

# MICHIGAN JOURNAL OF PUBLIC AFFAIRS

**Volume 19**

The Gerald R. Ford School of Public Policy  
University of Michigan  
2022

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# Letter from Ford School's Dean Michael Barr

It is my pleasure to introduce the 19th volume of the Michigan Journal of Public Affairs, a wholly student-run and peer-reviewed publication of first-rate public policy articles from graduate and professional students, academics, and policy professionals.

MJPA showcases rigorous policy analysis and clear, persuasive writing. The articles in this volume illuminate both critical problems facing our world and country, and substantive policy solutions. I hope in reading it you will both learn something new and think more deeply about a public policy challenge.

To the MJPA staff: Congratulations on another outstanding volume! It is a testament to your professionalism, policy acumen, and hard work.

Best,

Michael S. Barr  
Joan and Sanford Weill Dean of Public Policy

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# Letter from the Editor-in-Chief

Dear readers,

Every year, the Michigan Journal of Public Affairs presents some of the best research produced by the brightest graduate students and practitioners in the field of public policy. It's a sometimes grueling but ultimately rewarding experience that served as the highlight of my time at the Ford School.

Our publication process begins with paper solicitation. We essentially spam the email inboxes of every relevant institution to cast the widest net possible. We receive dozens to hundreds of submissions in any given year. MJPA editors, the most qualified of an already overqualified pool of Fordies, carefully read each paper for selection in a blind review. The most timely, novel, and well-written pieces go through a months-long refinement process. This highly coordinated effort produces some of the most innovative, clear, and well-reasoned thinking on emerging policy issues.

The ideas selected and refined through this process demonstrate considerable potential to improve policy, and by extension, the futures of millions of people. The articles that follow provide concrete suggestions and draw from interdisciplinary academic traditions regarding criminal justice reforms, space exploration, global poverty, diplomacy, financial regulations, and communications technology. Even where practitioners or academics may disagree with an author's conclusion, these papers discuss well-developed perspectives on some of the most important and pressing problems of the day.

I could not be prouder of our authors and staff. Each individual throughout this process worked incredibly hard and sacrificed considerable time to develop and present these ideas to the public. It has been an absolute honor for the opportunity to work with and learn from everyone on the team.

Sincerely,

Nicholas Birdsong, J.D., M.P.P.  
Editor-in-Chief



# Illuminating the Path Towards a Shared Lunar Infrastructure

*Paul Capp, Samantha Franks, Severine Kale, Emma Macfarlane, Evan Mulbry\**

## Abstract

Amid renewed interest in lunar research and establishing a permanent presence on the Moon, the United States seeks to partner with private industry and international partners during the next step in space exploration. However, many of the current legal frameworks for technology sharing and space commercialization act as a barrier to effective international cooperation. Through primary interviews with government and industry experts, paired with secondary reports, the Diplomacy Lab team outlined the commercial and geo-political drivers for shared lunar infrastructure. Additionally, this paper recommends changes to legal structures to facilitate cooperation, such as export controls, and offer a framework for evaluating cooperative action.

## Introduction

The next decade of space exploration will likely be the most significant in fifty years; while the race to the Moon may be over, efforts to understand and utilize lunar surface resources are just beginning. In December 2017, President Donald Trump's administration called upon the National Aeronautics and Space Administration to lead a human mission to the Moon, with eyes focused on Mars. This directive led to NASA's creation of the Artemis Lunar Exploration Program, which endeavors to land the first woman on the Moon by 2024. The Artemis

Plan is twofold, focused first on achieving a human landing in 2024, while simultaneously working towards sustainable lunar exploration in the mid- to late 2020s.

This Briefing Paper explores the legal and policy implications of an eventual lunar infrastructure. Part I identifies both the main economic and geopolitical drivers necessitating the lunar program from the U.S. standpoint. It also identifies the primary challenges towards the lunar infrastructure's success, including technical cooperation and international legal gaps. International cooperation is key to lunar exploration, but identifying proper partnerships may also be complex. Part II explains the benefits offered to other nations and private companies by the U.S. and balances these benefits against potential challenges. Part III provides an analytical framework for evaluating and incentivizing potential partnerships for the lunar infrastructure.

## Partnering to Create a Shared Lunar Infrastructure

### *Lunar Infrastructure Defined*

The Moon is Earth's only natural satellite, orbiting 384,400 kilometers away. The lunar surface and its location offer a crucial potential steppingstone to further space exploration. A permanent, sustainable habitation on the Moon — a lunar “campus” or “infrastructure” — offers substantial financial and

\* We appreciate the opportunity offered by Diplomacy Lab to conduct interviews with leaders in the field. The authors would like to thank stakeholders from Aerospace Industries Association, Coalition for Deep Space Exploration, Defense Trade Controls Licensing and Office of Defense Trade Controls Policy, Federal Aviation Administration, National Space Council, NASA, Secure World Foundation, and U.S. Department of State for providing background information and valuable insight.

geopolitical benefits and could take a variety of forms. NASA intends to create scientific outposts on the lunar surface to facilitate long-term, potentially life-sustaining opportunities for exploration. These outposts possess the opportunity for manned missions, but also will likely provide the United States with the ability to create robotic monitoring systems to reach the far side of the moon.

### *Why Lunar Infrastructure is Necessary*

A lunar infrastructure would establish an entry point into lucrative lunar mining, create a base for further scientific exploration, and serve as a jumping off point for the next great celestial adventure, a crewed mission to Mars. The establishment of the lunar infrastructure will also preempt and prevent geopolitical tension and conflict on the lunar surface. With the Artemis Program, the U.S. has indicated the first steps towards the creation of such an infrastructure. Such a monumental effort will require complex partnerships. Promoting these partnerships require understanding the potential benefits of lunar infrastructure.

A commercial lunar infrastructure promises a myriad of economic benefits to the U.S., including by facilitating resource extraction, catalyzing technology transfer, and providing direct commercialization opportunities. Mining operations in space are potentially long-term, attractive economic enterprises. Industry estimates claim that a single asteroid could hold as much as \$25-\$50 billion in platinum. NASA broadly values space mining operations at \$700 quintillion in potential value. Lunar mining operations

also represent a long-term opportunity for extracting Helium-3, a potentially valuable resource in future energy markets.<sup>1</sup> Additionally, the Moon contains potentially lucrative rare earth metals crucial in emerging technologies and water, which is crucial for sustaining life and conversion into rocket fuel.<sup>2</sup>

Long-term lunar exploration, infrastructure, and habitation would also yield compounding economic benefits. For instance, an established lunar infrastructure could act as a cost-effective steppingstone to Mars. Many lunar infrastructure technologies would be transferable to the Martian context, and the potential production of lunar-derived propellant could make future travel to Mars more affordable.<sup>3</sup> Benefits may also stem from the commercialization of products and technological know-how originally developed for space exploration. A significant portion of economic output in the U.S. has roots in the massive scientific and research investments made into space exploration over the past five decades.<sup>4</sup> According to studies by and figures from NASA, the agency's research and investments have resulted in 2,000 directly commercialized products between 1976 and 2018.<sup>5</sup>

A study of 15 life science companies in 2002 found that commercialization of NASA life science research for these 15 companies led to \$1.5 billion in economic value added, with \$64 million in NASA research and development spending linked directly to \$200 million in private sector research and development for commercialization. This demonstrates the significant potential re-

<sup>1</sup> Senjuti Mallick & Rajeswari Pillai Rajagopalan, *If Space is 'The Province of Mankind,' Who Owns its Resources*, Observer Research Foundation vol. 182 (Jan. 2019) at pages 2-4.

<sup>2</sup> Matthew Hall, *Lunar Gold Rush: Can Moon Mining Ever Take Off?*, Mining Technology.com (Mar. 22, 2021).

<sup>3</sup> Allison F. Zuniga et al., *Lunar COTS: An Economical and Sustainable Approach to Reaching Mars*, AIAA Conf. (2015) at page 4.

<sup>4</sup> *The Space Economy in Figures*, OECD (July 5, 2019) at pages 65-68.

<sup>5</sup> *Id.* at page 57.



turn on investment for space exploration.<sup>6</sup> Taking leadership in the next stage of lunar exploration and infrastructure could help secure U.S. primacy in the commercialization of space technology.

Creating a lunar infrastructure may also help prevent geopolitical tension and conflict on the lunar surface. Like Earth, geographic elements on the lunar surface have varying strategic value for exploration and development. The Lunar Peaks of Eternal Light in the Moon's polar regions, for example, may invite competition between countries because the location allows for constant access to sunlight.<sup>7</sup> Each lunar day is the equivalent of roughly 14 Earth days, and each lunar night is the equivalent of roughly 14 Earth days. Currently, only a limited number of technologies can store 14 days of energy to prevent parts from freezing during the lunar night. Possession of the Lunar Peaks of Eternal Light could enable one party to hold a virtual monopoly on constant and reliable access to solar energy.<sup>8</sup>

Current space law and the OST are unclear on if one country would be able to unilaterally claim the Lunar Peaks of Eternal Light. Researchers have postulated that the OST would allow one country to establish a scientific installation on the Lunar Peaks of Eternal and effectively lay claim to them because other countries would be prevented from interfering with its normal operation. While this would not technically be a declaration of sovereignty over the territory, but establishing a settlement and then claiming a safety zone of noninterference would effectively give one nation effective

control over this region.<sup>9</sup> China and Russia have already announced the intention to place scientific installations on the lunar surface.<sup>10</sup> If those installations allowed Russia and China to claim sole dominion over a critical portion of the lunar surface, such as the Lunar Peaks of Eternal Light, this could lead to conflict on the lunar surface. A common lunar infrastructure could prevent one country from unilaterally staking claim to this critical area.

Multilateral cooperation is also necessary from a political standpoint. The infrastructure required to generate mining operations on the moon would require an initial investment of more than \$4 billion.<sup>11</sup> As of 2005, the Apollo program has incurred \$165 billion in total costs including salaries, overhead, and costs of equipment.<sup>12</sup> The costs of establishing operations on the Moon would be similar in terms of development and manpower costs. These significant costs may be too large for a single country to bear. The U.S. and other nations could band together to spread the burden. Doing so would hasten the pace of lunar technology and create a forum to discuss and preemptively diffuse geopolitical tensions before they arise.

### **Anticipated Challenges to the Creation of a Shared Lunar Infrastructure**

The path towards lunar infrastructure faces many challenges. Among them is the pressing need for international cooperation and negotiations between the U.S. and other states, companies, and international organizations. Geopolitical realities, space capabilities, and export control regulations

<sup>6</sup> Henry R. Hertzfeld, *Measuring the Returns to NASA Life Sciences Research and Development*, AIP Conf. Proceedings vol. 420 (1998).

<sup>7</sup> Babak Shakouri, *A Legal Regime for Lunar Peaks of Eternal Light*, *The Space Rev.* (Dec. 23, 2013).

<sup>8</sup> *Id.*

<sup>9</sup> Martin Elvis et al., *The Peaks of Eternal Light: A Near-Term Property Issue on the Moon*, *Popular Physics* (Aug. 2, 2016) at pages 8-9.

<sup>10</sup> *China and Russia to Build Lunar Space Station*, BBC News (Mar. 10, 2021).

<sup>11</sup> David Kornuta et al., *Commercial Lunar Propellant Architecture: A Collaborative Study of Lunar Propellant Production*, REACH (Feb. 27, 2019) at page 106.

<sup>12</sup> *NASA's Exploration Systems Architecture Study: Final Report*, NASA (Nov. 2005) at page 676.

limits on the number and scope of potential country partnerships. This section will address five challenges: 1) the practical necessity of technological cooperation between nations, 2) interoperability requirements, 3) the necessity for a shared understanding of, and ambiguities within, international law, 4) the limitations of domestic U.S. law, and 5) the trials brought about by Sino-American geopolitical relations.

### *Technology Gaps*

The journey to the Moon will require overcoming many hurdles, but the technological challenges facing the U.S. may be the most pressing. Conversations with various stakeholders revealed significant technical gaps that must be addressed before an international lunar infrastructure becomes possible. Those challenges can be roughly separated into three categories: safe transportation to and from the Moon, surviving the lunar night, and mining. A related barrier is the difficulty of partnering with other states to address the various technological challenges without a clear blueprint for success.

Safe lunar transportation technology is still under development. For example, two important NASA programs, the Orion spacecraft and the Space Launch System (SLS), have been plagued by development delays. NASA contracted Boeing and Lockheed on the development of the SLS and Orion. Initially scheduled for 2017, current estimates push the launch to sometime in 2022.<sup>13</sup> Delays have increased costs by about \$1 billion. Although progress in the commercial sector may be more promising, these systems far from operational.

In addition to lunar transportation, safely landing on the Moon's surface remains technologically challenging. In September 2019, NASA asked American industry partners to propose designs for a human landing system.<sup>14</sup> On April 30, 2020, NASA selected Blue Origin, Dynetics, and SpaceX to begin development of the Artemis Human Landing System. These companies will split a fund of \$976 million, which will finance 10 months of development work. Each company has a different vision for how its system will operate. The SpaceX Starship will launch off Earth using a giant reusable rocket called Super Heavy. It will be able to carry 100 people at a time, according to SpaceX founder Elon Musk.<sup>15</sup>

Once the technology to travel to and safely land on the Moon is developed, the lunar environment presents additional challenges. Due to the low thermal inertia of the lunar regolith, temperatures on the lunar surface fluctuate up to 300 K between day and night.<sup>16</sup> Researchers are still working to develop safe and reliable heating technology.

One proposed solution involves using radioisotope heaters combined with radioisotope thermoelectric generators (RTGs). In the past, radioactive heaters or RTGs based on polonium and plutonium were used on the Moon, but both have strong disadvantages: high toxicity, short half-life, and restricted availability of the isotope. Due to the environmental and political challenges of using Radioisotope Heating Units (RHUs) or RTGs, another potential option involves burying the spacecraft in lunar regolith. While this solution has potential, it raises its own technological challenges and would require using a burying mechanism

<sup>13</sup> Loren Grush, *NASA's Future Moon Rocket Will Probably Be Delayed and Over Budget Yet Again: Audit*, The Verge (June 19, 2019).

<sup>14</sup> *NASA's Exploration Systems Architecture Study: Final Report*, NASA (Nov. 2005).

<sup>15</sup> Mike Wall, *NASA Wants Private Moon Landers from 3 Companies. Here's How They'll Work*, Space.com (May 1, 2020).

<sup>16</sup> Max Braun et al., *Human Lunar Return: An Analysis of Human Lunar Exploration Scenarios Within the Upcoming Decade*, Acta Astronautica vol. 177 (Dec. 2020).

or the ability to pile lunar regolith around the craft.

Conversations with NASA personnel revealed that international perceptions present an additional challenge with respect to creating partnerships to solve technological challenges. Many potential partners may believe that a 'plug and play' colony already exists. If true, it would be relatively easy for the U.S. to match willing partners with technological challenges. NASA personnel reported that potential international partners may look to the U.S. to decide what to do. However, there are numerous proposals and no settled blueprint for progress. Here, the difficulty in down-selecting architecture is partly responsible. For example, there may be 20 viable proposals on how to build a lunar habitat. The difficulty lies in selecting which to pursue. How can the U.S. use partnerships to maximize the pursuit of innovative solutions while minimizing duplicative work? How can the U.S. harness willingness without know-how? How can the U.S. encourage ongoing investment from potential partners? Not only will the U.S. need to solve a variety of technological challenges before a lunar infrastructure becomes feasible, but it will also need to figure out how to encourage investment from partners despite the technological uncertainties.

### *Interoperability*

One of the major challenges in designing a framework for technical coordination in international lunar infrastructure is defining and enforcing interoperability standards for engineering systems. An international lunar infrastructure will need a blueprint for how to incorporate systems designed or manufactured by different international or commercial partners to work across different systems and perform to the same standards. Barriers to implementing interoperability standards form two common themes. First, international cooperation between gov-

ernments in coming to technical consensus on interoperability may be stymied by competition over national pride or differing engineering cultures. Second, commercial partners have an incentive to develop proprietary systems which serve as a barrier to interoperability.

Lunar infrastructure plan development must also contend with additional cultural challenges to interoperability. Each space agency may have its own approach to solving an engineering problem based on tradition over decades of development. For example, on the ISS, there are five different approaches to micrometeorite shielding that are all effective and, in this instance, offer increased flexibility when used in concert. However, in other cases, these differences in agency cultures can be a barrier to interoperability. For example, there are deep-seated cultural differences between training philosophies, be it immersive in the Russian context, procedural in the American context, or collective decision making in Japan's engineering tradition. Establishing interoperability standards in lunar infrastructure must account for differences in engineering philosophies in addition to agreeing upon specifications.

### *Ambiguities in International Law*

International legal framework provides some guidance for space exploration. Multilateral treaties drafted in the aftermath of the Cold War provide the general legal framework and customary international law fills in some of the gaps. However, key legal questions remain unanswered when activities are commercial in nature, when actors are both governments and private entities, and when infrastructure is shared internationally. Who has jurisdiction over a particular infrastructure element? How do property rights function? What information must be shared with other actors? Is consensus on these questions possible? If it is not,

what happens?

Unlike other areas of international law, treaties dominated space law from the beginning. Five treaties form the legal framework for activities in space and lay out the general principles guiding science and exploration in space: the 1967 Outer Space Treaty, the 1972 Liability Convention, the 1975 Registration Convention, and the 1979 Moon Agreement. More recently, consensus has become more difficult to reach and treaties have become less common as the number of actors participating in space activities has grown.<sup>17</sup> Likewise, as the space paradigm has evolved since the 1970s, customary international law (CIL) now plays an important role as the source of additional rights and obligations in outer space.<sup>18</sup> For example, some CIL norms are broadly accepted, including the boundary between air space and outer space, the fact that outer space is beyond national territory, and the right of states to fly over other states on the way into or out of orbit.

While existing treaties and CIL provide some guidance on a legal framework for international lunar infrastructure, a variety of gaps remain. The United States and its closest international partners recently signed the Artemis Accords, which seeks to create a safe and transparent environment that facilitates exploration, science, and commercial activities. In the meantime, it will be imperative to settle jurisdiction and property rights, as well as interpret Article VI and Article IX of the OST.

## Jurisdiction

An internationally owned lunar infrastructure raises novel questions of jurisdiction. The OST addresses jurisdiction generally in Article IX via the principle of due regard.<sup>19</sup> On the International Space Station, the Space Station Intergovernmental Agreement and Crew Code of Conduct govern jurisdiction.<sup>20</sup> In general, each state registers its contributions as space objects and retains jurisdiction and control over those elements and its nationals. For nationally and privately owned components, the problem of jurisdiction may be solved by extending the International Space Station model. This model treats states agreeing to share resources and knowledge in the name of exploration.

## Property Rights and Extraction

Article II of the OST establishes the non-appropriation principle and prohibits states from appropriating the Moon or other celestial bodies by claiming sovereignty or by other means. Nonetheless, the extent of the principle is unclear. The U.S.' position is that the safety zones contemplated under the Artemis Accords do not violate the non-appropriation principle. The Artemis Accords also endorse the U.S. viewpoint in Section Ten:

The Signatories emphasize that the extraction and utilization of space resources, including any recovery from the surface or subsurface of the Moon, Mars, comets, or asteroids, should be executed in a manner that complies with the Outer Space Treaty and in support of safe and sustainable space activities. *The Signa-*

<sup>17</sup> Vladlen S. Vereshchetin & Gennady M. Danilenko, *Custom as a Source of International Law of Outer Space*, J. of Space L. vol. 13 (1985), at page 22.

<sup>18</sup> Ram S. Jakhu & Steven Freeland, *The Relationship Between the Outer Space Treaty and Customary International Law*, SSRN (2016) at page 188.

<sup>19</sup> Valentina Vecchio, *Customary International Law in the Outer Space Treaty: Space Law as Laboratory for the Evolution of Public International Law*, German J. of Air & Space L. vol. 66 (2017) at page 498.

<sup>20</sup> Michael Chatzipanagiotis, *Criminal Issues in International Space Law*, Eu. J. of Law Reform vol. 18 (2016) at page 110.

*tories affirm that the extraction of space resources does not inherently constitute national appropriation under Article II of the Outer Space Treaty, and that contracts and other legal instruments relating to space resources should be consistent with that Treaty.*

As a result, the Accords established an important precedent, with several of the world's most prominent space states committing to a broader interpretation of Article II. This interpretation allows for an easier path forward for the lunar infrastructure, although it is far from universally endorsed. For example, Article 11 of the Moon Agreement states that the Moon and its natural resources are the common heritage of mankind. While the U.S. is not a signatory to the 1979 Moon Agreement, 18 states are, including international partners such as Australia and Belgium. A new international customary norm may be developing that the Moon Agreement prohibits ownership of lunar property and creates an obligation to share lunar infrastructure.

Lunar mining will almost certainly involve the exclusion of the use of others on a given mining site or area within a Safety Zone. The OST prohibits national appropriation of outer space. National space agencies, private companies, and other stakeholders are devoting an enormous amount of time, money, and other resources to devising technology to extract lunar resources. However, some commentators argue that it is "morally imperative to consider interests of non-space-faring states when formulating space property law."<sup>21</sup>

### Information-Sharing

Space-faring states have shared information since the beginning of the space age,

and the principle was codified in Article IX of the OST. The Artemis Accords state that information about the location and nature of operations will be provided to the public to avoid harmful interference and to ensure deconfliction of activities, a new idea in space law. Section 5 on Interoperability, Section 8 on the Release of Scientific Data, and Section 11 on Deconfliction all explore potential venues and promote information sharing. However, the extent of the transparency requirement under the Artemis Accords is unclear.

### Interpreting Article VI of the Outer Space Treaty

Under Article VI of the OST, states are responsible for all actions of their non-state actors. In a departure from attribution standards governing terrestrial non-state actors, non-state (private) actions in space are attributed to the state that licenses and oversees them. Not only is the extent of this duty unclear, but practical concerns with respect to the organization of commercial actors in space may mean that multiple states could be considered responsible for a particular endeavor.

Notwithstanding the scope of a state's duty to authorize and continually supervise commercial actors in space, to whom companies will report on the lunar surface remains an open question. Private companies are bound to comply with the terms of the OST based on their host nation's signature to the treaty. The FAA payload review process currently fills the gap with respect to launching space objects, but more robust activity on the lunar surface will require oversight.<sup>22</sup> The data for space situational awareness is currently provided by the Department of Defense, but no agency regulates on-orbit operations.

<sup>21</sup> Julie Michelle Klingler, *Chapter 6: Extraglobal Extraction, Rare Earth Frontiers*, Cornell U. Press (2017) at page 207.

<sup>22</sup> NASA's *Exploration Systems Architecture Study: Final Report*, NASA (Nov. 2005) at page 676.

### The Buy American Act

The Buy American Act requires the government to purchase items “manufactured in the U.S. substantially all from articles, materials, or supplies mined, produced, or manufactured in the U.S.”<sup>23</sup> This requirement is implemented by the Federal Acquisition Regulations, which dictate government contract requirements and related accounting standards for invoicing. Historically, the federal government has interpreted this requirement to mean that products must meet a two-part test: first, the end product must be manufactured in the U.S. and second, at least 50% of the cost of the components must be of U.S. origin.<sup>24</sup>

For organizations developing space-related technologies, NASA regulates contract administration and related accounting standards. Discussions with business leaders indicated that these requirements are onerous for foreign enterprises looking to develop technologies for NASA. This is further supported by the award funding for foreign enterprises, which in 2019, was 1.3% of NASA’s budget and 0.7% of NASA’s procurement actions.<sup>25</sup>

Government agencies such as NASA can waive the Buy American requirements but are currently unwilling to do so. One external pressure weighing on agency decisions is Executive Order 13811, which increases the requirements for American sourced products from 50% to 55% or more, as well as increases the requirement for steel from 50% to greater than 95%. Many space systems require steel inputs, and a 95% American input requirement could significantly increase the cost of those systems.

When pricing and designing contracts, NASA has taken an innovative approach to bringing down costs. NASA originally used cost-plus arrangements, in which it contracted for specific technical requirements and reimbursed contractors for the cost of materials plus an additional fee. Critics of this approach have highlighted how space contracts awarded on a cost-plus basis tend to have budget overruns and delays. In response, NASA began development of a new type of contract where NASA would contract with private enterprise for a specific service such as space transportation but would not own any of the ultimate assets. Proponents of the cost-plus approach dislike the fixed fee awards because the government does not own the ultimate asset.

### Export Control Regulations

Export controls restrict the movement of goods, technology, or information across international boundaries or to foreign persons. In the U.S., export controls are broadly divided into two bodies of regulations. The International Traffic in Arms Regulations (ITAR) control the export, re-export, and re-transfer of defense articles and defense services, as well as associated technical data. The U.S. Department of State, Directorate of Defense Trade Controls (DDTC) regulates the ITAR.<sup>26</sup> The list of items subject to DDTC’s jurisdiction is enumerated in the U.S. Munitions List (USML).<sup>27</sup> For dual-use items, which are items with both civil and military applications, the Department of Commerce, Bureau of Industry and Security (BIS) regulates the ability of U.S. companies to export, re-export, and re-transfer these items and their associated technology. BIS enumerates the list of controlled items on the Commerce Control List (CCL). For

<sup>23</sup> 41 C.F.R. §8302(a)(1) (2020).

<sup>24</sup> 48 C.F.R. §1800 et seq. (2020).

<sup>25</sup> FY 2019 Agency Financial Report, NASA (2019).

<sup>26</sup> 22 C.F.R. §120 et seq. (2020).

<sup>27</sup> 22 C.F.R. §121 (2020).



items not enumerated on the CCL, they are labeled EAR99.<sup>28</sup>

Commodities used for space exploration are enumerated on both the USML and the CCL.<sup>29</sup> Companies tend to eschew export controlled items to avoid the heightened compliance requirements, especially foreign companies for items on the USML. What makes eschewing export controlled items more difficult are rules addressing incorporation of export controlled items into an otherwise uncontrolled item. For example, the ITAR incorporates what is colloquially referred to as the “see-through” rule, where any ITAR item incorporated into an otherwise non-ITAR product becomes subject to the ITAR regulations.<sup>30</sup> Space related items have exceptions available to this rule, such as if they are enumerated in Category XV of the USML, incorporated into an EAR controlled item, and do not create an item listed in USML Category XV(a).<sup>31</sup>

Companies cite export controls as one of the most significant impediments to international cooperation in space related technology. To avoid the costs of complying with U.S. regulations, ITAR-free satellites emerged as a marketing tool to avoid the associated compliance burdens.<sup>32</sup> In response to this concern of over-control, the government began reform processes wherein commodities were moved from the USML to the CCL when not deemed one of industry’s “crown-jewels.” These items are listed in the “500-series” and “600-series” sections of the CCL, which allow exporters to take advantage of license exception Strategic Trade Authorization under certain circumstances.<sup>33</sup>

For space related industries, Space Policy

Directive 2 requires DDTC to re-evaluate the USML to determine whether space related commodities primarily in Category XV should be moved to the CCL. Conversations with government officials indicated the regulatory changes associated with Space Policy Directive 2 will primarily act as a regulatory clarification rather than a wholesale change.

Despite these changes, foreign companies remain focused on keeping their supply chains “ITAR-free,” which poses a significant obstacle to U.S. companies looking to partner with foreign companies to develop new space exploration technology. European companies have stated they want to keep their products “ITAR-free” to avoid the “see-through” rule and enable them to work with Chinese companies.<sup>34</sup>

Failing to educate the corporate sector on ways to partner with foreign companies without triggering ITAR provisions risks pushing those foreign companies into the Chinese market. As companies eschew buying American products, supply chains will become more focused in the Chinese market rather than the American market. The U.S. government should educate U.S. and foreign companies on ways they can work together within ITAR. Doing so would thread the needle between balancing U.S. national security interests without pushing foreign companies into the Chinese economic orbit.

### *Sino-American Geopolitical Relations*

China is notably absent from US-ISS partnership. The current state of U.S.-China competition in civil and scientific space ex-

<sup>28</sup> 15 C.F.R. §744 (2020), Supp. 1.

<sup>29</sup> *Id.*; 22 C.F.R. §121 (2020).

<sup>30</sup> Sarah Guasta, *ITAR ‘See Through’ Rule*, Wilmarth & Associates (Oct. 27, 2020).

<sup>31</sup> 22 C.F.R. §121 (2020) (Category XV Note 1 to Paragraph A).

<sup>32</sup> John Hoffner, *The Myth of “ITAR-Free”*, Aerospace Security (June 29, 2020).

<sup>33</sup> *U.S. Export Controls for the Commercial Space Industry*, Fed. Aviation Admin. (Nov. 2017) at page 27.

<sup>34</sup> Louis de Gouyon Matignon, *International Traffic in Arms Regulations, Space Legal Issues* (June 13, 2019).

ploration was set when China was excluded from the international partnership in construction of the ISS in the early 2000s. In the past 15 years, even with the rising sophistication of China's space exploration capabilities, cooperation has continued to be limited due to U.S. fears of technology transfers to Chinese military space operations. While there were some attempts to include China in ISS research and operations, these were halted by the 2011 Wolf Amendment. The Amendment limited NASA from working with Chinese government or commercial entities due to technology transfer risk. The law continues to be a legal hindrance to U.S.-China bilateral cooperation in space.<sup>35</sup> While the Wolf Amendment was in large part intended to pressure China on human rights abuses, China's response has been to concentrate on leading parallel Sino-led space exploration efforts.

The Wolf Amendment's exclusion of China from international cooperation risks causing the U.S. to cede international leadership in space exploration projects after the ISS begins its planned retirement in 2024. The Chinese Space Station, slated to begin construction in 2020, will likely be the only option available for international partnerships absent a U.S.-led international replacement.<sup>36</sup> Given this context, lunar exploration and infrastructure has the potential to serve as a new foundation for U.S.-led space diplomacy following the ISS retirement.

Space diplomacy has long been a part of U.S. foreign policy, and China sees similar advantages in developing its own civil-space capabilities as a lure to establish relationships with smaller nations parallel to the Western-led geopolitical system. The pros-

pect of potential partnerships in space has historically been a tool to draw smaller nations into mutually beneficial cooperation on trade and scientific advancement.<sup>37</sup> Ceding leadership in internationally led space ventures will create a vacuum that China is hoping to fill with its own independent programs. China's economic rise over the past decade has enabled it to seek a geopolitical strategy of developing new Sino-led international institutions and agreements outside of the Western-led order that has dominated international trade, finance, and development since the end of the Cold War.

The Belt and Road Initiative (BRI) is the most broad and visible coordinated program to use economic development and incentives combined with diplomatic pressure to form parallel venues of international cooperation outside of Western-led norms and rulemaking. China's attempts to lead alternative regional and international cooperative agreements also extend to the space-based expansions of the BRI. China established the Belt and Road Space Information Corridor with its newly operational Beidou GPS satellite constellation serving as the crown jewel. The nation hopes to use its massive investments in space infrastructure to develop a global commercial space system independent of Western-led systems.<sup>38</sup> Moreover, in 2005, China led the development of the Asia-Pacific Space Cooperation Organization (APSCO), focused on training foreign scientists at Chinese space institutions. APSCO currently includes China, Bangladesh, Iran, Mongolia, Pakistan, Thailand, and Peru. This organization operates in parallel to the larger Japan-led regional space cooperation organization, the Asia-Pacific Regional Space Agency Fo-

<sup>35</sup> Makena Young, *Bad Idea: The Wolf Amendment (Limiting Collaboration with China in Space)*, Defense 360 (Dec. 4, 2019).

<sup>36</sup> *Id.*

<sup>37</sup> Todd Harrison, *China in Space: A Strategic Competition*, Ctr. for Strategic Int'l Studies (Apr. 25, 2019) at pages 2-3.

<sup>38</sup> Daniel R. Russel & Blake H. Berger, *Weaponizing the Belt and Road Initiative*, Asia Soc. Pol. Inst. (2020) at pages 7-8.



rum.<sup>39</sup>

A more aggressive China, incentivized to design and lead parallel space exploration projects to serve as a competing forum of space diplomacy, underlies the importance of U.S. leadership in international cooperation in developing lunar infrastructure. The U.S. should re-evaluate how China may be included in international space endeavors without compromising national security interests. In the absence of Sino-US cooperation in space, China and Russia have recently announced plans for a joint construction of an “International Scientific Lunar Station.”<sup>40</sup> The Chang’e 4 lunar probe mission provides a limited preview of what U.S.–China space cooperation might look like. With FBI certification over a limited engagement, NASA provided photos of Chang’e’s landing site using its Lunar Reconnaissance Orbiter.<sup>41</sup> The incoming Biden administration has signaled a willingness to establish cooperation in space with China to reduce tensions in other matters of technological cooperation and prevent “destabilizing” competition in the space domain.<sup>42</sup>

## Incentivizing U.S. Partnerships

### *Regulatory Assistance*

Access to American resources may motivate partnership with the U.S. in the creation of a shared lunar infrastructure. The U.S. is one of the most powerful space nations. Its technologies account for close to one-third of the active spacecraft orbiting around Earth, and NASA has the largest budget of space agencies worldwide. Regulatory initiatives further streamline the commercial use of space for agencies and private actors, such as the Space Policy Directive 2.

In May 2018, President Trump endorsed a compilation of recommendations made by the National Space Council. Space Policy Directive 2 aimed to streamline the bureaucratic regulatory processes created by the agencies overseeing space activities within the U.S. Chief among these are the Federal Aviation Administration (FAA), the Federal Communications Commission (FCC), and the National Oceanic and Atmospheric Administration (NOAA). Typically, private commercial space companies must obtain licenses from at least one of the agencies to conduct a space mission. For instance, companies may be required to obtain a launch license from the FAA, a remote sensing license from the NOAA, or a radiocommunication license from the FCC. This applies even when launches take place for testing purposes, which can be a costly, time-consuming, and bureaucratic undertaking. The Space Policy Directive 2 aims to simplify the regulatory licensing process by contemplating a “single license system for all launch and reentry operations” and the creation of a “one-stop shop” for administering and regulating all commercial space flight.<sup>43</sup>

Regulatory initiatives like Space Policy Directive 2 are a boon for commercial space companies such as SpaceX. Such policies also have potential to incentivize foreign commercial actors to partner with the United States. A concise, streamlined system is appealing to foreign aerospace companies that wish to fast-track launches and proceed in regulatory space with transparent, simplified requirements. The U.S. is one of the only countries with such an advanced operational regulatory structure, further incentivizing foreign companies to set up shop within American borders.

<sup>39</sup> James Clay Moltz, *China, the United States, and Prospects for Asian Space Cooperation*, J. of Contemporary China vol. 20 (2010).

<sup>40</sup> *China and Russia to Build Lunar Space Station*, BBC News (Mar. 10, 2021).

<sup>41</sup> Jeff Foust, *A Step Towards a ‘One-Stop Shop’ for Commercial Space Regulations*, Space Rev. (May 29, 2018).

<sup>42</sup> Jacqueline Feldscher, *Biden Space Advisers Urge Cooperation with China*, Politico (Dec. 20, 2020).

<sup>43</sup> Jeff Foust, *A Step Towards a ‘One-Stop Shop’ for Commercial Space Regulations*, Space Rev. (May 29, 2018).

The U.S. also benefits from sustained funding of space exploration. NASA projects spending \$28 billion from fiscal year 2021 through 2025 on Phase 1 of the Artemis program. While funding from Congress is not yet secure, the U.S. government has historically been generous in its appropriations towards space funding. Moreover, the U.S. has a long history of partnerships with private companies and the Artemis Program plans relies heavily upon the ability to pull resources from those groups.

### *The Bilateral U.S.–Canada Partnership: A Case Study*

The ongoing relationship between the U.S. and Canada demonstrates some of the benefits that can arise out of bilateral partnerships. There are multiple rationales for creating alliances: deterrence, resources, information, geography, and legitimacy.<sup>44</sup> This brief case study will focus on the exchange of material resources in the form of Canadian robotic arm technology, but it is important to recognize that other grounds for creating partnership exist – especially since many potential partners may be unable to contribute significant material resources in a partnership. This expanded perspective regarding partnership justification and beneficial outcomes may help overcome one of the challenges identified by stakeholders: motivating both parties to get to “yes.” However, if the parties lack this broader understanding, they may lack the motivation to partner, making negotiation more difficult.

The U.S. and Canada have a long history of cooperating on space exploration. For example, Canada’s robotic arm technology, “Canadarm,” debuted on the Space Shuttle Columbia in 1981.<sup>45</sup> The Canadarm was

retired along with the Space Shuttle program after 30 years of successful operation. Beyond the Canadarm’s functional contribution to over 90 spaceflights, its legacy of success benefits Canada in other ways. It fostered Canada’s reputation for robotic innovation on the international stage, paved the way for the use of Canadian robotics on the ISS, and inspired generations of Canadian scientists and engineers to develop new technology for use in the space industry and beyond.<sup>46</sup>

Canada and the U.S. have since leveraged their long history of productive collaboration into the next phase of space exploration. In 2019, Canada became the first international partner for NASA’s Lunar Gateway project. On the Gateway, Canada’s newest robotic arm and robotic hand will perform necessary tasks and minimize the need for dangerous spacewalks.<sup>47</sup> This agreement contributes a much needed functional element to the Lunar Gateway and allows a partner country of the U.S. to showcase a source of national pride. The agreement between the parties also provides both countries with legitimacy and lays the groundwork for further cooperation in the future.

As in the U.S.–Canada partnership, if a potential partner demonstrates a particular technological capability, the U.S. can work to incorporate its technology into its plans. This allows the other country to showcase a source of national pride and results in a longer term relationship. Although the U.S.–Canada partnership revolves around the exchange of material resources, not all potential partners need to work under similar pretenses. A partner may make a valuable contribution in the form of deterrence, information, geography, or legitimacy. A broader understanding of potential benefits

<sup>44</sup> Michael P. Gleason & Charity Weeden, *Alliance Rationales & Roadblocks: The Aerospace Corporation*, Aerospace Corp. (Apr. 16, 2018) at page 2.

<sup>45</sup> *Canadarm*, Canadian Space Agency (Mar. 31, 2021), [www.asc-csa.gc.ca/eng/canadarm/default.asp](http://www.asc-csa.gc.ca/eng/canadarm/default.asp).

<sup>46</sup> *Id.*

<sup>47</sup> Sean Potter, *NASA, Canadian Space Agency Formalize Gateway Partnership for Artemis*, NASA (Dec. 16, 2020).

beyond just functional contribution may motivate parties to get to “yes.” Whether the agreement involves a substantial long-term undertaking or a one-off, the program and policy must drive the agreement between the parties.

### **Analytical Framework for Evaluating Partnerships**

In evaluating potential international partnership opportunities in lunar exploration and beyond, a framework for analysis should be used to assess the possible risks and opportunities of action. This framework must consider questions of national security, long-term concerns over space-debris and preserving access, technological interoperability, and establishing shared principles for future exploration.

#### *National Security*

The Cold War served as a spark for America’s space program. Scientific advancement acted as a proxy measurement for the rivalry between the United States and the Soviet Union. As a result, national security has long been tied to the United States’ goals for space exploration. This is true for two reasons. First, advancements in space technology are a soft power show of dedication to science and technology. Second, and more concretely, many of the technologies that are involved with space exploration are now intimately connected to national security. Satellite surveillance, for example, is made possible by expansions in space technology, and satellites generally serve as a cornerstone to modern life. As the world turns again to the skies, the possibility of corruption of these satellites is a grave security threat. Similarly, the Outer Space Treaty and the Artemis Accords both stress the need for safe space. Armed activities in the atmosphere, or on the lunar surface, should be avoided at all costs.

#### *Sustainability*

The sustainability of space is critical to future habitation endeavors. Because of this, our analysis of the lunar infrastructure requires understanding humankind’s potential environmental impact on the Moon and surrounding near space. It is worth noting that we likely do not grasp the full potential of humankind’s impact on the terrain. This section will discuss two primary environmental concerns: space debris and lunar dust.

The most serious and known challenge facing human exploration in outer space is the growing collection of space debris in low Earth orbit (LEO). More than 1,800 satellites orbit the Earth. These satellites provide vital information, but their upkeep often leads to the shedding of parts and pieces into LEO. These satellites, combined with the occasional collision or the breakage of a rocket as it moves out of orbit, have led to an increase in materials orbiting the earth. Now, there are close to 6,000 tons of materials in LEO, some of which reach speeds of up to 18,000 miles per hour. It is estimated that debris will become self-sustaining; these materials will collide with other debris or satellites and cause further wreckage. The denser the LEO becomes, the more difficult and dangerous it will become to leave the planet.

Currently, no international agreement regulates “the world’s largest garbage dump” and no country is required to take responsibility for it.<sup>48</sup> Space debris is currently impossible to remove from orbit. It moves too fast and is too heavy for easy extraction. Mitigation is the only solution with current technology. As we turn our eyes to the Moon, we must continue to be aware of the threat of space debris and work to minimize shedding of parts into orbit. One potential path has been illuminated recently by Japan, which com-

<sup>48</sup> Brian Dunbar, *Space Debris*, NASA (July 1, 2019).

mitted to sending only wooden, degradable satellites into the atmosphere after 2022.

Lunar soil is different than on Earth. Lunar dust consists of miniscule grains “formed by millions of years of meteorite impacts that repeatedly crushed and melted rocks, creating tiny shards of glass and mineral fragments.”<sup>49</sup> It clings to all kinds of materials, because of its sharp edges and electrostatic charge caused by unshielded ultraviolet radiation from the sun. Creating a lunar infrastructure will need to dislodge this dust, which has the capability to wreak havoc on manmade creations. There are also concerns that the dust particles may be hazardous to human health.

While NASA has begun collaborations with researchers to understand how to work in such an inhospitable environment, measures should be taken before lunar infrastructure development begins. Companies and the government should establish health and safety legislation and guidelines to ensure the safest standards possible.

### *Interoperability*

NASA is a forerunner in addressing the interoperability challenges, which will prove crucial in leading the partnership towards the development of a lunar infrastructure. NASA has worked with partner nations’ space agencies to develop and publish technical standards for deep space exploration, including Russia’s Roscosmos, Japan’s JAXA, the European Space Agency, and Canada’s CSA. These International Deep Space Interoperability Standards categorize technical interoperability across 8 different systems: avionic, communications, environmental control and life support systems, power, rendezvous, robotics, thermal, and

software. The standards were finalized and released in December 2019 and updated in October of 2020.<sup>50</sup>

NASA and its partners collaborated on draft standards and then sought public feedback to incorporate concerns from industry partners in a process that took about two years.<sup>51</sup> These standards will likely form the basis of interoperability development in cooperation on lunar infrastructure, with the stated purpose “to enable industry and international entities to independently develop systems for deep space exploration that would be compatible aboard any spacecraft, irrelevant of the spacecraft designer.”<sup>52</sup>

### *Fostering a Shared Vision for the Future of Space Exploration*

The final element for evaluating and incentivizing international partnerships concerns the opportunities that arise with the U.S. positioned as a market leader within the space industry. The U.S. can shape the future of space exploration through partnerships with emerging space nations that have indicated burgeoning investment and development in their nation’s space sector. These nations include the BRICS countries and South-East Asian states such as Malaysia and Indonesia. The U.S. could leverage partnerships to shape the future of space exploration in accordance with its own principles, such as those contained within the Artemis Accords. Such partnerships need not take place in the form of monetary or contractual exchanges. Instead, the U.S. could foster cross border dialogue to further its principles of space exploration and encourage new spacefaring nations to partner up among themselves with the American principles. Establishing partnerships with emerging space nations also comports with

<sup>49</sup> Lori Keesey, *NASA’s Coating Technology Could Help Resolve Lunar Dust Challenge*, NASA (Nov. 5, 2019).

<sup>50</sup> Alex Pline, *International Deep Space Interoperability Standards*, Int’l Deep Space Interoperability Standards (Oct. 26, 2020).

<sup>51</sup> Tabatha Thompson, *NASA, Partners Seek Input on Standards for Deep Space Technologies*, NASA (Mar. 5, 2018).

<sup>52</sup> *Supra* footnote 50.

the recent establishment of the “Space2030” agenda, a UN–led effort to effect the UN Sustainable Development Goals through a “comprehensive and inclusive long-term vision for space.”<sup>53</sup>

## Recommendations

The next few decades of spaceflight and the creation of a lunar infrastructure offer an exciting opportunity to shape mankind’s future. In doing so, the political, legal, and economic ramifications of the next steps will be crucial. Our paper concludes with the following recommendations.

*The United States must remain dedicated to the Artemis Program and international law.*

The Artemis Accords provide the basis for understanding by which the U.S. can lead international cooperation for sustainable lunar presence and infrastructure development. The International Space Station shows what successful civil–scientific cooperation in space can achieve. To ensure that the Accords become the foundation of lunar operations standards, the U.S. must remain committed to the corresponding Artemis Program’s proposed timetable for a return to the Moon and avoid the fate of the prior canceled Constellation program.

The U.S. needs to both return to the Moon on this proposed timetable and build the framework for international cooperation. These achievements will inform the next generation of lunar exploration from the start and establish the rules and norms by which nations and commercial entities act in a future developed lunar service.

The early development of global digital infrastructure serves as an analogue. The U.S. was a first mover to the digital space and created the global digital communications

system with openness, transparency, and cooperation as foundational standards later entrenched in institutions such as ICANN. As nations such as China push–back against free expression norms and standards that form the foundation of the digital age, it must develop a parallel system of norms. If the U.S. wishes to formalize the tenets agreed upon in the Artemis Accords as the basis for engagement between nations in the next evolution of lunar exploration, it should once again obtain first move advantage to set international standards and norms.

As shown in the trajectory of China’s ambitions in space over the last decade, China may intend to use space as an additional domain to form a parallel system of international standards. To mitigate this competition, the U.S. should cooperate with China in lunar infrastructure development based on the principles in the Artemis Accords. The U.S. must first complete its stated commitment to return to the Moon to gain leverage. It should do so in the best conformity possible with the Outer Space Treaty, but also with the recognition that speed and the sustaining of the Artemis Accords remain paramount.

Similarly, as the United States continues to build out its attempts to settle more permanently in space, it must pay close attention to the environmental damage possible in both Low Earth Orbit and on the lunar surface. An emphasis on environmental impacts will ensure the future of spaceflight is not limited by space junk or an unsettling of lunar dust and will help the United States comply with the precautionary principle under international law. It will also serve as a good faith action in the eyes of our international partners.

<sup>53</sup> Luigi Scatteia et al., *The Role of Emerging Space Nations in Supporting Sustainable Development and Economic Growth*, PWC (2020), at page 1.

*The United States must confront technology gaps head-on.*

Developing the technology necessary to support a lunar infrastructure will likely be costly and time-consuming. As addressed in Part II, development delays are common among the projects currently underway. Additional funding could provide an incentive for expedited development but would be subject to budgetary constraints with no guarantee of success.

The U.S. could also address technology gaps by expanding the number of actors working on solutions. This could involve creating a “menu” of project options that potential partners can choose to work on to capitalize on potential enthusiasm to get involved. The approach may address two challenges cited by stakeholders: the perception that a “plug and play” model exists and the difficulty in down-selecting from among viable proposals. Although this approach may lead to duplicative work, it is also likely to foster more innovation. Subject to existing legal and national security restraints, the U.S. may consider sharing information and resources to encourage new partners to get involved.

The U.S. should also work to develop longer term partnerships in the vein of the U.S.–Canada relationship. This approach may require more initial investment, but the long-term partnership potential would likely justify the initial costs. The initial focus may be on identifying areas of technological expertise or national pride with a potential partner and identifying ways to develop that program. A successful relationship would not only produce a needed element of technology but would also yield legitimacy benefits for both parties.

*The U.S. should facilitate cooperation with foreign companies to expedite space exploration.*

Current U.S. regulations pose an obstacle to international cooperation for space exploration. The two primary sets of regulations that dampen foreign operations in the U.S. are export control regulations and the Buy American Requirements for government contracting. Export controls pose an obstacle to international cooperation because they block international companies from cooperating in technological development. Additionally, Buy American provisions prohibit foreign companies from bidding on projects with NASA.

To address these problems, this paper recommends the Department of State take steps to facilitate cooperation with foreign companies. First, the U.S. should change existing export control laws to facilitate technological development between foreign partners and U.S. domestic enterprises. Secondly, the Department of State can work with NASA to help foreign companies obtain waivers for the Buy American Programs when foreign governments agree to shoulder the cost for certain modules of the overall system.

Export controls safeguard American national security and foreign policy interests by prohibiting certain transfers of tangible and intangible materials. Current DDTC regulations do not regulate “fundamental research” but only limits this type of research to that performed by universities and academic institutions. By contrast, BIS regulations exclude fundamental research conducted by both academic institutions and companies. To facilitate cooperative space technological development DDTC should consider changing the fundamental research exception to include fundamental research conducted between foreign and domestic companies related to USML Category XV items. Sara Crossman, Senior Director and head of FTI Consulting’s ITAR Practice, noted that such a change would be significant because it would open up a new



area of cooperation between foreign and domestic enterprises.

Making this change would align DDTC regulations with current BIS regulations that exempt fundamental research from regulatory control. While there are concerns of exempting defense services that might jeopardize national security, limiting the exception to items in Category XV would mitigate this concern and not allow companies to perform uncontrolled research in other areas. Additionally, including companies in the fundamental research exception would not dramatically raise the risk profile because research universities are already included and so this would not be creating a new avenue of escaping the regulations but rather augment the existing regulations.

DDTC should raise awareness of the Category XV incorporation exception among industry professionals. Conversations with industry experts noted that many in the space industry are not aware that incorporation of an ITAR-controlled item under Category XV into an EAR-controlled item does not invoke the see-through rule and thus lead the item to be ITAR controlled. Including for example session at BIS's annual update conference to educate the industry on this exception in the regulations would be a low cost method of facilitating space cooperation.

Additionally, current government contracting regulations require a certain percentage of components to be "Made in the United States." Agencies have the authority to issue waivers when the use of a domestic product is either a) inconsistent with the public interest, insufficient or unreasonably unavailable or its quality is unsatisfactory, or b) the domestic product is likely to increase the total cost by 25% or more. In a conversation with a space industry association, it was noted that there is almost no possibility of obtaining a waiver of the Buy American re-

quirements. This paper recommends that as a benefit of working with the U.S. for space exploration NASA and the Department of State work with foreign companies to help them obtain waivers of the Buy American requirements when foreign governments agree to shoulder the cost of certain modules of an overall system.

NASA's use of fixed price contracts would likely require all subsystems under the prime contractor to adhere to the Buy American requirements. Foreign governments may be unwilling to invest in major spacefaring projects with these Buy American requirements in place. For countries that are willing to shoulder the financial burden of developing and implementing certain modules of a larger project, NASA should consider using its waiver authority to waive Buy American Act requirements to facilitate this type of cooperation. NASA would be able to lower the costs associated with the venture and a foreign government would benefit by further developing their own space industrial base.

# Challenging the “Feminization of Poverty” Hypothesis: Analyzing the Vulnerability and Resilience of Single Female-Headed Internally Displaced Households

Madison Chapman

## Abstract

Academics, policymakers, and humanitarian practitioners overwhelmingly seem to agree that female-headed households are a universally vulnerable, homogenous group. Consequently, humanitarian assistance frequently targets these households. Yet little to no empirical research analyzes if this assumption holds water. Research is even more scarce on the relationship between vulnerability and marital status as divorced, never-married, or widowed female-headed households. This paper re-analyzes a recent JIPS-World Bank dataset on internally displaced persons in Abu Shouk and El Salam IDP camps in North Darfur, Sudan with this gender-disaggregated lens. It suggests that household vulnerability by household headship is far from homogenous. While single, female-headed households experience risks, single, male-headed households are not far behind. This paper concludes with a call for focusing on single headship, rather than exclusively gendered headship, and community participatory approaches in future humanitarian targeting and IDP programming in Darfur. As a result, I hope to contribute to a growing literature on gendered data disaggregation policies and humanitarian targeting mechanisms in com-

plex emergencies.

## 1. Introduction

In the field and in the development and humanitarian literature, academics, policymakers, and humanitarian practitioners appear to agree: with some exceptions, Female-headed households (FHH) are a uniquely vulnerable group.<sup>1</sup> Humanitarian targeting mechanisms frequently single these households out to receive particular attention in programming. Yet, little empirical research analyzes if this assumption holds water, especially in urban contexts. The research on vulnerability and marital status is even more scarce. This presents a challenge for developing effective humanitarian targeting mechanisms.

Gender proxy targeting often takes a narrow approach to gender mainstreaming, focusing largely on women and FHH as uniform categories. In determining what qualifies as an FHH, humanitarian organizations often include households headed by divorced, separated, abandoned, polygamous, or unmarried women as household heads.<sup>2</sup> This presents a host of issues. Most glaring is the expectation that, by virtue of heading a household, women household heads—and

<sup>1</sup> *Under the Radar: Internally Displaced Persons in Non-Camp Settings*, Brookings (Oct. 2013); Zeynep N. Kaya & Kyra N. Luchtenberg, *Displacement and Women's Economic Empowerment: Voices of Displaced Women in Kurdistan Region of Iraq*, LSE Ctr. for Women, Peace & Security (2018).

<sup>2</sup> Stephan Klasen et al., *What About the Women? Female Headship, Poverty and Vulnerability in Thailand and Vietnam*, Courant Research Ctr. (2011); Kanchana N. Ruwanpura & Jane Humphries, *Mundane Heroines: Conflict, Ethnicity, Gender, and Female Headship in Eastern Sri Lanka*, *Feminist Economics* vol. 10 (2004); Lucia Hanmer et al., *Addressing the Needs of Women and Girls in Contexts of Forced Displacement*, World Bank (May 2019).



their household members—immediately become more vulnerable. This paternalistic assumption plays into traditional gender norms and can dismiss women's resilience.

This paper defines gender as a “learned social difference,” differing between males and females over time and varying both within and between cultures.<sup>3</sup> It intersects with race, class, and other identities, such as disability or sexuality, to determine social standing, social roles, power, and resources throughout life.<sup>4</sup> This intersectionality is key to understanding how and why gender plays only one limited part in determining vulnerability.

The presumed universality and homogeneity of female-headed household vulnerability plays directly into the complex and controversial “feminization of poverty” hypothesis. This theory suggests that women are more vulnerable because of their gender, i.e., that female-headed households must be more vulnerable because women are always poorer or more vulnerable. This hypothesis argues that poverty is an essentially female experience, and that women and children are “disproportionately represented amongst the...poor.”<sup>5</sup> It also contributes to a disenfranchising narrative surrounding internally displaced women, and an infantilization of woman migrants' experiences.<sup>6</sup> This narrative also excludes men. Forced recruitment, social stigma, loss of livelihoods, “thwarted masculinities,” and sexual violence also stigmatize men and boys, putting them at greater risk of exploitation and

abuse.<sup>7</sup> However, studies of vulnerability in displacement rarely focus on how single male-headed households (SMHH) experience risk.<sup>8</sup> This raises a red flag for inclusivity in targeting.

With this background, it is possible to examine the idea of female headship, marital status, and vulnerability through quantitative analysis. A recent JIPS-World Bank IDP profiling exercise collected gender and headship-disaggregated data on vulnerability in IDP households in peri-urban and urban Abu Shouk and El Salam IDP Camps in North Darfur, Sudan. This paper analyzes this dataset, which focuses on the urban context, helping to fill an important need for additional scholarship on internally displaced people in urban areas—an area currently lacking in the literature.

When researching vulnerability and household headship, it is important to consider internally displaced people. Increased funding and action for refugees in humanitarian assistance contributes to a “coverage gap” in which internally displaced people remain largely forgotten.<sup>9</sup> However, according to the World Food Program, 20% of internally displaced people remain displaced for ten or more years.<sup>10</sup> Internally displaced people tend to follow patterns of recovery and stabilization that begin with meeting food and shelter needs and re-establishing livelihoods, and continue toward the more drawn-out phase of accessing education, psychosocial support and healthcare, and reliably accessing clean water.<sup>11</sup> As they inte-

<sup>3</sup> See, *The Gender Handbook for Humanitarian Action*, IASC (Feb. 2018).

<sup>4</sup> *Id.*

<sup>5</sup> MacKenzie A. Christensen, *Feminization of Poverty: Causes and Implications*, Gender Equality (2019).

<sup>6</sup> Rita Manchanda, *Gender Conflict and Displacement*, Econ. & Political Weekly vol. 39 (2004).

<sup>7</sup> Jenny Birchall, *Gender as a Causal Factor in Conflict*, UK Dep't for Int'l Dev. (Feb. 2019); Hannah Wright, *Masculinities, Conflict and Peacebuilding: Perspectives on Men Through a Gender Lens*, Saferworld (2014).

<sup>8</sup> Katharine Charsley & Helena Wray, *Introduction: The Invisible (Migrant) Man*, Men & Masculinities vol. 18 (2015).

<sup>9</sup> Brigitte Rohwerder, *Women and Girls in Forced and Protracted Displacement*, GSDRC (Sept. 5, 2016).

<sup>10</sup> WFP's IDP Review: WFP- *Reaching People in Situations of Displacement*, World Food Programme (2000).

<sup>11</sup> Deborah Hines & Raoul Balletto, *Assessment of Needs of Internally Displaced Persons in Columbia*, Overseas Dev. Inst. (Dec. 2002).

grate into new communities or re-establish themselves in camp settings, humanitarian assistance thus provides a critical boon in helping internally displaced people transition from temporary to more sustainable households and livelihoods. As Hines and Balletto note, where this has not happened, mortality rates have soared.<sup>12</sup> It is therefore especially important to consider gender in internal displacement. IDP households are more likely to be headed by women—many of whom are single. In a study of internally displaced people in Colombia, for example, 91% of IDP households were headed by a woman and 39% of these were headed by a single caregiver.<sup>13</sup>

This paper challenges the “feminization of poverty” hypothesis in the context of Abu Shouk and El Salam in North Darfur, Sudan, and explores why it is misguided for humanitarian targeting purposes in these camps through a quantitative analysis of a JIPS-World Bank dataset. This paper builds on JIPS (2019) and Pape (2017, 2019) by contributing additional analysis on household headship and gender in these camps.<sup>14</sup> Using descriptive statistics and k-variable regressions, this paper asks: Are SFHH indeed (universally) more vulnerable in Abu Shouk and El Salam than SMHH?

To explore this question, this paper does two things. First, it compares SFHH and SMHH using common vulnerability indicators, focusing on households as the unit of analysis.<sup>15</sup> It then proposes recommendations for

improved humanitarian targeting practices in urban and peri-urban internal displacement contexts, focusing on single headship, community participatory targeting mechanisms, and area-based approaches (ABAs).

This paper finds that SFHH vulnerability is far from homogenous—and that all SFHH are not 1) particularly vulnerable compared to SMHH or 2) vulnerable in the same way. While SFHH are more likely to be vulnerable on some indicators, SMHH are more likely to be more vulnerable across others. Therefore, gender may not be the most effective proxy for vulnerability when targeting in Abu Shouk and El Salam, and SFHH vulnerability is far from universal across all SFHH.

## **2. Literature Review of Targeting, Gender, and Headship in Displacement**

### *2.1 What Is Vulnerability?*

According to Blaikie et al. (1994), income poverty acts only as a descriptor of need, while the more nuanced and multifaceted concept of ‘vulnerability’ also accounts for socioeconomic and demographic factors.<sup>16</sup> In practice, vulnerability is often difficult to measure. Humanitarian organizations frequently determine vulnerability primarily by poverty level or household income.<sup>17</sup> It may also be measured by vulnerability mapping frameworks and indices.<sup>18</sup> Increasingly, practitioners and academics are recognizing that vulnerability is more

<sup>12</sup> *Id.*

<sup>13</sup> Matthew Finger, *Humanitarian Aid and Internally Displaced Persons*, Humanitarian Assistance in Complex Emergencies (2011).

<sup>14</sup> *Progress Towards Durable Solutions*, JIPS (2019); Utz Pape, *Sudan Profiling Preparation*, World Bank (2017); Utz Pape, *Informing Durable Solutions for Internal Displacement in Nigeria, Somalia, South Sudan, and Sudan*, World Bank (2019).

<sup>15</sup> Throughout this paper, SFHH and SMHH are used to denote the household as a unit. When there is a need to discuss household heads as individuals, this paper uses “female household head” and “male household head.”

<sup>16</sup> Piers Blaikie et al., *At Risk: Natural Hazards, People Vulnerability and Disasters*, Routledge (1994).

<sup>17</sup> See, *Vulnerability Assessment: Syrian Refugees in Egypt 2017*, UNHCR (2017).

<sup>18</sup> Maja Janmyr & Lama Mourad, *Modes of Ordering: Labelling, Classification and Categorization in Lebanon's Refugee Response*, J. of Refugee Studies vol. 31 (Jan. 2018).

dynamic and puzzling than poverty level alone.<sup>19</sup> However, many large-scale humanitarian organizations have yet to adapt their mapping practices to reflect these nuances.<sup>20</sup> The fact that household vulnerability itself is dynamic and changes over time complicates attempts to standardize targeting mechanisms.

Some organizations have adopted proxy targeting mechanisms to expand vulnerability mapping beyond income poverty. In proxy targeting, “affected people are selected based on an observable characteristic (i.e., gender, social group affiliation).”<sup>21</sup> Gender proxy targeting by FHH is often an attempt to introduce gender mainstreaming into humanitarian assistance.<sup>22</sup> ECOSOC defines “gender mainstreaming” as “the process of assessing the implications for women and men of any planned action, including legislation, policies or programs, in all areas and at all levels.”<sup>23</sup>

## 2.2 Are SFHH Vulnerable Compared to SMHH?

As humanitarians have borrowed from development research, they have embraced the “feminization of poverty” hypothesis and

have overlooked male experiences of vulnerability. The existing humanitarian and development literature suggests that women are at a “double” or even “triple disadvantage” during humanitarian emergencies, as they face poverty, gender discrimination, and the burden of household headship simultaneously.<sup>24</sup> The idea of a triple disadvantage has contributed to the widespread assumption that there must be a pathological disclosure of female headship in survey participation,<sup>25</sup> and that SFHH can form a “neatly packaged” target group.<sup>26</sup>

This assumption corresponds with existing literature on this topic. These studies suggest that SFHH have less access to land, credit, and education; higher dependency ratios; depend more on aid; rely more on remittances; consume less per capita; have a higher work burden; and work longer hours than MHH.<sup>27</sup> As a result, UN documents and best practices for working with migrants tend to assume that FHH are generally the most vulnerable type of household in displacement contexts.<sup>28</sup> This implicitly excludes men and masculinities, suggesting that SMHH cannot be or are not equally disadvantaged to SFHH. This fails to adequately capture different lived experienc-

<sup>19</sup> Karen Jacobsen & Rebecca Furst Nichols, *Developing a Profiling Methodology for Displaced People in Urban Areas*, Feinstein Int'l Ctr. (2011).

<sup>20</sup> *Supra* footnote 18.

<sup>21</sup> Leah Campbell, *Working with People and Communities in Urban Humanitarian Crises*, ALNAP (2018).

<sup>22</sup> *The Peacebuilding Commission's Gender Strategy*, UN Peacebuilding Comm'n (2020).

<sup>23</sup> *Id.*

<sup>24</sup> See e.g., Mayra Buvinic & Greeta Rao Gupta, *Female-Headed Households and Female-Maintained Families: Are They Worth Targeting to Reduce Poverty in Developing Countries?*, *Econ. Dev. & Cultural Change* vol. 45 (1997); Kerrie Holloway et al., *Gender in Displacement: The State of Play*, *Overseas Dev. Inst.* (2019).

<sup>25</sup> Sylvia Chant, *Women-Headed Households: Diversity and Dynamics in the Developing World*, Springer (1997).

<sup>26</sup> David J. Lewis, *Going It Alone: Female-Headed Households, Rights and Resources in Rural Bangladesh*, *European J. of Dev. Research* vol. 5 (1993).

<sup>27</sup> Cynthia B. Lloyd & Anastasia J. Gage-Brandon, *Women's Role in Maintaining Households: Family Welfare and Sexual Inequality in Ghana*, *Pop. Studies* vol. 47 (Mar. 1993); Mayra Buvinic & Greeta Rao Gupta, *Female-Headed Households and Female-Maintained Families: Are They Worth Targeting to Reduce Poverty in Developing Countries?*, *Econ. Dev. & Cultural Change* vol. 45 (1997); Catherine Johnson et al., *Children's Nutritional Status in Female-Headed Households in the Dominican Republic*, *Soc. Sci. & Medicine* vol. 37 (Dec. 1993).

<sup>28</sup> See, *Strengthening Sector Policies for Better Food Security and Nutrition Results*, UNFAO (2017); *Guiding Principles on Internal Displacement*, UNHCR (2001); *African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa*, UNHCR (Jan. 29, 2021).

es of poverty between women and men.<sup>29</sup> Findings from development studies have yet to be sufficiently explored in humanitarian contexts, reflecting a gap in existing literature.

The following sections review the existing development and humanitarian literature on gender and FHH, highlighting the following themes: poverty, food insecurity, and maladaptive livelihoods; housing, land, and property; legal documentation; physical safety and security; psychosocial support, reproductive health, and social cohesion; and aid obstacles.

### 2.2.1 Poverty, Food Insecurity, and Maladaptive Livelihoods

Practitioners and researchers cite poverty, food insecurity, and unsustainable livelihoods as key reasons why FHH are more vulnerable than MHH, especially in displacement settings. Women might arrive in camps with fewer assets than men and rely more frequently on “survival sex,”<sup>30</sup> lack access to strong protection systems,<sup>31</sup> or have insufficient or culturally inappropriate access to job and vocational trainings. Caterina and Schrepfer (2014) argue that resilience to displacement diminishes with each additional shock.<sup>32</sup> Survival sex and other negative or maladaptive coping mechanisms exemplify this practice.

FHH—especially SFHH—also lack access

to enough food in displacement, and mothers are more likely to reduce food intake for themselves to provide for their children. This contributes to poverty. In some conflict situations, a larger share of FHH fall below the poverty line than MHH.<sup>33</sup> A very few studies highlight how men and boys experience similar challenges.<sup>34</sup>

Gender also impacts vulnerability in urban and peri-urban contexts. In 2014, The Brookings Institution found that IDP women in urban contexts were more likely to resort to negative coping mechanisms, such as reducing the number and quality of meals per day or purposefully separating from other household members to increase their chances of employment, than those in camps.<sup>35</sup> Even when displaced female household heads can find safe livelihoods, they may have fewer opportunities than male household heads. Studies of Syrian refugee women in Lebanon, Turkey, and Jordan suggest that FHH embraced entrepreneurship in urban and peri-urban informal economies,<sup>36</sup> but these businesses were often home-based and not profitable, as markets for certain women-produced goods quickly became saturated.

Social stigma against unaccompanied women might also impede their access to sustainable income-generating activities. For example, displaced Rohingya men in Bangladesh reacted strongly and negatively when asked whether women should be able

<sup>29</sup> Louise Waite, *How Is Household Vulnerability Gendered? Female-Headed Households in the Collectives of Suleimaniyah, Iraqi Kurdistan*, Disasters vol. 24 (Dec. 2002); Cecile Jackson, *Rescuing Gender from the Poverty Trap*, World Dev. vol. 24 (Mar. 1996).

<sup>30</sup> Emma Batha, *Syrian Refugee Crisis is Changing Women's Roles: Aid Agency*, Reuters (Sep. 9, 2016).

<sup>31</sup> Virginie Le Masson et al., *Disasters and Violence Against Women and Girls*, Overseas Dev. Inst. (Nov. 2016).

<sup>32</sup> Nina Schrepfer & Martina Caterina, *On the Margin: Kenya's Pastoralists*, NRC (2014).

<sup>33</sup> Kopalapillai Amirthalingam & Rajith W.D. Lakshman, *Impact of Displacement on Women and Female-Headed Households: A Mixed Method Analysis with a Microeconomic Touch*, J. of Refugee Studies vol. 26 (May 2012).

<sup>34</sup> Mayra Buvinić & Greeta Rao Gupta, *Female-Headed Households and Female-Maintained Families: Are They Worth Targeting to Reduce Poverty in Developing Countries?*, Econ. Dev. & Cultural Change vol. 45 (1997).

<sup>35</sup> *Improving the Protection of Internally Displaced Women: Assessment of Progress and Challenges*, Brookings (Oct. 2014).

<sup>36</sup> Ramzi Fathallah, *Shadows to Light: Syrian Refugee Entrepreneurs in Jordan's Informal Economy*, Issam Fares Inst. for Pub. Pol. & Int'l Aff. (2020); Kate Moran, *Woman Head More Than a Quarter of Refugee Households. What's Next for Them?*, Ctr. for Int'l Private Enterprise (Mar. 8, 2017).

to engage in livelihood activities in the public sphere.<sup>37</sup> Tensions between mobility and income generation complicate livelihood access for FHH.

On the other hand, some research suggests that FHH are not always more vulnerable compared to MHH on poverty, livelihoods, and food security indicators. Some studies report a positive, empowerment effect of being a female household head or living in an FHH. For example, Ensor (2014) found that South Sudanese refugees living in FHH in Uganda were more adaptive and resilient than other refugees to “social instability, deprivation, and conflict.”<sup>38</sup> Additionally, Buvinić and Gupta (1997) note that female household heads have less need to negotiate with men over how to spend household money, and more ability to prioritize spending on child education—another empowerment effect. However, children in FHH often eventually leave school to help with household tasks or find work.<sup>39</sup>

Buvinić and Gupta (1997) also find that in some cases, female headship has a poverty-shielding effect in targeting.<sup>40</sup> In Rwanda, when poverty indicators centered on children, nutritional status, or educational access and performance, FHH were less likely to be targeted as poor. These findings indicate that choice of targeting indicator is perhaps more relevant for vulnerability

status than household head gender. As a result, there remains a lack of consensus about whether humanitarian and development interventions should target FHH over MHH or other similarly poor communities by using gender as a proxy for vulnerability.<sup>41</sup>

### 2.2.2 Housing, Land, and Property

Literature suggests that displaced FHH face unique challenges in obtaining or claiming rights to housing, land, and property compared to MHH.<sup>42</sup> Displaced FHH have historically been more likely to work in the informal sector and therefore lack documentation, such as proof of steady wages or asset ownership, to obtain a mortgage or negotiate fair rent.<sup>43</sup> The process of renting or hiring a contractor may also expose displaced FHH to sexual abuse or harassment,<sup>44</sup> landlord discrimination, security and privacy exploitation, or public shame for being seen alone with men.<sup>45</sup> This situation can also exacerbate existing mental health challenges in displaced FHH.

### 2.2.3 Legal Documentation

Property rights are closely linked to legal documentation for FHH. While lack of access to legal documentation impacts displaced women and men, customary socio-cultural norms particularly impact women. Legal documents may only list male names,

<sup>37</sup> Dorothy Sang, *One Year On: Time to Put Women and Girls at the Heart of the Rohingya Response*, Oxfam (Sep. 11, 2018).

<sup>38</sup> Marisa O. Ensor, *Displaced Girlhood: Gendered Dimensions of Coping and Social Change Among Conflict-Affected South Sudanese Youth*, *Refuge* vol. 30 (2014).

<sup>39</sup> *Supra* footnote 34; but see, Simon Levine, *The Impact of Displacement on Gender Roles and Relations: The Case of IDPs from FATA, Pakistan*, *Overseas Dev. Inst.* (2019) (noting that prioritizing spending on education may increase child welfare compared to income, especially for girls).

<sup>40</sup> *Id.*

<sup>41</sup> See, Jane Freedman, *Sexual and Gender-Based Violence Against Refugee Women: A Hidden Aspect of the Refugee “Crisis”*, *Reproductive Health Matters* vol. 24 (Jun. 2016); *Improving the Protection of Internally Displaced Women: Assessment of Progress and Challenges*, *Brookings* (Oct. 2014).

<sup>42</sup> Judy A. Benjamin & Khadija Fancy, *The Gender Dimensions of Internal Displacement*, *UNICEF Off. of Em. Programmes* (Nov. 1998).

<sup>43</sup> Filomina Chioma Steady, *Women, Shelter and the Environment*, *Env. Values* vol. 2 (1993).

<sup>44</sup> *Humanitarian Charter and Minimum Standards in Humanitarian Response*, *Sphere Project* (2011).

<sup>45</sup> Rana Hajjar, *Gender & Accessibility to Housing*, *Norwegian Refugee Council* (2019) at page 59.

or men may be needed for women to obtain a legal identification in their own name.<sup>46</sup> This is especially true when male household members disappear or die, or for women who have never been married.<sup>47</sup>

#### 2.2.4 Physical Safety

Existing literature also argues that FHH face physical exploitation at different rates than MHH. Vu et al. (2014) found that approximately 20% of refugee and other displaced women experience sexual violence, which is often used as a “weapon of war.”<sup>48</sup> Sexual violence can contribute to increased social isolation when victims of sexual assault are encouraged to stay silent, or are deemed “impure” or “dirty.”<sup>49</sup> This “cheapens” their social status even within displaced communities, further threatening their safety, mobility, and ability to access secure livelihoods.

#### 2.2.5 Psychosocial Support, Health, and Social Cohesion

The psychosocial trauma of shifting gender roles and responsibilities may also increase FHH vulnerability compared to MHH in displacement settings. Fitzpatrick et al. (2016) found that FHH in rural Sudan cited pregnancy as a shock requiring female household heads to divert valuable time and energy away from income-generating

activities toward breastfeeding and child-care.<sup>50</sup> Pregnant and lactating FHH are generally considered amongst the most at-risk in displacement for this reason.<sup>51</sup> In Sudan specifically, lactating mothers and pregnant women are considered amongst the most vulnerable due to their prenatal nutrition needs.<sup>52</sup> This may deepen food insecurity when food is scarce, and can also intensify the psychological stress of juggling traditional childcare responsibilities with new gender roles.

The disability or chronic illness of a household member may also exacerbate psychological stressors for FHH more than for MHH. Caring for an ill or disabled household member may prompt female household heads to divert household spending away from consumption toward health-care—a delicate balancing act.<sup>53</sup>

Literature also highlights that FHH are often more vulnerable compared to MHH on social cohesion measures. This is relevant as community safeguards and strong social networks are important for physical safety, self-reliance, and connecting women migrants to employment outside of the home.<sup>54</sup>

Gender plays a role in how communities perceive FHH and MHH, which impacts individual psychosocial outcomes. In many cultures, social norms dictate that men head

<sup>46</sup> Zoe Tabary, *No Documents, No Home: ‘Desperate’ Syrian Mothers Turn to Child Marriage*, Reuters (Mar. 28, 2019); Erin Mooney, *Internal Displacement and Gender*, UNICEF (Apr. 17, 2020).

<sup>47</sup> Zoe Tabary, *No Documents, No Home: ‘Desperate’ Syrian Mothers Turn to Child Marriage*, Reuters (Mar. 28, 2019).

<sup>48</sup> Vu et al., *The Prevalence of Sexual Violence Among Female Refugees in Complex Humanitarian Emergencies: A Systematic Review and Meta-Analysis*, PLOS Currents (Mar. 18, 2014).

<sup>49</sup> Kerrie Holloway et al., *Gender in Displacement: The State of Play*, HPG (Dec. 3, 2019).

<sup>50</sup> Merry Fitzpatrick et al., *Risk and Returns: Priorities for Resilient Livelihoods in Darfur*, Feinstein Int’l Ctr. (Aug. 2016).

<sup>51</sup> Utz Pape, *Sudan Profiling Preparation*, World Bank (2017).

<sup>52</sup> *Migration Crisis Operational Framework*, Int’l Org. for Migration (2019).

<sup>53</sup> *Supra* footnote 50.

<sup>54</sup> Dale Buscher, *Displaced Women and Girls at Risk: Risk Factors, Protection Solutions and Resource Tools*, Women’s Comm’n for Refugee Women & Children (2006); Amani El Jack, “Education is My Mother and Father:” *The “Invisible” Women of Sudan*, Refugee vol. 27 (2012); Katarzyna Grabska, *The Return of Displaced Nuer in Southern Sudan: Women Becoming Men?*, Dev. & Change vol. 44 (2012); Kerrie Holloway et al., *Gender in Displacement: The State of Play*, Overseas Dev. Inst. (2019).



a household, while women manage it. Female household heads may experience severe psychological distress when expected to take on new gender roles or renegotiate their idea of femininity after humanitarian emergencies.<sup>55</sup> Women and girls may face heightened discrimination in job markets and access to resources due to cultural taboos against widows, divorced women, or women perceived to have had children out of wedlock, including by rape.<sup>56</sup> Social stigmatization not only impedes FHH livelihoods, but negatively impacts their quality of life.

### 2.2.6 Aid Obstacles

FHH are more likely to live on the peripheries of camps or cities.<sup>57</sup> This increased distance from markets, water sources, health centers, and shared toilets steals valuable time away from income-generating activities due to long commutes.<sup>58</sup> It also increases exposure to risks for women traveling alone, especially in cultures that frown upon mobility for unaccompanied women.

Low levels of female leadership in aid distribution and patriarchal aid distribution structures also contributed to vulnerability.<sup>59</sup> Patriarchal structures often mandate that aid be distributed to a man, or with a man present—a luxury that many SFHH may not possess. In cases when aid is distributed to women directly, distribution workers may request sexual favors in return.<sup>60</sup> Sexual assault continues to pose a

challenge at aid distribution sites, both by fellow migrants and aid workers.

Existing literature on FHH presents a mixed picture, but skews toward supporting the “feminization of poverty” hypothesis. It highlights heightened risks and vulnerabilities for FHH in most cases, but also recognizes some empowerment effects for displaced single women and FHH. The literature also largely excludes men, undermining the strength of this hypothesis.

## 3. Sudan Case Study

### 3.1 Context: Abu Shouk and El Salam



Figure 1: Map of Sudan, *CIA World*

Sudan is in East Africa and is characterized by an arid, drought-prone climate.<sup>61</sup>

<sup>55</sup> Roula El-Masri et al., *Shifting Stands: Changing Gender Roles Among Refugees in Lebanon*, Oxfam (Sep. 2013) at page 43; Karen Culcasi, “We are Women and Men Now:” *Intimate Spaces and Coping Labour for Syrian Women Refugees in Jordan*, *Transactions of the Inst. of British Geographers* vol. 44 (2019); Virginie Le Masson et al., *Disasters and Violence Against Women and Girls*, Overseas Dev. Inst. (Nov. 2016).

<sup>56</sup> Mayra Buvinic and Greeta Rao Gupta, *Female-Headed Households and Female-Maintained Families: Are They Worth Targeting to Reduce Poverty in Developing Countries?*, *Econ. Dev. And Cultural Change* vol. 45 (1997).

<sup>57</sup> Dale Buscher, *Displaced Women and Girls at Risk: Risk Factors, Protection Solutions and Resource Tools*, Women's Comm'n for Refugee Women & Children (2006).

<sup>58</sup> Cavill et al., *Lighting, WASH, and Gender-Based Violence in Camp Settings*, WEDC (Aug. 2018).

<sup>59</sup> Dorothy Sang, *One Year On: Time to Put Women and Girls at the Heart of the Rohingya Response*, Oxfam (Sept. 11, 2018).

<sup>60</sup> Erin Mooney, *Internal Displacement and Gender*, UNICEF (Apr. 17, 2020).

<sup>61</sup> *Sudan Country Profile*, Internal Displacement Monitoring Ctr. (Apr. 17, 2020).

Approximately 64% of people live in rural areas, largely practicing animal husbandry or subsistence agriculture.<sup>62</sup> The Darfur region— distinguished by one of its largest cities, El Fasher— lies near the border with Chad, South Sudan, and the Central African Republic.

Urbanization and protracted internal displacement in Abu Shouk and El Salam make this a particularly interesting case study. Due to the high proportion of female-headed households in each camp, this case study is ripe for comparative research on SFHH and SMHH. According to JIPS's (2019) analysis, 41% of households in El Salam and 56% in Abu Shouk are headed by women.<sup>63</sup> As conflict continues to displace scores of rural communities to urban centers in Sudan, exploring Abu Shouk and El Salam is also timely and relevant for practitioners seeking to improve humanitarian targeting policies in Darfur.

In 2003, Darfur became the epicenter of a violent conflict, resulting in what some

experts consider one of the “deadliest civil wars in the second half of the 20th century.”<sup>64</sup> The conflict generated scores of internally displaced people and refugees. Approximately 1,997 million were still internally displaced as of November 2017.<sup>65</sup> According to the Internal Displacement Monitoring Center, 2020 witnessed 454,000 new disaster and 79,000 new conflict displacements in Darfur.<sup>66</sup> Beyond the armed conflict, flooding also continues to spark new displacements across Sudan.<sup>67</sup>

According to JIPS and the World Bank,<sup>68</sup> internally displaced people living in Abu Shouk and El Fasher are demographically and socioeconomically distinct from local, non-displaced hosts in El Fasher.<sup>69</sup> JIPS-World Bank analyses find that camp-based internally displaced people do not primarily depend on aid for food or income.<sup>70</sup> They often combine humanitarian assistance with wage labor and draw on their social networks to create hybrid livelihoods in informal labor markets. They have also become increasingly politically active in their

Map 1: IDPs place of origin

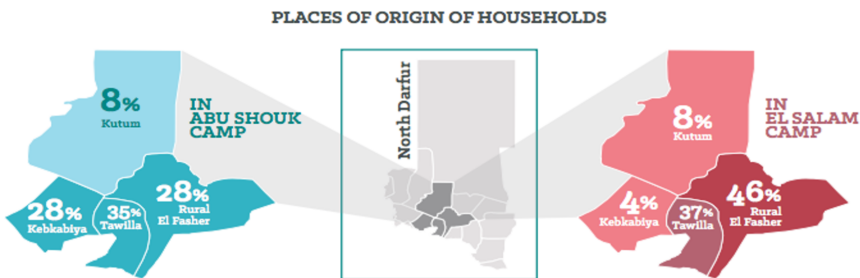


Figure 2: Places of Origin of IDP Households in Abu Shouk and El Salam Camps, *Joint IDP Profiling Service*, 2019

<sup>62</sup> *Invisible and Excluded: The Fate of Widows and Divorcees in Africa*, World Bank (Jan. 20, 2018).

<sup>63</sup> *Progress Towards Durable Solutions*, JIPS (2019).

<sup>64</sup> *Supra* footnote 61.

<sup>65</sup> *Sudan 2018 Humanitarian Needs Overview*, UN OCHA (Mar. 13, 2018).

<sup>66</sup> *Supra* footnote 61.

<sup>67</sup> *Id.*

<sup>68</sup> *See, supra* footnote 14.

<sup>69</sup> As generated from the World Bank analysis of the data used in this paper. *See*, Utz Pape, *Sudan Profiling Preparation*, World Bank (2017).

<sup>70</sup> *Id.*



neighborhoods, such as through voicing their rejection of potential camp closures.<sup>71</sup>

Camp-based IDP households are more likely to be female-headed with a lower overall level of education, especially for women.<sup>72</sup> Women are less likely to be literate or have access to education than men.<sup>73</sup> Gender in Darfur is policed by legal and religious institutions as much as conservative cultural and customary norms. Customary institutions in Sudan curtail rights and participation for women in socio-political and economic spaces.<sup>74</sup> These institutions can complicate access to resources. Hakura—an informal social institution that governs land tenure negotiations—is one such system.<sup>75</sup> Though Sudanese women legally have formal access to land, ownership rights, transfer of ownership from a husband, and property access in the absence of a male relative are rarely actually granted under hakura. Hakura also restricts access to credit and other financial services for Sudanese women.<sup>76</sup> Illiteracy compounds this issue, as evidenced by cases in which some South Sudanese women, unaware of government land registration processes, were misled into signing their property rights away.<sup>77</sup> The inability to register land without a man has left many FHH landless and unable to return to their homes, cutting off access to a critical strategy for camp-based women hoping to draw on whatever agricultural or livestock assets they still possess.

Adverse property conditions may push

some single women toward negative or “maladaptive” coping strategies. In urban and peri-urban areas of Sudan, such “zero-sum” strategies include commercial sex work or “survival sex” as well as alcohol brewing and domestic labor. These activities expose women to physical danger and put them at a greater risk of HIV infection.<sup>78</sup> In El Fasher, especially, IDP women now primarily work in such unregulated, informal jobs to make ends meet.<sup>79</sup>

Gender and religious norms also curtail the right to work for many single Sudanese women.<sup>80</sup> The Muslim Family Law of 1991 requires wives to get permission from their husband if working outside of the home but leaves no such instruction for single women.<sup>81</sup> This creates a gap in the interpretation of social and religious norms that could invite stigma for single, working women. However, in principle, customary laws do not completely exclude single women. For example, divorced and widowed women are customarily entitled to a mahr, a second portion of the dowry that women receive upon divorce or the death of their husband. In practice, mahr are rarely paid.<sup>82</sup>

In addition to legal and customary constraints on work and land tenure, Sudanese women are also governed by sociocultural norms that impact their public mobility and social roles. Because they are forced to generate income, often in public spaces, IDP SFHH may feel the effects of these legal and cultural restraints particularly strongly. Di-

<sup>71</sup> Zurab Elzarov, *Emerging Options for Durable Solutions in Darfur*, Forced Migration Rev. vol. 62 (Oct. 2019).

<sup>72</sup> *Supra* footnote 63.

<sup>73</sup> *Supra* footnote 51.

<sup>74</sup> Brief Overview of Key Gender Issues, LOGiCA (Apr. 2013).

<sup>75</sup> The applicability of hakura to rental negotiations, more common in IDP camp settings, remains unclear.

<sup>76</sup> *Id.*

<sup>77</sup> Monica Sanchez Bermudez et al., *Life Can Change: Securing Housing, Land and Property Rights for Displaced Women*, NRC (2014).

<sup>78</sup> Sara Pantuliano et al., *City Limits: Urbanization and Vulnerability in Sudan*, HPG (2011) at page 28.

<sup>79</sup> *The Humanitarian Situation in Abu Shouk Camp, al-Fasher, North Darfur*, SUDO UK (Feb. 2012).

<sup>80</sup> Mala Htun et al., *Gender-Discriminatory Laws and Women's Economic Agency*, Soc. Politics vol. 26 (Jan. 2019).

<sup>81</sup> Liv Tønnessen, *Women at Work in Sudan: Marital Privilege or Constitutional Right?*, Int'l Studies in Gender, State & Society vol. 26 (May 2019).

<sup>82</sup> *Id.*

vorced and widowed women in Sudan may suffer particularly from social stigma and exclusion that threatens their livelihoods, regardless of their displacement status. Denial of matrimonial property and infrequency of mahr payments leave women “destitute or reliant on their natal family or the state,” especially in the context of “swift divorces.”<sup>83</sup> Divorced women may also lose access to livestock and agricultural inputs, left to perform wage labor instead. Those that retain pastoral assets may lack the ability to care for remaining farmland or livestock alone.

Divorced women also bear the brunt of social stigma and are often blamed for the marriage failing,<sup>84</sup> deepening their social ostracization even amongst other women. This relates to well-studied literature on “voluntariness” of household headship and social perceptions. Research finds that the degree of “voluntarism” in becoming a SFHH impacts autonomy and risk for the household, including in how the household is treated and perceived by others.<sup>85</sup> Widows experience similar setbacks, despite their more “involuntary” marital status. Most often, widowed women in Sudan also “lack the skills to get jobs outside of their homes” and leave “empty-handed” when separated from their husband.<sup>86</sup>

#### 4. Operationalization of Variables and Methodology

This paper uses two methods of quantitative analysis to compare vulnerability indicators between SFHH and SMHH, as well as between divorced, widowed, and never-married SFHH. These include (1) descriptive

statistics using t-tests and cross-tabulations and (2) regression analyses using Ordinary Least Squares (OLS) multiple k- variable regressions and probit regressions (dprobit, to bound binaries). The following standard regression is employed:

$$Y \text{ (Dependent Variable)} = \lambda + \alpha \text{ (Independent Variable)} + \beta_1 \text{ (Strata)} + \beta_n \text{ (Controls)} + v \text{ (Error Term)}, \text{ robust}$$

#### 4.1 Data Quality

JIPS and the World Bank worked with IDP camp representatives, local sheiks, and elder and youth enumerators to collect survey data on 3,002 households (18,553 individuals) in El Fasher, Abu Shouk IDP Camp, and El Salam IDP Camp in Darfur.<sup>87</sup> However, JIPS-World Bank dataset does suffer from possible data quality challenges. This may contribute to potential bias and measurement error. These data quality challenges fall into broad categories: challenges in defining “gender,” “household,” and “female-headed,” challenges to survey design (i.e. autocorrelation between displacement status and IDP camp residency), and data collection bias (i.e. beneficiary self-reporting challenges). However, it is outside the scope of the current paper to go into detail on each challenge.

#### 5. Regression Results

##### 5.1 About the Dataset

The following sections present the results of regressions comparing IDP SFHH to IDP SMHH, as well as comparing divorced, never married, and widowed IDP SFHH to

<sup>83</sup> M. Siraj Sait, *Chapter 11: Our Marriage, Your Property? Renegotiating Islamic Matrimonial Property Regimes, Changing God's Law*, Routledge (2016).

<sup>84</sup> *Supra* footnote 79.

<sup>85</sup> Louise Waite, *How Is Household Vulnerability Gendered? Female-Headed Households in the Collectives of Suleimaniyah*, Iraqi Kurdistan, Disasters vol. 24 (Dec. 2002).

<sup>86</sup> Julia A. Duany & Wal Duany, *War and Women in the Sudan: Role Change and Adjustment to New Responsibilities*, Northeast African Studies vol. 8 (2001).

<sup>87</sup> *Progress Towards Durable Solutions*, JIPS (2019).

<i>HHH Marital Status (Displaced)</i>	<b>Male Head</b>	<b>Female Head</b>	<b><i>Total</i></b>
<b>Single (Divorced, Widowed, Never Married)</b>	271	1,421	1,692
<b>Not Single (Other Headship)</b>	6,020	4,142	10,162
<b><i>Total</i></b>	<b>6,291</b>	<b>5,563</b>	<b>11,854</b>

Table 4: Number of Households El Fasher vs. Camp (Abu Shouk) and Camp (El Salam)

<i>Location</i>	<b>Male Head</b>	<b>Female Head</b>	<b><i>Total</i></b>
<b>Camp (Abu <u>Shouk</u> and El Salam)</b>	1,031	951	1,982
<b>El Fasher</b>	701	319	1,020
<b><i>Total</i></b>	<b>1,732</b>	<b>1,270</b>	<b>3,002</b>

Table 7.1: Comparative Descriptive Statistics, SFHH vs. SMHH

	<b>SFHH</b>	<b>SMHH</b>
<b>Average Household Member Age</b>	23	21
<b>Average Household Head Age</b>	48	34
<b>Dependency Ratio</b>	1.275	1.114

each other. To understand these regression analyses, it is first useful to review general demographics in Abu Shouk and El Salam. Table 5 represents the number of members living in households headed by a man or a woman in Abu Shouk and El Salam, by “type of singleness,” such as never married, divorced, or widowed. Summary data suggests that there are 171 SFHH and 134 SMHH in Abu Shouk and El Salam.

## *5.2 Regression Results: Comparing Individuals Living in IDP SFHH vs. Individuals Living in IDP SMHH*

### 5.2.1 Hypothesis

Sudanese sociocultural and gender norms suggest that SFHH in Abu Shouk and El Salam experience more social stigma and economic hardship than SMHH because of gendered property laws, limited access to resources, social exclusion, restricted mobility, lack of training in urban livelihoods skills, and reliance on under-regulated informal economies.

This paper hypothesizes that SFHH in Abu Shouk and El Salam will exhibit greater vulnerability across all indicators compared to SMHH. The following regression tests for differences between SFHH and SMHH.

### 5.2.2 Results

Of single-headed households in Abu Shouk and El Salam with a lactating member—understood in conventional literature as an indicator of increased vulnerability—approximately 77% were headed by a single woman. A greater proportion of households with pregnant members (80%) and with members who had experienced a birth in the last two years (78%) were also headed by single women. Similarly, of households with a disabled member, 90% were SFHH, while of households with a chronically diseased member, 93% were SFHH. All displaced

SFHH and SMHH reported experiencing obstacles to receiving aid, and approximately 13.5% of all single-headed households reported lacking secure access to aid. Approximately 6% of SFHH reported having land that makes money, while no SMHH member reported having such land. SMHH tended to live further from markets and health centers in Abu Shouk and El Salam, while SFHH tended to live further from water sources.

With these descriptive statistics in mind, this paper finds the following (where  $dF/dx$  is the percentage point likelihood of the variable for SFHH compared to SMHH):

Regression 1 indicates that SFHH were, on average, more likely to engage in the following activities than SMHH: limiting food portions (25 percentage points), including for adults (11 percentage points); consuming less preferred foods (18 percentage points); reducing meals due to insufficient food access (10 percentage points); and engaging in negative or maladaptive coping mechanisms (24 percentage points) (including removing children from school at .5 percentage points). Each of these results are statistically significant. Having a lactating, new mother, disabled, or pregnant household member increased the coefficient on negative coping for long-term displaced SFHH. Reducing the distance to a health center, a proxy for town center, and having land that makes money significantly reduced the likelihood of relying on negative coping strategies for SFHH compared to SMHH.

However, SFHH were not more likely to fall beneath the poverty line or the extreme poverty line than SMHH. They were also no more likely to report feeling physically unsafe in certain situations, such as walking at night, or feel perceptions of weak social connectedness with locals compared to SMHH.

### Results of Regression 1, SFHH vs. SMHH (Probit)

<i>Variable</i>	<u>dF/dx</u>	Std. Err.	z	P> z	x-bar	[ 95% C.I. ]
<b>Poor</b>	-0.00597	0.0066272	-0.84	0.4	0.825 5	<u>-.018961</u> <u>.007018</u>
<b>Extreme Poor</b>	0.02150 8	0.0298662	0.74	0.457	0.825 5	<u>-.037028</u> <u>.080045</u>
<b>Safe Walking Night</b>	0.05784 9	0.0434497	1.34	0.18	0.826 8	<u>-.027311</u> <u>.143008</u>
<b>Eat Less Preferred Food ***</b>	0.18574	0.0424847	4.66	0	0.825 3	<u>.102471</u> <u>.269009</u>
<b>Borrowed Food</b>	0.04304 7	0.0433522	1	0.318	0.828 8	<u>-.041921</u> <u>.128016</u>
<b>Limited Food Portions ***</b>	0.25686 9	0.0404759	6.28	0	0.815 5	<u>.177538</u> <u>.3362</u>
<b>Limited Adult Food Portions ***</b>	0.11641 6	0.0421365	2.62	0.009	0.826 8	<u>.03383</u> <u>.199002</u>
<b>Reduced Number of Meals **</b>	0.10612 3	0.0462226	2.31	0.021	0.824 9	<u>.015529</u> <u>.196718</u>
<b>Used Negative Coping ***</b>	0.23856 6	0.0842103	3.26	0.001	0.773 8	<u>.073517</u> <u>.403615</u>
<b>Removed Children from School **</b>	0.00564 7	0.0022343	2.53	0.011	0.816 8	<u>.001268</u> <u>.010026</u>

Table 8.2: Results of Regression 1, SFHH vs. SMHH (OLS)

<i>Variable</i>	Coeff.	Robust SE	t	P> t	[ 95% C.I. ]
<b>Share Toilet **</b>	0.077996 8	0.039465	1.98	0.048	.0005731 <u>.1554205</u>
<b>No Money Seven Days</b>	- 0.012479 3	0.039912 9	-0.31	0.755	-0.0907809 <u>.0658223</u>
<b>Coping Strategies Index ***</b>	-3.64995	0.954514 3	-3.82	0	-5.522606 <u>-1.777293</u>

## 6. Analysis and Conclusions

### 6.1 Analysis

This paper examined the common assumption in humanitarian targeting that SFHH are universally more vulnerable than SMHH in the context of the Abu Shouk and El Salam IDP camps in Sudan. This paper finds through regression analysis of common vulnerability indicators that these assumptions are misguided in the Abu Shouk and El Salam contexts, challenging the “feminization of poverty” hypothesis in the specific context of these two Sudanese IDP camps.

### 6.2 Regression Analysis

This paper finds that there are differences between SMHH and SFMM in Abu Shouk and El Fasher, but those differences are not universal. Contrary to the “feminization of poverty” hypothesis, SMHH in Abu Shouk and El Salam experience a greater incidence of poverty and a higher coping strategies index score than SFHH. This is surprising, given that more SFHH have especially vulnerable members such as lactating and pregnant women, the disabled, and the chronically ill. On the other hand, SFHH exhibit more vulnerability to food insecurity and negative coping, as well as less access to improved housing, as evidenced by toilet sharing. This finding supports the common assumption that SFHH lack access to safe and sustainable livelihoods in Abu Shouk and El Salam.<sup>88</sup> This may be due to their limited mobility, limited education, balancing new gender roles, challenges to working outside of the home, and crowded or peripheral living conditions. It may also be a result of lacking skills for the urban la-

bor market. These findings are consistent with qualitative research in El Fasher,<sup>89</sup> Abu Shouk, and El Salam,<sup>90</sup> which details how single women engage in informal unregulated economies, such as selling on roadsides. However, it is inconsistent with the World Bank’s (2013) finding that most internally displaced women have shifted from survival to resilience-building livelihoods in Abu Shouk and El Salam, or with this paper’s finding that more SFHH make money from land holdings despite patriarchal property rights and inheritance laws.<sup>91</sup> These regressions demonstrate that SFHH largely remain in the survival stage, possibly relying on maladaptive coping.

Surprisingly, economic conditions also do not result in statistically greater physical insecurity for camp-based SFHH. For example, SFHH were no more likely than SMHH to perceive themselves as unsafe at night or experience a safety shock, contradicting the common victimization narrative applied to internally displaced women and FHH. Regression 1 highlights how SMHH are also vulnerable in camp settings and in need of gender-specific assistance, especially in poverty-reduction initiatives and access to markets and health centers. This has policy implications: gender-based proxy approaches to targeting may overlook SMHH with urgent humanitarian needs, based possibly on their singleness.

The analysis presented here suggests that gender alone does not explain increased vulnerability for SMHH and SFHH in Abu Shouk and El Fasher. This paper largely rejects the conventional wisdom that SFHH are universally more vulnerable than SMHH in internal displacement. This rejection is consistent with a small body of re-

<sup>88</sup> Though it does not address the discrepancy between negative coping and CSI, which contradict each other. This would be appropriate for further study.

<sup>89</sup> *The Humanitarian Situation in Abu Shouk Camp, al-Fasher, North Darfur*, SUDO UK (Feb. 2012).

<sup>90</sup> Osman Mohamed Osman Ali & Ali Mohamed Mahmoud, *From a Temporary Emergency Shelter to an Urbanized Neighborhood: The Abu Shoak IDP Camp in North Darfur*, CMI (2016).

<sup>91</sup> *Brief Overview of Key Gender Issues*, LOGICA (Apr. 2013).

search focused on reducing generalization in targeting practices. For example, Kibreab (2003) notes that due in part to the oversimplification of female headship, male household heads and members of male-headed households may be worse-off in some cases.<sup>92</sup> Twerefou et al. (2014) argue that “characteristics effects” are the most suitable for comparing poverty in SFHH and SMHH, rather than gender alone.<sup>93</sup> Using household characteristics serves as a “stand-in” for certain unobservable characteristics such as household consumption preference, discount rates, and attitudes toward risk. Engel and Ibañez (2007) and Anyanwu (2010) use similar approaches in their research.<sup>94</sup> The present paper joins these studies in offering an alternative to the gender proxy targeting approach. These regression results generate two key policy recommendations, as well as beg the question: should practitioners target by female household headship at all?

### 6.3 *Rebuttal: Gender Proxy as Compensation*

Some practitioners and researchers argue that targeting SFHH as a proxy for vulnerability, even if they are not universally more vulnerable, does still succeed in both its practical and feminist aims. As Buvinic and Gupta (1997) note, targeting FHH can be helpful when poor households are not prevalent and when other reliable methods of household identification are unavailable.<sup>95</sup> Yet they also note in areas with high rates of

poverty, targeting by a system of universal triage such as gender can deepen beneficiaries’ mistrust of humanitarian assistance. Others argue that targeting SFHH for assistance compensates unpaid care work that women perform, even if SFHH are not the most vulnerable in their communities. This can help create conditions for long-term household resilience and recovery.<sup>96</sup> FHH targeting may also support SFHH-specific physical and psychological needs,<sup>97</sup> especially when these interventions are attached to cash assistance.

However, these benefits do not necessarily outweigh the costs of gender stereotyping. As this paper demonstrates, the “feminization” approach can promote a “reductive framing of gender” that is inflexible to changing contexts and presupposes that traditional gender roles remain static in displacement.<sup>98</sup> The rhetoric surrounding SFHH vulnerability can also have a paternalistic “disempowerment” effect, stripping women of their agency and decision-making power. Insisting on using SFHH as a targeting proxy can contribute to the victimization of SFHH as they continue to be “widely equated with the ‘poorest of the poor.’”<sup>99</sup>

This paper contributes a case study to the body of literature challenging the “feminization of poverty” hypothesis. This leads to two policy recommendations directed

<sup>92</sup> Gaim Kibreab, *Rethinking Household Headship Among Eritrean Refugees and Returnees*, Dev. & Change vol. 34 (May 2003).

<sup>93</sup> Twerefou et al., *Determinants of Poverty Among Male-Headed and Female-Headed Households in Ghana*, Ghanaian J. of Econ. vol. 2 (Dec. 2014).

<sup>94</sup> Stefanie Engel & Ana Maria Ibanez, *Displacement Due to Violence in Colombia: A Household-Level Analysis*,

<sup>95</sup> Econ. Dev. & Cultural Change vol. 55 (Jan. 2007); John C. Anyanwu, *Poverty in Nigeria: A Gendered Analysis*, African Dev. Bank Group vol. 11 (Nov. 2010).

<sup>96</sup> *Supra* footnote 34.

<sup>97</sup> Rekha Mehra, *Women, Empowerment, and Economic Development*, Annals of the Am. Academy of Pol. & Soc. Sci. vol. 554 (1997); Almudena Moreno Mínguez, *Gender, Family and Care Provision in Developing Countries: Towards Gender Equality*, Progress in Dev. Studies vol. 12 (Oct. 2012).

<sup>98</sup> Nicola Jones et al., *Raising the Visibility of IDPs: A Case Study of Gender- and Age-Specific Vulnerabilities Among Ethiopian IDP Adolescents*, Overseas Dev. Inst. (2019).

<sup>99</sup> *Id.*; Alice Szczepanikova, *Gender Relations in a Refugee Camp: A Case of Chechens Seeking Asylum in the Czech Republic*, J. of Refugee Studies vol. 18 (Sep. 2005).

<sup>99</sup> Sylvia Chant, *Female Household Headship and the Feminisation of Poverty*, LSE Research Online (2003).



toward humanitarian practitioners and researchers that seek to target vulnerable Abu Shouk and El Salam households in a more effective, gender-sensitive way.

#### 6.4 Policy Recommendations

##### 6.4.1 Focus on “Single Parent” and “Type of Singleness” Indicators in Data Collection

As early as 1997, Buvinić and Gupta suggested that “FHH” may not be the most accurate term to describe households that are economically dependent on women. They suggested terms such as “single-parent,” “male absent,” or “female-led” instead.<sup>100</sup>

These regression results suggest that a gender-neutral term such as “single-parent” or “single-headed” would indeed be more appropriate. Focusing on “single-parent” or “single-headed” headed households, rather than FHH or SFHH, reduces the gendered assumption that women are universally more vulnerable. This opens pathways for targeting mechanisms to highlight SMHH as well, who are, as Regression 1 demonstrated, more likely to experience certain vulnerabilities than SFHH, but less likely to be included in gender policy recommendations.<sup>101</sup>

Understanding and embracing that gender issues include masculinities is a first step toward more gender-sensitive data analysis—rather than only woman-sensitive analysis. When masculinities are excluded, proper gender mainstreaming of humanitarian programs is unlikely to occur.<sup>102</sup> According to White (2000), “... bringing men in must not mean replacing a focus on women with a focus on men, but a genuinely integrated and relational approach. This should

include locating gender within broader dimensions of power and social difference, and recognizing its symbolic as well as material aspects.”<sup>103</sup> This paper reinforces White, while contributing another example of how this need plays out in urban internal displacement contexts. This requires a shift in data collection methods, survey design, and more disaggregated, intersectional data analysis that recognizes the heterogeneity of “single-headed” households and accurately captures their level of external support. Doing so can help prevent over-inclusion of SFHH in humanitarian programming at the expense of other single, similarly vulnerable households.

##### 6.4.2 Invest in Participatory, Community-Based Targeting and Area-Based Approaches (ABAs)

Targeting remains necessary in humanitarian action due to time and resource constraints. The question becomes not whether to target, but if proxy targeting is the most appropriate in peri-urban, protracted IDP camp environments such as Abu Shouk and El Salam.

Participatory and area-based approaches to targeting offer alternatives to proxy targeting in these environments. While a thorough review of the literature on ABAs is outside the scope of this paper, it is sufficient to note that ABAs respond to multi-sectoral needs as opposed to sector-specific needs. They are concerned with programming and targeting by place, as opposed to technical sectors such as cash, water, sanitation, and hygiene, or protection. ABAs are therefore well-suited to complex urban and peri-urban emergencies, where multiple overlap-

<sup>100</sup> *Supra* footnote 34.

<sup>101</sup> *Supra* footnote 18.

<sup>102</sup> *Masculinities: Male Roles and Male Involvement in the Promotion of Gender Equality: A Resource Packet*, Women's Comm'n for Refugee Women & Children (Sep. 2005).

<sup>103</sup> Sarah C. White, ‘Did the Earth Move?’ *The Hazards of Bringing Men and Masculinities into Gender and Development*, IDS Bulletin vol. 31 (Apr. 2000).



ping household needs co-exist simultaneously.<sup>104</sup> ABAs work at the neighborhood level, adapting to diverse community-level needs over time. Their recognition of the household as a non-homogenous entity means this approach is particularly useful for working with “single-headed” households.<sup>105</sup>

Community-based approaches are also well-suited to working with “single-headed” households. The logic underpinning community-based targeting is simple—on a small, local scale, communities will best be able to identify who amongst them is the most vulnerable. Some aid organizations assume that this approach only works effectively in rural, kinship, clan-based, or village communities. Yet neighborhood-level ABAs make it possible to utilize participatory targeting in urban and peri-urban areas, especially in tight-knit protracted displacement contexts.<sup>106</sup> Abu Shouk and El Fasher fall into this category. Area-based participatory approaches may include, but are not limited to: focus group discussions, locally-led household economy surveys and proxy-means tests, community scorecards, and working with local leaders to identify most-vulnerable households.<sup>107</sup>

Participatory targeting is not without its challenges. Urban or peri-urban migrants may find themselves in unfamiliar neighborhoods, without a “community” that can accurately identify their targeting needs.<sup>108</sup> Participatory scoring also requires high lev-

els of transparency and downward accountability. Participatory and community-based approaches—especially those relying on local leaders—may inadvertently exclude women. In Darfur, women remain under-represented in community organizations and leadership positions that help determine how aid is distributed.<sup>109</sup> Humanitarian organizations should therefore perform careful context analysis to ensure that community approaches will be gender-inclusive. Yet when they are well-developed, participatory approaches can lead to more relevant, timely, and holistic humanitarian programming for “single-headed” households. The self-help community practice of *nafir* amongst rural Sudanese women suggests that Abu Shouk and El Salam would be fertile environments for gender-informed community targeting approaches to take root.

## 6.5 Conclusion and Future Research

This paper demonstrated that targeting by household head gender is an imperfect proxy for vulnerability in Abu Shouk and El Salam, North Darfur. It also underscored that marital status matters in internal displacement. One size does not fit all when targeting FHH.

However, the regression analyses in this paper tell only one part of the story. Quantitative data cannot capture displacement narratives or migrants’ lived experiences of vulnerability and resilience. Humanitar-

<sup>104</sup> Leah Campbell, *Working with People and Communities in Urban Humanitarian Crises*, ALNAP (2018).

<sup>105</sup> Ronak B. Patel et al., *What Practices are Used to Identify and Prioritize Vulnerable Populations Affected by Urban Humanitarian Emergencies?*, Oxfam (Jan. 2017); Elizabeth Parker & Victoria Maynard, *Humanitarian Response to Urban Crises: A Review of Area-Based Approaches*, Human Settlements Working Paper (July 2015); David Sanderson & Pamela Sitko, *Ten Principles for Area-Based Approaches in Urban Post-Disaster Recovery*, Humanitarian Practice Network vol. 71 (Mar. 27, 2018); David Sanderson, *Implementing Area-Based Approaches (ABAs) in Urban Post-Disaster Contexts*, *Env. & Urbanization* vol. 29 (2017).

<sup>106</sup> *Supra* footnote 21.

<sup>107</sup> See, Paula Armstrong & Karen Jacobsen, *Cash Transfer Programming for Syrian Refugees*, Feinstein Int’l Ctr (Feb. 2016); Pascale Schnitzer, *How to Target Households in Adaptive Social Protection Systems? Evidence from Humanitarian and Development Approaches in Niger*, *J. of Dev. Studies* vol. 55 (2019).

<sup>108</sup> *A Community-Based Approach in UNHCR Operations*, UNHCR (Jan. 2008).

<sup>109</sup> Devanna De La Puente, *Women’s Leadership in Camps for Internally Displaced People in Darfur, Western Sudan*, *Community Dev. J.* vol. 46 (July 2011).

ian researchers in Abu Shouk and El Salam might consider pairing a quantitative data collection approach with qualitative surveys and interviews to further contextualize proxy-based, area-based, and participatory targeting mechanisms. In doing so, humanitarian organizations can continue to work toward most effectively identifying vulnerable migrant populations, while also empowering narratives of FHH ingenuity and resilience—and continuing to challenge the “feminization of poverty” hypothesis.

# With a Little Help From My Friends: A Gulf-States Model for U.S. Facilitated Cooperation Among Adversaries

*Ofir Dayan*

## Abstract

This paper examines the possibilities of enhanced cooperation between traditional adversaries, and the role of major states as potential facilitators. This research also attempts to categorize the types of security cooperation and assistance given by superpowers to their clients and the extent to which this assistance can help facilitate cooperation between adversaries. I hypothesize that: 1) great powers have a major impact on the way their clients interact, even to the point of turning adversaries to allies, 2) an increase in aid to clients would lead to more cooperation between them, and 3) aid in the form of security guarantees and military aid is better suited than economic aid to achieve cooperation. To evaluate these hypotheses, this paper examines the U.S. facilitated cooperation between Israel and Egypt using academic and practitioner-written literature, official U.S. accounts of security aid given to Israel and the Gulf States, and interviews.

## Introduction

In April 2018, the Crown Prince Mohammed bin Salman of Saudi Arabia visited the United States to gain support for his country's long struggle against Iranian influence in the Middle East. This power struggle, known as the Middle East's Cold War,<sup>1</sup> led to proxy wars and an arms race between the two countries. During this trip, Mohammed

bin Salman said, "Palestinians and the Israelis have the right to have their own land. But we have to have a peace agreement to assure the stability for everyone and to have normal relations."<sup>2</sup> This statement represented a radical reversal. Saudi Arabia previously refused to recognize both Israeli claims to the land of Israel, as well as Israel's very existence. The Crown Prince also proclaimed that "there are a lot of interests Saudi Arabia share[s] with Israel and if there is peace, there would be a lot of interest between Israel and the Gulf Cooperation Council countries."<sup>3</sup> This statement likely referred to the shared Iranian threat and the potential for cooperation between Israel and Saudi Arabia, as well as between Israel and all Gulf States. Further, the Prince chose to say these statements while visiting the United States. This choice of venue may indicate that bin Salman views the U.S. as vital to his country's relationship with Israel. Arguably, he might have believed such statements would please the U.S., potentially aiding his country through increased security cooperation and assistance.

To understand these processes and show that security cooperation may facilitate cooperation even better than economic aid, this research uses both academic literature and official United States accounts of security cooperation and assistance given to Israel and the Gulf States. The literature mainly relies on the writings of American military and civilian researchers who study

<sup>1</sup> See e.g., Sam Ellis, *The Middle East's Cold War, Explained*, Vox (July 17, 2017).

<sup>2</sup> Saudi Crown Prince Says Israelis Have Right to Their Own Land, Reuters (April 2, 2018).

<sup>3</sup> *Id.*

security cooperation and assistance. However, research is not readily available on the effects of cooperation and assistance given by a larger power on relationships between smaller powers. The data on security cooperation and assistance given by the U.S. is drawn from official U.S. Green Books, a type of official document recording assistance given to other countries, and from the National Defense Authorization Act's information about Israel and the Gulf States. This research examines a case study of superpower aid facilitating cooperation between adversaries: U.S. aid to Egypt and Israel, following decades of conflict.

Finally, this paper analyzes interviews of three individuals representing each side of the security cooperation and assistance triangle: the U.S. (the provider), Israel, and the Gulf States (the recipients). The respondents are asked about their respective government's relationship with the others and the effect of security cooperation and assistance on those relationships.

The influence of major powers' aid on the relationships of other countries, particularly adversaries, was not discussed extensively in the academic literature. This research contributes to the pool of knowledge and the understanding of the influence great powers have on their client states and these clients' relationship with other countries. These findings may have practical implications on how great powers use wealth and military might to promote and facilitate cooperation and potentially reconciliation, normalization, and peace. If successful, these efforts can help clients, promote great powers' interests, and achieve a more stable

international system.

## Background

According to the Department of State, the U.S. was the first country to recognize Israel upon its founding in May of 1948. The U.S. defines Israel as "America's most reliable partner in the Middle East."<sup>4</sup> The U.S. describes the two countries' relationship as "strong" and notes U.S. assistance to Israel is "anchored by over \$3 billion in foreign military financing annually."<sup>5</sup> The U.S. also participates in high level of exchanges with Israel, including joint military exercises, military research, and weapons development.<sup>6</sup> In terms of the countries' economic relationship, the U.S. is Israel's single largest trading partner.<sup>7</sup>

According to the State Department, the U.S. established relations with Bahrain as soon as the latter gained independence and it is "a vital U.S. partner in defense initiatives."<sup>8</sup> Bahrain hosts U.S. military bases and participates in American-led coalitions. United States assistance, according to the Department "enables Bahrain to continue to obtain equipment and training for its own defense and to operate alongside U.S. air and naval forces."<sup>9</sup> Moreover, it promotes regional security.<sup>10</sup>

The U.S. and Oman established diplomatic relations in 1972 after almost 150 years of bilateral engagement. Oman, according to the U.S., is "helping the United States realize its wide-ranging stability goals for the region."<sup>11</sup> Oman's friendship with the U.S. increases U.S. national security and promotes its interests in the region. The U.S. assists

<sup>4</sup> *U.S. Relations with Israel: Bilateral Relations Fact Sheet*, U.S. Dep't of State (Jan. 20, 2021).

<sup>5</sup> *Id.*

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>8</sup> *U.S. Relations with Bahrain: Bilateral Relations Fact Sheet*, U.S. Dep't of State (Dec. 4, 2020).

<sup>9</sup> *Id.*

<sup>10</sup> *Id.*

<sup>11</sup> *U.S. Relations with Oman: Bilateral Relations Fact Sheet*, U.S. Dep't of State (Dec. 13, 2020).

Oman in counterterrorism and narcotics through aid and training.<sup>12</sup>

Saudi Arabia, the largest country in the region, shares interests with the U.S. in preserving regional stability and security.<sup>13</sup> The two governments “consult closely on a wide range of regional and global issues.”<sup>14</sup> Saudi Arabia is also America’s largest foreign military sales consumer. Through these sales, the U.S. helps the country face security challenges.<sup>15</sup>

The United Arab Emirates (UAE) is a key strategic partner to the United States.<sup>16</sup> The countries cooperate to promote joint interests both in the region and globally. According to the State Department, the U.S. provides export and border security to the UAE.<sup>17</sup>

The relationship between Israel and the Gulf States is largely unofficial. According to Ulrichsen (2016), leaders in the region have, throughout the years, held largely “antagonistic” views toward Israel.<sup>18</sup> Oman, who supported the Egyptian-Israeli peace agreement in the late 1970’s, was an outlier.<sup>19</sup> The hostile Gulf approach towards Israel began to change in the 1990s with changes in leadership after the death of regional “founding fathers.”<sup>20</sup> Following the Madrid Conference in 1991, two Israeli Prime Ministers visited Oman,<sup>21</sup> Israeli trade offices were opened in Oman and Qatar, and an Omani trade of-

fice was opened in Israel. Relations backslid with the Second Intifada — the Palestinian armed uprising of the early 2000s — as trade offices closed and ties were severed.<sup>22</sup> Another shift occurred in 2002, when Saudi leadership presented a peace initiative to the Palestinian-Israeli conflict which included a recognition of Israel’s existence. The initiative failed when a major round of violence erupted between Palestinians and Israelis and since Israeli and U.S. policymakers did not show support for the agreement.<sup>23</sup>

Trade between Dubai and Israel increased after the passing of Sheikh Zayed of the Emirates in 2004. In 2006, when the U.S. criticized the country, the CEO of one of Israel’s largest companies defended the UAE. However, public opinion in the Gulf States remained unfavorable toward Israel. In the aftermath of the Arab Spring of 2011-2012, the Gulf States sought to blame external actors for the upheavals.<sup>24</sup> This new approach brought the Gulf and Israeli views of the region closer together as they both saw Iran as being an “external threat to regional stability” and the Muslim Brotherhood and other similar movements as a “similar internal threat.”<sup>25</sup> These shared views led to intelligence sharing and cooperation between Israel and the Gulf States.<sup>26</sup>

<sup>12</sup> *Id.*

<sup>13</sup> *U.S. Relations with Saudi Arabia: Bilateral Relations Fact Sheet*, U.S. Dep’t of State, (Dec. 15, 2020).

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*

<sup>16</sup> *U.S. Relations with the United Arab Emirates: Bilateral Relations Fact Sheet*, U.S. Dep’t of State (Dec. 9, 2020).

<sup>17</sup> *Id.*

<sup>18</sup> Kristian Coates Ulrichsen, *Israel and the Arab Gulf States: Drivers and Direction of Change*, Baker Inst. for Pub. Pol. (Sep. 2016), at page 3.

<sup>19</sup> *Id.* at page 3.

<sup>20</sup> *Id.*

<sup>21</sup> Emily Judd, *Six Major Events in Oman-Israel Relations: Timeline*, al-Arabiya News (Aug. 18, 2020).

<sup>22</sup> *Israel Renewing Oman Ties, Opportunity for More: Spy Chief*, France24 (Jan. 7, 2019).

<sup>23</sup> *The 2002 Arab Peace Initiative*, Ctr. for Israel Edu. (Mar. 28, 2002).

<sup>24</sup> *U.S. Relations with Saudi Arabia: Bilateral Relations Fact Sheet*, U.S. Dep’t of State, (Dec. 15, 2020).

<sup>25</sup> *Id.*

<sup>26</sup> *Id.*

## Literature Review

The major themes discussed in this paper are security cooperation and assistance, Israel-U.S. relations, Gulf-U.S. relations, and Israel-Gulf relations. While there is a vast body of literature engaging with each of these themes, there are almost no works on the intersection of some of these themes. For example, while many researchers wrote about the security aid the U.S. gives Israel, not many of them wrote about how this assistance influences Gulf-Israel relations or the relationship between Israel and its foreign adversaries. More broadly, there is a gap in the literature in describing the diplomatic and security influences of aid given by a large power to smaller clients. This section examines existing literature on each of these topics so it can be used to create new knowledge and draw conclusions about the intersection of these themes.

In Cole (2017), the author discusses ways in which the U.S. uses aid to tackle complex crises around the world as one part of the three D's – defense, diplomacy, and development. The paper examined three cases: Burma, Jordan, and Lake of Chad. In Burma, the U.S. focused on “fostering political change and economic liberalization, instilling respect for human rights, and promoting peace and national reconciliation.”<sup>27</sup> In Jordan, the U.S. focused on “managing destabilizing internal stressors, addressing humanitarian and security needs in Syria, and preventing violent extremist activity from threatening Jordan’s security.”<sup>28</sup> In the Lake of Chad, the U.S. sought to “degrade and defeat the terrorist organization Boko

Haram’s impact on the region’s citizens and address the underlying conditions that gave rise to Boko Haram.”<sup>29</sup> At the end of her paper, Cole recommends that the U.S., when addressing foreign complex crises, “allow the 3Ds to adapt the foreign policy machinery during crisis,” which can be useful for the fast-changing and dynamic character of relationships between countries who evolve from adversaries to partners.<sup>30</sup>

Blanken and Sullivan (2017) examines a strong state’s assistance to a weaker one through military aid.<sup>31</sup> The paper focuses mostly on assistance given to post-conflict governments, not the facilitation of relations and continued cooperation between states.<sup>32</sup> The authors consider if “higher levels of military aid after conflict termination will be associated with a lower risk of conflict recurrence.”<sup>33</sup> Blanken and Sullivan find no evidence to support this view. However, they find that the probability of conflict recurrence decreases with time, and more aid does not lead to a higher conflict recurrence rate.<sup>34</sup>

## Data and Methods

This research relies on three primary sources of data. The first is a historical analysis of the relationship between Israel and Egypt. This case was selected because Israel and Egypt are traditional adversaries who fought for decades before reaching a peace agreement. This agreement remains in effect and is reinforced by security and economic cooperation between the two countries. The United States was also involved in almost every phase of the relationship’s develop-

<sup>27</sup> Beth Cole & Carla Koppel, *Fostering Diplomatic-Defense-Development (3D) Cooperation in Responding to Complex Crises*, U.S. Inst. of Peace (Dec. 6, 2017), at page 2.

<sup>28</sup> *Id.* at page 3.

<sup>29</sup> *Id.*

<sup>30</sup> *Id.* at page 5.

<sup>31</sup> Leo J. Blanken & Patricia L. Sullivan, *Foreign Military Assistance and the Quality of the Peace in Post-Conflict Countries*, Int’l Studies Ass’n (Feb. 2017), at page 1.

<sup>32</sup> *Id.* at page 1.

<sup>33</sup> *Id.* at page 5.

<sup>34</sup> *Id.* at page 12.

ment and provided varying levels of security assistance. This provides insight into how different U.S. approaches to security assistance may have influenced the situation and a means by which we can evaluate the approaches that led to more violence, establish peace, or maintain the status quo.

Secondly, this paper draws from interviews with three individuals to better understand this relationship and U.S. involvement in it. The interviewees represent the provider (the U.S.) and the recipients (Israel and the Gulf States) of security assistance. These interviews offer insight into what the recipients may need to maintain or enhance cooperation with rival states, as well as what the U.S. is willing and able to provide in furtherance of these goals.

Thirdly, this paper draws from the United States Green Books, an official U.S. document that records assistance given by the United States to other countries. The document classifies information by year, region, country, assistance category (e.g., economic or military), publication row, funding agency, funding account name, and the value in dollars. The information from the Green Books is used for both the Egypt-Israel and the Gulf-Israel examinations. This information allows for a better understanding of the value and kind of aid given to recipient countries. This information may be compared to the level of cooperation to evaluate the hypothesis that some types of assistance may be more effective at facilitating cooperation between adversaries.

The independent variable in this research is the amount and type of aid given by the United States to the recipient countries, as reported in the Green Books. The amount is measured in U.S. dollars (US\$), and the type is classified as either economic or mil-

itary. The dependent variable is the level of cooperation and reconciliation between the adversaries, measured through historical accounts in the Egypt-Israel context, the expert interviews, and historical accounts in the Gulf-Israel context. Increase in cooperation is indicated through shared projects, public statements, and official interactions.

### **Case Study: Facilitating Cooperation between Israel and Egypt**

According to Mohammad Soliman, a Cairo-based political analyst, the relationship between Egypt and Israel today can be described as “full partnership, unbreakable alliance and diplomatic completion.”<sup>35</sup> The two countries maintain full diplomatic relations, they cooperate in the fight against the Islamic State (ISIS) Sinai branch. Egypt is often the middleman between Israel and Hamas, in their sporadic episodes of violence.<sup>36</sup> However, this was not always the case. The countries were bitter enemies until the U.S.-brokered peace agreement in 1979.

Between the creation of the State of Israel in 1948 and the signing of the peace treaty in 1979, Egypt and Israel fought five wars and engaged in multiple skirmishes along the border. These conflicts occurred under different leaders and for different reasons, but the U.S. worked to end hostilities in each case.

In May 1948, the Egyptian army invaded Israel alongside other Arab nations’ armies. The U.S. imposed an arms embargo on the region throughout the war. Following its conclusion, Egypt was the first Arab country to sign an armistice agreement with Israel the following year.<sup>37</sup> According to the U.S. Office of the Historian, “[t]he United States did not become directly involved with the armistice negotiations, but hoped that in-

<sup>35</sup> Zena Al Tahhan, *Egypt-Israel Relations ‘At Highest Level’ in History*, Al-Jazeera (Sep. 20, 2017).

<sup>36</sup> *Id.*

<sup>37</sup> *Israel’s Wars & Operations: War of Independence (1947 - 1949)*, Jewish Virtual Lib. (accessed Mar. 31, 2022).



stability in the Middle East would not interfere with the international balance of power between the Soviet Union and the United States.”<sup>38</sup>

A few months after the armistice was signed, Egypt blocked Israeli ships from the Suez Canal. The United Nations ordered Egypt to reopen the canal. Egypt refused. In 1955–1956, Egypt sent infiltrators to commit operations against Israel and blocked the Straits of Tiran. A joint French-British-Israeli responded with an attack on Egypt in 1956.<sup>39</sup> After failing to end hostilities through the UN, the U.S. made a US\$1 billion loan contingent on the cease-fire. The contingent loan represented tactical shift from the embargo used during the 1948 war.<sup>40</sup> However, a more significant driver behind the Israeli withdrawal was President Eisenhower’s promise to maintain freedom of navigation to Israeli ships and the creation of a UN committee monitoring the territories Israel withdrew from – a form of security cooperation.<sup>41</sup> These promises did not include arms transfers. President Eisenhower stated that the U.S. “do[es] not intend to contribute to an arms competition in the Near East.”<sup>42</sup>

In early May 1967, the Soviet Union gave Egypt false intelligence that Israel was preparing for a war against Syria, which Egypt was legally bound to protect. Egypt then began moving troops to the Israel-Egypt

border, expelled the UN officials from the area, and blocked the Straits of Tiran. The UN and U.S. declared the move illegal. In response, Israel attacked Egypt.<sup>43</sup> The U.S. under President Johnson decided to be “neutral in thought, word, and deed,” and imposed another regional arms embargo.<sup>44</sup> The war lasted six days. By its conclusion, Israel conquered the Sinai Peninsula and the Gaza Strip. Israel relinquished Sinai after signing the peace agreement.<sup>45</sup>

A year after the 1967 war, Israel and Egypt fought again. The conflict consisted of a series of skirmishes along the border lasting from 1968 to 1970. The United States put forth the Rogers Plan, which supported the security rights of all countries in the region.<sup>46</sup> The U.S. also decided to use diplomacy rather than aid by sending Ambassador Jarring to mediate.<sup>47</sup>

On October 6, 1973, Egypt and Syria invaded Israel. Arab states imposed oil embargos on western countries that were viewed as supporting Israel during the conflict, including the United States.<sup>48</sup> This war marked a shift in American policy towards engagement and aid to the Middle East. The U.S. initiated arms transfers to Israel through a massive emergency airlift, which included spare parts, tanks, bombs, and other supplies. The total value for these supplies amounted to about US\$2.2 billion.<sup>49</sup> According to official U.S. accounts, the U.S. believed the Arab-Is-

<sup>38</sup> *The Arab-Israeli War of 1948*, U.S. Off. of the Historian (accessed Mar. 31, 2022).

<sup>39</sup> *Suez Crisis*, Encyclopaedia Britannica (July 19, 2021).

<sup>40</sup> *Suez Crisis, 1956*, U.S. Dep’t of State (accessed Mar. 31, 2022).

<sup>41</sup> *Israel’s Wars & Operations: The Sinai-Suez Campaign*, Jewish Virtual Lib. (accessed Mar. 31, 2022).

<sup>42</sup> Dwight D. Eisenhower, *The Sinai-Suez Campaign: President Eisenhower Message to Rabbi Abba Hillel Silver on the Near East Situation*, Jewish Virtual Lib. (Nov. 15, 1955).

<sup>43</sup> Uri Bar-Noi, *The Soviet Union and the Six-Day War: Revelations from the Polish Archives*, Wilson Ctr. (Jan. 2003).

<sup>44</sup> *Israel’s Wars & Operations: The Six-Day War*, Jewish Virtual Lib., (accessed Mar. 31, 2022).

<sup>45</sup> *Id.*

<sup>46</sup> Ken Stein, *U.S. Secretary of State William Rogers Plan for an Arab-Israeli Settlement*, Ctr. for Israel Edu. (Sep. 2016).

<sup>47</sup> *Israel’s Wars & Operations: The War of Attrition*, Jewish Virtual Lib. (accessed Mar. 31, 2022).

<sup>48</sup> *Oil Embargo, 1973–1974*, U.S. Off. of the Historian (accessed Mar. 31, 2022).

<sup>49</sup> *Israel’s Wars & Operations: The 1973 Yom Kippur War*, Jewish Virtual Lib. (Mar. 31, 2022).

raeli standoff would harm the U.S. and the détente with the USSR.<sup>50</sup> However, during the war, Egypt received aid from the Soviets. President Nixon decided that the U.S. could not allow an upset of the balance of power between the two superpowers and supplied aid to Israel.<sup>51</sup> The U.S. Historian notes that the aid given to Israel by the U.S. set the stage for Kissinger, then Secretary of State and National Security Advisor, “to make a major effort at Arab-Israeli peacemaking.”<sup>52</sup>

This approach launched what became known as “shuttle diplomacy,” a series of short flights Secretary Kissinger took between Middle Eastern states to craft disengagement agreements. The disengagement agreement between Israel and Egypt included the first signs of security cooperation between the two adversaries in the shape of free passage through the Suez Canal, the Straits of Tiran, and Bab el-Madeb.<sup>53</sup>

The peace process was initiated by two leaders. Anwar Saadat of Egypt announced his willingness to negotiate and visit Israel, and Menachem Begin of Israel extended an invitation to Saadat to speak at the Israeli Knesset. However, by 1978, the talks reached a deadlock and the U.S. returned to its role as chief negotiator. President Carter initiated a two-week summit with the leaders and their delegations along with multiple other conversations until the peace treaty was signed.<sup>54</sup>

The treaty signed by Egypt and Israel agreed to both cease the conflict and cooperate in

the security sphere as mentioned in Article 1 Clause 3 (establishment of normal and friendly relations) and Article 4 (especially Clause 3 discussing a joint commission to ensure implementation of the treaty). The treaty also contains detailed agreements on the amounts and kinds of weapons and soldiers stationed in areas close to the border. Article 7 under Annex 1 goes even further and discusses the establishment of military liaison offices in both countries with direct telephone link between them to resolve pressing issues.<sup>55</sup> These liaison offices continue to be used extensively.<sup>56</sup>

Security cooperation and assistance both facilitated and maintained the peace between adversaries. According to the Congressional Research Service, the U.S. has provided Egypt with “significant” military and economic assistance since the late 1970’s on the basis of sustaining the peace treaty with Israel.<sup>57</sup> The report also notes that Egypt has progressively broadened its international base of support and that one of its “key partners” is Israel, others are the Gulf States.<sup>58</sup> For reference, from the beginning of aid to Egypt in 1946 up until 1979, the U.S. provided almost \$19 billion in total. From 1979 to 2017, the U.S. awarded Egypt aid totaling \$137.64 billion. American aid to Israel also increased since the peace treaty with Egypt was signed. From 1951 to 1979, Israel was granted \$48.75 billion in U.S. aid. However, since 1979, Israel has received \$206.46 billion in U.S. aid.<sup>59</sup>

<sup>50</sup> *The 1973 Arab-Israeli War*, U.S. Off. of the Historian (accessed Mar. 31, 2022).

<sup>51</sup> *The Yom Kippur War Brings United States and USSR to Brink of Conflict*, History.com (Nov. 13, 2009).

<sup>52</sup> Moni Chorev, *Surprise Attack: The Case of the Yom-Kippur War*, Nat’l Def. U. (1996), at page 21.

<sup>53</sup> *Shuttle Diplomacy and the Arab-Israeli Dispute, 1974-1975*, U.S. Off. of the Historian (accessed Mar. 31, 2022).

<sup>54</sup> *Camp David Accords and the Arab-Israeli Peace Process*, U.S. Off. of the Historian (accessed Mar. 31, 2022).

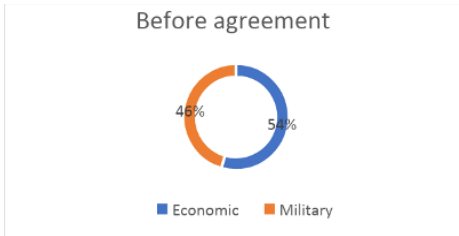
<sup>55</sup> *Israel-Egypt Peace Treaty*, Israel Ministry of Foreign Aff. (Mar. 26, 1979).

<sup>56</sup> When the author of this paper served on the Israeli-Egyptian border, as recently as 2017, daily contact was kept between the head of the Israeli 80th Division and his Egyptian counterpart on the topics of ISIS in Sinai, illegal immigration to Israel through Egypt, and drug trafficking.

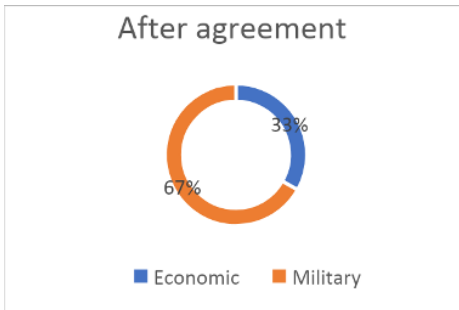
<sup>57</sup> Jeremy M. Sharp, *Egypt: Background and U.S. Relations*, Cong. Research Serv. (Sep. 30, 2021), at page 33.

<sup>58</sup> *Id.* at page 1.

<sup>59</sup> *U.S. Overseas Loans and Grants*, U.S. Agency for Int’l Dev. (Dec. 1, 2018).



Since the peace agreement was signed, the U.S. has granted more military aid to both Egypt and Israel compared to the economic aid received by the two countries before the peace treaty was signed. Before 1979, the two countries were granted \$38.42 billion in economic aid, and \$32.12 billion in military aid. Following the agreement, they were granted \$104.38 billion in economic aid and almost \$210 billion in military aid.<sup>60</sup>



Since 1948, the United States has used different approaches to Middle East conflict, especially the conflict between Egypt and Israel. It has attempted neutrality, an arms embargo, supplying weapons to one side of the conflict, and supplying weapons to both sides of the conflict. In the case of Israel and Egypt, two adversaries became close partners. The U.S. managed to facilitate cooperation, although at high costs and only after thirty years. Neutrality and an arms embargo did not help end hostilities or facilitate cooperation. The most successful method involved aiding both sides of the conflict

and maintaining a regular supply of weapons and aid to both countries to sustain co-operation after it was achieved.

The case of Egypt and Israel, although very specific, may be generalizable to other conflicts and sets of adversary-clients. The characteristics of the Egyptian-Israeli conflict, like conflicting economic, national, territorial, and political interests, and two strong armies in the same region, are present in many other conflicts. In South-East Asia, for example, a large power has high stakes in maintaining the peace between hostile countries.

### Interviews: U.S. Role in Israel-Gulf Relations

This research aims to understand American use of assistance and cooperation to mediate between adversaries. The most prominent example from recent years is the warming relationship between Israel and the Gulf States. This relationship is of particular interest since the four Gulf States that have been working with Israel over the past years, Bahrain, Kuwait, Saudi Arabia, and the United Arab Emirates, never recognized Israel's existence, and Oman and Qatar recognized it and later rescinded the recognition.<sup>61</sup>

As these relationships involve subjective, non-public information, we use interviews as a means of evaluating with officials who work to facilitate them. According to an interview with Israel's former Minister of Regional Cooperation Tzachi Hanegbi,<sup>62</sup> this is not the first time Israel and the Gulf States have cooperated. After the Oslo Accords, the Minister stated, "there were breakthroughs and interests' offices [were opened]." However, "it lasted for a short period of time and without a deeper mental

<sup>60</sup> *Id.*

<sup>61</sup> *Israel International Relations: International Recognition of Israel*, Jewish Virtual Lib. (accessed Mar. 31, 2022).

<sup>62</sup> *Members of the 24th Knesset: Knesset Member Tzachi Hanegbi*, The Knesset (accessed Mar. 31, 2022).

change.” The Minister attributed the failure of the Israeli-Gulf cooperation after Oslo to the Palestinian issue at the heart of the conflict. Gulf States could not cooperate with Israel after the Oslo Accords collapsed.

Another possible reason not mentioned by the Minister is that the U.S. saw only Egypt, Syria, and Lebanon as relevant to the process — not the Gulf States, as indicated by the U.S. Office of the Historian’s account of U.S. involvement in the Israeli-Palestinian peace process.<sup>63</sup> This may explain why the U.S. chose to assist these countries more than the Gulf States, and why those countries engaged in talks with Israel regarding cooperation.

Minister Hanegbi claimed fundamental differences distinguished cooperation between Israel and the Gulf States after Oslo and cooperation in the last decade. Now, he said, “the perception started to change... we started hearing interesting statements speaking about the Jews as people you have to live with, having a right to protect themselves, actual cooperation.” These statements were accompanied by “Netanyahu’s visit to Oman [and] Saudi Arabia’s decision to allow Air India to fly over Saudi airspace twice a day [to Israel; OD],” and other actions. The change in perception, according to the Minister, had much to do with American involvement. He argued that the current U.S. administration sees the solution as regional, and that the Americans are trying to legitimize dialogue between Israel and the Gulf States. Legitimizing the dialogue manifested in military drills in which American, Arab, and Israeli armies participated,<sup>64</sup> and other forms of security cooperation and assistance.

Unlike Israel, where relations with the Gulf enjoy overwhelming public support, Gulf leaders would likely have to pay a political price for cooperation. These leaders may therefore need to show their constituents they got something in return.<sup>65</sup> As Minister Hanegbi put it, “the story is the cow and the lamb; the lamb wants to be fed and the cow wants to feed. The cow is the U.S., and the lamb is the Gulf States. They understand they can gain from the Americans if they comply with them.” The U.S. could leverage its position to foster cooperation between the Gulf States and Israel to further common interests.<sup>66</sup>

Rabbi Marc Schneier is the founder of the Foundation for Ethnic Understanding, a non-profit focusing on improving Jewish-Muslim relations. Rabbi Schneier was appointed to the Steering Committee of the Kingdom of Saudi Arabia’s World Conference on Dialogue and serves as an advisor to many Gulf leaders and heads of states on Judaism and Israel.<sup>67</sup> He agreed with Minister Hanegbi on the role the U.S. should play in the Israel-Gulf relationship. He believes that, for the first time, “you have the U.S., Israel, and the Gulf on the same page” regarding former President Trump’s peace plan. Moreover, the Gulf States “see Israel as an extension of the U.S. So, U.S. aid draws them closer to the west and as a part of it, Israel.”

According to the Rabbi’s assessment, three things could bring the Gulf closer to Israel: 1) a common threat, i.e., Iran, 2) economic transformation of the region, and 3) the perception of Israel as a means to strengthen relations with the U.S. A common threat is the most important one for the Gulf States. Some of the leaders, like the King of

<sup>63</sup> *The Oslo Accords and the Arab-Israeli Peace Process*, U.S. Off. of the Historian (accessed Mar. 31, 2022).

<sup>64</sup> Aya Batrawy, *US, Israel and Gulf Arab Allies Launch Joint Red Sea Drill*, Associated Press (Nov. 12, 2021).

<sup>65</sup> Nesreen Bakheit, *Gulf Warm to Israel as Attack on UAE Underscores Common Threats*, Nikkei Asia (Jan. 19, 2022).

<sup>66</sup> See, appendix B for the full interview.

<sup>67</sup> Rabbi Marc Schneier, *Huffington Post* (accessed Mar. 31, 2022).

Bahrein, even tell Schneier that “the only guarantee for a strong, stable, Muslim, Arab region is a strong Israel.” Others even hint on a desire to form a NATO styled organization in the region that would include Israel. The Rabbi, speaking on behalf of Gulf leaders, believes that security assistance and cooperation between Israel and the Gulf when facilitated or encouraged by the U.S. would improve diplomatic and other relations.

When asked about what he thought a future U.S. policy in the region should be, Rabbi Schneier said that he does not “think the U.S. should give the Gulf economic aid. [Instead,] the Gulf needs assurances that the U.S. would be there if Iran attacks them. This would help facilitate cooperation between the Gulf and Israel and build a ‘NATO’ alliance between them.” This kind of alliance, he believes, could lead to economic cooperation.<sup>68</sup>

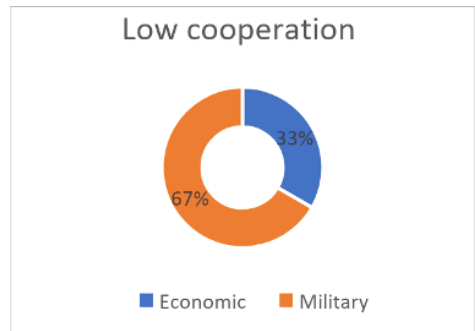
Representative Ted Deutch (D-FL) is a member of the U.S. House of Representatives Foreign Affairs Committee and the Chairman of the Subcommittee on the Middle East and North Africa.<sup>69</sup> Like both Hanegbi and Schneier, Rep. Deutch believed that Iran poses “the gravest threat to peace and stability in the Middle East.” He bases this view on Iranian involvement in Syria, nuclear activities, support for terrorist groups, and human rights violations. According to the Congressman, Israel and the Gulf States share interests in combating the threat posed by Iran. Deutch argued that cooperation serves American interests. He believed that the U.S. should foster security cooperation between Israel and the Gulf States, as well as cooperation on “other vital regional issues.”

Where Hanegbi and Schneier primarily focused on what their respective parties would like to receive, Rep. Deutch empha-

sized the need to ensure arms are not distributed without careful strategic analysis of the situation. He says that “the U.S. provides arms sales to the region to ensure our own security interests and interoperability with our own systems,” and to do so, “all sales must ensure Israel’s qualitative military edge.” Representative Deutch believes that “a threat to Israel, our strategic ally in a turbulent region, is also a threat to U.S. national security. Enhancing Israel’s security is a step toward strengthening our own national security.” Therefore, the United States should keep giving assistance to Israel at “unprecedented levels.” This, according to him, should trump the assistance given to Gulf States even if it may facilitate cooperation.

### U.S. Green Book

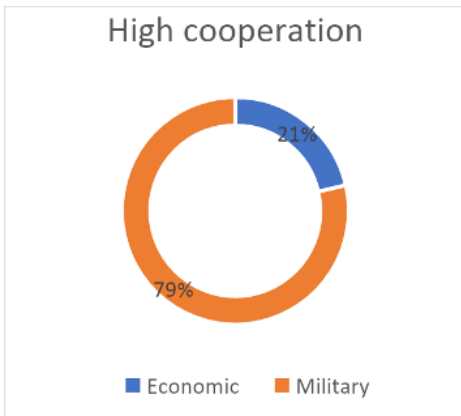
The strategic importance of the Middle East region to the United States has motivated consistently high assistance provided to Israel and the Gulf States. To demonstrate the connection between assistance and cooperation, the data should indicate that assistance to Israel and the Gulf States increased over time along with cooperation. The assistance given between when negotiations began in 1993 and the Second Intifada in 2001 is measured separately to understand if the U.S. may have influenced cooperation between Gulf and Israel during the Oslo Process, as mentioned by Minister Hanegbi .



<sup>68</sup> Rep. Deutch recently announced his retirement from Congress. See appendix B for the full interview.

<sup>69</sup> *About Ted Deutch*, U.S. House of Representatives (accessed Mar. 31, 2022).

Between 1946 and 1992, the U.S. gave \$156 billion. This includes \$57.35 billion in economic aid and \$98.64 billion in military aid. On average, aid totaled \$2.3 billion per year. The Gulf States received only \$2.3 billion of the amount. During the Oslo process and implementation, the U.S. granted the Gulf states and Israel \$43.6 billion. This includes \$16 billion in economic aid and \$27 billion in military aid. On average, aid totaled \$4.6 billion a year. The Gulf States received \$307.4 million. After the failure of the Oslo accords and up until relations between the Gulf and Israel worsened again in 2009, the U.S. delivered \$33.2 billion in aid. This included \$5.7 billion in economic aid and \$27.5 billion in military aid, averaging \$3.44 billion a year. The Gulf states received \$743.2 million. Between 2009 and 2017, during rapprochement, the U.S. gave the countries \$33.2 billion, \$341.2 million in economic aid, and \$33.2 billion in military aid. This totaled \$3.44 billion per year on average. Gulf States received \$322.3 million.



## Results

The United States chose to employ different approaches to its involvement in the conflict at different stages, including non-intervention, an arms embargo, diplomacy, and military aid. This allows us to draw evidence as to what may have been the most effective approach. The more comprehensive strate-

gy, consisting of both arms transfers and diplomacy, led to further diplomatic attempts and to the historic Egyptian-Israeli peace agreement. The agreement referred explicitly to future cooperation between the two former enemies. Further, the U.S. started granting aid and weapons to both parties for the purpose of maintaining the peace. After the agreement, aid given to Egypt and Israel shifted from mainly economic to primarily military.

The information obtained from the three interviews reveals potential paths toward more cooperation. A comprehensive view of the region, targeting pressing issues within it, leveraging U.S. support, and identifying and allying against a common threat.

The United States Green Book provided evidence of two interesting trends. The first is a positive correlation between higher percentages of military aid and cooperation between adversaries. In times of low cooperation, 67% of aid was military aid and in times of high cooperation it was 79%. The second trend is that there is almost no correlation between the amount of aid given to the Gulf States and their cooperation with Israel. This may be explained by the fact that the Gulf States are generally wealthy countries that do not necessarily need the money as much as the guarantees and the arms technology itself.

## Discussion and Conclusions

This research has significant limitations. It examines only the U.S. as a provider of aid and only Middle Eastern countries as recipients. Although this paper attempts to approximate an experimental design using historical policy changes, we cannot control for exogenous variables. Causal claims about the observed relationships cannot be made with any confidence without an experimental or quasi-experimental research design, which is not feasible in this con-



text. Moreover, due to the scope of this research, we generalize among Gulf States that maintain distinct motives, socio-political dynamics, institutions, and histories. Further research on this topic should consider these limitations and explore this dynamic in other regions of the world. Lastly, the Israel-Gulf relations continue to change and evolve as this article is being written.

This research examined both the theoretical background of facilitated cooperation among adversaries and the real life attempts to foster such cooperation. These findings are consistent with a realist framework, or views that countries seek to maximize utility even at the price of cooperation with adversaries.<sup>70</sup> This may explain why many Gulf countries are willing to cooperate with Israel in return for gaining favor with the U.S. and protecting themselves against the Iranian threat.

However, the relationship between Israel and the Gulf States can also be viewed from different perspectives and support other schools of thought. Application of a liberalist framework might find that the importance of regional and international institutions, and shared values, explain increasing cooperation.<sup>71</sup> In support of this view, we could cite the waning rejection of Israel in the Arab League and the United Nations. Constructivists, on the other hand, could argue that the rapprochement is only a manifestation of a newly developed Middle Eastern identity that includes all ethnic groups in the region, including both Arabs and Jews, or the resurrection of the Semitic identity.<sup>72</sup>

The findings of this paper provide several implications for future U.S. approaches to facilitating cooperation between Israel and Saudi Arabia. Facilitation efforts should

adopt the comprehensive engagement method proposed in “Fostering Diplomatic-Defense-Development Cooperation in Responding to Complex Crises” and alluded to in Minister Hanegbi’s interview. Efforts should also incorporate the view that more weapons do not necessarily lead to recurrence of conflict between former adversaries. We should learn the lessons from history with the Gulf and Israel and take advantage of the common interests and Gulf States’ desire to maintain commercial relations with the United States.

The United States should employ the same approach that helped Israel and Egypt reach a peace agreement. This includes using explicit requests for cooperation and military aid as incentives to cease war and to make peace. The U.S. should adopt a more inclusive view and incorporate both the Gulf and Israel in promoting regional initiatives, and perhaps even help establish a NATO-styled organization that could also serve American interests.

<sup>70</sup> *Political Realism in International Relations*, Stanford Encyclopedia of Phil. (July 26, 2010).

<sup>71</sup> *Liberalism*, Encyclopaedia Britannica (accessed Mar. 31, 2022).

<sup>72</sup> *Constructivism*, U. at Buffalo (accessed Mar. 31, 2022).



## Appendix A: Survey Questions

Two sets of questions were constructed for this research, the first one for the American respondent, who is on the provider's side, and the second for the Israeli respondent and the respondent who is representing the Gulf States, who are on the recipients' side.

### *Theme #1: Military Aid—Provider*

1. When did the U.S. government (USG) initiate aid to recipient state [Israel\ Gulf states]?
2. What drove the decision to grant aid?
3. What types of aid has been made?
4. Have there been any changes in the level or type of aid to the recipient over time?
5. Did the cooperation between Israel and the Gulf states increase over time?
6. Did the US and the aid it has given [to Israel\ Gulf states] influenced the relationship between the recipients?
7. What kind of aid best facilitated cooperation between the recipients?

### *Theme #2: Military Aid—Recipient*

1. When did your state first receive transfers from the United States?
2. What kind of aid did your country get from the United States?
3. Did your state's cooperation with [Israel\ Gulf states] increase over time?
4. What role do you think the United States and the aid it has given your state played in your country's cooperation with [Israel\ Gulf states]?
5. What kind of aid do you think best helped facilitate cooperation between your country and [Israel\ Gulf states]?

## Appendix B: Interviews

### *Representative Ted Deutch*

- Israel is under constant threat from every direction. A threat to Israel, our strategic ally in a turbulent region, is also a threat to U.S. national security. Enhancing Israel's security is a step toward strengthening our own national security. That is why the US provides security assistance, now at unprecedented levels, to Israel. It's also why I have introduced legislation in the both 115th Congress and the 116th Congress with significant bipartisan support to codify security assistance to Israel, significantly enhance Israel's Qualitative Military Edge over its enemies, and improve bilateral cooperation on a range of other issues. U.S. security assistance sends a powerful message of bipartisan American support for Israel and our continued investment in its security.
- Iran presents the gravest threat to peace and stability in the Middle East. Iran's role in Syria has led to the slaughter of more than half a million Syrians. In addition to its nuclear activities, Iran has supported terrorist groups around the Middle East and around the world. It continues to commit human rights violations against its own people and to hold American citizens. These actions threaten Israel and the Gulf states, which share an interest in countering Iran's destabilizing activities, imposing punishing sanctions on Tehran, countering the proliferation of missiles and weapons, and denying Iran all pathways to a nuclear weapon. It is in U.S. interests to see greater cooperation between Israel and the Gulf states on security and other vital regional issues. The U.S. provides arms sales to the region to ensure our own security interests and interoperability with our own

systems. All sales must ensure Israel's Qualitative Military Edge.

*Minister Tzachi Hanegbi*

- The ministry does not engage the Gulf state directly, we are working mainly with the countries we have borders with, mainly Jordan and Egypt, and with the Palestinian Authority, although it is not really a border. However, because of my position, I am present in many forums in which a broader perspective is discussed, and I have dialogues with regional partners we do not share a border with.
- It is clear that there is positive development in terms of the Israeli and regional interests in the last decade, in the way the Gulf states view Israel.
- This cooperation is first and for most a mental one. Before you can build a joint facility or work in attending to, it does not matter if it is a security issue, environmental, energy, first of all there has to be a recognition that Israel is an asset and not an enemy. This is the dramatic change of the last decade. After Oslo (the Oslo Accords signed between Israel and the Palestinian Authority; OD), there were breakthroughs and interests' offices but it lasted for a short period of time and without a deeper mental change. It faded away very quickly because the Palestinian issue remained the heart of the problem.
- In the last ten years a threatening force rose, Iran, it threatens both in the context of nuclear capabilities and in the context of terror in the Middle East; the Houthis, Iraq, Syria, Hezbollah, even against the Saudi ambassador in Washington, there was a lot of evidence that the risk to the Gulf regimes is Iran and not the classical Zionist enemy. Then, the perception started to change, this time deeper, and we started hearing interesting statements speaking about the Jews as people you have to live with, having a right to protect themselves, actual cooperation. An embodiment of the changing perception is Netanyahu's visit to Oman. No more meetings under censorship, public meeting. Later we saw Saudi Arabia's decision to allow Air India to fly over Saudi airspace twice a day (to Israel; OD), and we know, by things said by the Prime Minister, that this is only the beginning.
- I am sure the US is playing a role. The US is public about the solution in a regional perspective, we will soon find out what is Trump's deal of the century (President Trump's proposed peace deal between Israel and the Palestinians, to be published around June; OD), what comes from there, unlike former plans, Clinton's, Obama's, Bush's, and other leaders', they do not see it in a narrow way of the 1967 lines (the ceasefire lines before June 6th 1967; OD), Jerusalem, settlements, a more wholesome approach to the area, you can assemble a larger puzzle. It is clear that for this thing to happen, we need a regional dialogue, it is clear that the Americans are putting in effort in a genuine attempt to legitimize this dialogue. It means to connect, as much as possible, Israel's interests to those of the countries in the region. The story is the cow and the lamb, the lamb wants to be fed and the cow wants to feed. The cow is the US and the lamb is the Gulf states. they understand they can gain from the Americans if they comply with them. Their interest is to take advantage of the advantages of connecting to Israel, even if they did not have uncle Sam.

- I am less aware of the needs of the Gulf states, I do not know what they are missing, in terms of Israel, we pretty much exhausted everything we can get from the Americans, the MOU was improved in the end of Obama's time in office, it is on the verge of the most we can get from the American public. Of course, we got the F-35 deal, which we of course pay full money for. But there are countries who asked and did not get it. we are of course getting, in the last two years, decision and statements we did not dream of (recognition of Jerusalem as Israel's capital, Golan Heights as Israeli territory; OD), I think, generally, there is nothing else. But we do not need to, the connection to the Gulf states is our interest even without getting anything for it. With the Gulf states it is different, there is a political price, they will have to show something to their constituents.

*Rabbi Marc Schneier*

- When did your state first receive transfers from the United States? receiving aid for years, one of the reasons they are working with Israel to strengthen the relations with the US, with the Trump administration.
- What kind of aid did your country get from the United States? the Gulf has 3 issues that are bringing the Gulf and Israel close; common threat (Iran), economic transformation of the region (heard from Gulf leaders who have said that with their wealth and Israel's tech and brain, we could develop the most powerful region in the world), see Israel as a way to strengthen the relationship with the US.
- Did your state's cooperation with Israel increase over time? Yes, both economic and recognition and sharing common

threats. Increased from a Muslim-Jewish relations. The Gulf today has a priority in terms of being a place of inter-religious dialog.

- What role do you think the United States and the aid it has given your state played in your country's cooperation with Israel? going to have tremendous impact in terms of the peace plan (Trump's), you have the US, Israel, and the Gulf on the same page. The king of Bahrain said that the only guarantee for a strong, stable Muslim Arab region is a strong Israel. In the US, presidents come and go, but they are now looking to Israel to be their defender, building a NATO in the gulf. They see Israel as an extension of the US, so the US aid draws them closer to the west and as a part of it, to Israel.
- What kind of aid do you think best helped facilitate cooperation between your country and Israel? I don't think the US should give the Gulf economic aid, I think the Gulf need insurances that the US would be there if Iran attack them. this would help facilitate the cooperation between Gulf and Israel, to build a "NATO" alliance between them. an alliance which could translate to economic cooperation.

# Progressive Prosecution of Sex Work

Abbey Doyno

## Abstract

Progressive prosecutors refrain from pursuing charges for certain non-violent crimes, believing that incarceration may be unwarranted or worsen conditions that led individuals to run afoul of the law in the first place. This paper evaluates seven of these progressive policies in the context of sex work, finding inconsistent application across offices. Some, including Chesa Boudin and Eli Savit, have incorporated progressive approaches to sex work in their campaigns for office. Others, such as Larry Krasner, Marilyn Mosby, and Cyrus Vance, have recently enacted or expanded similar policies. At the far end of the spectrum, Dan Satterberg has continued to prosecute sex workers despite his reputation for declining charges for similar types of crimes. This paper argues that a non-prosecution approach for sex work would align with the stated goals of the full spectrum of progressive prosecutors. I conclude that sex work and tangential practices should be included in progressive prosecutors' non-prosecution initiatives.

## I. Introduction

In 2005, forty-one people were arrested in Washtenaw County, Michigan for crimes

related to sex work.<sup>1</sup> Today, those individuals would not be charged. Recently elected County Prosecuting Attorney Eli Savit considers the prosecution of sex work to be “in serious tension with established norms related to bodily autonomy and personal liberty.”<sup>2</sup> Leveraging the prosecutorial discretion he wields, Mr. Savit has declined to charge crimes still “on the books” in favor of the “demonstrated public-safety and public-health benefits of decriminalizing sex work.”<sup>3</sup>

Mr. Savit is not alone in enacting policies of non-prosecution. Several candidates for district attorney have recently run for office on platforms that use prosecutorial discretion and power to reform the criminal justice system along the lines of fairness, accountability, and reduction of disproportionate impacts.<sup>4</sup> These so-called progressive prosecutors have begun beating their more traditional opponents in elections, those who ran on “tough-on-crime” platforms, with campaign promises to decline charging certain non-violent crimes.<sup>5</sup>

In a general sense, progressive prosecution is the practice of prioritizing ideas for reform of the criminal justice system in prosecutorial decision making. Progressive

<sup>1</sup> 2005-Prostitution & Common Law Vice Arrests, Uniform Crime Reports Mich. State Police (accessed Apr. 10, 2022).

<sup>2</sup> Eli Savit, *Policy Directive 2021-08: Policy Regarding Sex Work*, Off. of the Prosecuting Atty. (Jan. 14, 2021).

<sup>3</sup> *Id.*

<sup>4</sup> See e.g., David Sklansky, *The Changing Political Landscape for Elected Prosecutors*, Ohio St. J. Crim. L. vol. 14 (2017), at page 650; *The Paradox of “Progressive Prosecution”*, Harvard L. Rev. vol. 132 (2018), at page 750; Jeffrey Bellin, *Defending Progressive Prosecution: A Review of Charged by Emily Bazelon*, Yale L. Rev. vol. 39 (2020), at page 221.

<sup>5</sup> See e.g., Sophie Tatum, *Progressive Civil Rights Lawyer to be the next Philadelphia District Attorney*, CNN (Nov. 8, 2017); Michael Jonas, *Rachael Rollins on Vindication of Her Decline-to-prosecute Policy*, CommonWealth (Apr. 5, 2021); Stephanie Clifford & Joseph Goldstein, *Brooklyn District Attorney to Stop Prosecuting Low Level Marijuana Cases*, N.Y. Times (Jul. 9, 2014).

prosecutors use the discretion they are provided to balance the traditional prosecutorial expectation of zealously pursuing charges with ideas for changing how the criminal justice system affects individuals and society. Dr. Angela Davis defines progressive prosecutors as those who are “committed to reducing mass incarceration and racial disparities in the criminal justice system.”<sup>6</sup> The non-profit organization Fair and Just Prosecution defines progressive prosecutors similarly, stating that they “use their discretion to improve the overall fairness and efficacy of the criminal justice system and champion priorities that improve the safety and well-being of our communities.”<sup>7</sup>

Over the last decade, a growing number of prosecutors have begun to describe themselves as “progressive” by shifting priorities, striving to reduce mass incarceration, and aiming to reduce the disproportionate effects of the criminal justice system on low-income and minority communities.<sup>8</sup> While some prosecutors self-identify as “progressive,” not all self-identified progressive prosecutors implement sweeping reforms. For the purposes of this paper, “progressive prosecutors” will refer to the subset of self-identified “progressive” prosecutors who strive to implement three key reforms: diversion from prison, police accountability, and non-prosecution of certain crimes, though there remains disagreement on which crimes.<sup>9</sup>

Progressive prosecutors refrain from pros-

ecuting certain non-violent crimes, such as low dollar amount theft, trespassing, and disorderly conduct. Some refuse to charge minor traffic violations. Others, such as Larry Krasner, Philadelphia District Attorney, no longer prosecute simple marijuana possession cases.<sup>10</sup> Even more drastically, others such as former Suffolk County District Attorney Rachael Rollins have enacted non-prosecution policies for larceny under \$250, simple drug possession, and drug possession with the intent to distribute.<sup>11</sup> These differences may stem from the interests of their constituencies, the crime rates in their district, or their own personal beliefs.

Though they differ in which crimes to prosecute, progressive prosecutors frame policies consistently. These prosecutors identify crimes for non-prosecution where a) punishment does not address root causes of crime, b) cases pull minor offenders into the penal system, saddling individuals with a criminal record, fines and court dates that make holding a job difficult, and c) prosecution has disproportionately targeted low-income communities and communities of color. Criminalization of sex work falls squarely into these criteria. Regardless, non-prosecution of sex work has not been a consistent initiative in the recent groundswell of change.

#### *a. Discussion of Terminology*

This paper will use the term “sex work” and “sex worker” to describe members of a het-

<sup>6</sup> Angela J. Davis, *Reimagining Prosecution: A Growing Progressive Movement*, U.C.L.A. Crim. Justice L. Rev. vol. 3, (2019), at page 22.

<sup>7</sup> 21 *Principles for the 21st Century Prosecutor*, Fair & Just Prosecution (2018).

<sup>8</sup> See e.g., Brian Rogers, *Ogg, Anderson Locked in Contentious DA Race*, Houston Chronicle (Sept. 30, 2016); Sam Prickett, *District Attorney-Elect: We're Seeking Justice, Not Just Convictions*, Weld For Birmingham (Nov. 30, 2016); Christopher Hooks, *Is the Best Offense a Good Defense Lawyer?*, Texas Monthly (Nov. 2016); Steve Schmadeke, *Kim Foxx Promises “New Path” of Transparency as Cook County State’s Attorney*, Chicago Tribune (Dec. 1, 2016).

<sup>9</sup> Progressive prosecutors frequently self-identify as progressive during election campaigns, but the definition stems from implemented practice not exclusively purported ideals or political affiliation. David Allen Sklansky, *The Progressive Prosecutor’s Handbook*, UC Davis L. Rev. Online vol. 50 (2017) at page 27.

<sup>10</sup> *Promises Kept*, Larry Krasner for District Atty., (accessed Mar. 29, 2020).

<sup>11</sup> *Charges to be Declined*, Rachael Rollins, (accessed Mar. 29, 2020).

erogeneous group that are affected by and/or, exchange sexual services for resources.<sup>12</sup> The term “sex work” is contested, even among advocates, and may not adequately describe an individual’s experience.<sup>13</sup> At the same time, the term is not widely used in legal resources, criminal statutes, or by prosecutors’ offices.<sup>14</sup>

The term “consensual sex work” is often used by academics as a means of distinguishing between forms of sex work, wrongly implying there can be sex work without consent.<sup>15</sup> A more apt distinction is between sex work and human trafficking.<sup>16</sup> Sex work is a form of work, within which there can be abuse as in any form of work. Within the occupation of sex work, there are points of distinction that can be made between those who feel empowered in their occupation and workplace and those who are abused. Separately, human trafficking is a human rights abuse and is not equivalent to sex work. Human trafficking can affect any individual regardless of occupation. Simply, human trafficking is not a form of work. Often conflated, sex work and human trafficking are distinct

concepts, and should be treated as such with differentiated strategies by prosecutors.

#### *b. Intersection of Race, Gender, and Sexuality in Prosecution of Sex Work*

Progressive prosecutors aim to reduce the disproportionate impacts of the criminal justice system, in terms of policing, prosecution, sentencing, and incarceration, on communities of color and low-income communities.<sup>17</sup> Arrests and charging of sex work disproportionately target people of color, and most particularly transgender women of color.<sup>18</sup> Amnesty USA found that “in 2015, nearly 40% of adults arrested for prostitution were Black. This disparity is larger for minors, where approximately 60% of youth under the age of 18 arrested for prostitution were Black.”<sup>19</sup> Particularly, transgender women are profiled by police for engaging in sex work or actions assumed to be related, such as loitering. The American Civil Liberties Union (ACLU) found that “approximately three in 10 Black transgender women and multiracial transgender women reported that a police officer had as-

<sup>12</sup> See, Kate D’Adamo, *Chapter 10: Sex (Work) in the Classroom: How Academic Can Support the Sex Worker’s Rights Movement, Challenging Perspectives on Street-Based Sex Work*, Temple U. Press (2017).

<sup>13</sup> *Language Matters: Talking About Sex Work*, Stella (2013); Karen McMillan et al., *Usage of the Terms Prostitution, Sex Work, Transactional Sex, and Survival Sex: Their Utility in HIV Prevention Research*, Arch. Sex. Behav. vol. 47 (2018), at page 1517.

<sup>14</sup> Where an original text uses terms other than sex work, this paper will reproduce the original term to avoid mischaracterizing a statute or definition. See, Cal. Code § 647(b) (West 2021); D.C. Code § 22–2701 (2015); § 796.07, Fl. Stat. (2021); Mass. Gen. L. Ch. 272, § 53A(a) and (b) (2012).

<sup>15</sup> Martin A. Monto, *Chapter 11: Objectivity, Activism, and the Challenge of Research on a Highly Polarized and Somewhat Stigmatized Topic, Challenging Perspectives on Street-Based Sex Work*, Temple U. Press (2017), at pages 218–26.

<sup>16</sup> See, Ine Vanwesenbeeck, *Sex Work Criminalization is Barking Up the Wrong Tree*, Arch. of Sex Behav. vol. 46 (2017).

<sup>17</sup> David Sklansky, *The Changing Political Landscape for Elected Prosecutors*, Ohio St. J. Crim. L. vol. 14 (2017), at page 649; see, *Criminal Justice Facts*, The Sentencing Project (accessed Dec. 16, 2021) (noting that people of color make up 60–70% of the prison population and only 30–40% of the overall population); see also Angela J. Davis, *Reimagining Prosecution: A Growing Progressive Movement*, U.C.L.A. Crim. Just. L. Rev. vol. 3 (2019); Robert J. Smith & Justin D. Levinson, *The Impact of Implicit Racial Bias on the Exercise of Prosecutorial Discretion*, Seattle U. L. Rev. vol. 35 (2012); Ian F. Haney López, *Post-Racial Racism: Racial Stratification and Mass Incarceration in the Age of Obama*, Calif. L. Rev. vol. 98 (2010).

<sup>18</sup> Ruby Corado, *Chapter 13: Nothing About Us Without Us: The Trans Response to Survival Sex Work, Challenging Perspectives on Street-Based Sex Work*, Temple U. Press (2017).

<sup>19</sup> Jasmine Sankofa, *From Margin to Center: Sex Work Decriminalization Is A Racial Justice Issue*, Amnesty Int’l, (Dec. 12, 2016).



sumed they were sex workers.”<sup>20</sup> The ACLU additionally describes that all 305 LGBTQ+ survey respondents reported “being profiled as sex workers, stopped and searched, often verbally or physically abused, and even arrested on account of possessing condoms as evidence of prostitution, though none were working as sex workers at the time.”<sup>21</sup> These trends in profiling track with trends in arrest and incarceration rates; women of color and particularly transgender women of color are significantly more likely to be arrested and charged for engaging in sex work.<sup>22</sup>

In addition to sex work prosecutions disproportionately targeting women of color, women of color are disproportionately harmed by policing and prosecuting sex work. Ruby Corado, a sex worker rights activist and social scientist, writes:<sup>23</sup>

[T]he National Coalition of Anti-Violence Programs found that trans people were 1.8 times more likely to experience discrimination and verbal threats than cisgender respondents, 1.7 times more likely to experience sexual violence, and 3.7 times more likely to experience physical violence *at the hands of law enforcement* (emphasis added).

Sex workers sometimes describe a reluctance to report violence perpetrated against

them due to fears of prosecutorial retaliation or due to past experiences of violence by law enforcement.<sup>24</sup> People of color who are sex workers represent a potentially supportive constituency group for progressive prosecutors and would generally benefit from progressive reforms. Despite this, prosecutors have not consistently developed initiatives intended to prevent the harms of prosecuting sex work.

## II. Dominant Modes of Prosecuting Sex Work

Criminalization serves as the dominant policy response to sex work in the United States.<sup>25</sup> Sex work is only legal in about twenty licensed establishments in seven Nevada counties.<sup>26</sup> Rhode Island decriminalized sex work in 2003, but the state re-criminalized the practice six years later.<sup>27</sup> Scholars, such as Bernstein and Jakobsen, have characterized the motivations behind these punitive government responses as being dominated by religious-moral notions. According to this worldview, sex should not be paid for and making the practice illegal would be the surest way of eradicating it.<sup>28</sup> The dominant mode also conflates sex work with human trafficking, as well as groups sex work by adults and by minors, which is inherently coercive.<sup>29</sup> Sex work is prosecuted directly as “prostitution,” “nightwalking,”

<sup>20</sup> *Is Sex Work Decriminalization the Answer?*, The Am. Civil Liberties Union (accessed Jan. 9, 2022) (citing Sandy E. James, et. al., *The Report of the 2015 U.S. Transgender Survey*, Washington, D.C., Nat’l Ctr for Transgender Equality (2016)).

<sup>21</sup> *Is Sex Work Decriminalization the Answer?*, The Am. Civil Liberties Union (accessed Jan. 9, 2022) (citing *Make the Road New York*, *Transgressive Policing: Police Abuse of LGBTQ Communities of Color in Jackson Heights*, Make the Road New York (2012)).

<sup>22</sup> See, *supra* footnote 18 at page 233; Stéphanie Wahab & Meg Panichelli, *Ethical and Human Rights Issues in Coercive Interventions with Sex Workers*, *Affilia* vol. 28 (Oct. 2013), at page 345.

<sup>23</sup> *Supra* footnote 18 at page 233.

<sup>24</sup> *Is Sex Work Decriminalization the Answer?*, The Am. Civil Liberties Union (accessed Jan. 9, 2022).

<sup>25</sup> *Supra* footnote 16.

<sup>26</sup> David Rosen, *It’s Time to Decriminalize Sex Work*, *The Progressive Mag.* (Aug. 14, 2018).

<sup>27</sup> *Id.*

<sup>28</sup> Elizabeth Bernstein & Janet R. Jakobsen, *Sex, Secularism and Religious Influence in US Politics*, *Third World Quarterly* vol. 31 (2010); Amin Yacoub, *Consensual Sex Work: An Overview of Sex-Workers’ Human Dignity in Law, Philosophy, and Abrahamic Religions*, *Women’s Stud. Int’l. Forum* vol. 76 (2019); Carly Daniel-Hughes, *Evangelical Women Are Shaping Public Attitudes About Sex Work*, *The Conversation* (Jan. 3, 2018).

<sup>29</sup> This paper does not suggest that sex work by minors should be evaluated in the same manner as sex work by adults.



or “offering to sell sex.”<sup>30</sup> Sex workers are prosecuted for crimes stereotyped to be related to their work, such as loitering, trespassing, and disorderly conduct.<sup>31</sup>

Stakeholders differ in their views on whether clients of sex work should be prosecuted.<sup>32</sup> Non-prosecution of sex work is often justified by perceptions of sex workers as “victims of the system,” who should not face criminal consequences for their life circumstances.<sup>33</sup> This reasoning does not extend to clients. Those who advocate for criminalization of clients are still interested in stymying sex work as prosecuting clients severely impacts a sex worker’s ability to make a living and may worsen some of the associated risks.<sup>34</sup>

The criminalization of sex work is at odds with how other practices in the United States are regulated. For example, consensual sex between adults is protected and laws banning consensual sex are generally unconstitutional.<sup>35</sup> When payment is involved, however, those protections disappear. At the same time, conflictly, pornography is generally legal.<sup>36</sup> These boundaries can be difficult to unravel and may be best understood by the enigmatic social mores around consensual sex and relationships.

### III. Progressive Prosecutorial Strategies

Progressive prosecutors use various strategies to try to improve the criminal justice system, such as increasing diversion programs, ending cash bail, asking for shorter sentences, engaging in fair plea bargaining without trial penalties, ending the death penalty, refraining from charging minors as adults, and encouraging medical treatment for those with addiction or mental illness.<sup>37</sup> Each of these tools prioritizes fairness within the system and treatment of the defendant as an individual, as well as recognizing power imbalances between defendants and prosecutors.<sup>38</sup>

Among these tools, progressive prosecutors may promote fairness by declining to prosecute certain crimes. Minor infractions, such as loitering, public urination, and disturbing the peace, may not warrant incarceration or the social and economic consequences of a criminal record.<sup>39</sup> Some offices use diversion programs to maintain consequences while avoiding incarceration.<sup>40</sup> These approaches tend to recognize that certain crimes unequally target low-income individuals and communities of color.<sup>41</sup>

<sup>30</sup> *Supra* footnote 24.

<sup>31</sup> *Id.*

<sup>32</sup> See, Stephanie Ebbert, *Sex Work or Sexual Abuse? US Representative Pressley, Activists Debate Decriminalizing Prostitution*, The Boston Globe (Dec. 16, 2019).

<sup>33</sup> *Id.*; Carly Daniel-Hughes, *Evangelical Women Are Shaping Public Attitudes About Sex Work*, The Conversation (Jan. 3, 2018).

<sup>34</sup> *Id.*; *supra* footnote 15 at page 219; Natasha Lennard, *Sex Work Prosecution Changes in New York are a Welcome Step-But Not Enough*, The Intercept (Apr. 24, 2021).

<sup>35</sup> *Lawrence v. Texas*, 539 U.S. 558, 562 (2003); *Cook v. Gates*, 528 F.3d 42 (1st Cir. 2008).

<sup>36</sup> *Roth v. United States*, 354 U.S. 476 (1957).

<sup>37</sup> *Supra* footnote 7.

<sup>38</sup> More traditional prosecutorial stances do not necessarily recognize power imbalances as problematic and instead often focus on the importance of prosecutorial discretion (a power) in the criminal justice system. David Sklansky, *The Changing Political Landscape for Elected Prosecutors*, Ohio St. J. Crim. L. vol. 14 (2017) at page 649.

<sup>39</sup> Jamil Smith, *Progressive Prosecutors Are Working Within the System to Change It. How is That Going?*, Vox (Jul. 30, 2021).

<sup>40</sup> See e.g., D.A. Vance Ends Prosecution of Prostitution and Unlicensed Massage, A First in New York State, Off. of the Manhattan Dist. Atty. (accessed Apr. 21, 2021).

<sup>41</sup> *State’s Attorney Mosby Shares Steps to Undo Systemic Racial Disparities in the Criminal Justice System*, Off. of the State’s Atty. for Baltimore City (Mar. 16, 2022); *Restorative Justice*, Off. of the District Atty. for San Francisco (accessed Apr. 12, 2022).

Crimes such as loitering and disorderly conduct are widely accepted by progressive prosecutors as crimes that should be declined.<sup>42</sup> Policies on sex work prosecution still lack consensus. Chesa Boudin and Eli Savit have run on platforms of not prosecuting sex work while others, such as Larry Krasner and Cyrus Vance, have changed their office policy over time to decline sex work charges. At the same time, some progressive prosecutors have not yet enacted policies declining to charge sex work related crimes. In the middle of this spectrum of policies are a range of practices that maintain prosecution of the work and lives of sex workers, such as continuing to prosecute clients or informing immigration officials when sex workers are identified.

The following section describes a series of varied approaches in the current landscape of how progressive prosecutors view charging crimes related to sex work, indicating that otherwise like-minded prosecutors have disparate views on sex work.

#### *a. Chesa Boudin*

The San Francisco District Attorney announced plans to stop prosecuting sex work following his election in November 2019.<sup>43</sup> Mr. Boudin's policies aim to "promote racial justice; end the criminalization of poverty; and combat mass incarceration by relying on incarceration as a last-and not first-resort."<sup>44</sup> The new policies include a shift to no longer prosecute "quality of life crimes," such as unlicensed vending in public, panhandling, public camping, and public ur-

inating.<sup>45</sup> This policy includes ending prosecution of those offering or soliciting sex.<sup>46</sup>

Mr. Boudin's policy recognizes that these types of crimes stem from a root cause, often substantial need or socio-economic status.<sup>47</sup> The office aims to provide outside support to address underlying issues which may lead to commissions of crime, "while upholding the dignity of those who have caused harm."<sup>48</sup> Furthermore, Mr. Boudin has explained his view that incarceration often fails to address the real causes of crime and considers imprisonment to exacerbate factors that lead to violence such as a lack of rehabilitation and separation from community.<sup>49</sup> Mr. Boudin aims to "begin to repair the harm that the criminal-legal system has caused to communities of color" through his non-prosecution policy, focus on root causes, and comprehensive diversion programs.<sup>50</sup>

#### *b. George Gascón*

Mr. Boudin's policy builds on the platform of former District Attorney and fellow progressive prosecutor George Gascón. Under Mr. Gascón's leadership, the office did "not prosecute persons for involvement in sex work or other forms of sex trade when they are victims or witnesses of sexual assault, human trafficking, stalking, robbery, assault, kidnapping, threats, blackmail, extortion, burglary or other violent crime [emphasis added]."<sup>51</sup> The policy offers leniency only for sex workers who are "victims." Mr. Gascón's policy statement stressed the need for voices of sex workers in reporting seri-

<sup>42</sup> *Supra* footnote 38.

<sup>43</sup> Matt Charnock, *Boudin Will Not Prosecute Prostitution, Public Camping, and Other 'Quality-of-Life' Crimes Once Sworn In*, SFist (Nov. 16, 2019).

<sup>44</sup> *Healing Justice Initiative*, Off. of the District Atty. for San Francisco (Mar. 16, 2022).

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*

<sup>48</sup> *Restorative Justice*, Off. of the District Atty. for San Francisco (accessed Apr. 12, 2022).

<sup>49</sup> *Id.*

<sup>50</sup> *Supra* footnote 43.

<sup>51</sup> George Gascón, *Prioritizing Safety for Sex Workers*, Off. of the District Atty. (accessed Apr. 12, 2022).

ous crimes, and the strong disincentives sex workers faced in reporting violence. Somewhat uniquely, the policy also committed to “not report to any person or government agency the immigration status of any person making a report under this policy, with the exception of assisting with the application for immigration relief that would benefit the victim or witness.”<sup>52</sup>

### c. Larry Krasner

Philadelphia District Attorney Larry Krasner has had an office policy of not prosecuting sex workers since at least 2018.<sup>53</sup> Mr. Krasner’s office does prosecute sex workers, but continues to prosecute clients under “patronizing a prostitute” statutes.<sup>54</sup> In the early stages of his policy, Mr. Krasner’s office declined to prosecute sex workers, particularly those who were arrested for the first time, and offered to others a diversion program called Dawn Court.<sup>55</sup> Dawn Court is a program that “mandates services for sex workers in exchange for eventually clearing their records of at least some of their prostitution charges.”<sup>56</sup> More recently, the office has declined to prosecute sex workers regardless of their arrest record.

Mr. Krasner views incarceration as often inappropriate as a means of addressing root causes of crime.<sup>57</sup> Instead, Mr. Krasner’s

office values diversion programs to address trauma, mental illness, and substance use factors that may contribute to future commission of crime.<sup>58</sup> Further, the office considers some sentences as “entirely disconnected from public safety concerns,” and aims to avoid incarceration when not necessary for public safety.<sup>59</sup> As a broad goal, Mr. Krasner’s office works “to decrease the racial disparities that permeate our legal system.”<sup>60</sup>

### d. Marilyn Mosby

Baltimore City State’s Attorney Marilyn Mosby ended her office’s policy of prosecuting sex work, among other low-level crimes, in March 2020.<sup>61</sup> The office cited the disproportionate enforcement and effects of prosecution on people of color. Ms. Mosby’s policies aim to “reduce systemic racial disparities and allow us to focus on serious offenses to ensure justice is applied fairly, regardless of race.”<sup>62</sup> Specifically, Ms. Mosby views “prosecuting these low-level offenses that have nothing to do with public safety” as more likely to exacerbate racial disparities.<sup>63</sup>

Ms. Mosby’s policy change was announced following a 20% drop in violent crime from the prior year.<sup>64</sup> The office dismissed 1,400 charges for low-level crimes, including sex work, and withdrew an equivalent number

<sup>52</sup> *Id.*

<sup>53</sup> Aisha Mohammed, *Sex Workers Don’t Need Aggressive Prosecution to Protect Themselves*, The Philadelphia Inquirer (Jan. 14, 2019).

<sup>54</sup> Larry Krasner, *Letter to the Editor: DA Krasner Responds To McSwain’s Fact-Free Nonsense*, The Justice Wire (Jan. 3, 2019).

<sup>55</sup> *Supra* footnote 52.

<sup>56</sup> *Id.*

<sup>57</sup> *Larry Will Continue To Attack Mass Incarceration and Work To Prevent Violence*, Larry Krasner for DA, (accessed Mar. 29, 2020).

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*

<sup>61</sup> Christopher Harris, *Baltimore Ends Drug, Sex Work Prosecutions*, Revolt (Mar. 27, 2021).

<sup>62</sup> *State’s Attorney Mosby Shares Steps to Undo Systemic Racial Disparities in the Criminal Justice System*, Off. of the State’s Atty. for Baltimore City (Mar. 16, 2022).

<sup>63</sup> Elissa Salamy, *A Halt to Low-Level Prosecutions in Some Cities. But Could it Lead to More Crime?*, The Nat’l Desk (Apr. 26, 2021).

<sup>64</sup> *Id.*

of warrants for the same crimes.<sup>65</sup> Ms. Mosby stopped prosecuting sex workers, stating such charges “typically tie up Black people in the criminal justice system.”<sup>66</sup> 78% of the charges declined by Mosby’s office “were averted in the Black community.”<sup>67</sup>

#### *e. Cyrus Vance*

Cyrus Vance Jr. announced in the spring of 2021 that the Manhattan District Attorney’s office would no longer prosecute sex work or unlicensed massage.<sup>68</sup> The policy announcement cited reasons such as violence against sex workers as motivation for the change. Mr. Vance stated, “[o]ver the last decade we’ve learned from those with lived experience, and from our own experience on the ground: criminally prosecuting prostitution does not make us safer, and too often, achieves the opposite result by further marginalizing vulnerable New Yorkers.”<sup>69</sup> Additionally, Mr. Vance announced hundreds of cases brought against sex workers would be dismissed.<sup>70</sup>

The Manhattan District Attorney’s office had a longstanding practice of diverting prosecutions for sex work. The office used to provide services to those charged and had a policy of dismissing charges filed against sex workers “in the interest of justice” if the person completed a certain number of counseling sessions. In acknowledging this change in policy, Mr. Vance said:<sup>71</sup>

For years, rather than seeking criminal convictions, my Office has reformed its practice to offer services to individuals arrested for prostitution. Now, we will decline to prosecute these arrests outright, providing services and supports solely on a voluntary basis. By vacating warrants, dismissing cases, and erasing convictions for these charges, we are completing a paradigm shift in our approach. These cases – many dating back to the 1970s and 1980s – are both a relic of a different New York, and a very real burden for the person who carries the conviction or bench warrant.

Until 2021, the Manhattan District Attorney’s office prosecuted individuals for “loitering for the purpose of prostitution.”<sup>72</sup> Crimes such as loitering criminalize multiple aspects of sex work, and lead to strong disincentives for sex workers to bring claims of violence forward. Police targeted members of the LGBTQ+ community using the loitering statute to such an extent that it became colloquially known as the “Walking While Trans” law. The NY statute was repealed earlier in 2021, and the Manhattan District Attorney’s office followed suit.<sup>73</sup> Mr. Vance’s office dismissed 5,080 cases brought under the Loitering for the Purpose of Prostitution statute, earlier this year.<sup>74</sup>

#### *f. Eli Savit*

Eli Savit was elected as Prosecuting Attor-

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<sup>65</sup> *Id.*

<sup>66</sup> *Supra* footnote 60.

<sup>67</sup> *Id.*

<sup>68</sup> *D.A. Vance Ends Prosecution of Prostitution and Unlicensed Massage, A First in New York State*, Off. of the Manhattan Dist. Atty. (accessed Apr. 21, 2021); Natasha Lennard, *Sex Work Prosecution Changes in New York are a Welcome Step-But Not Enough*, *The Intercept* (Apr. 24, 2021).

<sup>69</sup> *D.A. Vance Ends Prosecution of Prostitution and Unlicensed Massage, A First in New York State*, Off. of the Manhattan Dist. Atty. (accessed Apr. 21, 2021).

<sup>70</sup> *Id.*

<sup>71</sup> *Id.*

<sup>72</sup> *Id.*

<sup>73</sup> *Id.*

<sup>74</sup> *Id.*

ney for Washtenaw County, Michigan, in January 2021.<sup>75</sup> Mr. Savit announced soon after his winning campaign that “his office will no longer pursue charges against adults who engage in consensual sex work.”<sup>76</sup> Mr. Savit’s announcement included a policy no longer prosecuting “people who sell sex and those who solicit it.”<sup>77</sup>

The announcement cited research demonstrating that due to traditional prosecution strategies, sex workers are forced to operate in isolated, off the path areas, which places sex workers in places where violence is more common.<sup>78</sup> Mr. Savit’s policy indicates an awareness of how violence against sex workers is intricately linked with prosecution and criminalization. As noted in his policy, sex workers and those who experience violence or exploitation are less likely to report crimes if they fear prosecution. Mr. Savit stated, “[a]s with other prohibitionist policies, the criminalization of sex work actually increases the risk of sex work-adjacent harm...Forcing sex workers to operate in the shadows increases their susceptibility to physical assault, sexual assault and trafficking.”<sup>79</sup>

Mr. Savit’s office plans to maintain its practice of prosecuting human trafficking, violence against sex workers, solicitation of sex from minors, indecent exposure, managers of sex workers, and “unlawful commercial sexual establishment[s].”<sup>80</sup>

*g. Dan Satterberg*

Prosecuting Attorney for King County, Washington, Dan Satterberg has implemented numerous progressive prosecutorial strategies, such as a diversion program for those charged with drug possession as well as a pre-charge diversion program for youth.<sup>81</sup> Mr. Satterberg has not included reforms to traditional practices of prosecuting sex workers. In the 2018 election for the King County office, Mr. Satterberg’s challenger campaigned on a platform of decriminalizing sex work while criticizing Mr. Satterberg’s continued practice of prosecuting sex workers and a 2018 sting operation to charge clients.<sup>82</sup> Mr. Satterberg stated in response, “I’m sure there are people involved fully and consensually in prostitution. But what we see in the criminal justice system is not that.”<sup>83</sup> Mr. Satterberg has maintained practices of prosecuting sex workers, though has focused resources on prosecuting clients, to date.<sup>84</sup>

#### **IV. Non-prosecution of Sex Work Aligns with Progressive Prosecutorial Policies**

Progressive prosecutors enact policies that aim to reduce incarceration, make the criminal justice system fairer for defendants, and address the effects of a criminal record on an individual’s ability to find housing, employment, and care for dependents.<sup>85</sup> Progressive prosecutors strive to incorporate means of reducing the discriminatory effects of the criminal justice system on

<sup>75</sup> Angie Jackson, *Washtenaw County Will No Longer Prosecute Consensual Sex Work*, Detroit Free Press (Jan. 15, 2021).

<sup>76</sup> *Id.*

<sup>77</sup> Eli Savit, *Policy Directive 2021-08: Policy Regarding Sex Work*, Off. of the Prosecuting Atty. (last modified Jan. 14, 2021).

<sup>78</sup> *Id.*

<sup>79</sup> *Supra* footnote 73.

<sup>80</sup> *Supra* footnote 75.

<sup>81</sup> *Supra* footnote 6 at page 12.

<sup>82</sup> Amy Radil, *Before You Vote: Prosecutor Candidates on Youth Jail, Sex Work*, Nat’l Pub. Radio (Jul. 23, 2018).

<sup>83</sup> *Id.*

<sup>84</sup> *Id.*

<sup>85</sup> Brooke Gladstone, *The Progressive Prosecutor Wave is Rising*, WYNC Studios (July 26, 2019); Justin Wise, *Study Links Not Prosecuting Misdemeanors to Lower Crime*, Law360 (Apr. 4, 2021).

people of color and low-income communities. Crimes progressive prosecutors have declined to charge are typically low-level, non-violent, no victim crimes, whose deterrent value is outweighed by the potential for discrimination and outsized negative effect on the defendants.

Concerns about criminalization of sex work overlap with the issues motivating general progressive prosecutorial initiatives. Sex work is often non-violent. If violence is involved, it tends to be perpetrated against the sex worker. Sex workers with criminal records experience barriers to employment and finding housing, exacerbating the economic circumstances that may have prompted participating in sex work initially.<sup>86</sup> Low-income individuals and people of color are disproportionately likely to be arrested for sex work and as a result, experience social barriers more acutely.<sup>87</sup>

Ending the practice of prosecuting sex work meets the goals and already implemented practices of progressive prosecutors. Some progressive prosecutors have incorporated sex work into non-prosecution initiatives. Others have run and been elected on similar platforms. A 2016 poll found that 60% of Americans believe there should not be criminal prosecution of those arrested for “prostitution.”<sup>88</sup> Likewise, recent high-profile elections of progressive prosecutors as well as recent challenges to already progressive-leaning incumbents for not “doing enough” may indicate a further shift in the

public’s receptiveness to these strategies.<sup>89</sup>

Several progressive prosecutors have been unwilling to decline prosecution for sex workers. Despite declining to charge low-level crimes,<sup>90</sup> engaging in sex work may be characterized by prosecutorial offices differently. Low-level crimes typically have a lesser impact on society, have monetary not physical impacts, have an easier to prove mens rea requirement, and carry a lesser sentence. Low-level crimes include trespass, disorderly conduct, petty theft, and public intoxication. “Prostitution” or other criminalized forms of sex work may not be categorized as a low-level crime due to the perception that sex work does have a societal impact, the physical element of the work, and the weighty sentencing available. These factors may also point to why in-person sex work is viewed so differently than engaging in pornography.

Sex work raises extremely complicated social values, and many people and organizations outside of the industry have opinions on sex work. Conflation with human trafficking has led policy-makers and non-governmental organizations to reject efforts to “normalize” sex work.<sup>91</sup> Strongly held beliefs by a range of interest groups may make it difficult for progressive prosecutors to take a stance on the issue, particularly during elections.<sup>92</sup> Numerous religious groups have started “rescue” houses for sex workers.<sup>93</sup> Some religious groups, particularly evangelical Christians, have formed

<sup>86</sup> Marie Bailey-Kloch, *Chapter 12: Poetry in Street-Based Sex Work, Challenging Perspectives on Street-Based Sex Work*, Temple U. Press (2017).

<sup>87</sup> *Supra* footnote 24.

<sup>88</sup> *Should Prostitution Be Legalized?*, MaristPoll (May 31, 2016); David Rosen, *It’s Time to Decriminalize Sex Work*, The Progressive Mag. (Aug. 14, 2018).

<sup>89</sup> See, *supra* footnote 80; *supra* footnote 42.

<sup>90</sup> Characterization of low-level crimes differs from characterization of misdemeanors and felonies which is dependent upon sentencing. A low-level crime is often a misdemeanor, but those categories are not synonymous.

<sup>91</sup> *Supra* footnote 16 at page 1632.

<sup>92</sup> *Supra* footnote 6.

<sup>93</sup> Stéphanie Wahab & Meg Panichelli, *Ethical and Human Rights Issues in Coercive Interventions with Sex Workers*, *Affilia* vol. 28 (Oct. 2013), at pages 344-49; Ine Vanwesenbeeck, *Sex Work Criminalization is Barking Up the Wrong Tree*, *Arch. of Sex Behav.* vol. 46 (2017), at page 1632.



a constituency to call for an end to the industry, as they view sex work as facilitating human trafficking.<sup>94</sup> These religious groups are joined by an equally strong coalition of anti-sex work secular feminists.<sup>95</sup> The two groups are more often at odds with one another, but have formed alliances on this issue. Progressive prosecutors must take their constituencies' preferences into consideration, and some locations may have strong voices from coalitions opposing sex work. Prosecutors likely do not have support for every initiative, and there may be greater public willingness in certain locations for other progressive reforms over reforming prosecutorial strategies related to sex work.

Third, progressive prosecutors may believe post-charge, alternative sentencing programs, or diversion programs are sufficient to ameliorate harms of the criminal justice system to sex workers. These programs are often heralded as positive steps towards more progressive alternatives.<sup>96</sup> However, diversion programs raise concerns about equitable treatment and procedure for low-income defendants.<sup>97</sup> Progressive prosecutors, potentially facing opposition from interest groups, may consider diversion programs as a middle ground.

For any single or combination of these reasons, not all progressive prosecutors have been able to implement policies of declining to prosecute sex work. Other efforts provide concrete benefits, such as declining to pros-

ecute associated actions like loitering and disturbing the peace, not using possession of condoms as evidence to charge for sex work, and pre-charge diversion programs. For prosecutors who have ended the practice of prosecuting sex work, there is often still room for improvement.

## V. Policy Recommendations

While the efforts of some progressive prosecutors to address the needs of sex workers is laudable, there are opportunities to make the criminal justice system fairer.

First, progressive prosecutors should decline to prosecute clients. Prosecuting clients of sex work financially harms workers and continues the cycle of economic strain that may have led to the work initially.<sup>98</sup> Prosecuting clients will lead to only those clients who are capable of evading investigation to seek services.<sup>99</sup> This will make screening clients more difficult for sex workers, while screening clients is one of the safest ways for sex workers to engage in the profession.<sup>100</sup> Diversion programs for clients present similar problems as diversion programs for sex workers; there are still barriers to financial stability and safety for sex workers if clients are reluctant to transact in an open manner.<sup>101</sup>

Second, progressive prosecutors should decline to prosecute all aspects of sex work. Declining to prosecute sex work, while

<sup>94</sup> Carly Daniel-Hughes, *Evangelical Women Are Shaping Public Attitudes About Sex Work*, The Conversation (Jan. 3, 2018).

<sup>95</sup> *Id.*

<sup>96</sup> Stéphanie Wahab & Meg Panichelli, *Ethical and Human Rights Issues in Coercive Interventions with Sex Workers*, *Affilia* vol. 28 (Oct. 2013), at page 345.

<sup>97</sup> With diversion programs, prosecutors reinstate the initial charge (and enact punishment) if the defendant is unable to meet the diversion program requirements. Often these requirements include maintaining a job, refraining from engaging in sex work, or attending job training programming, among other program goals. The diversion programs can have the effect of disproportionately granting leniency to those with more means. *Id.*

<sup>98</sup> *Supra* footnote 15 at page 221.

<sup>99</sup> *Id.*

<sup>100</sup> Kristen DiAngelo & Rachel Anderson, *Sex Work and Human Trafficking in the Sacramento Valley: A Needs Assessment*, Sex Workers Outreach Project (May 2015).

<sup>101</sup> *Supra* footnote 15 at page 221; Emily Witt, *After the Closure of Backpage, Increasingly Vulnerable Sex Workers Are Demanding Their Rights*, The New Yorker (Jun. 8, 2018).



maintaining prosecutions of crimes such as disorderly conduct or loitering, will not address progressive prosecutors' goals of reducing incarceration or minimizing the impact on a criminal record on an individual. Prosecuting other low-level crimes that may arise while an individual is engaging in sex work, such as loitering, will be prosecuting sex work by another name. If sex workers fear prosecution for any low-level crime related to their work, they will still be reluctant to bring forward claims of violence.<sup>102</sup> Sex workers' willingness to engage with law enforcement without fear of retaliation can lead to cooperation strategies, where sex workers can alert law enforcement when they witness human trafficking, violent clients, or violent managers.<sup>103</sup>

Third, progressive prosecutors should avoid relying on public forums that facilitate safer sex work as a means of identifying and charging sex workers. Legislation aiming to address human trafficking often conflates sex work with human trafficking. As a result, laws intended to combat human trafficking have the result of stymying sex work, and often primarily impact the safest forms of sex work. For example, in 2018, the House passed the Allow States and Victims to Fight Online Sex Trafficking Act, simultaneously with the mirror Senate bill, the Stop Enabling Sex Traffickers Act (FOSTA-SESTA).<sup>104</sup> FOSTA-SESTA is an exception to the Communications Decency Act (Section 230) that holds web publishers responsible if third parties post advertisements for sex on their sites.<sup>105</sup> The law is intended to fight human trafficking, however, it removed a primary means of investigation into traffick-

ing for law enforcement.<sup>106</sup> Moreover, FOSTA-SESTA criminalized websites which sex workers had been using to meet clients.<sup>107</sup> These sites were considered the safest transaction forums. Clients could be screened, reported for violence, and sex workers could set up client meetings where they felt comfortable (as opposed to street-based sex work).<sup>108</sup> Prosecutions of these websites removed a proverbial rung on the ladder to a safer industry. By not prosecuting public forums, progressive prosecutors would better achieve desired results: non-prosecution of sex work and robust investigation of human trafficking.

In all these recommendations, none aim to limit the efforts to investigate and prosecute human trafficking. Human trafficking is a violent act that meets most progressive prosecutors' categorization of crimes requiring full prosecution and consequences. As stated, there is an opportunity to meet both goals through collaboration. Sex workers who trust their local prosecutor to not seek charges may be more open to informing investigators or working with law enforcement.

## VI. Conclusion

Progressive prosecutors have made dramatic strides in the last decade, implementing a range of policies to promote fairness in the criminal justice system while sustaining approval from constituents to create lasting change. Generally applicable policies aimed at promoting a more fair and just criminal justice system will benefit sex workers as well, such as ending cash bail. At the same

<sup>102</sup> *Supra* footnote 93 at page 345.

<sup>103</sup> *Supra* footnote 97.

<sup>104</sup> Aja Romano, *A New Law Intended to Curb Sex Trafficking Threatens the Future of the Internet as We Know It*, Vox (Jul. 2, 2018); Liz Tung, *FOSTA-SESTA was Supposed to Thwart Sex Trafficking. Instead, It's Sparked a Movement*, Nat'l Pub. Radio (Jul. 10, 2020).

<sup>105</sup> *Id.*

<sup>106</sup> *Id.*

<sup>107</sup> Emily Witt, *After the Closure of Backpage, Increasingly Vulnerable Sex Workers Are Demanding Their Rights*, The New Yorker (Jun. 8, 2018).

<sup>108</sup> *Supra* footnote 97.

time, not all progressive prosecutors have initiated specific policies aimed at addressing harms to sex workers, potentially due to significant resistance from interest groups or perceived effectiveness of alternatives. Progressive prosecutors can take steps such as declining to prosecute clients, refraining from using public forums to identify sex workers and not prosecuting those sites, and declining to prosecute crimes considered tangential to sex work. All of these policies, building on a foundational practice of non-prosecution of sex work, can lead to increased safety for sex workers, cooperative engagement with law enforcement, and an ability to make a living.

This issue will continue to be a divisive topic with strongly held beliefs about the best way forward from varied stakeholders. Prosecutors will need to connect initiatives benefiting sex workers to the core progressive principles that have seen a surge in support: lessening disproportionate effects of the criminal justice system, reducing mass incarceration, and promoting fairness for all defendants as individuals.

# Bank Stress Tests as Safety Case Regulation

Bryan Ricketts

## Abstract

Normal Accident Theory describes the phenomenon by which complex and tightly coupled systems lead inevitably to accidents as a consequence of a system's design. Some scholars have applied this interpretive lens to describe the inevitability of crises in complex, tightly coupled financial systems, but have left open the question of how to manage these systems. This article uses NAT theory to focus on the management of financial systems, examining whether bank stress testing meets the definition of the safety case, an NAT management strategy, and providing policy recommendations for bank stress testing based on NAT management tools.

## Introduction

The financial crisis of 2008 precipitated enormous harm on people across the world. It was an outgrowth of the global financial system, but it centered on many financial institutions within the United States. After such an event, it is natural to look for structural lenses to facilitate reform.

Following the work of several sociologists, this paper suggests that Normal Accident Theory (NAT) provides a useful interpretive lens for financial crises. Building on this body of literature, I consider how solutions associated with NAT apply to the United States' regulatory response to the

financial crisis. In particular, this paper examines safety case regulation as a response to "normal accidents," analyzing whether bank stress tests can serve as effective safety case regulation. I conclude with policy recommendations for the stress testing regime based on the safety case lens.

## Normal Accident Theory

Charles Perrow pioneered Normal Accident Theory as an interpretive lens for catastrophes that occur at a systems level. System, as used here, refers to a user-defined boundary around a collection of interacting subsystems. Those subsystems are in turn made up of units, which themselves are made up of parts.<sup>1</sup> While the system has a defined boundary, it interacts with the outside world through designers, operators, and managers who shape the system and develop frameworks through which it may be understood.<sup>2</sup> Key to the understanding of a system is that while individual parts or operators may fail (an "incident"), an "accident" is a system-level phenomenon.<sup>3</sup> Normal Accident Theory is meant to be applied as an interpretive lens that focuses on the structural causes of accidents, rather than individual or component-level failures.<sup>4</sup>

To understand the structure of systems, Perrow classifies them along two dimensions: their level of complexity, and their degree of coupling. Interactive complexity is associated with a system's layout or design.

<sup>1</sup> Charles Perrow, *Normal Accidents: Living with High-Risk Technologies*, Princeton U. Press (1999), at pages 64-66.

<sup>2</sup> *Id.*

<sup>3</sup> *Id.* at page 70.

<sup>4</sup> *Id.* at page 63.

In a simple system there are few components and a clearly defined causal chain; in a complex system, the interactions between parts, units, and subsystems are numerous, interlocking, and unpredictable.<sup>5</sup> Coupling, on the other hand, refers to the system's rate of change. In a tightly coupled system, a change in one part of the system quickly facilitates change in others, often doing so through feedback loops and other nonlinear paths.<sup>6</sup> A system which is both complex and tightly coupled is known as a "transformative system." These systems can be thought of as the opposite of a linear, or assembly line, process.<sup>7</sup>

Perrow concludes that tightly coupled, complex systems will be subject to normal accidents. In other words, their characteristics lead inevitably to accidents. He therefore suggests that humans should not build these systems - such as nuclear power or nuclear weapons - if the consequences of an accident would be immense.<sup>8</sup> Systems with the potential for catastrophic failure, however, may nevertheless be considered by some as essential for life as we know it. For these, Perrow suggests that society must assert a right to shape these systems, and that their design should consider the many stakeholders who benefit from and are harmed by them, with particular attention paid to externalities borne by society at large.<sup>9</sup>

### **The Financial Crisis as Large-Scale Organizational Failure**

The spark for the global financial crisis was the U. S. housing market, which began to

slow in 2005.<sup>10</sup> Subprime borrowers found that they could not refinance their mortgages, which had often been issued with poor underwriting standards or with terms that assumed refinancing (such as Alt-A loans which allowed borrowers to pay only interest).<sup>11</sup> Instead, these borrowers defaulted, kicking off a cycle of lower housing values and further default. Under the "originate-to-distribute" model, these defaults were not losses to the mortgage originator - instead, the mortgage had been sold and repackaged into a mortgage-backed security (MBS), a financial instrument combining the cash flows of many mortgages.<sup>12</sup> These securities could be further recombined, swapped, or used as collateral, multiplying the number of financial instruments built on top of the underlying mortgages and the number of institutions exposed to problems in the mortgage market.<sup>13</sup>

Multiple scholars have found Normal Accident Theory to be a useful interpretive lens for financial markets, with several authors using the framework to examine the 2008 crash. Palmer and Maher argue that finance, particularly the creation of MBSs, should be considered a transformative system under Normal Accident Theory, as it creates "securities that [a]re qualitatively different... than the sum of their parts."<sup>14</sup> As noted above, transformative systems are those which exhibit both interactive complexity and tight coupling.

Interactive complexity can be seen in the financial system's largest banks, which were interconnected through a myriad of

<sup>5</sup> *Id.* at pages 72-89.

<sup>6</sup> *Id.* at pages 89-96.

<sup>7</sup> *Id.* at pages 84-86.

<sup>8</sup> *Id.* at page 304.

<sup>9</sup> *Id.* at page 342.

<sup>10</sup> Christopher J Mayer et al., *The Rise in Mortgage Defaults*, Fed. Reserve Board of Governors (2008).

<sup>11</sup> *Id.*

<sup>12</sup> Donald Palmer & Michael Maher, *Chapter 7: A Normal Accident Analysis of the Mortgage Meltdown, Markets on Trial*, Emerald (2010), at page 225.

<sup>13</sup> *Id.*

<sup>14</sup> *Id.* at page 222.

mortgage securities transactions. Disentangling the effects of the collapse of the MBS market required assessing many layers of counterparties that had been involved in each individual trade.<sup>15</sup> The system was also tightly coupled. Electronic systems allow for rapid dissemination of information, which can quickly be traded on by computer algorithms.<sup>16</sup> Since much of this trading was done on margin (using borrowed money), one bank's weakened position could lead to a margin call; its sale of assets to meet that call would depress prices, devaluing collateral and leading to a spiral of further margin calls.<sup>17</sup> This is a classic example of dynamic instability, in which the existence of one 'bad state' (the initial margin call) causes a feedback loop that spreads the bad state through the rest of the system.

Guillén and Suárez note the increased complexity of the globalized financial system and the innovative new products that sliced up and repackaged cashflows and risk from underlying assets.<sup>18</sup> They also note the increased coupling driven by leverage taken on by participants in the system. Leveraging up was usually done via collateralized lending, so if the value of collateral decreased, the borrowing firm would need to put up more collateral to meet its margin call. This process increased coupling because collateral is valued at market price. Whether the borrower's collateral has enough value is a function of the buying and selling of other market participants. Since the banks held smaller reserves, they could absorb only small losses before their position had to be

liquidated, lowering the value of assets and spinning the banking system into a cascading fire sale.<sup>19</sup> Schneiberg and Bartley offer similar analysis, and add on the 1970s-90s deregulation of banking as a significant cause of the complexity and coupling.<sup>20</sup>

Perrow himself opposes the Normal Accident Theory reading of the crisis, preferring an "agentic" reading of the crisis in which executives' actions caused the failure. In support of this assessment, he lists the self-interested actions of elected officials, regulatory officials, and financial firms.<sup>21</sup> For example, Senator Phil Gramm, an author of the deregulatory Gramm-Leach-Bliley Act of 1999 (GLBA), was part of an ideological project and campaign finance system that encouraged the deregulation of financial services.<sup>22</sup> During his tenure, Treasury Secretary Robert Rubin "[set] the stage for deregulation" for Citigroup, whose merger with Traveler's was retroactively approved by the GLBA's rescission of Glass-Steagall. He later earned \$126M working for Citigroup.<sup>23</sup> Firms' securities desks continued to buy and sell mortgage assets while other parts of the firm bet against the market (or even for the same securities).<sup>24</sup> These actions, according to Perrow, show that the system was undermined by those involved. It was not an inevitable accident; it was the chickens of self-interest coming home to roost.

The problem with Perrow's argument lies in part with his definition of the system. The system of chemical plant has very clear

<sup>15</sup> *Id.* at pages 224-227.

<sup>16</sup> *Id.* at pages 228-230.

<sup>17</sup> *Id.*

<sup>18</sup> Mauro F. Guillén & Sandra L. Suárez, *Chapter 8: The Global Crisis of 2007-2009: Markets, Politics, and Organizations, Markets on Trial*, Emerald (2010), at page 261.

<sup>19</sup> *Id.* at page 262.

<sup>20</sup> Marc Schneiberg & Tim Bartley, *Chapter 9: Regulating or Redesigning Finance? Market Architectures, Normal Accidents, and Dilemmas of Regulatory Reform, Markets on Trial*, Emerald (2010).

<sup>21</sup> Charles Perrow, *Chapter 10: The Meltdown Was Not an Accident, Markets on Trial*, Emerald (2010).

<sup>22</sup> *Id.* at pages 318-319.

<sup>23</sup> *Id.* at pages 319-322.

<sup>24</sup> *Id.* at pages 322-324.

boundaries between the human and the mechanical, with clearly defined points for input and output. To be certain, Perrow sees the operators as a part of the system, but they do not constitute it - the pipes and boilers of a refinery are the elements of the system which bring about transformational change. Financial markets, on the other hand, are socially constructed and exist through human interactions. Brokers buying and selling, analysts interpreting, and bankers building relationships with CEOs - these are not inputs or interfaces to a natural or physical system; they are the system that transforms capital. Our present-day markets have added on significant amounts of technology and regulation that partially obscure this fact, but at their core financial markets remain socially constructed. Therefore, the design of the financial system must consider how its component parts - human relationships and decision-making - will act.

As an example, consider a bank run. A depositor with concerns about their bank's stability makes the individually rational choice to withdraw their money. If everyone chooses to do this at the same time, these withdrawals will themselves cause the bank's collapse. Individually rational choices by the agents in the system lead to a collectively negative outcome. It is clear in this example that the problem lies with the system's design, not with its actors. Add on deposit insurance, and the threat of bank runs is removed.

Broadening our lens from an individual bank to the financial system, we can see that the individual, self-interested choices of firms to build and participate in MBS trans-

actions led to a collectively negative outcome. Perrow's focus on executive agency in these choices, while a useful lens, would lead to the conclusion that some pure financial market, untouched by the unscrupulous executives, exists somewhere underneath their meddling. Recognizing the markets as entirely socially constructed should lead us to reject this conclusion and consider how elements of the system's design can change incentives, norms, or behaviors and thus the functioning of the system itself. This sort of understanding then allows us to apply Normal Accident Theory to analyze and manage the meltdowns of financial markets.<sup>25</sup>

### Safety Case Regulation

When a necessary system is prone to failure, it is a reasonable response to attempt to regulate the system. According to Normal Accident Theory, the common types of regulation are inadequate for regulating complex, tightly coupled systems. The safety case arose in response to two styles of regulation: prescriptive regulation and delegated regulation.

Prescriptive regulation involves setting forth detailed standards that companies must meet. For example, the Nuclear Regulatory Council dictates that a nuclear plant must have "a containment building, a redundant reactor shut-down system, and on-site electrical system."<sup>26</sup> The prescriptive approach allows for significant levels of government oversight, but scholars and business organizations criticize the approach as restrictive, arbitrary, or unreasonable, hampering innovation.<sup>27</sup>

Delegated regulation uses experts within an

<sup>25</sup> This is not to imply that the executives bear no responsibility for what happened, or that they should not face legal liability. Rather, investigating and prosecuting them, in addition to its moral and legal dimensions, should be understood as a feedback loop in the social system that is the markets.

<sup>26</sup> *Approaches and Methods to Conduct Regulatory Safety Review and Assessment*, Int'l Atomic Energy Agency (2013).

<sup>27</sup> Peter J. May, *Performance-Based Regulation and Regulatory Regimes*, Global Pol. Summit on the Role of Performance-Based Building Regs. (Nov. 3, 2003).

organization to assess safety issues on behalf of the regulator, generally when the products involved are technically complex or unique. For example, the Federal Aviation Administration (FAA) uses “Authorized Representatives” hired by Boeing to monitor and assess safety concerns with Boeing aircraft.<sup>28</sup> The agency delegates a supervisory role to the organization’s own employees, who assess whether the organization’s product is compliant with relevant safety regulations.<sup>29</sup> These representatives, while acting on behalf of the regulator, are paid and evaluated by the supervised entity.<sup>30</sup> The delegated approach utilizes the specific technical expertise of embedded personnel, but misaligns incentives for safety, as the regulated firm is providing its own regulation. For example, the House committee investigation into the Boeing 737 MAX crashes cited the FAA’s Organization Designation Authority program as a key systemic cause of the accident.<sup>31</sup>

To synthesize the competing frameworks of prescription and delegation, Andrew Hopkins has proposed the use of the safety case system.<sup>32</sup> Normal Accident Theory recommends the use of this safety case system to reduce the frequency and severity of accidents. The synthesis of the safety case system combines the most effective elements of prescriptive and delegated regulation. The prescriptive ability of the government to independently set and enforce limits is preserved, and the government maintains internal expertise on the subject matter.

The delegated authority is found in allowing firms to develop their own risk management strategy and process. These two systems are combined in a way that contains both adversarial and collaborative elements. The five components of the safety case system are described below.<sup>33</sup>

- Hazard Management System: The identification of major hazards and control plans.<sup>34</sup>
- Workforce Involvement: Employees must be involved in the development of a safety case, and regulators must have access during audit.<sup>35</sup>
- Competent and Independent Regulator: A body with the requisite funding and expertise to correctly assess risk.<sup>36</sup>
- The Requirement to “Make the Case” to the Regulator: “Making the case” means that the firm’s safety experts must “demonstrate to the regulator the processes they have gone through to identify hazards, the methodology they have used to assess risks and the reasoning that has led them to choose one control rather than another.”<sup>37</sup> This includes judgment by the regulator of whether the operator is adequately prepared to respond to specific, known hazards and to unexpected incidents.

<sup>28</sup> *The Design, Development & Certification of the Boeing 737 MAX*, House Com’tte on Transp. & Inf. (Sep. 2020) (Report by Committee Majority Staff).

<sup>29</sup> *Id.*

<sup>30</sup> *Id.* at page 67.

<sup>31</sup> *Id.*

<sup>32</sup> Andrew Hopkins, *Explaining ‘Safety Case’*, Nat’l Research Ctr. for OHS Reg. (Apr. 2012), at page 13. It is important to note that Hopkins views the safety case approach as complementary to the prescriptive system, rather than as a replacement; *see*, Hopkins, *supra* at page 5.

<sup>33</sup> *Id.* at page 3.

<sup>34</sup> *Id.*

<sup>35</sup> *Id.* at page 4.

<sup>36</sup> *Id.* at pages 5-6.

<sup>37</sup> *Id.* at pages 4-5.



- General Duty of Care: Risk should be “as low as reasonably practicable” such that the firm has followed best practices and taken reasonable steps to identify all hazards.<sup>38</sup>

## Bank Stress Testing

The prevailing legal regime prior to the financial crisis was one of delegated regulation. In a 1994 committee hearing, then-Federal Reserve chair Alan Greenspan aptly summarized this approach in saying, “[t]here is nothing involved in federal regulation per se which makes it superior to market regulation.”<sup>39</sup> International regulations had a large element of delegation as well. A key element was risk-weighted capital standards, which set a minimum level of capital that must be held by a bank against assets of different risk classes. The Basel II Accords, an early-2000s international agreement on bank capital requirements, allowed large banks to use their own internal models to determine how much capital to hold.<sup>40</sup> Though the U.S. had not fully implemented Basel II by the time of the crisis, it had switched to this bank-led method.<sup>41</sup>

During the 2008 financial crisis, stress testing became a key regulatory mechanism. In the years leading up to the crisis, banks had participated in stress tests, but they were internally developed.<sup>42</sup> When the crisis be-

came serious, the banks needed to convince markets that they were solvent. The Federal Reserve, as an independent agency, could provide credibility by designing and conducting the stress test itself.<sup>43</sup> After the stress test results were released in May 2009, market volatility fell, and indicators of financial health improved.<sup>44</sup> The success of the model led to interest among regulators and banks in adopting a permanent version.

Following the financial crisis, Congress included a provision requiring bank stress testing in the Dodd-Frank Wall Street Reform and Consumer Protection Act.<sup>45</sup> The Dodd-Frank Act Stress Test (DFAST) requires banks to provide standardized data on their holdings, exposures, and financial conditions to the Federal Reserve.<sup>46</sup> The Federal Reserve then uses this data to assess system-wide and individual bank stability under “adverse” and “severely adverse” scenarios of its choosing.<sup>47</sup> The results are made publicly available, and also provide inputs to the Comprehensive Capital Analysis and Review (CCAR) program, which sets capital requirements for the banks to ensure their operations would survive a downturn.<sup>48</sup> The goal is to be dynamic, forward-looking and to “[serve] the dual purpose of market discipline and government agency accountability.”<sup>49</sup>

The administrator behind development of the Federal Reserve’s stress testing program,

<sup>38</sup> *Id.* at pages 6-10.

<sup>39</sup> Peter S. Goodman, *Taking Hard New Look at a Greenspan Legacy*, *The New York Times* (Oct. 9, 2008).

<sup>40</sup> Michael S. Barr et al., *Financial Regulation: Law and Policy*, ed. 3, Foundation Press (2021), at pages 310-316.

<sup>41</sup> *Id.*

<sup>42</sup> Timothy F. Geithner, *Stress Test: Reflections on Financial Crises*, Broadway Books (2014), at pages 286-289.

<sup>43</sup> *Id.*

<sup>44</sup> *Id.* at page 325.

<sup>45</sup> Daniel K. Tarullo, *Next Steps in the Evolution of Stress Testing*, Speech at Yale School of Mgmt. Leaders Forum, New Haven, Conn. (Sep. 26, 2016). The use of stress tests for financial firms is much older than the Dodd-Frank Act, but a full discussion is beyond the scope of this paper.

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*

<sup>48</sup> *Id.*

<sup>49</sup> Daniel K. Tarullo, *Taking the Stress Out of Stress Testing*, Speech at the Americans for Fin. Reform Conf. on Big Bank Reg. Under the Trump Admin., Washington, D.C. (May 21, 2019); Daniel K. Tarullo, *Departing Thoughts*, Speech at Princeton, N.J. (Apr. 4, 2017).

Daniel Tarullo, said that imposing the test was necessary to correct for significant information problems.

“[M]any of these banks [in 2009] were unable to aggregate their total exposure to particular counterparties across the many parts of the bank in anything like a reasonable time. Some firms did not have ready access to basic information about the location and value of collateral that they held. As recently as a couple of years ago, we were still seeing some significant problems with data and modelling reliability in banks’ internal risk management processes.”<sup>50</sup>

Initially, the Federal Reserve had to rely on banks’ “own estimates of losses and revenues.”<sup>51</sup> Now, the DFAST is run jointly by the Federal Reserve and by the banks themselves as a part of their own risk management processes. The program aims to have each bank develop their own internal risk procedures to avoid “model monoculture.”<sup>52</sup> This process allows banks to apply their own assessment of risk, but in a way that is transparent to and validated by the Federal Reserve.

Tarullo has noted that the test can still be improved, as “it generally does not directly take account of second-round effects of stress on the financial system” and therefore may miss some of the complex interactive elements of a crisis.<sup>53</sup>

### **Stress Testing as Safety Case Regulation**

If crises in the financial system can be understood under the framework of Normal Accident Theory, then safety case regulation

would be an appropriate response. This section examines the ways in which bank stress testing can be seen as a type of safety case regulation.

At a high level, the stress test has several commonalities with safety case regulation. It is designed to consider expertise within the bank (its internal assessment of losses and capital required) and external to the bank (the Federal Reserve’s assessment of the same). It is presented to an extremely competent and well-resourced regulator and attempts to ‘make the case’ that its procedures and capital levels are adequate. Through the CCAR process, regulators can require changes in the bank’s operations by adjusting the amount of capital they are required to hold. This plays a similar function to the safety case regulator’s ability to require adjustments to plans before approval. Importantly, the use of a safety case is meant to focus firms at the systems level of analysis and away from focus on the reliability of a system’s parts. The stress test does the same – Tarullo noted that prior to stress testing, regulation was microprudential, “without regard to the interaction of the bank and the financial system as a whole.”<sup>54</sup> Furthermore, even though every possible risk cannot be addressed in the stress test, it is used to help set a capital buffer at a level that covers tail risk losses, much like the safety case is expected to contain contingency plans for ensuring safety in unexpected scenarios.

There are some clear differences from the safety case regime, however. Under stress testing, the regulator proposes the hazardous scenario. The particulars are not known to the banks ahead of time. Safety case regimes generally rely on the firm to propose

<sup>50</sup> *Id.*

<sup>51</sup> Daniel K. Tarullo, *Stress Testing after Five Years*, Speech at Fed. Reserve 3rd Annual Stress Test Modeling Symposium, Boston, Mass. (June 25, 2014).

<sup>52</sup> Tim P. Clark & Lisa H. Ryu, *FRB: CCAR and Stress Testing as Complementary Supervisory Tools*, Fed. Reserve Board (June 24, 2015).

<sup>53</sup> *Supra* footnote 49.

<sup>54</sup> *Supra* footnote 45.

hazardous scenarios. Additionally, the stress test operates at a different level of abstraction. Rather than focusing on identifying and managing sources of risk within the system, it is akin to simulating a chemical plant's operations to see if anything explodes. Most importantly, under the safety case regime, firms take on liability under the general duty of care. The banks, however, can operate with the knowledge that they are 'too big to fail' and will ultimately be bailed out in the worst-case scenario.

Despite these differences, the many similarities mean that the safety case can serve as a useful interpretative lens for bank stress testing. It is situated as a careful navigation of the regulation of a technically challenging sector.

### **Implications for Bank Stress Testing & Financial Regulation**

The COVID-19 crisis provides some evidence for how banks might have fared during the 2008 crisis had stress testing been in place. Very few banks failed during the pandemic, despite the extreme swings in economic conditions.<sup>55</sup> Stress testing played a role in this positive outcome. Central banks turned to stress testing as a tool for understanding the unexpected and uncertain impacts of the pandemic on financial institutions.<sup>56</sup> In the United States, the results of the COVID-19 stress test led the Federal Reserve to require updated bank capital plans and impose limits on share buybacks and dividends.<sup>57</sup>

Despite the positive record of stress testing,

its promise as a safety case method is incomplete. Looking through the lens of the safety case, we can recommend several improvements for the practice of bank stress testing.

1. The role of stress testing in setting bank capital requirements was a major topic of debate for Trump appointees at the Federal Reserve. This threatens the safety case role of the stress test as a joint regulatory effort between the banks and their regulator. The safety case lens should guide stress testing to avoid becoming either prescriptive or delegated regulation.
  - a. Vice Chair for Supervision Randy Quarles has given significant information about the Federal Reserve's stress testing models to the banks.<sup>58</sup> This should be seen as an attempt at delegated regulation, in which the banks can use this knowledge to game the Federal Reserve's models and then decide internally how they want to manage risk.
  - b. As Tarullo has cautioned, using only prescriptive regulation to set capital levels would be a blunt instrument.<sup>59</sup> The safety case rejects the exclusive use of prescriptive regulation, as it misses important information about firm operations, and instead reserves this kind of regulation for use as an additional tool for issues that persist after the application of the safety

<sup>55</sup> Brendan Pederson, *Pandemic Sparked Predictions of More Failures. The Opposite Happened*, Am. Banker (Dec. 09, 2021).

<sup>56</sup> Patrizia Baudino, *Stress Testing Banks during the Covid 19 Pandemic*, Fin. Stability Inst. Briefs no. 11 (October 2020).

<sup>57</sup> *Assessment of Bank Capital during the Recent Coronavirus Event, June 2020*. Board of Gov. of Fed. Reserve Sys. (June 2020) at page 19.

<sup>58</sup> Pete Schroeder & Michelle Price, *Fed Proposes Changes to Make U.S. Bank Stress Tests More Transparent*, Reuters (Dec. 7, 2017).

<sup>59</sup> Daniel K. Tarullo, *Taking the Stress Out of Stress Testing*, Speech at the Am. for Fin. Reform Conf. on Big Bank Reg. Under the Trump Admin., Washington, D.C. (May 21, 2019).

case.

2. A safety case is meant to provide a buffer for unexpected risk but works better the more specific risks that can be identified and planned for. The Federal Reserve should resume developing modeling for second-order effects to better understand the complex risks of the banking system. In particular, the effects of climate change on the financial system are poorly understood. Recognizing the effectiveness of safety case regulation in managing the unexpected, climate stress testing offers an opportunity to bring together banks and regulators to better identify and manage climate risk.
3. The placement of liability with the regulated firm is key to an effective safety case regime, as it gives incentive to be thorough in assessing risk. If banks believe that they will be bailed out in a crisis, this incentive is lacking. Congress should explore structural changes that would fulfill this requirement of safety case regulation, either by breaking up large banks or providing a credible threat of liability to bank management.

# Can Low Earth Orbit Satellites Bridge the Digital Divide in the United States?

*Sophia Warner*

## Abstract

Low Earth Orbit (LEO) Non-Geostationary Satellites (NGSO) provide rural and difficult to reach communities in the United States with reliable, high-speed, and affordable internet broadband service. This paper focuses on the role of this new information communication technology, asking if current Federal Communications Commission (FCC) investment in LEO satellite technology can help bridge the digital divide. This paper specifically evaluates the performance of SpaceX's Starlink LEO satellite fleet, "the world's first high-speed, low-latency satellite internet service" provider. I argue that SpaceX should continue receiving FCC funding to further its development of this technology to enable internet access for individuals living in difficult to reach areas of the US.

## Introduction

Low Earth Orbit (LEO) satellite technology has already begun to play a role in bridging the nation's digital divide. Canadian communications company Telesat became the first company to launch an LEO satellite with internet capacity in 2018. Private aerospace manufacturing company SpaceX followed in 2021. Telesat and SpaceX's success has also pushed other companies, such as OneWeb and Amazon, to begin working on similar LEO satellite projects that help close the nation's digital divide.

This paper focuses on the success of SpaceX's Starlink satellite system, as the only LEO

satellite internet program currently providing internet in the U.S. Insufficient information currently exists to assess the success of OneWeb and Amazon, which are still developing domestic LEO fleets. Using Starlink as a case study, I demonstrate how LEO satellites can best be utilized in the U.S. to bring consumers living in difficult to reach areas to the grid.

Part I describes context and recent history federal efforts to provide internet access to all Americans, followed by a description of SpaceX's Starlink program. Part II describes relevant criteria for the success, including speed, latency, and alternative technologies' performance. The following section describes Starlink's performance along those metrics and evaluates possible concerns about the technology. In Part IV, I compare metrics for Starlink to competing programs OneWeb and Amazon's Project Kuiper.

## I. The Digital Divide in the United States

In the 2021 Broadband Deployment Report, the Federal Communications Commission (FCC) described the importance of universal internet access. "Over the last four years, the Commission's top priority has been closing the digital divide, in recognition that high-speed broadband and the digital opportunity it brings are increasingly essential to innovation, economic opportunity, healthcare, and civic engagement."<sup>1</sup> Congress allocated the FCC \$134,495,000 in 2021 towards a competitive bidding system that would subsidize commercial projects that improve nationwide infrastructure and

<sup>1</sup> *Fourteenth Broadband Deployment Report*, FCC (Jan. 19, 2021).

broadband access.<sup>2</sup> Today's "digital divide" refers to the 19 million Americans who live in rural and urban areas and lack access to high-speed internet.<sup>3</sup> These individuals either have no internet access or have access only at speeds below the FCC's benchmark of 25 minimum download megabits per second and over 3 minimum upload megabits per second (25/3 Mbps).

The FCC adopted current broadband Internet speed benchmarks in 2015 after receiving pressure from the Obama administration to increase the "outdated" 2010 benchmark speed of 4 Mbps to accurately reflect both advances in technology and consumer demands.<sup>4</sup> Though the FCC reports that 95.6% of Americans have access to broadband speeds of 25/3 Mbps or higher, state-led research suggests that the FCC has overestimated this percentage by 50%.<sup>5</sup> Furthermore, critics of the new baseline broadband speed claim that the 25/3 Mbps standard is still "too low for a nation that has moved so much online."<sup>6</sup>

The internet coverage that meets the FCC standard of 25/3 Mbps is unequally distributed. Speeds tend to vary along with socioeconomic divisions including race, income, and education levels.<sup>7</sup> In a series of digital divide studies conducted between January 25, 2021 and February 8, 2021, the Pew Research Center found that 80% of white adults in the US have home broadband,

compared to 71% of Black adults and 65% of non-white Hispanic adults. The same study also found that 57% of adults who make less than \$30,000 a year do not have broadband internet at home.<sup>8</sup> Lack of internet access further exacerbates socioeconomic divisions. For example, students' ability to complete online tasks is hindered and employers are prevented from video-calling and downloading information. As a result, the inability to connect, stream, and communicate with academic and professional communities may contribute to poor academic and job performance.<sup>9</sup>

Understanding the various socioeconomic factors that contribute towards the digital divide is critical to creating policies that reduce poverty and increase digital literacy. Nicol Turner Lee of the Benton Institute for Broadband Society noted that, "the severity of the digital divide goes beyond the usual analogy of a three-legged stool—broadband availability, affordability, and digital literacy. Policymakers must acknowledge that efforts to close the digital divide should also address poverty, geographic [isolation], and social isolation."<sup>10</sup>

Geographic isolation exacerbates the current digital divide, as traditional telecommunications companies ignore rural and sparsely populated communities living in difficult to reach areas. The Department of Transportation estimates that the aver-

<sup>2</sup> Chris Bennett & Clinton Griffiths, *Loading... Will 5G, StarLink and Private Networks Narrow the Digital Divide?*, Farm J. vol. 145 (Feb. 2021).

<sup>3</sup> *Id.*

<sup>4</sup> Tyler Cooper, *The FCC Definition of Broadband: Analysis and History*, BroadbandNow.com (Feb. 10, 2018).

<sup>5</sup> Sascha D. Meinrath et al., *Broadband Availability and Access in Rural Pennsylvania*, Ctr. For Rural Penn. (June 2019); John Busby & Julia Tanberk, *FCC Reports Broadband Unavailable to 21.3 Million Americans, BroadbandNow Study Indicates 42 Million Do Not Have Access*, BroadbandNow.com (Feb. 3, 2020); Karl Bode, *How Bad Maps Are Ruining American Broadband*, The Verge (Sep. 24, 2018).

<sup>6</sup> Sean Gonsalves, *Why 25/3 Broadband Is Not Sufficient*, Community Networks (Nov. 13, 2020).

<sup>7</sup> Erin Gobler, *Starlink: Bridging the Digital Divide*, AllConnect.com (Aug. 17, 2021).

<sup>8</sup> Emily A. Vogels, *Digital Divide Persists Even as Americans with Lower Incomes Make Gains in Tech Adoption*, Pew Research Ctr. (June 22, 2021).

<sup>9</sup> Kevin Taglang, *Lack of Broadband Leaves Students Behind*, Benton Inst. (Mar. 6, 2020); Pippa Stevens, *Digital Racial Gap Could 'Render the Country's Minorities Into an Unemployment Abyss,' says Deutsche Bank*, CNBC (Sep. 2, 2020).

<sup>10</sup> Nicol Turner Lee, *Can We Better Define What We Mean by Closing the Digital Divide?*, The Hill (Dec. 18, 2021).

age cost of building and laying fiber cables costs \$27,000 per mile.<sup>11</sup> Furthermore, due to high upfront costs, broadband providers target densely popular areas where they are more likely to receive a return on their investment. Even if customers in these difficult to reach areas can connect to fiber Internet broadband, connections are slow and spotty. As a result, customers cannot download, upload, or stream at a constant speed of 25/3 Mbps. The high cost of laying physical cable infrastructures, paired with the “lack” of customers for broadband providers, means that 14.5 million Americans still live in areas where broadband speeds do not meet the FCC’s broadband standard speed.<sup>12</sup>

#### *Current FCC Initiatives: The Rural Digital Opportunity Fund*

Current FCC initiatives that address geographic and social isolation include the Rural Broadband Accountability Plan, Homework Gap and Connectivity Divide Programs, and Broadband Data Collection Programs. Through its Rural Digital Opportunity Fund (RDOF), the FCC plans to allocate over \$20 billion in funding over the next 10 years to reach its goal of “bringing connectivity to consumers in areas lacking access to broadband.”<sup>13</sup> So far, the FCC claims that Phase I, which concluded in November 2020, “allocated \$9.2 billion in support to bring high-speed broadband to over 5.2 million unserved homes and businesses.”<sup>14</sup> The implementation of Phase II will allocate the remaining \$10.8 billion. However, this allocation will likely take the FCC another two years as the agency must first collaborate with the FCC Broadband

Data Collection program to create an accurate new broadband map that tracks Phase I progress.

#### *New Investment Opportunities within the Rural Digital Opportunity Fund*

Phase I funding targeted internet broadband infrastructure in areas that do not meet the FCC’s benchmark speed of 25/3 Mbps. Most of Phase I funding was allocated to internet providers that prioritize high network speeds with low lag or delays – also known as latency.<sup>15</sup> The three companies receiving the highest amount of funding (LTD Broadband, Charter, and Rural Electric Cooperative Consortium) all promote increasing broadband speeds and lowering latency levels through fiber, fixed, and cable broadband services. While these communications companies have been traditionally supported by FCC connectivity initiatives, the FCC also awarded private aerospace manufacturing company SpaceX with the fourth highest monetary allocation in Phase I of the RDOF.

The FCC’s allocation was significant, as SpaceX’s Starlink Services “will offer the world’s first high-speed, low-latency satellite internet service” to users in the U.S.<sup>16</sup> Instead of laying traditional physical cable Internet infrastructure, SpaceX will use its \$885.5 million FCC Phase I award toward Starlink’s LEO satellite systems that “provide high-speed internet service to nearly 643,000 homes and businesses in 35 states.”<sup>17</sup> SpaceX was awarded funding to further the FCC’s commitment of “deploy[ing] broadband to more than 5.2 million homes and small businesses...that previously lacked

<sup>11</sup> *Low Earth Orbit Satellites: Potential to Address the Broadband Digital Divide*, Cong. Research Serv. (Aug. 31, 2021).

<sup>12</sup> *Id.*

<sup>13</sup> *Rural Broadband Accountability Plan*, FCC (Feb. 3, 2022).

<sup>14</sup> *Rural Digital Opportunity Fund Dashboard*, FCC Pub. Reporting Sys. (accessed Dec. 28, 2021).

<sup>15</sup> *Rural Digital Opportunity Fund*, USAC (Dec. 28, 2021).

<sup>16</sup> *Petition of Starlink Servicers, LLC for Designation as an Eligible Telecommunications Carrier*, FCC (Feb. 3, 2021).

<sup>17</sup> Brian Berger, *SpaceX Wins Big Share of \$9.2B RDOF Broadband Subsidy*, SpaceNews.com (Dec. 7, 2020).



broadband service with minimum speeds of 25 megabits per second downstream and 3 megabits per second upstream (25/3 Mbps).<sup>18</sup> SpaceX now boasts that Starlink's beta satellite services provide Internet services to over 250,000 people around the world, and the latest FCC Broadband Map coverage reveals that SpaceX provides Internet to around 230,480 U.S. Internet users.<sup>19</sup> Starlink's LEO satellite coverage has already seen success in rural areas of Washington state, where the company partnered with the Washington Department of Natural Resources and the Washington Federal Emergency Management Agency to bring internet service to areas impacted by wildfires.

#### *New Investment Opportunities: SpaceX's Starlink Services*

SpaceX is emerging as the leading LEO satellite Internet service provider, disrupting the traditional satellite industry service market. Hughes Communications (HughesNet) and Viasat were traditionally the only two geostationary (GEO) satellite internet providers in North America. Although Hughesnet and Viasat have seen some success, critics claim that GEO satellites are too expensive to service and experience high latency. GEO satellites are further away from Earth than LEO satellites. Data tends to experience greater delays traveling into orbit and back – especially if weather or terrain obstruct the path of signals. Furthermore, as LEO satellites orbit Earth in fleets, a user can connect to more than one satellite for service. If weather or physical terrain obstructs one satellite, users may connect to another and continue working. As a result, innovations in satellite information communication technology have the potential to put many rural communities back on the

grid. LEO satellites may still face reliability and latency challenges, although to a lesser degree.

## **II. Evaluating the Success of LEO Satellites**

### *Speed and Latency Challenges*

Latency affects all forms of internet technologies to varying degrees. Affected communications include fiber, cable, digital subscriber line (DSL) internet, as well as satellite broadband systems. Latency refers to the time it takes for data to travel from a device to a remote server and back. This lag is unavoidable, as “every internet connection has to deal with one fixed time cost: distance.”<sup>20</sup> Increased lag means slower upload and download speeds, pushing users to operate at speeds below 25 Mbps.

Any technology that seeks to effectively close the digital divide will not only need to provide users with reliable speed, but also needs to keep latency levels under 100 milliseconds. Latency tends to become observable in streaming data when over this time-response threshold.<sup>21</sup> FCC testing revealed that fiber internet service providers, cable Internet service providers, and DSL providers all experienced median latencies between 12 to 80 milliseconds, which averaged below the 100-millisecond range.

Traditional HEO/GEO satellite systems located 23,000 miles above sea level have a latency of 600 milliseconds.<sup>22</sup> LEO satellites operating closer to Earth experience significantly lower latency speeds. Starlink satellites orbit Earth's surface at around 1,242 miles above sea level and have reached latency as low as 20 milliseconds, providing users with faster streaming, upload, down-

<sup>18</sup> *Supra* footnote 15.

<sup>19</sup> *Provider Coverage Overlap and Population Coverage*, Broadbandmap.FCC.gov (Dec. 2020).

<sup>20</sup> *Supra* footnote 14.

<sup>21</sup> *Supra* footnote 15.

<sup>22</sup> Jon Brodtkin, *OneWeb's Low-Earth Satellites Hit 400Mbps and 32ms latency in new test*, ArsTechnica (July 17, 2019).

load, and video calling speeds than current competing Viasat and Hughesnet systems. Both competitors' satellites have latencies between 600-800 milliseconds.<sup>23</sup> While LEO satellites provide lower latency levels than GEO satellites, they cannot compete with 4G LTE and 5G fixed cable broadband competitors, which have latencies as low as 1-2 milliseconds. Since latency increases the further away an object is from Earth and is further compounded by an increased number of concentrated users, LEO satellites struggle to compete with faster and more proximate competitors.

### *The Role of 4G LTE and 5G*

LEO satellite systems may compete in overlapping markets with 5G and 4G LTE providers to provide expanded broadband internet access. The FCC's funding reveals that traditional communications companies that rely on fiber and cable broadband are still receiving the most monetary support from government programs, especially as LEO satellites are considered novel and their success is still being measured. What policy makers must realize is that 4G LTE and 5G will not do enough to connect rural communities living in geographic isolation to the grid. While 5G does have the potential to connect communities in sparsely populated rural areas, Forbes estimates that 5G speeds will probably remain at around 53.4 Mbps.<sup>24</sup> Though this speed does surpass the FCC's benchmark of 25 Mbps, LEO satellites with speeds ranging between 150 - 500 Mbps provide better alternatives to emergency responders and medical professionals in rural areas who rely on fast connectivity speeds to serve their communities.<sup>25</sup>

Critics of 5G argue that the technology may not be able to meet bandwidth demands. Increasing volumes of internet traffic will, they argue, overwhelm servers and decrease their capacity to efficiently transmit large amounts of data. High traffic would then result in higher latency and a high number of dropped connections.<sup>26</sup> LEO satellites mitigate this problem, as an increased number of LEO satellites in the sky means that users would not overwhelm one fixed server. Users would instead be able to connect to a fleet of satellites providing more opportunities for high speeds and low latencies. Cisco forecasts that as IP traffic compounds at an annual growth rate of 20% and internet traffic compounds at an annual growth rate of 24%, broadband speeds need to double if they are to meet growing demand.<sup>27</sup>

4G LTE and 5G broadband systems cannot meet this growing demand alone. While GEO satellites currently complement physical telecommunications infrastructure, Starlink's fleet LEO satellites will help bridge the digital divide by providing high speeds and low latency solutions to rural areas across the U.S.

### *Hughes Communication GEO Satellites vs. LEO Starlink Satellites*

With high latency and slow speeds, Hughes Communications GEO satellites are no longer viable for consumers in rural areas. Using satellites to extend the reach of internet service providers is not a new or novel invention: Hughes Communications (HughesNet) has relied on high GEO satellites to connect remote communities in the U.S. since 1993. As the nation's largest sat-

<sup>23</sup> *Low-Earth Orbit: What It Is and How It Could Bridge the Digital Divide*, Soc. Media Monthly (Feb. 1, 2021).

<sup>24</sup> *How 5G Will Bring High-Speed Internet to Underserved Communities*, Forbes (Apr. 9, 2021) (T-Mobile branded content).

<sup>25</sup> Bevin Fletcher, *Starlink Intros Faster LEO Satellite Broadband Tier for \$500 per Month*, Fierce Wireless (Feb. 2, 2022).

<sup>26</sup> Larry Thompson & Warren Vande Stadt, *5G is Not the Answer for Rural Broadband*, Broadband Communities (Apr. 2017).

<sup>27</sup> *United States 2021 Forecast Highlights*, Cisco (accessed Dec. 28, 2021).

elite internet service provider, HughesNet currently charges users \$99 for a start-up kit and \$60 per month for 10GB of data for 120 hours of internet usage. As HughesNet operates geostationary satellites, no additional equipment is required to monitor satellite movement. HughesNet satellites currently operate at 25 Mbps—the minimum reliable speed standard set by the FCC. Though the initial HughesNet offer may seem like a good deal to some rural-based consumers, HughesNet has recently received criticism for dropping users' speeds to 3 Mbps if they exceed data limits.<sup>28</sup>

Despite these issues, HughesNet continues to dominate the GEO satellite internet industry and plans to expand its reach into the LEO sphere. HughesNet is the nation's largest GEO satellite internet company with around 1 million users.<sup>29</sup> Unlike LEO satellites that orbit Earth at altitudes between 300-1,200 miles, HughesNet satellites are located around 22,000 miles above Earth's surface. As a result, HughesNet geostationary satellites suffer from increased lag times. Reports indicate that HughesNet satellites have latencies as high as 800 milliseconds, making online gaming and video calling virtually impossible. To put this in perspective, a latency above 200 milliseconds prevents users from playing fast paced and multiplayer sports or "shooter" video games.<sup>30</sup>

Although HughesNet President and CEO Pradmal Kaul claim that increased lag will not impact user experience, video streaming currently consists of about 75% of HughesNet network traffic and the company is investing in OneWeb's LEO satellite

systems. HughesNet likely recognizes that competing with SpaceX requires investing in LEO satellite systems and reducing lag times. HughesNet's approximately \$1 million funding award from Phase I of the FCC's RDOF, this new partnership may open the telecommunications company to greater investment during Phase II.

### III. SpaceX's Starlink LEO Satellite Fleet

Through its Starlink fleet, SpaceX dominates the LEO satellite industry space. Difficult terrain and low population density present less of a barrier to reliable internet access. Instead of spending more money on building cable infrastructure that serves relatively few people and fail to provide returns on investment, SpaceX "delivers service to users by coordinating the delivery of thousands of radio-frequency beams across the satellite fleet to dynamically allocate connections between the satellites in space and users on the ground." As a result, users facing geographic isolation no longer face infrastructure challenges.

Starlink owns and operates over 1,000 LEO satellites currently in orbit and plans to increase that number to 40,000 by 2027.<sup>31</sup> With over 90,000 internet customers around the world and an estimated demand of 700,000 potential customers across the US,<sup>32</sup> Starlink's main goal is to provide internet access to the "most difficult-to-reach" populations with limited or no Internet connectivity.<sup>33</sup> The company received nearly \$900 million in FCC Phase I Rural Digital Opportunity Fund (RDOF) funding to continue expanding its' LEO satellite internet services by building ground stations and creating user

<sup>28</sup> Chris Velazco, *The Latest Space Race is All About Improving Internet Access*, Wash. Post (Nov. 2, 2021).

<sup>29</sup> Kipp Bentley, *Opinion: Satellite Internet Positioned for Rural Students*, Gov't Tech. (Mar. 7., 2022).

<sup>30</sup> Alex Miller, *Satellite Internet Latency: What's the Big Deal?*, Viasat (Nov. 30, 2021).

<sup>31</sup> *Supra* footnote 2.

<sup>32</sup> Michael Sheetz, *SpaceX's Starlink Internet Shows Fast Speeds During Early Tests, Capable of Gaming and Streaming*, CNBC (Sep. 3, 2020).

<sup>33</sup> Sascha Segan, *Elon Musk Targets August for Global Starlink Coverage*, PCMag.com (June 29, 2021).

terminals. Starlink also claims that the company plans to build 120 satellites a month.<sup>34</sup> Though this project may cost the company over \$10 billion, it is expected to bring in roughly \$30 billion a year in revenue, increasing SpaceX's valuation to \$175 billion.<sup>35</sup>

### *Speed and Latency*

Starlink estimates that LEO satellite internet speeds will not reach 5G levels, but the company hopes to achieve speeds that are 10 times faster than 4G LTE.<sup>36</sup> By using RDOF funding to build more ground stations and by adding lasers to new satellites, Starlink plans to cut latency in half and increase speeds to 300 Mbps.<sup>37</sup> This should enable users to stream, download, and video call at faster speeds than 4G LTE and 5G. An Ookla Speedtest conducted in August 2021 found that Starlink's LEO satellite constellation allowed for lower latency (45 milliseconds) and faster download speeds (97.23) than its two main competitors. Viasat and Hughesnet reached latencies between 630-724 milliseconds and download speeds between 18-19 Mbps.<sup>38</sup> To put these numbers in context, a download speed of 97.23 Mbps allows Starlink users to download a 1,500 megabyte film in three to four minutes,<sup>39</sup> while Viasat and Hughesnet speeds of 18-19 Mbps require a 12 minute wait time to download a film of the same size.<sup>40</sup>

Although current Starlink speeds remain relatively high, research conducted by the

Institute of Electrical and Electronics Engineers in September 2021 found that "success will depend on maintaining relatively low spatial subscriber densities, preferably below 0.1 users per km<sup>2</sup>, otherwise the services provided may offer little benefit against other terrestrial options."<sup>41</sup> The most recent Ookla Speedtest conducted in December 2021 corroborates this finding, showing Starlink's download speed decreased from 97.23 Mbps to 87.25 Mbps as a result of adding more customers.<sup>42</sup> The comparative advantage for Starlink's LEO satellite internet may be limited to rural locations where population density is fewer than 100 people per square mile.<sup>43</sup> In a study conducted by PC Magazine, results showed that Starlink satellites would best serve the 230,000 people currently living in rural communities with connections that fail to reach the FCC speed benchmark of 25 Mbps.<sup>44</sup>

### *Affordability*

Starlink's high startup costs are currently its most significant obstacle to adoption in difficult to reach communities. Many consumers are reluctant to pay for a service still under development and with uncertain net benefits. Starlink Broadband Start-Up Kits provide users with a router, power supply, cables, and satellite dish for a one-time cost of \$499. This start-up fee is almost double that of competitor services HughesNet and Viasat. Service fees continue at \$99 per month, with unlimited data caps and

<sup>34</sup> Michael Sheetz, *SpaceX is Manufacturing 120 Starlink Internet Satellites Per Month*, CNBC (Aug. 10, 2020).

<sup>35</sup> Michael Sheetz, *Morgan Stanley: SpaceX Could be a \$175 Billion Company if Elon Musk's Starlink Internet Plan Works*, CNBC (July 20, 2020).

<sup>36</sup> *Supra* footnote 2.

<sup>37</sup> Michael Kan, *Starlink's Latency Will Become Fit for Competitive Online Gaming, Musk Says*, PCMag.com (July 15, 2021).

<sup>38</sup> Isla McKetta, *How Starlink's Satellite Internet Stacks Up Against HughesNet and Viasat Around the Globe*, Ookla.com (Aug. 4, 2021).

<sup>39</sup> Nick Baker, *Download Time Calculator: A Guide to Download Speeds*, USwitch (Feb. 18, 2022).

<sup>40</sup> *Id.*

<sup>41</sup> Ogutu B. Osoro & Edward J. Oughton, *A Techno-Economic Framework for Satellite Networks Applied to Low Earth Orbit Constellations: Assessing Starlink, OneWeb and Kuiper*, IEEE vol. 9 (Oct. 13, 2021).

<sup>42</sup> Isla McKetta, *Starlink Expands but Q3 2021 Performance Flattens in Some Areas*, Ookla (Dec. 20, 2021).

<sup>43</sup> Sascha Segan, *Who Needs Starlink Internet? These Rural US Counties Top the List*, PCMag.com (Mar. 31, 2021).

<sup>44</sup> *Id.*

speeds ranging between 50 to 150 Mbps.<sup>45</sup> Though current estimates show that Starlink could save users around \$18 billion in subscription broadband costs overall each year,<sup>46</sup> a 2020 McKinsey & Company report revealed that Starlink will need to significantly reduce costs to maintain long-term viability. The company currently reports losses of between \$1,000-\$2,000 per unit.<sup>47</sup> Furthermore, launching each LEO satellite into space can cost up to \$60 million. Starlink's \$499 Start-Up Kits currently cost the company more money than they generate, but CEO Elon Musk hopes to eventually kit costs to \$250.<sup>48</sup> These high start-up costs make sense, especially as the current demand for Starlink is growing at a faster pace than satellite dishes can be produced. SpaceX argues that it "will offer broadband at rates that are reasonably comparable to rates offered in urban areas," and that it will provide affordable communications support to customers who qualify.<sup>49</sup> While SpaceX is still eligible for FCC subsidies through future rounds of the RDOF, it cannot rely on government subsidies alone to sustain its long-term business model.

### *Accessibility*

Starlink may be more affordable long-term, but the company has been criticized for accessibility and availability issues. The company continues to slowly move through legal and regulatory processes to expand its satellite's fleet coverage despite launching in 2019. Users experience periodic signal

loss due to fleet limitations.<sup>50</sup> Starlink has also been criticized for long pre-order wait times: customers who pre-ordered dishes in 2020 were notified that they would not receive their start-up kits until 2022 or 2023 due to shipping delays and silicon shortages.<sup>51</sup> Most recently, Starlink customers complained that a glitch in the company website's digital map tool that moved back their pre-order delivery dates to 2023 despite using the digital map tool to adjust service area locations by only a few feet. Forbes also reports complaints about the lack of customer service.<sup>52</sup> SpaceX may be able to bear such criticism without suffering from customer loss in the short-term given the lack of serious competition, the company may need to create a precedent for reliable and accessible internet service to cement its market position. If Phase I RDOF results show that Starlink has not adequately provided users with an internet connection that meets the FCC's standards, Starlink may not receive Phase II funding. This could prevent the service from expanding outside of the northern US.

### *Drawbacks and Concerns*

Scientists and astronomers worry that the increased number of LEO satellites in orbit could hurt long-term astronomical research and nocturnal wildlife. Though satellites will not fully distort scientific images of stars and other celestial bodies, astronomers will have to digitally remove satellite streaks from research images, which could result in

<sup>45</sup> Erin Gobler, *Starlink: Bridging the Digital Divide*, AllConnect.com (Aug. 17, 2021).

<sup>46</sup> James Dennin, *How SpaceX's Starlink Could Close the Digital Divide for Internet Access*, Inverse (June 28, 2019).

<sup>47</sup> Sue Marek, *Marek's Take: Will LEO Satellite Systems be Able to Bridge the Digital Divide?*, FierceWireless.com (Oct. 12, 2020); Doug Mohney, *SpaceX has a Lot riding on Starlink's \$499 'UFO on a Stick'*, SpaceNews.com (Nov. 19, 2020).

<sup>48</sup> *Supra* footnote 32; Jon Brodtkin, *Starlink's 'Next-Generation' User Terminal Will Cost a Lot Less, Musk Says*, ArsTechnica.com (June 30, 2021).

<sup>49</sup> *Petition of Starlink Servicers, LLC for Designation as an Eligible Telecommunications Carrier*, FCC (Feb. 3, 2021).

<sup>50</sup> *Supra* footnote 46.

<sup>51</sup> Kate Duffy, *SpaceX has Pushed Back Delivery Times for Some Starlink Preorders and Apologized to Customers, Saying that Silicon Shortages have Slowed Production of its Internal Kit*, BusinessInsider.com (Nov. 25, 2021).

<sup>52</sup> Kate Duffy, *SpaceX Starlink Customers Who Paid a \$100 Deposit 7 Months Ago are Frustrated at Being Unable to Contact Customer Service to See When Their Kits Will Arrive*, BusinessInsider.com (Sep. 5, 2021).

losing 15-20% of a final image.<sup>53</sup>

Sending more objects into space increases the amount of sky pollution, leading to increased possibilities for collisions with other satellites and space debris. Scientific American Magazine reports that “the addition of the Starlink array alone is expected to necessitate 67,000 avoidance maneuvers per year.”<sup>54</sup> This means that Starlink will not only be responsible for operating and providing reliable on-the-ground service but will also need to ensure increased air safety measures that prevent collision and conflict with other private and government entities. So far, Starlink has been unsuccessful in alleviating concerns over this threat. In the past, China has criticized the company for contributing to increased space debris that endangered Chinese astronauts.<sup>55</sup> SpaceX has also seen complaints from commercial competitors Viasat and Kepler, who insisted that decommissioned Starlink satellites would contribute to growing space debris and make maneuvers even more difficult.

The commercialization of space and the increased crowding of Earth’s LEOs poses various legal and environmental challenges. Customary space law codified under the 1967 Outer Space Treaty does not address the increased involvement of private actors such as Starlink, questions of liability in case of a collision, and the responsibility of removing space debris. While these debates within customary international space law must and will continue, they are outside the scope of the FCC’s mandates. In an FCC order filed in January 2021, the FCC concluded that the increased number of LEO satellites would not substantially harm “orbital debris and space safety issues,” and furthered that

“any failed satellite can be expected to experience sufficiently rapid orbital decay and re-entry into the atmosphere so as to present little risk of long-term effect on the orbital debris environment.”<sup>56</sup> While the FCC may choose to leave space debris mitigation efforts to parties like NASA or the United Nations Committee on the Peaceful Uses of Outer Space, the increase in LEO satellites orbiting Earth pose yet unresolved legal and regulatory challenges in the long term.

With SpaceX and HughesNet plans to increase their LEO fleets, this remains a complicated and unresolved issue.<sup>57</sup> While environmental challenges and space collision risks may be outside of the FCC’s scope and jurisdiction, Phase II FCC funding should consider providing LEO satellite internet bidders with additional funding that takes these increased costs into account.

#### IV. Starlink’s Competition

Multiple companies now challenge Starlink’s dominance in the LEO satellite internet systems market, including OneWeb and Amazon’s Project Kuiper. Both competitors have gathered national and international support and are collaborating with the nation’s two largest broadband providers: Verizon and AT&T. As a result, OneWeb and Amazon have the potential to disrupt Starlink’s current winning streak.

##### *OneWeb and AT&T*

In a 2017, OneWeb Founder Greg Wyler testified before the Senate Committee on Commerce, Science, and Technology. Wyler promised that his company would “invest nearly \$30 billion to achieve [their] mission

<sup>53</sup> Brian Resnick, *The Night Sky is Increasingly Dystopian*, Vox (Jan. 29, 2020).

<sup>54</sup> *Supra* footnote 7.

<sup>55</sup> Rhoda Kwan & Jon Henley, *China Berates US After ‘Close Encounters’ with Elon Musk Satellites*, The Guardian (Dec. 28, 2021).

<sup>56</sup> *Supra* footnote 46.

<sup>57</sup> Sara Morrison, *The FCC’s Big Bet on Elon Musk*, Vox (May 17, 2021).



of fully bridging the global digital divide by 2027.”<sup>58</sup> The UK based global communications network plans to expand its current fleet from 394 LEO satellites to 648, with global coverage achievable in 2022.<sup>59</sup>

Although OneWeb declared bankruptcy in March 2020, it emerged that November after a \$1 billion equity investment from the UK Government and India’s Bharti Enterprises. OneWeb now boasts various international investors, including Japan’s Softbank, Hughes Network Systems, South Korea’s Hanwha Systems, Eutelsat, and AT&T. With investments of over \$2.7 billion of new equity, OneWeb is now debt-free and fully funded.

OneWeb added 36 new satellites to their constellation during the successful December 2021 launch from the Baikonur Cosmodrome in Kazakhstan. According to the company’s press release, “[t]his represents over 60% of OneWeb’s planned 648 LEO satellite fleet that will deliver high-speed, low-latency global connectivity.”<sup>60</sup> The system’s tests demonstrated internet speeds of between 400–500 Mbps,<sup>61</sup> surpassing Starlink’s network performance. OneWeb’s latency levels remain at an average of 32 milliseconds, 13 milliseconds faster and more reliable than Starlink averages.

Though concerns of overburdening the sky with satellites remain, researchers have noted that OneWeb satellites are fainter than original Starlink satellites. As the presence of more LEO satellites creates increased risk of collisions with other satellites and space debris, OneWeb not only prioritizes the development of sustainable satellite technology, but also equips their satellites with grap-

pling interfaces that allow for the effective removal of failed equipment.<sup>62</sup>

According to OneWeb’s website, the company is currently prioritizing commercial satellite sales to businesses, governments, maritime operators, and aviation organizations. The firm does not have its own commercial beta program like Starlink, so no pricing currently exists to act as a point of comparison. OneWeb also recently signed a strategic agreement with AT&T in September 2021, which allows AT&T to use the company’s LEO satellites to extend their reach in remote areas across the U.S. Though neither company has released full details of the partnership, AT&T currently provides coverage to over 2.5 million customers nationwide and has committed \$2 billion worth of investments over the next three years to help bridge the nation’s digital divide. AT&T has already invested over \$11 million in programs that help increase free Wi-Fi and connectivity for schools around the U.S. However, OneWeb’s strategic partnership places them in a better position to reap the positive externalities regarding AT&T’s established reputation and customer service support.

#### *Amazon’s Project Kuiper and Verizon*

After receiving FCC approval in 2020, Project Kuiper received \$10 billion in investment from Amazon. The company plans to launch 3,235 LEO satellites to provide fast-paced internet to underserved schools and businesses in “hard-to-reach” places.<sup>63</sup> Even though Project Kuiper is still in the early stages of development, the project intends to challenge Starlink’s dominance. A company press release in early 2021 claimed

<sup>58</sup> Greg Wyler, *Testimony Before the Committee on Commerce, Science, & Technology*, U.S. Senate (Oct. 25, 2017).

<sup>59</sup> Bevin Fletcher, *BT, OneWeb Fire Up New LEO Satellite Connectivity Deal*, *FierceWireless.com* (Nov. 3, 2021).

<sup>60</sup> *OneWeb Confirms Successful Launch of 36 Satellites, After Rapid Year of Progress*, OneWeb (Dec. 27, 2021).

<sup>61</sup> *Supra* footnote 23.

<sup>62</sup> Monica Allevan, *Verizon Taps Amazon’s Kuiper for Backhaul, Rural Connectivity*, *FierceWireless.com* (Oct. 26, 2021).

<sup>63</sup> *Id.*



that “[i]t is clearly in SpaceX’s interest to smother competition in the cradle if they can, but it is clearly not in the public’s interest.”<sup>64</sup> Amazon hopes to provide the public with another LEO satellite internet service. Its strategic partnership with Verizon could cause Starlink to lose potential customers who hope to utilize both 4G LTE options as well as satellite internet back-ups.

Amazon hopes to launch its KuiperSat-1 and KuiperSat-2 satellites in late 2022. The company currently has no LEO satellites in operation, but recent prototype launches saw speeds of 400 Mbps. Assuming these tests would be representative of the technology in service, it would provide some of the fastest internet in the U.S.<sup>65</sup> Amazon has not yet to set a monthly price for service. However, prices will need to be both affordable to rural communities and competitive with Starlink and OneWeb’s services.

In a partnership similar to the one between OneWeb and AT&T, Amazon reached an agreement with Verizon to complement the providers’ 4G LTE and 5G networks. As Amazon CEO Andy Jassy notes, “no single company will close the digital divide on its own.”<sup>66</sup> While Verizon’s 4G LTE network currently covers about 70% of the U.S. and reaches around 98% of the population, Amazon’s Project Kuiper will fill the gaps in coverage where terrestrial infrastructure fails to reach. Philip Burnet of New State Research concludes that Project Kuiper could provide both companies with a total of \$2.4 billion in revenue.<sup>67</sup> Verizon applied for but did not receive Phase I RDOF funding, as Verizon supports high-latency satellite broadband, directly clashing with the FCC’s current prioritization of low latency inter-

net solutions. As a result, Verizon hopes that the FCC will tweak its latency guidelines for Phase II, giving the company a chance of receiving part of the \$11.2 billion remaining in RDOF Phase II funding.

## Conclusion

Starlink’s LEO satellite internet system will likely continue to provide rural communities and emergency responders with internet capabilities beyond 4G LTE and 5G broadband. However, until companies like Starlink can reduce latency and costs, the FCC will likely continue prioritizing funding allocation towards fiber and cable infrastructure systems. The company has yet to find a path toward long-run profitability.

Companies producing LEO satellites must be strategic about the customers they serve, the regions they operate in, and the partnerships they create. Closing the digital divide cannot and will not happen in a vacuum. While SpaceX may have the reputation for being the first private aerospace company creating a mega constellation of satellites to help bridge the digital divide, competitors could disrupt SpaceX’s success if the company chooses to forgo strategic partnerships with 4G LTE and 5G providers. While Starlink has successfully identified rural communities in need of digital connectivity, Amazon and OneWeb may surpass the company as they team up with larger cable infrastructure companies like Verizon and AT&T. These partnerships suggest that LEO satellites alone will not be able to bridge the digital divide, but rather work best when paired with existing physical broadband infrastructure.

<sup>64</sup> Mike Brown, *Amazon Project Kuiper: Launch Date, Specs, Beta, Plans for Starlink Alternative*, Inverse.com (Nov. 19, 2021).

<sup>65</sup> Brian Resnick, *The Night Sky is Increasingly Dystopian*, Vox (Jan. 29, 2020).

<sup>66</sup> Sue Marek, *Marek’s Take: Will LEO Satellite Systems be Able to Bridge the Digital Divide?*, FierceWireless.com (Oct. 12, 2020).

<sup>67</sup> Karishma Vanjani, *Amazon’s Kuiper Satellite Unit Strikes Deal With Verizon for Rural Broadband*, Barron’s (Oct. 26, 2021).