted that Assad should step down, while Russia vehemently opposed a regime change (Akpinar, 2016). Russia's position was about protecting national security interests, as the fall of Assad would mean the spread of terrorism into its borders and further radicalization of the Middle

East (Kozhanov, 2016). For the US, opinions centered on correcting humanitarian atrocities committed by Assad, sustaining regional stability, and promoting democratization determined their position (Sorenson, 2013). Geneva highlighted the vastly different views the great powers held on the future of Syria and its role in international politics. Ultimately, Annan could not resolve the differences in the international community that would weaken Russia's support for the regime (Lundgren, 2016).

United Nations Negotiations: Second Round

Stemming from the failure of the first round of negotiations and the inability of Russia and the US to reconcile their differences, in the summer of 2012 Annan stepped down. Annan was replaced by new envoy, Lakhdar Brahimi, an Algerian diplomat whose career prior to Syria included peacemaking efforts in Lebanon, Haiti, Afghanistan, and Iraq ("Lakhdar Brahimi," 2019). In his resignation, Annan criticized the international and regional powers for failing to rally behind his efforts and provide the leverage necessary to execute the plan (Lundgren, 2016). Disunity among the international community was further exemplified by those who celebrated the attempts as offering the only viable solution since third-parties were reluctant to intervene, and those arguing the attempts legitimized Assad and allowed the continued militarization on the ground (Akpinar, 2016). According to some scholars, the perceived failure can be attributed to the early phase of mediation, that the parties need to reach a point of "mutually hurting stalemate" before negotiation is appealing (DeRouen, 2015). Early on, Assad had no incentives to enter negotiations given that the opposition was weaker and the international community was at a crossroads on how to deal with the conflict and whether to intervene (Akpinar, 2016).

When Brahimi assumed the role of special envoy in September 2012, he adopted a more cautious approach, stressing the futility of continued violence and the humanitarian costs it imposed on the Syrian population (Lundgren, 2016). Brahimi faced the challenges of a conflict

that had intensified, expanding to include even more parties than before. Between September 2012 and January 2014, “the conflict began spreading into neighboring countries; chemical weapons were introduced; and the Islamic State and the Kurds became more influential” (Akpinar, 2016). Moreover, mediation efforts were further complicated as the need to offer attractive bargains to satisfy the conflicting interests of multiple parties became apparent. In January 2014 the second round of Geneva talks ensued, bringing together representatives from the United Nations, the Arab League, the European Union, and 30 other states; however, this time the talks also brought the Syrian government and the opposition, represented by the Syrian National Coalition, face-to-face (Akpinar, 2016). While the US and Russia set aside their differences to leverage their power over the parties, the meeting again failed to bring an end to conflict and ushered in new envoy Staffan de Mistura (Akpinar, 2016).

The new envoy, Staffan de Mistura, was met with some of the same challenges as his predecessor. Some accused the envoy of being too sympathetic to Assad and criticized him for trying to exert Western influence. A key point of contention was that de Mistura failed to propose a plan with international guarantees of an agreement and one that accounted for the rejection of the peace process (Akpinar, 2016). International peacekeeping intends to create a climate where fighting is no longer a reality and where peace is durable (DeRouen, 2015). Because greater international capacity is linked to greater success rates of peacebuilding, it is crucial for the UN to find ways to enforce or guarantee its initiatives (Doyle & Sambanis, 2000).

United Nations Negotiations: Third Round

On October 30, 2015, members from the United Nation Security Council, along with 20 other countries, met in Vienna to establish the International Syria Support Group (ISSG) (Akpinar, 2016). On December 18, 2015, Security Council Resolution 2254 was adopted, “which reiterated the support for a ceasefire, humanitarian access to besieged areas, and

called for elections to be held under UN supervision within the following 18 months” (Akpinar, 2016, p. 2296). Though promising, the future of Assad was never outlined in the Vienna meetings, and adequate representation from the rebels was missing. Again, the problem of which parties are present at the negotiating table became an issue in this round of negotiations (Mehler, 2009).

Illegitimate representation of the fighting factions was a recurring theme throughout the peace talks. The lack of representation was due in large part to the high levels of distrust among the groups and their hesitancy to be in the same room as the regime amid hostilities and continued violence on the ground. Still, Geneva III talks opened in February 2016 and were again halted for a several reasons: first, the opposition withdrew in response to the government’s attack on Aleppo; second, the presence of Russian-backed groups threatened the legitimacy of the peace talks in the eyes of the opposition; and third, key parties, such as the Islamic State and the Kurds were unrepresented (Akpinar, 2016).

Throughout the process, the opposition maintained that the only way a cease-fire could take place is if a transitional government was instituted that would force Assad to step down. Despite the setbacks, a ceasefire was agreed to in February 2016. This ceasefire was the most positive turning point in the war, with the longest period of peace stretching between February 2016 and March 2016 (Lundgren, 2016). However, in Aleppo and surrounding areas, “groups not covered by the ceasefire operated alongside groups that were, the ceasefire proved vulnerable, as the intermixing of groups made it difficult to contain hostilities” (Lundgren, 2016, p. 6). While the UN-backed peace talks were a step in the direction of peace, they never fully took off due to continuing conflicting interests between the US and Russia. In addition, the government and the opposition had not yet exhausted their military capabilities and did not see negotiation as an option to end conflict.

The Role of Foreign Powers

The diverging interests of the US and Russia have been evident throughout the conflict and all mediation attempts in Syria. The relative inability for the two superpowers to reconcile their own political and strategic agendas contributed to the unfortunate course of the peace talks. The logic of Doyle and Sambanis (2000) can extend to the gridlock between Russia and the US: peace-building plans are unlikely to be effective unless international actors cease to support war in favor of supporting peace. Russia's military involvement reinforces this logic. From the beginning, the top priority for Russia was to reestablish the military and political capacities of the Assad regime to cement their position both regionally and internationally (Kozhanov, 2016). The situation, for Russia, has primarily been about protecting its own national security interests. The downfall of the Assad regime would mean the further radicalization of the Middle East and the possible spread of terrorism into Russia's borders (Kozhanov, 2016). Furthermore, Russia has worked very hard to put their stamp on conflict resolution through the presence of military forces and providing military support to the regime. Unlike Russia, the US has been reluctant to engage militarily. For the West, Assad is linked to the source of the problem rather than the solution (Kozhanov, 2016).

At the same time, both superpowers have keen interest in combating terrorism with the involvement of ISIS, which is indicative of the internationalized component of the war. In addition, the US was hesitant to take any actions that would undermine the nuclear deal struck with Iran that was signed on November 24, 2013. All these interests combined have clouded the main goal of mediation efforts, which is to bring peace to Syria, as the two superpowers seek to leverage their power to force an agreement. According to Hinnebusch and Zartman (2016), leverage is one of the five major challenges that negotiators face and one that explains faltered UN mediations: "without the means to follow through on threats or promises, the mediators were reduced to

making warnings and predictions" (Hinnebusch & Zartman 2016, p. 1).

The evidence of power leveraging was seen at all levels of the UN-backed negotiations where the mediators disagreed on the fate of Assad. Thus, no concrete plan was ever conceptualized (Lundgren, 2016). Realizing the inability to agree on those terms and the implication it would have for the opposition, any peace plan avoided the question of Assad and used vague terminology like "cessation of violence" to appeal to both sides—in effect not making any guarantees. The consolidation of the Islamic State between 2014-2015 changed the landscape, shifting international attention in the war toward prioritizing counter-terrorism efforts over conflict resolution in Syria (Lundgren, 2016). These mutual interests led to Russia beginning to pull some of its military out of Syria and push to regenerate negotiations (Kozhanov, 2016). Despite the good intentions of the October 2015 Vienna talks, the most contentious issues could not be agreed upon, highlighting the shortcomings in changing the course of the war.

Stumbling Blocks to Mediation

Some striking similarities exist across every negotiation attempt, demonstrating the most predominant explanations for what went wrong. The number of parties, groups, and states involved disturbed the mediation process. The immense hostilities and distrust among the factions thwarted any proposals, and disunity on the United Nations Security Council, UNSC, between the United States and Russia, and among key actors made it unlikely for a concrete plan to be implemented. Despite institutional constraints to UN effectiveness, this last stumbling block is especially important for driving the future of diplomacy in a multi-polar world. The emergence of a multi-polar age requires a multilateral approach agreed upon by the actors, otherwise there will be real consequences for any peace process in the future (Hill, 2015). This new era requires "development of new and effective mediation strategies, as original and dynamic ideas are

developed to overcome new obstacles” (Hill, 2015, p. 472).

Number of Parties Involved

The first major problem with the conflict itself that carried over to the mediation process was the number of parties involved. As the number of parties in a conflict grows, the chances for successful mediation decreases (Greig, 2013). There were too many conflicting interests from all of the parties, which made it almost impossible to adopt a plan that satisfied all. According to Cunningham (2011) and Greig (2013), navigating an end to conflict is harder when there are too many parties involved. These conflicts endure “because more veto players make bargaining harder, leaving combatants less able or willing to negotiate an end to warfare” (Cunningham, 2011, p. 183). There are three reasons why the number of parties decreases the likelihood for negotiation settlements. First, a mediator faces a difficult task coordinating communications among parties while also limiting the chances for miscommunication simultaneously (Greig, 2013, p. 50). Second, the more parties involved means more spoilers to the peace process (Greig, 2013; Cunningham, 2011). Spoilers undermine the peace process when the warring parties feel their power and interests are threatened by a peace agreement. When spoilers are successful, war is renewed and casualties increase, as was the case in the failed peace accords of Angola in 1992 and Rwanda in 1994 (Stedman, 2000). In both cases, the casualties resulting from failed peace were much greater than those that resulted from fighting before the signing of a peace agreement (Stedman, 2000). Lastly, a lack of enforcement decreases the confidence that each side will stick to the agreement (Greig, 2013, p. 50).

Cunningham and Greig put forth a compelling argument that offers an explanation to why agreements have failed to halt violence for an extended period. Multi-party agreements often produce partial agreements, where peace is implemented among some of the parties, but other players are excluded. These partial agreements often are a contributing factor to

continued violence and unstable situations (Cunningham, 2011, p. 185). The fragility of multiparty ceasefires and their likelihood to crumble explains why any leeway made on a truce in Syria was short-lived. For a complete negotiated settlement to be reached, every party must engage in a cost-benefit analysis of resolution. Cost-benefit analysis requires the parties to believe they will do better from negotiating than continued violence, that the benefit of peace outweighs the cost of violence (Cunningham, 2011, p. 185). Since the opposition didn’t trust the regime to stay true to any agreements and there were no incentives for the regime to cooperate, violence seemed like the better alternative for both the central government and the opposition.

The multi-party nature of the conflict has also played out in the misrepresentation of key parties. Arguably, there have been so many factions involved that effective representation at the negotiation table was unachievable. Misrepresentation has occurred because of the multi-party nature of the conflict. It has made it difficult to pinpoint exactly which groups are fighting, and who should be involved at negotiations to bring peace to Syria. At numerous stages throughout the negotiations, the opposition was largely unaccounted for, whether it was due to the inability to identify leadership or the refusal to be in the same room as the government, this presented a real problem for getting any agreement signed. By giving the ability to choose who was present at the meetings to the regime, there were negative ramifications for the opposition. Because of the many sub-divisions within the opposition, it has been nearly impossible to identify all the actors necessary to participate in a peace process (Greig, 2013, p. 51). Misrepresentation of key parties at negotiations can send the message that the interests they seek or their motives for fighting are not of concern, thus there is little incentive for them to end combat. If key parties are excluded from mediation or interests are ignored, implementing peace accords becomes even harder. Angola has been a prime example of failed peace implementation. The 1991 Angola agreement implemented ‘winner-take-

all' elections, but when one of the major factions lost the election in 1992, war reignited (O'Toole, 1997). Those involved with brokering peace must be mindful of what the warring factions seek in order to ensure the parties do not return to violence.

Hostilities

The second major problem facing negotiators is the characteristics of the conflict itself. The warring factions have such deep-seated hostilities toward each other that generating enough trust between them for an agreement was highly unlikely. This was exemplified in every instance where parties came close to an agreement and then quickly reverted to violence.

Fear and mistrust have been rampant throughout the course of this conflict. "The authoritarian nature of the regime, demonstrated by its harsh treatment of political challengers in the past, burdened its ability to convince the opposition that conceding to negotiations was a real option" (Lundgren, 2016, p. 9). On one hand, the regime did not want to relinquish their power in fear of what would happen; on the other end, the opposition had suffered immensely at the hands of the regime, reinforcing their refusal to back down unless Assad conceded. Escalating violence further contributed to the opposition's uniform belief that Assad must go, illustrating the inflexible nature of both sides' refusal to budge on demands. Since the regime had no incentive to be flexible on this demand either, "disputes over this issue have recurred throughout the war and remained one of the central barriers to a negotiated settlement" (Lundgren, 2016, p. 10). Furthermore, as violence has escalated, the level of hostility increased with it and has encouraged, and will continue to encourage, more violence (Greig, 2013).

International Disunity

As was evident in the examination of the role of Russia and the different stages of UN peace talks, disunity among international actors has hindered the negotiation process. The international community has been unable

to unite under a common approach to end the Syrian Civil War, because their attention has been on self-seeking interests tied to questions of Assad's leadership, which ultimately led to the downfall of negotiation attempts. Treating the removal of the Assad regime as a precondition rather than a result of a settlement hampered negotiations from the beginning (Hinnebusch & Zartman, 2016). Put clearly, "one should not demand as a precondition what one hopes to gain in negotiation, since this removes an item of exchange for the other party" (Hinnebusch & Zartman 2016, p. 18).

Throughout each level of the UN negotiations, the US and Russia failed to agree on a common approach for Syria dismantled mediation efforts, despite their collaborations in the Geneva Communique and the ceasefire of 2016 (Lundgren, 2016). Ultimately, these fundamental conceptual differences within the members of the UN about conflict resolution diminished the Security Council's ability to demonstrate an unwavering and united front (Jafarova, 2014, p. 44). Academics argue that institutional constraints of the UN also resulted in faltered negotiations (Jafarova, 2014). However, if the international community, such as the United States and Russia, were able to set aside their differences and focus on a multilateral strategy that appealed to both the regime and the rebels, added constraints would not have been necessary.

Structuring the Post-War State

It is apparent that mediation has been unable to resolve tensions in Syria. One possible way to bring stability to Syria would be through partition: dividing up the state into sovereign territories. Different groups, such as Sunni rebels, the Kurds, and any other ethnic group seeking autonomy, would have control over their own sovereign territory. This option may appeal to several of the opposition factions. However, the process of dividing up sovereign entities is difficult, exacerbates disagreements, and does not ensure that fighting will cease (Paris, 1997).

Perhaps one of the reasons a settlement was never reached was that ceasefires were

negotiated and instated, as opposed to a fully developed negotiated peace settlement. Agreements and ceasefires without multi-dimensional power-sharing are likely to be short-lived, while those that incorporate multilevel power-sharing arrangements are likely to endure (DeRouen, 2015; Hartzell & Hoddie, 2003). Power-sharing is most commonly seen in political, territorial, economic, and military sectors (Hartzell & Hoddie, 2003). Political power-sharing ensures equal representation at the political center; military power-sharing integrates government and rebel armies into one coherent force; territorial power-sharing gives regionally concentrated groups the opportunity to self-govern; and economic power-sharing redistributes government resources to those who experienced economic discrimination prior to the conflict. These arrangements typically create a sustaining peace because of their capacity to foster security among former combatants, while also minimizing the danger of one party becoming dominant (Hartzell & Hoddie 2003).

Power-sharing, dividing, and balancing power among rival groups would be especially conducive to peace in Syria because it would address the grievances of the deeply divided society, where many have suffered under the Assad regime. Some researchers, such as Mehler (2009) argue that power-sharing is not inclusive enough and is undemocratic due to the absence of elections. Democracy and peace go hand-in-hand, Mehler asserts; therefore, power-sharing will only benefit upper classes and will not give most citizens a voice in the political process (2009). In Syria's case, power-sharing would address the root of the conflict and disincentivize a resurgence of the violence that has plagued this conflict. It would ensure that competing groups have a voice in government, so that no single group has a monopoly of power. Even if power-sharing isn't always associated with democracy, it is associated with enduring peace, which is essential after Syria's intense and prolonged struggle (Hartzell & Hoddie, 2003).

There are many reasons why democracy may not be the best choice when resolving the

Syrian Civil War. While democratic states are less likely to experience conflict, peace is ultimately the ideal goal before democracy. The potentially destabilizing effects that market democracy can impart on war-shattered states requires the international community to tailor peacebuilding operations to the needs of the state, rather than on the premises on which it should operate (Paris, 1997). Tailoring peace operations to the state means international and private agencies responsible for implementing peace accords must consider that Western ideals may not be effective in war-torn states. Bringing peace and stability to a state is far more essential than implementing democratic practices directly following a war.

Now that the war is at a stalemate, it is important to note the current conditions that make the state vulnerable. According to DeRouen (2015), violence can persist once a war ends due to the lack of state capacity to deter it and be exacerbated by a depleted economy. Effective peace-building requires acknowledgement of the three elements of the peace-building triangle, which include: level of hostility, international commitment and local capacity (Doyle & Sambanis, 2000). Following this logic, the bigger the space is in the triangle, the increased likelihood there is for peacebuilding success. Moreover, a peacekeeping mission that would assume the role of peace enforcement by deploying military and police personnel to the region would create an even more durable peace. This type of peacekeeping mission would be beneficial to post-war Syria because UN operations are responsible for disarming thousands of combatants and it is low cost in comparison to other efforts (DeRouen, 2015). Finally, this would allow attention to be focused on rebuilding state institutions and the economy.

When considering reconciliation, an effective and comprehensive UN peacekeeping mission coupled with a system of federalization would enable groups that are currently at war with each other to live in society harmoniously. For the political sector of power-sharing, Lijphart's consociational model for deeply divided states would best apply to Syria

(Hartzell & Hoddie, 2003). The consociational model hinges on the establishment of a grand coalition; the mutual veto; a proportional electoral system and proportionality in the distribution of administrative appointments; and either territorial or corporate autonomy (Hartzell & Hoddie, 2003). Ideally, giving the fighting factions in Syria their own regional autonomy would disincentivize conflict and reduce hostilities among the warring factions. Burundi, for example, is a state that has been successful in achieving peace and stability due to proportionality, group autonomy, and the minority veto (LeMarchand, 2006). Even though the work of LeMarchand (2006) focuses on the consequences associated with this particular model, the existence of grand, coalition-like conditions allows for the socio-political factors to be addressed by giving competing groups a voice in central government. Politics are not the only area of importance. As stated earlier, societies that implement all four dimensions of power-sharing are more likely to enjoy lasting peace and stability. If political, economic, territorial, and military power-sharing provisions are implemented, the failure of one provision can be made up for by the existence of others, strengthening the chances for stability. Furthermore, power-sharing arrangements supplemented by third-party enforcement create the conditions necessary for lasting peace by providing security and ensuring that stipulations are adhered to (Hartzell & Hoddie, 2003). Using the UN to maintain peace through military and police would provide adequate third-party enforcement.

Future of United Nations Initiatives

The UN will continue to play a crucial role in the mediation of civil wars across the globe and will be called upon to develop social, economic, and political institutions that prevent conflicts from turning violent (Doyle & Sambanis, 2000). Yet, if the UN is to increase its effectiveness in the modern world, drastic steps to rethink its methods must take place. International intervention has been a major focal point of the protracted Syrian conflict and

has implications for future conflict management all over the world. While intervention often occurs in the most intractable conflicts, it can increase the duration of the war. DeRouen argued that intervention can extend war if the party with external support believes that intervening will result in military victory (DeRouen, 2015, p. 250). The external support to the Assad regime and the lack of neutrality in mediation has decreased the likelihood for parties to agree to terms of a settlement. Conflict mediation that enhances trust among parties should guide the future endeavors of the international community, meaning it is imperative that members of the UN operate under a united front to lessen the potential for stumbling blocks (DeRouen, 2015, p. 252). If the UN can consolidate its interests, peacekeeping and humanitarian law can better aid in the reconciliation process and deter a recurrence of violence (DeRouen, 2015, p. 251).

The future of Syrian conflict mitigation will depend on the ability of Russia and the US to make credible commitments. If the Security Council is to be effective in mitigating future conflicts, the members must facilitate national dialogue while coercing spoilers to resolution with consequences (Jafarova, 2014). Furthermore, policymakers can learn a great deal from mediation failures. It is evident that plans contingent on strict parameters will gain little momentum, hence the need for flexibility and an emphasis on facilitating international security. Since institutional challenges make it hard for the Council to act in a unified manner, future success will rely on the ability of members to look past their own interests and deliver significant results. The Security Council has some of “the most potent policy instruments that allow it to adopt swift and effective actions in response to the most pressing challenges to international peace and security” (Jafarova, 2014, p. 50). Capitalizing on the policy tools of the Security Council, such as the ability to use force to make commitments binding, will reinforce the actions necessary for navigating conflicts in the multi-polar world. It may even be necessary to adopt a mandate that

would bind members to peace enforcement in the future.

Conclusion

The Syrian Civil War has been fraught with negative impacts both domestically and internationally. It has seen repeated attempts at mediation characterized by recurring roadblocks. From the Arab League negotiations to the UN-backed mediation attempts, the most apparent obstructions to peace was the multi-party nature of the conflict, disunity at the international level, and sustained hostility. Following the Cold War, negotiated settlements have been the most prevalent means of terminating wars. However, the war in Syria proves that the peace process is challenging, especially if there are many interests at stake.

The Syrian conflict is a product of many institutional failures at the international level (Jafarova, 2014). If policymakers are to take anything away from this conflict, it is that Syria is the beginning of a new era of civil wars; wars that will require a multilateral approach to resolve. Understanding what went wrong in negotiations is essential. If these problems are not addressed, the future of diplomacy will be threatened. Even though negotiations failed, “multilateral power can be constructed and exerted with effectiveness by mediators in civil wars, even in the most fraught and polarizing crises of the new multipolar international system” (Hill, 2015, p. 472). Furthermore, while institutional constraints severely limit the efforts of the UN, if parties had reconciled their differences in support of a plan that addressed the root causes, then a settlement could have been achieved.

In the aftermath of war, it is crucial to focus on peacebuilding to bring stability to the state. While democratization is routinely sought, adopting a strategic approach will preserve the goal of democratization while recognizing the vulnerability of war-torn states. By making gradual changes, designing a central government that rewards moderation, promoting equitable growth policies, creating effective coordinating bodies, and extending the duration of peace operations, the UN can ensure the state

achieves stability (Paris, 1997). The UN Security Council must examine internal dynamics and adopt a more interventionist approach to make credible commitments and assist in peacebuilding.

References

- Akpinar, P. (2016). The limits of mediation in the Arab Spring: the case of Syria. *Third World Quarterly* 37(12), 2288–2303. <https://doi.org/10.1080/01436597.2016.1218273>
- Cunningham, D. E. (2011). *Barriers to peace in civil war*. Cambridge: Cambridge University Press. doi: 10.1017/CB09780511993374
- DeRouen, K. (2015). *An introduction to civil wars*. Thousand Oaks, CA: CQ Press.
- Doyle, M., & Sambanis, N. (2000). International peacebuilding: a theoretical and quantitative analysis. *American Political Science Review* 94(4), 779-801.
- Fortna, V. P., & Huang, R. (2012). Democratization after civil war: a brush clearing exercise. *International Studies Quarterly* 56(4), 801–808.
- Gilsinan, K. (2015, October 29). The confused person’s guide to the Syrian Civil War. *The Atlantic*. Retrieved from <https://www.theatlantic.com/international/archive/2015/10/syrian-civil-war-guide-isis/410746/>
- Greig, M. J. (2013). Intractable Syria? Insights from the scholarly literature on the failure of mediation. *Penn State Journal of Law and International Affairs* 2(1), 48-56. Retrieved from <https://elibrary.law.psu.edu/cgi/viewcontent.cgi?article=1029&context=jlia>.
- Gurses, M., & Mason T. D. (2008). Democracy out of anarchy: the prospects for post-civil war democracy. *Social Science Quarterly* 89(2), 315–36.
- Hartzell, C. A., & Hoddie, M. (2003). Institutionalizing peace: power sharing and post-civil war conflict management. *American Journal of Political Science* 47(2), 318-332.
- Hill, T. H. J. (2015). Kofi Annan’s multilateral strategy of mediation and the Syrian Crisis: the future of peacemaking in a multipolar world? *International Negotiation* 20(3), 444-478. <https://doi.org/10.1163/15718069-12341322>.
- Hinnebusch, R. I., & Zartman, W., et al. (2016). *UN mediation in the Syrian Crisis: from Kofi Annan to Lakhdar Brahimi*. New York: International Peace

- Institute. Retrieved from <http://www.jstor.org/stable/resrep09643>.
- Hoddie, M., & Smith, J. M. (2009). Forms of civil war violence and their consequences for future public health." *International Studies Quarterly* 53(1), 175-202.
- Hubbard, B., & Patel, J. K. (2018, February 8). Why is the Syrian War still raging? *The New York Times*. Retrieved from <https://www.nytimes.com/interactive/2018/02/08/world/middleeast/war-in-syria-maps.html>
- Hultman, L., Kathman, J., & Shannon, M. (2013). United Nations peacekeeping and civilian protection in civil war. *American Journal of Political Science* 57(4), 875-891.
- Jafarova, E. (2014). Solving the Syria knot: dynamics within the UN Security Council and challenges to its effectiveness. *Connections* 13(2), 25-50. Retrieved from <https://www.jstor.org/stable/26326356>.
- Jenkins, B. M. (2014). *The dynamics of Syria's Civil War* [PDF file]. Santa Monica, CA: Rand Corporation. Retrieved from <https://www.rand.org/pubs/perspectives/PE115.html>
- Kozhanov, N. (2016). Russian military involvement in the Syrian Conflict: what happens next? In *Russia and the Syrian Conflict: Moscow's Domestic, Regional and Strategic Interests* (pp. 59-74). Berlin, Germany: Gerlach Press. doi:10.2307/j.ctt1hj9wjf.8.
- Lakhdar Brahimi (2019). In *Encyclopaedia Britannica*. Retrieved from <https://www.britannica.com/biography/Lakhdar-Brahimi>.
- Lemarchand, R. (2006). Consociationalism and power sharing in Africa: Rwanda, Burundi, and The Democratic Republic of Congo. *African Affairs* 106(422), 1-20. <https://doi:10.1093/afraf/adl041>.
- Lundgren, M. (2016). Mediation in Syria: initiatives, strategies, and obstacles, 2011–2016. *Contemporary Security Policy* 37(2), 273-288. <https://doi.org/10.1080/13523260.2016.1192377>.
- MacFarquhar, N., & Bakri, N. (2017, November 27). Isolating Syria, Arab League imposes broad sanctions. *The New York Times*. Retrieved from <https://www.nytimes.com/2011/11/28/world/middleeast/arab-league-prepares-to-vote-on-syrian-sanctions.html>
- Masters, J., & Sergie, M. A. 2014. The Arab League. *Council on Foreign Relations*. Retrieved from <https://www.files.ethz.ch/isn/185164/The%20Arab%20League%20-%20Council%20on%20Foreign%20Relations.pdf>
- Mehler, A. (2009). Peace and power sharing in Africa: a not so obvious relationship. *African Affairs* 108(432), 453-473.
- O'Toole, K. (1997, November 19). *Why peace agreements often fail to end civil wars* [news release]. Retrieved from <https://news.stanford.edu/pr/97/971119civilwar.html>
- Pact of the League of Arab States, March 22, 1945 (1). *The Avalon Project*. Retrieved from http://avalon.law.yale.edu/20th_century/arableag.asp
- Paris, R. (1997). Peacebuilding and the limits of liberal internationalism." *International Security* 22(2), 54-89.
- Slackman, M. (2011, March 25). Syrian troops open fire on protestors in several cities. *The New York Times*. Retrieved from <https://www.nytimes.com/2011/03/26/world/middleeast/26syria.html>
- Sorenson, D. S. (2013). US options in Syria. *Parameters* 43(3), 5-16.
- Specia, M. (2018, April 13). How Syria's death toll is lost in the fog of war. *The New York Times*. Retrieved from <https://www.nytimes.com/2018/04/13/world/middleeast/syria-death-toll.html>
- Stedman, S. J. (2000). Spoiler problems in peace processes. In P.C. Stern & D. Druckman (Eds.) *International conflict resolution after the Cold War* (pp. 178-224). Washington, DC: National Academy Press.
- Syrian National Council, n. d. Information on the SNC. Retrieved from <http://syriancouncil.org/>
- Toft, M. D. (2010). Ending civil wars: a case for rebel victories? *International Security* 34(4), 7-36.
- United Nations. (2012, February 23). *Kofi Annan appointed Joint Special Envoy of United Nations, League of Arab States on Syrian Crisis* [Press Release]. Retrieved from <https://www.un.org/press/en/2012/sgsm14124.doc.htm>.
- United Nations. (2012, June 30). *Action Group for Syria final communique* [Press Release]. Retrieved from <http://www.un.org/News/dh/infocus/Syria/FinalCommuniqueActionGroupforSyria.pdf>

Connected and Automated Vehicles: Urbanization versus Suburbanization

Brett Swan

University of Delaware

Testing has begun on fully connected and automated vehicles (CAVs). Within a decade or two, fully automated vehicles will be on public roads. Just as the automobile played significant role in changing the way people lived, so too will CAVs. However, that role is still unclear. CAVs, also known as self-driving vehicles, can lead a new wave of suburbanization, urbanization, or a mixture of both. To best prepare for the intended and potentially unintended consequences of CAVs, the federal, state, and local governments must be proactive in steering CAVs towards sustainable growth.

Introduction

Just over a century ago, advancement in transportation technology began to aid people in reshaping the way they lived their lives. As the automobile became more immersed in society during the 20th century, people were given the tool they needed to move out of the city and into the suburbs where housing and land prices were cheaper. We are now nearing the introduction of a new transportation technology - the automated vehicle. Connected and automated vehicles, also known as self-driving cars, were once only imaginable in science fiction. Now, we need to analyze and prepare for how automated vehicles are going to change the way we live our lives. If regulations are not implemented at both the state and federal level, the proliferation of autonomous vehicles could lead to a new wave of unsustainable suburbanization.

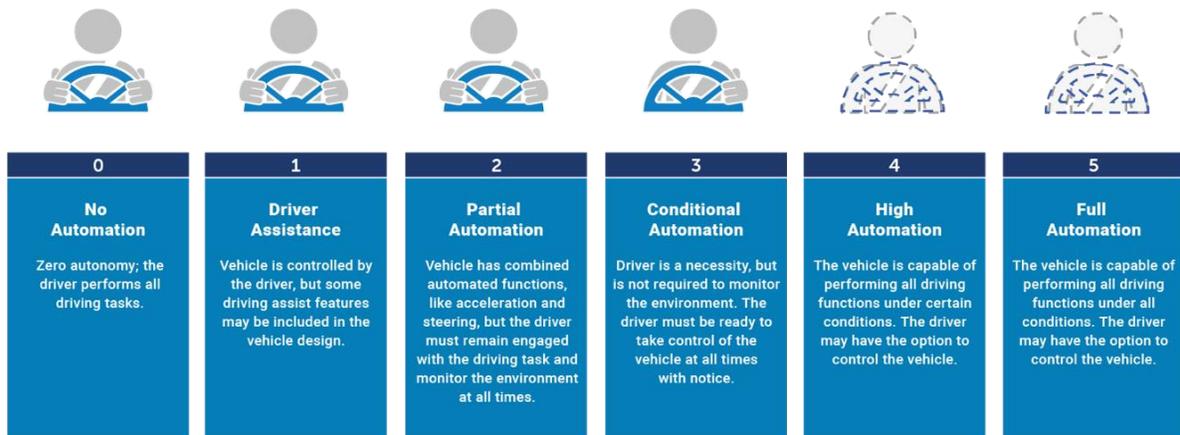
Levels of Automation

There are 6 levels, 0-5, of connected and automated vehicles (CAVs) identified by the Society of Automotive Engineers. Level 0 is no

automation. Most vehicles today fall into this category, where the driver performs all driving related tasks. Level 1 vehicles have some driver assistance features like adaptive cruise control, but the driver is still in control of all driving tasks. Partial automation occurs at level 2. This is currently the highest level achieved by commercially available CAVs. Tesla's Autopilot is an example of a level 2 CAV currently available to consumers. Level 3 includes conditional automation. In these vehicles, a driver is required, but they are not needed to monitor the environment. The driver always must be ready to take control of the vehicle. High automation occurs at level 4. At this level, the vehicle can perform all driving related functions. These vehicles can only operate in certain conditions and still may need the driver to take control. Full automation is achieved at level 5. Here the vehicle can perform all driving functions in all environments and the passengers are nothing more than passive occupants ("Automated Vehicles for Safety", 2018). These levels are further explained in Figure 1.

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS

Full Automation



Timeline for connected and automated vehicles

Important to the discussion about how CAVs will impact the urban and suburban environments is the timeline for adoption. Projections for a date when fully automated vehicles will be on the road have been wide ranging. One of the first major attempts to identify when CAVs are going to be on the road came from Morgan Stanley, an investment bank and financial services corporation, in 2013. Morgan Stanley estimated that self-driving vehicles would reach full market saturation in the mid 2020s (*Autonomous Cars*, 2013). Full market saturation is the point at which CAVs will be ubiquitous. As we near 2020, it is clear to see that Morgan Stanley’s estimate was far too optimistic. Reasons for the delayed timeline will be outlined later in this paper.

Given the complexity of not only manufacturing level 4 and 5 CAVs but also rolling them out on public roads, industry experts have been hesitant to set a hard deadline for their prediction. These complexities include accident liability, technology costs, data privacy, federal and state regulations, safety, limited weather operability, and high definition mapping. McKinsey and Company, a global management and consulting firm, predicted in 2016 that CAVs will reach market saturation between 2040 and 2050 (“Automotive Revolution”, 2016). In 2018, the Victoria

Transport Policy Institute predicted market saturation to occur around the 2060s (Litman, 2015). Other estimations from industry experts tend to fall into the range of 2040 to 2060 for automated vehicles to reach market saturation. Auto manufacturers have begun making their own estimations for when they will be releasing their self-driving cars. Alphabet Inc.’s subsidiary Waymo, which has also logged the most miles testing CAVs, has the earliest prediction. At the beginning of 2018, they announced their plan to have a ride-sharing fleet of level 4 automated vehicles by the end of 2018 (Huddleston, 2018). In December 2018, Waymo carried through with their prediction. Waymo’s One Program now provides an automated ride-sharing service to a limited number of customers in and surrounding Phoenix, Arizona (Huddleston, 2018). General Motors anticipates releasing their first level 4 CAV in 2019 for ride sharing services (Hawkins, 2018). Ford predicts that their level 4 ride sharing service vehicle will not be ready until 2021 (Golson, 2018).

Barriers to Implementing CAVs

Self-driving vehicles are immensely complicated technology. As such, they face barriers to their widespread implementation. These barriers include high definition mapping, accident liability, privacy, and costs. This is not a comprehensive list of barriers, but following sections outline some primary barriers that

CAVs face.

High Definition Mapping

Connected and automated vehicles face several challenges that will slow down the timeline for their widespread use. First, level 4 and 5 automated vehicles require high definition (HD) maps in order to function. These maps enable CAVs to know their location and understand their environment (Hook, 2018). The construction of HD maps is a significant obstacle that must be overcome before high level CAVs can hit the road. Companies such as Waymo, Uber, HERE, Tesla, Lyft, Civil Maps, and others are trying to be the first to perfect the mapping process. As of now, the process is time consuming, expensive, generates more data than current infrastructure can properly handle, and requires a high degree of computing power from within the vehicle itself (Barnes, 2018).

Liability

The legal question of liability must also be solved. When an automated vehicle gets into a car accident, either the CAV user or the manufacturer will have to assume the liability in an accident. The significant difference between level 1-3 and 4-5 CAVs is also an issue. In a CAV level 3 or below, users cannot be fully disengaged from the vehicle. It would be reasonable to claim that the user would assume liability in an accident if they ignored safety and warning features within the vehicle. In a level 4 or 5 CAV, the user can be more disengaged. In this case, it must be determined who assumes the liability for an accident. These are all questions that have to be resolved before CAVs can become commercially available and operated on freely on public roadways.

Privacy

Privacy is another concern. The technology used in CAVs collects and transmits a plethora of data not only about the vehicle itself, but also the user. Information collected can include biometric data like height, weight, and voice tone. Further analysis of the data can reveal information about personal health, travel habits, and specific locations visited (Barnes,

2018) If proper security measures are not in place, these data can be harvested by third-parties.

Cost

A final example is cost. Due to the technology and advanced computing involved in CAVs, it is estimated that an additional \$10,000 premium will be added on to automated vehicles on top of their prices currently (Fagnant, 2015). This price will eventually fall, but the first commercially available fully automated vehicles are likely to be well out of the price range of most Americans. For comparison, Audi's 2019 A8 sedan, which contains partial level 3 technology, starts at nearly \$92,000. The base model, without this technology, starts at approximately \$84,000 ("Luxury found the vehicle it deserves", 2018).

History of Transportation Technology Shaping Suburbanization

Suburbanization in America during the 20th century, where the population shifted from urban areas and into less densely populated suburbs, was driven by several factors, including advancements in transportation technology. The diffusion, or widespread use, of the automobile in American society during this period was concurrent with the expansive wave of suburbanization (Kopecky, 2010). As transportation travel expenses declined, those who were able to afford having an automobile were able to move to the urban edge where housing was cheaper. Due to the cost, by 1910 only approximately 2% of American households owned an automobile. However, as costs began to rapidly fall, 44% owned a car by the mid-1930s. By the 1970s, just over 80% of Americans owned at least one car (Kopecky, 2010).

While use of the automobile grew during the 20th century, so too did the U.S. metropolitan population. Between 1910 and 2000, the metropolitan population grew from 28% to 80%. Most of this growth was seen in the suburbs, not central cities. Approximately half of the U.S. population resided in suburban areas by 2000 (Hobbs, 2002). As the 20th

century came to an end, 4 out of 5 people in the U.S. now lived in metropolitan areas. At the same time, central city populations fell below 1950 levels as more people were moving into the suburbs (Hobbs, 2002). It is clear that the advent of the car was not the sole driving force of suburbanization in the 20th century. However, it is important to understand the role played by the automobile in that suburbanization to anticipate the impact of autonomous vehicles in the future. The automobile opened previously unfathomable and unfeasible options for the American people, so too will the autonomous vehicle.

Impact of CAVs on the Urban and Suburban Environment

Connected and automated vehicles have to the potential to significantly alter the urban and suburban dichotomy. These vehicles will change the value of travel time, increase safety, decrease congestion, change parking demand, and change the way we think about urban spaces.

Value of Travel Time

First, CAVs will dramatically change the value of travel time by reducing the opportunity cost of traveling. Automated vehicles, those at level 4 and 5, require little to no involvement from the passenger(s). As such, the passenger of the vehicle can use their travel time in a productive manner. For example, one hour spent driving can now be used to do work, homework, sleep, eat, or even shop online. Since individuals can use their commuting time in a productive manner, they may be more willing to commute even longer distances. This results in more people moving further into the suburbs where they can find lower housing prices (Litman, 2018) (McDonald, 2016).

Congestion

Connected to the change in the value of travel time is potential changes to congestion. According to the 2015 Urban Mobility Scorecard from Texas A&M's Transportation Institute, congestion in the United States is going to cause approximately 8.3 billion hours

of delayed travel time and waste 3.8 billion gallons of fuel. This results in a total economic loss of \$200 billion to the United States economy (Schrank, 2015). Connected and automated vehicles have the potential to reduce motor vehicle accidents and smooth traffic merging, both of which will help to alleviate traffic congestion between 15% and 60%. Just a 15% reduction in congestion would equal a national cost savings of \$30 billion from fuel and time saved (Fagnant, 2015). By alleviating the cost of congestion, both in terms of time and money, CAVs further lessen the burden of long commutes or extended travel.

Safety

In the United States there are roughly 5.5 million reported motor vehicle accidents and 33,000 fatalities every year. Human error is the cause of over 90% of these accidents (Fagnant, 2015). These crashes result in an estimated loss of \$250 to \$300 billion per year (Blincoe, 2015). While it is difficult to quantify the exact impact of autonomous vehicles, it is clear that CAVs will reduce the number of accidents, fatalities, and financial cost of motor vehicle accidents. It is important to note that autonomous vehicles are not immune to accidents. Even though CAV accidents will occur, they will happen at a much lower frequency than accidents today. With increased safety, reduced congestion, and a lower opportunity cost of traveling, people will be more willing to travel longer distances. This opens the potential for a new wave of suburbanization.

Parking

Automated vehicles are also going to have an impact on urban communities. Self-driving vehicles are expected to impact parking demand in urban centers. Vehicles, on average, only spend 5% of their lifetime in motion. The other 95% is spent parked (Kockelman, 2017). Automated vehicles will likely spend more of their lifetime in motion. For a commuter, rather than driving to work and leaving their vehicle in the parking lot nearby, the car can be sent back to their home to service the next family member or remain there until it is needed again.

Alternatively, the vehicle can be sent to a free or reduced-price parking space outside of the city. As CAVs continue to be introduced into ride-sharing markets, the number of required parking spaces in densely developed areas will decrease. These vehicles can move from passenger to passenger without needing to spend a substantial amount of time parked. Additionally, the increasing prevalence of ride sharing services, paired with autonomous vehicles, could reduce the number of multi-vehicle households. Fewer households with multiple cars will result in a lower demand for urban parking. Automated vehicles can also utilize smaller parking spaces than those currently available. A properly designed parking lot or redesigned parking garage could accommodate up to 62% more vehicles than a conventional lot (Nourinejad, 2018). Decreased parking demand, coupled with increased efficiency and capacity of new or existing parking infrastructure, will generate a smaller parking footprint, especially in urban areas (Barnes, 2018).

Urban Design

After parking demand has been diminished, precious real estate in city centers can be reclaimed by local municipalities because that space is no longer needed for expansive parking lots. This real estate can then be utilized for a variety of purposes. It can be reclaimed as a shared community space, utilized for pedestrian infrastructure, turned into green space, or rezoned for an entirely new purpose (Skinner, 2016). Rezoning will allow local governments to take advantage of mixed-use development, also known as live-work space. This space blends residential, commercial, and entertainment uses. An example of this development would be a multi-story urban building where the first floor is comprised of commercial businesses while the upper floors contain residential units. Particularly, municipalities can invest in higher density residential buildings. With more housing and the reduced need for a car, urban centers may become more of an attractive place to live.

The Next Generation: Urbanization or Suburbanization?

The living preferences of the next two generations are going to be a substantial influence on whether CAVs usher in the next wave of suburbanization. As already identified, automated vehicles can drive the trend in either direction. By altering the value of travel time, CAVs can enable more individuals to move out of urban centers and into fringe communities. On the other hand, the way CAVs will alter urban living could attract more individuals to life in urban centers. An analysis of generational housing preferences is necessary to determine what, if any, public policies are needed to ensure sustainable growth. Without proper planning, unfettered suburbanization can lead to excessive travel with longer commutes, increased pollution associated with increased vehicle travel, increased usage and wearing down of public infrastructure, and the destruction of green space and disruption of natural habitats for further suburban development.

Housing Preferences

Millennials, loosely defined as individuals born between 1981 and 1996, are about to set the housing market precedent for years to come (Dimock, 2018). However, uncertainty surrounds their preferred housing option. Some studies have pointed to millennials abandoning the suburbs and adopting life in the city. Other studies claim that millennials will largely follow in the steps of their baby-boomer parents and move to the suburbs. Research conducted by Transportation Research Board shows that millennial living preferences will not be dramatically different from previous generations. The researchers conducted a comprehensive travel and residential survey in seven major cities in the United States. They found that the net migration of millennials trends toward suburban environments (Clewlow, 2017). In a 2013 survey, researchers determined that millennials preferred to live in “compact, mixed use, walkable, and transit accessible communities” (Moos, 2018). These characteristics are more representative of urban, not suburban, living. While there have been

substantial efforts to study the housing desires of millennials, not enough research has been compiled on their habits as it relates to autonomous vehicles. According to most industry experts, autonomous vehicles are not going to reach market saturation for another 40 to 60 years. Assuming adoption happens as soon as 40 years from now, most millennials will be over 60 years old. By that time, most will already be settled into either an urban or suburban lifestyle and nearing retirement. Given substantial student debt, rising costs of living, and stagnant wages, it is unlikely that a statistically significant number of millennials will be able to personally own an autonomous vehicle until CAVs become more widely used. Most individuals, not just millennials, will be unable to afford a CAV in the near future. However, if testing continues on operating CAVs in urban centers for ride sharing purposes, there will be a greater incentive for millennials to move into the city and abandon their car instead of moving further out into the suburbs. So, individually owned CAVs are unlikely to have a significant impact on Millennials until much later in their lives. If CAV use in ride-sharing becomes more prevalent, which is a current unknown, then CAVs may encourage more Millennials to move into urban areas.

Generation Z comes after millennials. These individuals are more likely to have their housing preferences significantly influenced by CAV technology than millennials. Unfortunately, little scholarly work has been dedicated to analyzing their housing preferences due to their age. These individuals are just entering college or are even younger.

Recommendations

Connected and automated vehicles have the capability to drive both suburbanization and urbanization. While it is important to understand the preferred housing options of future generations, not enough research exists to date. As such, state and local governments must be proactive in steering growth in a sustainable way. Sustainable growth involves preventing urban flight. Urban flight involves

large populations of people abandoning urban centers and moving into suburban communities. Enough information exists now to conclude that automated vehicles will be an inescapable part of our reality. To not consider the impacts that CAVs will have on urban and suburban planning is irresponsible.

First, more research must be dedicated to determining the housing trends of Millennials, Generation Z, and the generation that will follow next. Understanding these trends will help determine what public policy initiatives will be the most successful producing the desired behavior or outcome.

Cities should take on this research to determine how best to attract the next generations and keep them from moving into the suburbs. Some of these methods include proactively starting to rezone urban centers and allow for a higher density and create walkable communities. Investments should be made to improve pedestrian and cyclist infrastructure as well as public transit. Automated vehicles will not replace public transit, but rather be a supplement to it. These investments should begin as soon as possible. Even though CAVs are likely decades away from widespread use, cities need to be ready to handle the challenges that CAVs will bring. Cities have to plan for how CAVs will alter urban living preferences and travel patterns, as well as how CAVs require significant transportation infrastructure investments. If not, cities more suffer more urban flight, resulting in underutilized and unattractive urban centers.

States and local governments should look to disincentivize excessive travel, single occupant travel, or zero occupant travel where the CAV is traveling without any passengers. One example of a disincentive would be a mileage-based user fee (MBUF). An MBUF is a fee imposed on vehicle travel, based upon the number of miles traveled. The implementation of this kind of system should result in the elimination of a gas tax. While this system has not been officially implemented in any U.S. state, it has been the subject of a number of pilot programs. Taxing miles traveled will disincentivize individuals from moving into the

suburbs and making longer commutes. Disincentivizing suburban development will save fuel from excessive travel, decrease pollution associated with vehicle travel, limit the use of and wearing down of public infrastructure, and preserve land that would otherwise be developed for suburban housing.

Conclusion

Automated vehicles are no longer the stuff of science fiction novels and films. CAV testing has demonstrated that the vehicles could become commercially available as soon as 2020-2030, at a steep price. By 2060, these vehicles are likely to approach full market saturation. Just as the automobile aided in increasing suburbanization in the 20th century, so too can the CAV. For that reason, planning professionals and policy makers must begin to proactively plan for the impacts of autonomous vehicles. Failing to direct smart growth will result in more unsustainable suburban development. Without government intervention or proper city planning, CAVs could lead to more urbanization or more suburbanization. As is the nature of many brand-new technologies, the full consequences, both intended and unintended, of connected and automated vehicles cannot be known. Federal, state, and local agencies must advance scholarly research to determine future generational trends and proactive planning.

References

- Anderson, J., Kalra, N., Stanley, K., Sorensen, P., Samaras, S., & Oluwatola, O. (2014). *Autonomous vehicle technology: A guide for policymakers*. Santa Monica, CA: RAND Corporation.
- Anderson, M., & Larco, N. (2017). *Land use and transportation policies*. Davis, CA: Institute of Transportation Studies, University of California Davis.
- Barnes, P., Swan, B. *High Definition Mapping and Data Collection*. Institute for Public Administration. University of Delaware. December, 2018.
- Barnes, P. *Privacy in Connected and Automated Vehicles*. Institute for Public Administration. University of Delaware. May, 2018.
- Barnes, P., Swan, B. *Urban Planning for Connected and Automated Vehicles*. Institute for Public Administration. University of Delaware. July, 2018.
- Berger, A., Laberteaux, K., Hamza, K., & Brown, C. *Driven To Expansion - Suburbanization, Decentralization, And Automated Driving*. MIT Norman B. Leventhal Center for Advanced Urbanism.
- Clements, L., & Kockelman, K. (2017). Economic effects of automated vehicles. *Transportation Research Record: Journal of the Transportation Research Board*, 2602, 106- 114.
- Clewlow, R., Mishra, G., Jenn, A., & Laberteaux, K. (2017, November 30). *Urban Travel and Residential Choices Across Generations: Results from a North American Survey*. Retrieved from <https://trid.trb.org/view/1495886>
- Dennis, E.P., Spulber, A., Brugeman, V.S., Kuntzsch, R., & Neuner, R. (2017). *Planning for connected and automated vehicles*. Ann Arbor, MI: Center for Automotive Research.
- Desouza, K., Swindell, D., Smith, K. L., Sutherland, A., Fedorschak, K., & Coronel. (2015). *Local government 2035: Strategic trends and implications of new technologies* (Issues in Technology Innovation). Washington, DC: Brookings.
- Dimock, M. (2018, March 01). *Where Millennials end and post-Millennials begin*. Retrieved from <http://www.pewresearch.org/fact-tank/2018/03/01/defining-generations-where-millennials-end-and-post-millennials-begin/>
- Fagnant, D., & Kockelman, K. (2015). *Preparing a nation for autonomous vehicles: Opportunities, barriers, and policy recommendations for capitalizing on self-driven vehicles. Transportation Research Part A: Policy and Practice*, 77, 167-181.
- Fagnant, D. J., & Kockelman, K. M. (2014). The travel and environmental implications of shared autonomous vehicles, using agent-based model scenarios. *Transportation Research Part C: Emerging Technologies*, 40, 1-13.
- Fox, S. (2016). *Planning for density in a driverless world. Northeastern University Law Journal, Forthcoming*.
- Golson, J. (2016, August 16). *Ford will build an autonomous car without a steering wheel or pedals by 2021*. Retrieved from <https://www.theverge.com/2016/8/16/12504300/ford-autonomous-car-ride-sharing-2021>
- Hawkins, A. J. (2018, January 12). *GM will make an autonomous car without steering wheel or pedals by 2019*. Retrieved from

- <https://www.theverge.com/2018/1/12/16880978/gm-autonomous-car-2019-detroit-auto-show-2018>
- Heinrichs, D. (2016). Autonomous driving and urban land use. In M. Maurer, J. C. Gerdes, B. Lenz, & H. Winner (Eds.), *Autonomous Driving* (pp. 213–231). Berlin: Springer.
- Huddleston, T. H. (2018, June 27). Move over Tesla, this self-driving Volvo will let you sleep during your highway commute. Retrieved from <https://www.cnbc.com/2018/06/26/volvo-self-driving-car-sleep-watch-movie-on-commute-by-2021.html>
- Kockelman, K., Boyles, S., Stone, P., Fagnant, D., Rahul, P., Levin, M. W., ... Li, J. (2017). *An assessment of autonomous vehicles: Traffic impacts and infrastructure needs* (No. 0- 6847–1). Austin, TX: Center for Transportation Research, University of Texas.
- Kopecky, K., & Suen, R. (2010). A QUANTITATIVE ANALYSIS OF SUBURBANIZATION AND THE DIFFUSION OF THE AUTOMOBILE. *International Economic Review*, 51(4), 1003-1037. Retrieved from <http://www.jstor.org/stable/40929500>
- Litman, T. (2018). *Autonomous vehicle implementation predictions: Implications for transport planning*. Victoria, BC: Victoria Transport Policy Institute.
- McKinsey & Company. *Automotive revolution – perspective towards 2030 How the convergence of disruptive technology-driven trends could transform the auto industry*. (2016, January). Retrieved from https://www.mckinsey.com/~media/mckinsey/industries/high_tech/our_insights/disruptive_trends_that_will_transform_the_auto_industry/auto_2030_report_jan_2016.ashx
- Moos, M. (2018). The millennial city: Trends, implications, and prospects for urban planning and policy. London: Routledge, Taylor & Francis Group.
- Morgan Stanley. (2013). *Autonomous cars: Self-driving the new auto industry paradigm*. New York, NY: Morgan Stanley.
- National Highway Traffic Safety Administration. (2018). *Automated Vehicles for Safety*. Retrieved from <https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety>
- National Highway Traffic Safety Administration. (2016). *Federal automated vehicles policy: Accelerating the next revolution in roadway safety*. Washington, DC: National Highway Traffic Safety Administration.
- Nourinejad, M., Bahrami, S., & Roorda, M. J. (2018). Designing parking facilities for autonomous vehicles. *Transportation Research Part B: Methodological*, 109, 110–127. Saiz, A., & Salazar, A. (2017). *Real trends: The future of real estate in the United States*. Cambridge, MA: Center for Real Estate, Massachusetts Institute of Technology.
- akaria, N., & Stehfest, N. (2013). *Millennials & mobility: Understanding the millennial mindset and new opportunities for transit providers*. Washington, DC: Transportation Research Board.
- Shaheen, S., & Cohen, A. (2013). *Innovative mobility carsharing outlook: Carsharing market overview, analysis, and trends*. Berkeley, CA: Transportation Sustainability Research Center.
- Shoup, D. (2011). *The high cost of free parking*. Chicago, IL: Routledge.
- Sivak, M., & Schoettle, B. (2015). *Road safety with self-driving vehicles: General limitations and road sharing with conventional vehicles* (No. UMTRI-2015-2). Ann Arbor, MI: The University of Michigan, Transportation Research Institute.
- Skinner, R., & Bidwell, N. (2016). *Making better places: Autonomous vehicles and future opportunities*. London, UK: WSP | Parsons Brinckerhoff.

BIDEN SCHOOL OF PUBLIC POLICY & ADMINISTRATION

Master's and Doctoral Opportunities

Offering graduate degrees in:

- public administration
- policy process and analysis
- disaster policy
- energy and environmental policy
- health policy
- urban and social policy

www.bidenschool.udel.edu



UNIVERSITY OF DELAWARE
BIDEN SCHOOL OF PUBLIC
POLICY & ADMINISTRATION