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MISSION: HOW MOBILE TECHNOLOGY CAN
ENHANCE REFUGEE VETTING**

Kessinger, Gregory S.

Monterey, CA; Naval Postgraduate School

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**NAVAL
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MONTEREY, CALIFORNIA

THESIS

**SECURING AMERICA'S HUMANITARIAN MISSION:
HOW MOBILE TECHNOLOGY CAN ENHANCE
REFUGEE VETTING**

by

Gregory S. Kessinger

December 2021

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**SECURING AMERICA'S HUMANITARIAN MISSION: HOW MOBILE
TECHNOLOGY CAN ENHANCE REFUGEE VETTING**

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ABSTRACT

The security vetting of refugees proves problematic, as refugees are often without documents to verify their identity. However, refugees are often in possession of mobile devices that could serve as a proof of identity. If the United States Refugee Admissions Program (USRAP) implemented a mobile phone vetting program, it could assist in identifying nefarious actors while expediting the security vetting process. Three policy alternatives were analyzed for a mobile phone screening program in the USRAP: (1) maintain the status quo of applicants' mobile phones not being screened, (2) implement mandatory screening of all applicants' mobile phones, and (3) administer a threat-based targeted approach where only the phones of applicants whose cases have fraud and/or national security indicators are screened. The alternatives were evaluated by efficiency (time and cost), risk to national security, and ethical consideration. Ultimately, a threat-based targeted approach was determined to be the best policy alternative, as it optimized efficiency, minimized risk to national security, and limited arbitrariness of mobile phone screening.

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LIST OF ACRONYMS AND ABBREVIATIONS

ABIS	Automated Biometric Identification System
AF	anti-forensics
CBP	Customs and Border Protections
CLASS	Consular Lookout and Support System
CSLI	cell site location information
DF	digital forensics
DHS	Department of Homeland Security
DOD	Department of Defense
DOS	Department of State
FDNS	Fraud Detection and National Security
GSMA	Global System for Mobile Communications
IAC	Inter-Agency Check
INS	Immigration and Naturalization Service
LOE	lines of effort
NGO	non-governmental organization
NSA	National Security Agency
NVC	National Vetting Center
PIA	privacy impact assessment
PII	personally identifiable information
RAD	Refugee Affairs Division
RAIO	Refugee, Asylum, and International Operations
RSC	Resettlement Service Center
SAO	Security Advisory Opinion
SORN	system of record
UNHCR	United Nations High Commissioner of Refugees
USCIS	United States Citizenship and Immigration Services
USRAP	United States Refugee and Admissions Program
WRAPS	Worldwide Refugee Admissions Program System

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EXECUTIVE SUMMARY

Historically, the United States Refugee Admissions Program (USRAP) has accepted more refugees than any other country in the world. As the United States continues to resettle this population as a part of its humanitarian mission, security vetting of it has evolved. However, the vetting of this population proves problematic as refugees are often without identity documents. This leaves United States government officials to accept the identity provided by the refugee without the ability to verify it. Despite the lack of government-issued identification, refugees are often in possession of mobile phones, a device that has been rapidly adopted throughout the developing world. Additionally, these devices hold significant amounts of data about their users, which lends them as a form of identification for refugees. If the U.S. Refugee Admissions Program were to utilize a refugee's mobile phone as proof of identity, it would assist the vetting process.

To determine the best policy to implement in a mobile phone screening program within USRAP, three policy alternatives were analyzed. To

1. Maintain the status quo of applicants' mobile phones not being screened.
2. Implement mandatory screening of all applicants' mobile phones.
3. Administer a threat-based targeted approach where only the phones of those applicants whose cases have fraud and/or national security indicators be screened.

These alternatives were analyzed with the following evaluative criteria: (1) efficiency, (2) risk to national security, and (3) ethical consideration: privacy of the refugee. The efficiency of each alternative was gauged based on the cost to implement and maintain a mobile phone screening program while evaluating the reduction in time to vet the refugee. The ability to minimize the risk to national security posed by each alternative was equally important, as each policy had varying likelihoods of detecting a nefarious actor. The final criteria, the privacy of the refugee, was selected because refugees are one of the most vulnerable populations in the world. As such, their need for privacy must be recognized in the formulation of a policy. As a result, each of the alternatives was rated

based on its ability to minimize the arbitrariness of the screening process. It was determined that a threat-based targeted approach was the best policy alternative as it optimized efficiency, minimized risk to national security, and minimized the arbitrariness of determining which subsets of the refugee populations mobile phones should be screened.

In order for the policy to be adopted by U.S. Citizenship and Immigration Services (USCIS), it would require an interagency forum. This forum would involve USCIS and members of both the law enforcement and intelligence community. A key stakeholder in the initiative would be U.S. Customs and Border Protection’s National Vetting Center. Following the adoption of the program, the director of USCIS would consult with the designated Department of Homeland Security official in accordance with the Executive Order on Rebuilding and Enhancing Programs to Resettle Refugees and Planning for the Impact of Climate Change on Migration.¹ This senior-level employee, designated by the Department of Homeland Security, will be responsible for “coordinating the review and any revision of policies and procedures regarding the vetting and adjudications of USRAP refugee applicants.”² Successful implementation of the policy would require several lines of effort to include: (1) communication, (2) privacy, and (3) training. The United States Refugee Affairs Division would employ a communication campaign to convey the purpose and benefits of a mobile phone vetting program and how the refugee’s privacy is safeguarded. A privacy impact assessment (PIA) would be conducted regarding the collection and retention of metadata collected from the refugee’s mobile phone. Finally, USCIS would need to recruit and maintain a cadre of mobile phone forensic professionals to manage the program. The outcome of a mobile phone forensic screening program would be determined based on its ability to decrease security screening times while minimizing the risk to national security and arbitrary mobile phone screenings of refugees.

¹ Joseph Biden, Executive Order 14013, “Rebuilding and Enhancing Programs to Resettle Refugees and Planning for the Impact of Climate Change on Migration.” Code of Federal Regulations, title 3 (2021 comp.): 8841.

² Biden, 8841.

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I. INTRODUCTION

A. PROBLEM STATEMENT

The United States stands as a beacon of hope to millions of refugees around the world who want a better life for themselves and their children. Since the early 1970s, the United States has resettled over three million refugees, more than any other country in the world.¹ The vetting of refugees seeking admission to the United States is conducted by the U.S. Refugee Admissions Program (USRAP) in a thorough, extensive process. It consists of multiple interviews with the refugee applicant and security checks within the intelligence community. The most difficult aspect of refugee vetting is that applicants often have no official, reliable documents to confirm their identity; rather, USRAP personnel must rely on applicants' self-reported identity, a circumstance that exposes the process to misrepresentation and fraud.

Unsurprisingly, the mobile phone has become commonplace in the developing world, often as the only form of communication in the absence of critical infrastructure. It is a secure means of making financial transactions and a way to stay connected to one's community no matter the geographical location.² This is particularly true of refugee populations who are often physically isolated from their communities and exploited by their countries of refuge.³

Mobile phones also contain a wealth of information about their users; they are essentially a unique digital footprint. This is the reason the U.S. Supreme Court ruled invalid warrantless searches of cell phones.⁴ A mobile phone's call and text message

¹ "Refugee Admissions," United States Department of State, accessed November 18, 2021, <https://www.state.gov/refugee-admissions/>.

² "Somalia: Prevalence of Cell Phones and Internet Cafes in Mogadishu, Including the Ability to Use Cell Phones for Financial Transfers (2012-February 2015)," Immigration and Refugee Board of Canada, March 5, 2015, <http://www.refworld.org/docid/550c35904.html>.

³ Andrew Hosken, "Syrian Child Refugees 'Being Exploited in Jordan,'" BBC, last modified November 4, 2015, <https://www.bbc.com/news/world-middle-east-34714021>; "Syrian Refugee Women Exploited in Egypt," IRIN News, January 31, 2013, <http://www.irinnews.org/news/2013/01/31/syrian-refugee-women-exploited-egypt>.

⁴ *Riley v. California*, 573 U.S. 373 (2014).

history can reveal an individual's location, activity, relationship status, organizational affiliation, and medical conditions.⁵ Beyond call and text functions, mobile phones now also enable connection to the World Wide Web and financial transactions. Photographs taken with a smartphone have global positioning system (GPS) coordinates, as well as a date stamp embedded in them. Beyond the data stored on these devices, each phone has a unique identifier associated with it at the hardware, network, operating system, and mobile application levels.⁶

The USRAP could certainly expedite the granting of refugee status to legitimate applicants and detect fraud in the admission process by screening the mobile phones of refugee applicants already deemed a security concern. The location and call data contained on an applicant's mobile phone would assist refugee officers in determining the credibility of an applicant's claim.

The use of mobile phones as proof of identity and history carries obvious risks, however, namely in the potential falsification of any or all of the data in a phone, as described above. If we were able to identify all the methods by which data can be falsified on a mobile phone and evaluate their sophistication, cost, and, thus, probability, we might also be able to construct mitigation measures that would, in turn, enable USRAP to include cell phones in the accepted forms of identity verification for refugee applicants.

B. RESEARCH QUESTION

If the USRAP were to implement mandatory screenings of refugee applicants' mobile devices, what would be the cost, benefits, and risks?

⁵ Jonathan Mayer, Patrick Mutchler, and John C. Mitchell, "Evaluating the Privacy Properties of Telephone Metadata," *Proceedings of the National Academy of Sciences* 113, no. 20 (May 17, 2016): 5536–41, <https://doi.org/10.1073/pnas.1508081113>.

⁶ University of Toronto, *A Primer on Mobile Privacy and Security* (Toronto, Canada: University of Toronto, 2015), <https://citizenlab.ca/2015/05/the-many-identifiers-in-our-pocket-a-primer-on-mobile-privacy-and-security/>.

C. USRAP SECURITY VETTING PROCESS

The vetting process of the USRAP has been described as a rigorous and thorough process that has not attracted much criticism from scholars nor from professionals within the homeland security enterprise; however, when a terrorist attack strikes from across the world, it often causes a re-examination of a country's own vetting procedures. On November 13, 2015, suicide bomb attacks and gunmen terrorized the streets of Paris, France, ultimately taking the lives 130 innocent civilians. The attackers were Belgian and French citizens of north African descent with the exception of two Iraqi nationals. Following the attacks, U.S. politicians called for the halt of the resettlement of Syrian refugees within the United States.⁷ They argued that the vetting of refugees was insufficient and required a re-examination in light of what occurred. Statements were made that Christian refugees should be given priority over Muslim refugees.⁸ The example of the two Iraqi refugees who were arrested in 2011 in Bowling, Kentucky, resurfaced among discussions. These two refugees were ultimately convicted for providing material support to Al Qaeda in Iraq and for targeting U.S. military in Iraq.⁹ The same example would be used years later during President Donald Trump's administration when one of his top advisors, Kellyanne Conway, used it to defend the president's executive order banning both immigrants and non-immigrants from predominantly Muslim countries from entering the United States.¹⁰

During the travel ban in 2017, a former counsel to the 9/11 commission recommended how to improve the refugee vetting process. Janice Kephart identified the need for the sharing of biometric data between the U.S. and the United Nations High

⁷ Teresa Berenson, "Key Republicans Call For Suspending Syrian Refugee Resettlements," *Time*, last modified November 16, 2015, <https://time.com/4115005/republicans-syrian-refugees-paris/>.

⁸ Dave Jamieson, "Jeb Bush: Let's Focus On Helping The Christian Syrian Refugees, Rather Than The Muslims," *HuffPost*, last modified November 16, 2015, https://www.huffpost.com/entry/jeb-bush-syrian-refugees-christian-muslim_n_5648b98de4b045bf3def84df.

⁹ "Former Iraqi Terrorists Living in Kentucky Sentenced for Terrorist Activities," The United States Department of Justice, January 29, 2013, <https://www.justice.gov/opa/pr/former-iraqi-terrorists-living-kentucky-sentenced-terrorist-activities>.

¹⁰ Clare Foran, "Kellyanne Conway and the Bowling Green Massacre That Wasn't," *The Atlantic*, last modified February 3, 2017, <https://www.theatlantic.com/politics/archive/2017/02/kellyanne-conway-bowling-green-massacre-alternative-facts/515619/>.

Commissioner of Refugees (UNHCR).¹¹ In addition, she contended biometric data should be collected by the Department-of-State-funded Resettlement Service Centers during the pre-screening interviews. Currently, biometric data is collected at the time of the refugee interview with United States Citizenship and Immigration Services (USCIS) and is not available until after the interview has been conducted. Both recommendations would allow USCIS's government officials to have more available information about the refugee prior to conducting the interview. There is currently a biometric agreement between the two. Finally, she makes the following recommendation regarding the Department of State's and USCIS's case tracking system:

State and USCIS use different case filing assignments for refugees. Policy does not require that State initiate a file number USCIS recognizes or uses in the processing of the ultimate immigration benefit the refugee seeks. Thus, each applicant has two different file numbers, creating disconnect and potential for confusion and duplication. Yet the problem could be eliminated entirely if the case numbers were eradicated and the 9/11 Commission recommendation for a biometric-based identity number for entire immigration system were put in place.¹²

The replacement of different case tracking systems with a refugee's biometric identifier would make the process more efficient, especially as a biometric identifier is unique to the refugee.

D. LITERATURE REVIEW

The adoption of the mobile phone in the developing world has been well documented. The refugee populations within these countries have been quick to acquire these devices due to their many uses. These devices have the ability to reveal personal information about their users due to the vast amounts of data, including metadata, that can be stored within the devices. Such data can be extracted during forensic examinations; however, there is a growing field, termed "anti-forensics," that seeks to thwart such examinations.

¹¹ "How to Improve Refugee Vetting Now; a 9/11 Commission Border Counsel Perspective," PR Newswire, April 24, 2017, 1-2.

¹² PR Newswire.

1. Mobile Phones in the Developing World

The use of mobile phones within the refugee community has been prevalent in the developing world. While the adoption of mobile phones is higher in some refugee populations compared to others due to the lack technological infrastructure (urban versus rural areas), the demand for the devices has persisted.¹³ Refugees spend approximately one-third of their disposable income on mobile devices.¹⁴ As a result, the mobile phone has been a topic of discussion across both government and non-governmental organizations seeking to improve the lives of these displaced populations. The demand for the device has been fueled for its ability to facilitate “internet connectivity and access, communication with family and friends, information for journeys, establishment in new locations, language, memory and record preservation, employment, education, management and coordination, distribution of assistance, data collection and analysis, registration, and identity management and digital identity provision.”¹⁵ As a result of its multiple uses, mobile phones are indispensable. However, while they promise to better the lives of this population, they do come with risks. Namely, the security and privacy of the refugee is at risk with mobile phone ownership. Different refugee populations throughout the world have shared stories of fraud, harassment, and extortion that they have encountered due to ownership.¹⁶ These devices hold significant information about their users, and as targets of persecution, their privacy must be protected. In Ana Beduschi’s article, “The Big Data of International Migration: Opportunities and Challenges for States Under International Human Rights Law,” she makes the following statement regarding the need for universal legal rights with mobile phone technology:

¹³ Alan Vernon, Kamel Deriche, and Samantha Eisenhauer, *Connecting Refugees: How Internet and Mobile Connectivity Can Improve Refugee Well-Being and Transform Humanitarian Action*, (Geneva, Switzerland: United Nations High Commissioner for Refugees, 2016), 12, <http://www.unhcr.org/publications/operations/5770d43c4/connecting-refugees.html>.

¹⁴ Vernon, Deriche, and Eisenhauer, 8.

¹⁵ Shelly Culbertson et al., *Crossing the Digital Divide: Applying Technology to the Global Refugee Crisis* (Santa Monica, CA: RAND Corporation, 2019), 6, https://www.rand.org/pubs/research_reports/RR4322.html.

¹⁶ Culbertson et al., 47–49.

New technologies and innovation have the potential to be used as a powerful instrument for the protection of migrants' legal rights. However, they can also be used to deny refuge or exclude individuals from protection. Accordingly, they should evolve within the existing legal framework of IHRL [International Human Rights Law].¹⁷

Beduschi notes the concerns generated by the revelation of the National Security Agency's data collection program in 2013 that targeted foreign nationals' data. She contends that there needs to be established international protections for migrants and their digital data. The concern regarding a migrant's privacy is shared by Maarten Bolhuis and Joris van Wijk in their journal article, "Seeking Asylum in the Digital Era: Social-Media and Mobile-Device Vetting in Asylum Procedures in Five European Countries." Bolhuis and van Wijk note that in Germany, Belgium, Norway, the Netherlands, and Sweden there is no publicly available information regarding the effectiveness of these country's social media/mobile phone vetting.¹⁸

2. Importance of Mobile Phone Metadata

There has been significant research conducted on how metadata is attributable to an individual's identity, contrary to the National Security Agency's (NSA) position on the subject. Following the discovery of the NSA covert collection of Americans' metadata in 2013, the director of National Intelligence at the time, James Clapper, noted the following regarding the collection of metadata:

The program does not allow the Government to listen in on anyone's phone calls. The information acquired does not include the content of any communications or the identity of any subscriber. The only type of information acquired under the Court's order is telephony metadata, such as telephone numbers dialed and length of calls.¹⁹

¹⁷ Ana Beduschi, "The Big Data of International Migration: Opportunities and Challenges for States Under International Human Rights Law," *Georgetown Journal of International Law* 49 (n.d.): 1017.

¹⁸ Maarten P Bolhuis and Joris van Wijk, "Seeking Asylum in the Digital Era: Social-Media and Mobile-Device Vetting in Asylum Procedures in Five European Countries," *Journal of Refugee Studies* 34, no. 2 (August 25, 2021): 1595–1617, <https://doi.org/10.1093/jrs/feaa029>.

¹⁹ "DNI Statement on Recent Unauthorized Disclosures of Classified Information," Office of the Director of National Intelligence, June 6, 2013, <https://www.dni.gov/index.php/newsroom/press-releases/press-releases-2013/item/868-dni-statement-on-recent-unauthorized-disclosures-of-classified-information>.

However, research conducted by Jonathan Mayer, Patrick Mutchler, and John Mitchell regarding metadata shows how revealing it is of a person's identity?²⁰ It can be used to determine an individual's relationship and health status, and geographical location.

3. Anti-forensic Approaches

In 2010, digital forensics (DF) scholar Simson Garfinkel noted the end of the DF "golden age" marked by fewer file formats and the commonly used computer operating system Windows XP.²¹ He explained that DF entered this era in 1997 and ended a decade later. The era's demise is illustrated by multiple mobile phone operating platforms and hundreds of different models of mobile phones available on the market. Garfinkel contended that for DF to remain relevant, the DF community needed a standardized method for representing and analyzing data acquired from digital media.²² This contention is shared throughout the DF community.²³

The new era of DF, specific to mobile devices (mobile phones, smartphones, and tablets), proves problematic to the judicial process.²⁴ Law enforcement's ability to extract digital evidence is complicated by the continually changing and expanding software and hardware in the mobile phone market. This contrasts with the golden era noted by Garfinkel where the software and hardware were limited. Despite the difficulty in acquiring digital evidence, the need for digital forensics continues to grow. The FBI's *Regional Computer Forensic Laboratory Annual Report for 2016* describes the need for its 15 regional computer forensic laboratories, pointing to the assistance it has given to 666 federal, state,

²⁰ Mayer, Mutchler, and Mitchell, "Evaluating the Privacy Properties of Telephone Metadata."

²¹ Simson L. Garfinkel, "Digital Forensics Research: The Next 10 Years," *Digital Investigation*, August 2010: S66.

²² Garfinkel, S69.

²³ A. Mouhtaropoulos, C. Li, and M. Grobler, "Proactive Digital Forensics: The Ever-Increasing Need for Standardization," in *2012 European Intelligence and Security Informatics Conference* (Piscataway, NJ: IEEE, 2012), 289, <https://doi.org/10.1109/EISIC.2012.66>.

²⁴ S. Dogan and E. Akbal, "Analysis of Mobile Phones in Digital Forensics," in *40th International Convention on Information and Communication Technology, Electronics and Microelectronics* (Piscataway, NJ: IEEE, 2017), 1241–44, <https://doi.org/10.23919/MIPRO.2017.7973613>.

and local agencies in processing over 17,000 items of digital evidence for criminal proceedings.²⁵

Since 2016, within the United States, an additional two regional forensic laboratories were created to meet the demand for digital forensic expertise. The response by federal authorities has caused nefarious actors to engage in new methods to thwart investigative efforts, known as “anti-forensics” (AF) in the digital forensic community.²⁶ The literature on anti-forensics identifies “data hiding, artifact wiping, trail obfuscation, and attacks on the individual forensic tools” as methods in which forensic acquisition can be hampered for an investigator.²⁷ It is worth noting that the number of anti-forensic tools is growing and the aforementioned methods are general categorizations among over a hundred anti-forensic tools.²⁸ A primary concern of investigators is a technique referred to as “timestomping,” whereby the digital date/time stamp on the digital media is altered.²⁹ Timestomping is a technique category of AF in artifact wiping.³⁰ For the mobile phone to be of value to an investigator, the data must be validated to ensure that there are no manipulations. Efforts have been undertaken in the digital forensic community to ensure that timestomping can be more easily detected.³¹

²⁵ Federal Bureau of Investigation Regional Computer Forensic Laboratory, *Regional Computer Forensics Laboratory Annual Report for Fiscal Year 2016* (Washington, DC: Federal Bureau of Investigation, 2016), 12, <https://www.rcfl.gov/file-repository/06-rcfl-annual-2016-170831.pdf/view>.

²⁶ Simson Garfinkel, “Anti-Forensics: Techniques, Detection and Countermeasures,” in *2nd International Conference on I-Warfare and Security* (Monterey, CA: Naval Postgraduate School, 2007), 9.

²⁷ S. Azadegan et al., “Novel Anti-Forensics Approaches for Smart Phones,” in *45th Hawaii International Conference on System Sciences* (Piscataway, NJ: IEEE, 2012), 5424–31, <https://doi.org/10.1109/HICSS.2012.452>.

²⁸ Kevin Conlan, Ibrahim Baggili, and Frank Bretinger, “Anti-Forensics: Furthering Digital Forensic Science through a New Extended, Granular Taxonomy,” in *16th Annual USA Digital Forensics Research Conference* (West Haven, CT: Cyber Forensics Research & Education Group, 2016), <http://dx.doi.org/10.1016/j.diin.2016.04.006>.

²⁹ “Timestomp,” MITRE Corporation, accessed February 20, 2019, <https://attack.mitre.org/techniques/T1099/>.

³⁰ Emre Caglar Hosgor, “Detection and Mitigation of Anti-Forensics Using Forensic Tools” (master’s thesis, Monterey, CA, Naval Postgraduate School, 2018), 10, <http://hdl.handle.net/10945/61392>.

³¹ H. Pieterse, M. S. Olivier, and R. P. van Heerden, “Playing Hide-and-Seek: Detecting the Manipulation of Android Timestamps,” in *2015 Information Security for South Africa* (Piscataway, NJ: IEEE, 2015), 1–8, <https://doi.org/10.1109/ISSA.2015.7335065>.

E. RESEARCH DESIGN

The thesis provides an overview of USRAP's security vetting after 9/11 as well as recent enhancements to the program. Primary sources were used to illustrate the history of USRAP's security-vetting policies and procedures. This historical understanding provides context for the idea of screening refugees' mobile phones.

Based on primary and secondary resources, it is demonstrated how the mobile phone is an intrinsic part of an individual's life in the developing world. A considerable number of refugees come from the developing world, and it is a misconception that mobile phone ownership is relegated to mid- to high socio-economic strata. In fact, mobile phone ownership among refugee populations is quite common. Information collected by United Nations High Commissioner of Refugees (UNHCR) and other sources was used to analyze rates of mobile phone ownership and the lack of country-of-origin documents to support the premise of utilizing mobile phones as an identity document. The mobile phone can establish a timeline and location history of its user based on the device's metadata. Other digital information exists on a mobile phone that proves beneficial in assessing an applicant's identity; for adjudication officers with U.S. Citizenship and Immigration Services, confirming a timeline of events and the travel history of a refugee applicant are essential.

Finally, this thesis includes a policy analysis of the alternatives of a refugee mobile phone screening program, utilizing Eugene Bardach and Eric Patashnik's Eightfold Path.³² The thesis examines the successes of other government agencies and their use of mobile phone forensic hardware and/or software to conduct an investigation to determine the strength of such a policy implementation in the refugee context. The thesis proceeds to examine three policy alternatives of a refugee mobile phone screening program. To

1. Maintain the status quo of applicants' mobile phones not being screened.
2. Implement mandatory screening of all applicants' mobile phones.

³² Eugene Bardach and Eric M. Patashnik, *A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving*, 6th ed. (Washington, DC: CQ Press, 2020).

3. Administer a threat-based targeted approach where only the phones of those applicants whose cases have fraud and/or national security indicators be screened.

The policy alternatives are evaluated against the following criteria: efficiency (gauged by time and cost), risk to national security, and ethical consideration. Based on the analysis, the best policy alternative was selected. A determination was made of how the policy alternative would be adopted and implemented.

F. OVERVIEW

Chapter II includes a review of the security vetting process of the U.S. Refugee Admissions Program. It takes an historical perspective of the data holdings refugees are screened against as well as programs that have been implemented to vet his population since 9/11. It then proceeds to describe the vetting process from the moment the refugee is first interviewed to when security checks are initiated on the refugee's biographical data.

Chapter III examines the prevalence of mobile phones in the developing world and utilizes Somalia as an example of where mobile devices have flourished despite the civil strife that has plagued the country. It then proceeds to demonstrate that a significant portion of the refugee population resides in the developing world and are in possession of mobile devices. Finally, it explores the types of data stored within mobile phones and how this information could be used to ascertain a refugees' identity, specifically as it pertains to their flight from persecution.

Chapter IV of the thesis presents a policy analysis of implementing a mobile phone screening program within the U.S. Refugee Admissions Program. It first looks at three policy alternatives and establishes criteria from which to evaluate each alternative. The thesis then evaluates all three policy alternatives and makes a determination as to which is the most effective. Following the determination, a pathway is put forth toward its adoption and implementation.

Chapter V provides a summary of the preceding chapters while restating which policy alternative is the best to implement. It outlines how the policy alternative would be

adopted and implemented. The result would be reduced vetting times, minimization of risk to national security, and consideration for the privacy of refugees.

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II. U.S. REFUGEE ADMISSIONS PROGRAM

Globally, there are currently approximately 68.5 million forcibly displaced persons; of those, 25.4 million are refugees.³³ Historically, the United States has accepted more refugees than other any other country, with more than three million being permanently resettled here since 1975.³⁴ The coordinated effort among the modern world to resettle refugees started with the League of Nations following World War I, after mass populations had been displaced throughout Europe. The international organization League of Nations recognized the legal status of Russian and Armenian refugees and issued them identity documents.³⁵ From there, the humanitarian mission of protecting refugees and seeking permanent resettlement continued with the founding of the United Nations High Commissioner of Refugees (UNHCR) in 1950, which still is in effect today. The United States, a signing party of the 1951 Refugee Convention, enacted legislation in 1980 to formalize the process and the number of refugees to be admitted into the U.S. The United States has historically welcomed those persecuted for their “race, religion, nationality, membership in a particular social group, or political opinion”—that which defines a refugee.³⁶ However, the admission of refugees into the United States and the security screening they undergo for acceptance has come under scrutiny in recent years.

Specifically, since 2019 under the Trump Administration, the United States restricted refugee admissions to record lows.³⁷ The program has been criticized for not being thorough enough and inadequate in detecting and deterring threats from entering the

³³ “Figures at a Glance,” United Nations High Commissioner for Refugees, accessed August 5, 2018, <http://www.unhcr.org/figures-at-a-glance.html>.

³⁴ “Refugees in America,” United Nations High Commissioner for Refugees, accessed November 27, 2021, <https://www.unrefugees.org/refugee-facts/usa/>.

³⁵ “Arrangement Relating to the Legal Status of Russian and Armenian Refugees,” June 30, 1928, *League of Nations Treaty Series* vol. LXXXIX, no. 2005, <https://www.refworld.org/docid/3dd8cde56.html>.

³⁶ “Aliens and Nationality Act,” Department of Homeland Security, C.F. R. title 8 (comp. 2011): 1101, <https://uscode.house.gov/view.xhtml?req=granuleid%3AUSC-prelim-title8-section1101&num=0&edition=prelim>.

³⁷ Shear and Kanno-Youngs, “Trump Slashes Refugee Cap to 18,000, Curtailing U.S. Role as Haven,” *New York Times*, last modified September 26, 2019, <https://www.nytimes.com/2019/09/26/us/politics/trump-refugees.html>.

U.S. During the past decade, news headlines such as “US Officials: Ex-ISIS Fighter Entered U.S. as Refugee” or “A Look at the K-1 Visa that Gave San Bernardino Shooter Entry into the U.S.” have been spread by media outlets.³⁸ For instance, the San Bernardino attacks in 2015, involving an admitted Pakistani-born immigrant raises the issue. Before the immigrant’s arrival into the U.S., she had social media postings promoting violent jihad against the U.S.³⁹ This, however, was not discovered during screening, only after the terrorist attack had occurred. While the immigrant was not a refugee, she still underwent a vetting process like that of the U.S. Refugee Admissions Program.

This chapter will examine the security vetting procedures and programs implemented following 9/11 to provide a historical perspective of how the vetting process has evolved and continues to evolve within the USRAP. It provides an understanding of the vetting process undergone by refugee applicants and shares the layers of security that are built into the process.

A. TERMINOLOGY

For the purposes of this work, it is necessary to define the terms “refugee” and “asylee,” as they are often used interchangeably. According to the 1951 Convention Relating to the Status of Refugees, a refugee is “someone who is unable or unwilling to return to their country of origin owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion.”⁴⁰ The U.S. Immigration and Nationality Act defines a refugee as

any person who is outside any country of such person’s nationality or, in the case of a person having no nationality, is outside any country in which

³⁸Don Thompson and Julie Watson, “U.S. Officials: Ex-ISIS Fighter Entered U.S. as Refugee,” *News Herald*, last modified August 16, 2018, https://www.news-herald.com/news/us-officials-ex-isis-fighter-entered-us-as-refugee/article_df9b2bb0-49d6-53a6-8136-bdc2e78b678b.html; Matt Pearce, “A Look at the K-1 Visa That Gave San Bernardino Shooter Entry into U.S.,” *Los Angeles Times*, last modified December 8, 2015, <https://www.latimes.com/world/europe/la-fg-k1-visas-20151208-story.html>.

³⁹Apuzzo, Schmidt, and Preston, “U.S. Visa Process Missed San Bernardino Wife’s Online Zealotry” *New York Times*, last modified December 21, 2017, <https://www.nytimes.com/2015/12/13/us/san-bernardino-attacks-us-visa-process-tashfeen-maliks-remarks-on-social-media-about-jihad-were-missed.html>.

⁴⁰Convention Relating to the Status of Refugees, RefWorld, accessed November 30, 2021, 152, <https://www.refworld.org/docid/3be01b964.html>.

such person last habitually resided, and who is unable or unwilling to return to, and is unable or unwilling to avail himself or herself of the protection of, that country because of persecution or a well-founded fear of persecution on account of race, religion, nationality, membership in a particular social group, or political opinion.⁴¹

An asylee, on the other hand, meets the requirements of a refugee but already resides within the United States or is applying for entry at one of the U.S. ports of entry.⁴²

Both populations are fleeing threats, forcing them to take immediate flight, which causes them to leave behind their identification credentials (or documents). Or in other instances, these documents are stripped off the refugee by his government, the human smuggler, or are disposed of for fear of persecution on some aspect of his identity. The issue here is that refugees are often without identity documents, and without access to identity documents, they are vulnerable, and as such, there are approximately 1.5 billion of them worldwide without personal identification credentials.⁴³ The lack of identity documents proves troublesome for the Refugee Admissions Program, as it limits the ability for U.S. Immigration officials to thoroughly screen applicants. In a worst-case scenario, a nefarious actor watch-listed on the U.S. Terrorist Screening Database and who is attempting to evade detection by officials could provide an alternate name, date of birth, and place of birth to evade detection by immigration officials. Within the process of the U.S. Refugee Admissions Program, it is imperative that the refugee officer establishes the applicant's flight from persecution to validate his persecution claim. Therefore, it is imperative that an alternate means of identifying the applicant be provided, and the mobile phone could be used as one mean of such validation.

⁴¹ "Aliens and Nationality Act, C.F.R., title 8 (comp. 2011): 1101" Department of Homeland Security, <https://uscode.house.gov/view.xhtml?req=granuleid%3AUSC-prelim-title8-section1101&num=0&edition=prelim>.

⁴² "Refugees and Asylees," Department of Homeland Security, April 5, 2016, <https://www.dhs.gov/immigration-statistics/refugees-asylees>.

⁴³ World Bank Group, *Identification for Development*, (Washington, DC: World Bank Group, 2016, 4), <https://thedocs.worldbank.org/en/doc/21571460567481655-0190022016/render/April2016ID4DStrategicRoadmapID4D.txt>.

B. POST-9/11 SECURITY SCREENING EVOLUTION

The 9/11 Commission identified a lack of information sharing among the law enforcement and intelligence communities. Furthermore, counterterrorism was not considered a part of the mission of several of the organizations responsible for both administering immigration benefits as well as screening cross-border activity. As a result, the Department of Homeland Security was created and composed of newly created and realigned agencies under its umbrella. The agency of U.S. Citizenship and Immigration Services (USCIS) was created from the immigration benefit granting part Immigration and Naturalization Services (INS), while the enforcement side was combined with the Department of Treasury's Customs Service to create a newly formed agency called U.S. Customs and Border Protection. Within USCIS, the Refugee Corps was created in 2005, with the purpose of travel overseas to interview refugee applicants and to adjudicate immigration benefits.⁴⁴

Immediately following 9/11, refugees began being screened against DOS' Consular Lookout and Support System (CLASS), a database used to identify immigration applicants who may be not eligible for an immigration benefit or that require additional vetting. In addition to refugees being subject to CLASS, they were also screened against DOS' Security Advisory Opinion, an additional layer of vetting conducted by multiple federal agencies (FBI & IC Partners) to ensure refugee applicants who pose a national security concern were identified and prevented from entering the United States. These checks are conducted on "groups and nationalities designated by the U.S. government as requiring this higher level check."⁴⁵ In 2008, the Inter-Agency Check (IAC) was implemented, which provided information to the intelligence community including biographical data as well as other data points provided during the admissions process.⁴⁶

⁴⁴ "Refugee Timeline," United States Citizenship and Immigration Services, November 9, 2021, <https://www.uscis.gov/about-us/our-history/history-office-and-library/featured-stories-from-the-uscis-history-office-and-library/refugee-timeline>.

⁴⁵ "Refugee Processing and Security Screening," United States Citizenship and Immigration Services, accessed July 7, 2020, <https://www.uscis.gov/humanitarian/refugees-and-asylum/refugees/refugee-processing-and-security-screening>.

⁴⁶ United States Citizenship and Immigration Services, "Refugee Processing and Security Screening."

In 2016, in addition to the several layers of security checks already in place, the U.S. Refugee Corps began a pilot program of deploying immigration officers with specialized knowledge and skillsets alongside refugee officers to address both fraud and national security concerns that may not otherwise be addressed in the security checks.⁴⁷ These officers, titled immigration officers (fraud detection and national security), reviewed all cases in which the refugee officers identified there to be either fraud or national security indicators. The officers were deployed to regions that exhibited high levels of fraud or national security concerns. Due to the success of the pilot, it is has become an established part of maintaining the integrity ofUSRAP. Figures 1 illustrates the history of implemented screening procedures.

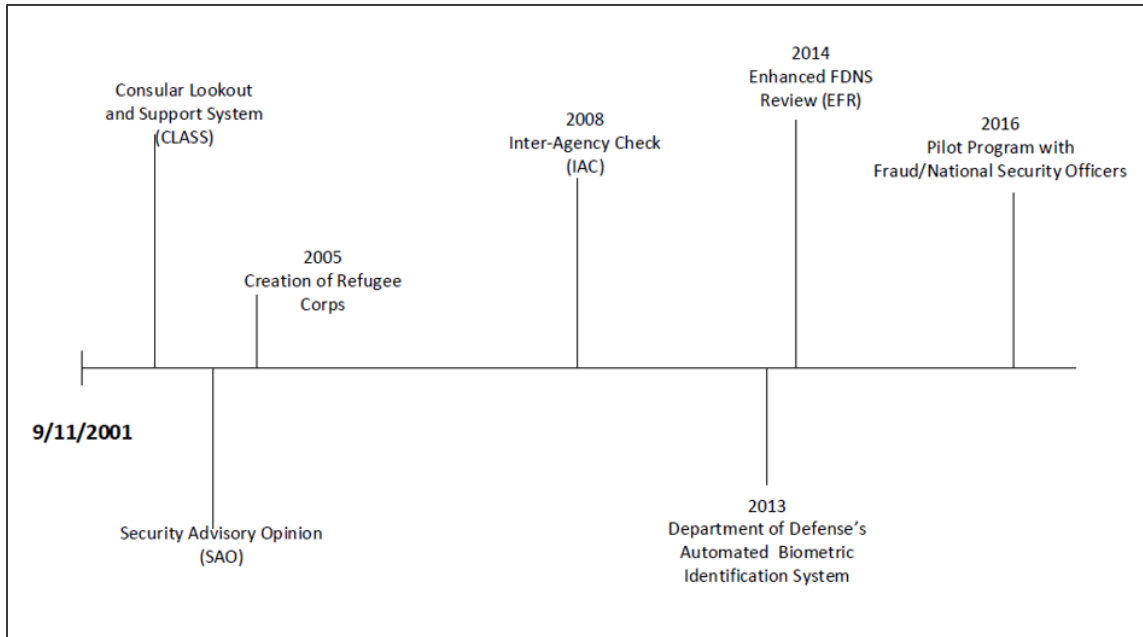


Figure 1. Security Screening Timeline⁴⁸

⁴⁷ United States Government Accountability Office, *Refugees: Actions Needed by State Department and DHS to Further Strengthen Applicant Screening Process and Assess Fraud Risks*, GAO-17-706 (Washington, DC: United States Government Accountability Office, 2017), 46.

⁴⁸ Adapted from United States Citizenship and Immigration Services, “Refugee Processing and Security Screening.”

C. VETTING PROCESS

The USRAP consists of several partner organizations such as the UNHCR, Resettlement Service Centers (RSCs), DOS, U.S. Customs and Border Protection (CBP), and USCIS' Refugee Affairs Division (RAD). Until a refugee applicant's claim to refugee status is approved by the USCIS RAD, a refugee applicant is considered an applicant for refugee status and is not considered a refugee. For the remainder of these thesis, a refugee will be referred to as an applicant.

The security vetting of an applicant consists of several stages, including interviews and security checks.⁴⁹ At any point during the process, it can be determined that an applicant has committed fraud to gain access to the USRAP or is a national security concern, and the applicant's case will be denied. This national security concern can be identified during the security check process or from testimony from the applicant.

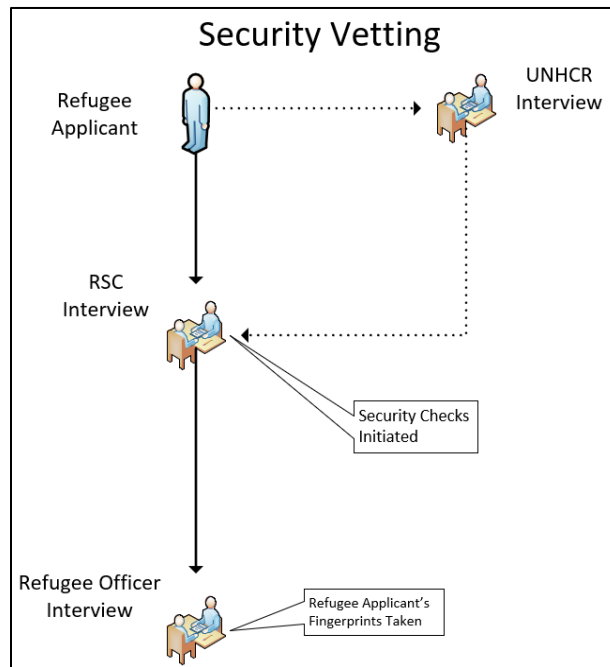


Figure 2. Security Vetting

⁴⁹ "Application and Case Processing," United States Department of State, accessed June 2, 2019, <https://www.state.gov/refugee-admissions/application-and-case-processing/>.

When an applicant is referred to theUSRAP, he will go to the RSC where he provides his biographical information and his persecution story. After the RSC receives the applicant's biographical information and other data points, the organization will initiate the security check process. Eventually, a team of U.S. refugee officers from USCIS's RAD will arrive in the country where the applicant resides. When the applicant comes before a refugee officer for his interview, the applicant will have his biometrics (fingerprints) taken by a U.S. government official. These biometrics are screened against U.S. government data holdings. If the refugee officer finds any indicators of fraud or national security concerns during the applicant's testimony, the case is put on hold for further research. If there are no national security or fraud concerns identified in the applicant's testimony and the biometrics and biographical information clear the screening process, he will be scheduled for travel to the United States.

D. SUMMARY

Historically, the United States has accepted more refugees than any other country in the world. While the U.S. has sought to resettle more refugees due to world crises, it has also continually augmented the screening process through biometrics, interviews, and biographical information; however, this population is often without identity documents, which poses a risk in the screening process. The next chapter presents a potential solution to the lack of identification: utilizing the applicant's mobile phone as a form of identification due to the amount information it contains. The mobile phone has become a rapidly adopted device in the developing world and has become a necessary survival tool for refugees.

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III. SMARTPHONES IN THE DEVELOPING WORLD

Mobile phone ownership has grown significantly within developing nations. The adoption has been the result of its many functions. Refugees, who primarily reside within the developing world, have contributed to the growing ownership of the devices. As the ownership continues to grow, so, too, does the amount of information these devices are able to hold. This information can be used by the USRAP to ascertain the identity of the refugee applicant during the security screening process. A mobile phone contains data that can reveal a user's location history which is valuable in the refugee screening process. However, data contained on the mobile phone can be manipulated by nefarious actors to avoid detection.

A. RAPIDLY ADOPTED TECHNOLOGY

The mobile phone has been quickly adopted in developing countries. These developing countries host a portion of the world's refugee population. According to the Pew Research Center's report, *Mobile Connectivity in Emerging Economies*, 11 countries were surveyed based on the following criteria: (1) middle-income countries, (2) mix of mobile phone types (smartphone, feature phone) or no phone at all, (3) diversity, (4) market conditions, and (5) high levels of internal/external migration.⁵⁰ Two of the ten countries, Jordan and Lebanon, possess significant refugee populations. In 2019, Jordan hosted approximately 744,795 refugees with 83% of them residing in cities while Lebanon had 936,164.⁵¹ In the survey, 94% of adults in Jordan owned a mobile phone while 89% of those in Lebanon did. Furthermore, according to United Nations High Commissioner of Refugees (UNHCR), the developing world hosts 84% of the world's refugees under the

⁵⁰ Laura Silver et al., *Mobile Connectivity in Emerging Economies* (Washington, DC: Pew Research Center, 2019), 5, <https://www.pewresearch.org/internet/2019/03/07/mobile-connectivity-in-emerging-economies/>.

⁵¹ "Lebanon," United Nations High Commissioner for Refugees, accessed July 23, 2020, <https://reporting.unhcr.org/node/2520?y=2019>; "UNHCR Continues to Support Refugees in Jordan throughout 2019" United Nations High Commissioner for Refugees, December 31, 2019, <https://www.unhcr.org/jo/12449-unhcr-continues-to-support-refugees-in-jordan-throughout-2019.html>.

UNHCR mandate with an approximate total of 14.5 million individuals.⁵² It is evident that the mobile phone has become a common item to possess and for good reason.

The mobile phone's indispensability is attributed to its many applications, from social interaction to more utilitarian purposes such as financial transactions or trekking foreign terrain. As a result, a significant portion of the population in the lower economic strata, which includes refugees, are in possession of these devices. The market penetration of mobile phones in the developing world has been significant. As illustrated by the Global System for Mobile Communications (GSMA) Association's 2019 report, 40% of the population of lower to middle economies have internet connectivity via a mobile device.⁵³ The drivers of the adoption of mobile connectivity have been "infrastructure, affordability, consumer readiness, and content and services."⁵⁴ Furthermore, beyond the communicative aspect of the device, it can be characterized as a "companion, an organizational hub, a lifeline and diversion."⁵⁵ The device provides a connection for the refugee to his family and friends as well as a distraction from his current situation. Though the cost to purchase and maintain service on the device may be relatively high, a refugee will make the sacrifice in order to possess it, even if it means not being able to buy food.⁵⁶

B. CASE STUDY: SOMALIA

Somalia has been a country ravaged by civil war since the 1980s and has only regained some semblance of order in the country when the United States recognized the

⁵² United Nations High Commissioner for Refugees, *Global Trends: Forced Displacement in 2016* (Geneva, Switzerland: United Nations High Commissioner for Refugees, 2017), 2, <https://www.unhcr.org/statistics/unhcrstats/5943e8a34/global-trends-forced-displacement-2016.html>.

⁵³ Calvin Bahia and Stefano Suardi, *The State of Mobile Internet Connectivity 2019* (GSMA, 2019), 5, <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/07/GSMA-State-of-Mobile-Internet-Connectivity-Report-2019.pdf>.

⁵⁴ Bahia and Suardi, 6.

⁵⁵ Amanda Alencar, Katerina Kondova, and Wannas Ribbens, "The Smartphone as a Lifeline: An Exploration of Refugees' Use of Mobile Communication Technologies during Their Flight," *Media, Culture & Society* 41, no. 6 (September 1, 2019): 829–30, <https://doi.org/10.1177/0163443718813486>.

⁵⁶ Danielle Sabrina, "Beyond Convenience: For Refugees, Internet Access Can Be as Important as Food," *HuffPost*, last modified December 2, 2016, https://www.huffpost.com/entry/beyond-convenience-for-re_b_13367536.

new federal government of Somalia on January 17, 2013.⁵⁷ Although the Somali central government collapsed in 1991, telecom companies continued to operate in the region. The lack of a central government contributed to telecom companies' ability to offer the cheapest rates within the African continent due to a lack of government regulations.⁵⁸ While these companies competed for new customers, they cooperated in the establishment of the technological infrastructure to support mobile technology in the region.⁵⁹ It was not until the summer of 2017 that Somali's legislative body passed a draft of law calling that regulatory measures be implemented in Somalia's thriving telecommunications arena. Some surveys suggest mobile phone ownership to be as high as 7 out of every 10 Somalis owning a mobile phone.⁶⁰ A 2015 Gallup World Poll in 2015, shows that Somalia ranked as one of the top sub-Saharan African countries where ownership of mobile phones exceeded the regional median of 61%.⁶¹ Nigeria led the 28 sub-Saharan countries with a high of 87%, and Tanzania had just 60%. The use of mobile phones has been an essential means for the average Somali in his day-to-day life.

Mobile technology has also enabled the average Somali to make financial transactions without the use of cash; the use of mobile of a phone as a substitute for an individual's wallet has allowed him/her to avoid becoming prey to the thieves as well as Al Shabab, a U.S. designated foreign terrorist organization. In 2010, Somali citizens speculated as to the reason Al Shabab outlawed mobile phone banking, suspecting the "ban may be intended to block a rival to the traditional money transfer systems, known as

⁵⁷ "U.S. Relations With Somalia," United States Department of State, accessed November 28, 2021, <https://www.state.gov/u-s-relations-with-somalia/>.

⁵⁸ Immigration and Refugee Board of Canada, "Somalia: Prevalence of Cell Phones and Internet Cafes in Mogadishu."

⁵⁹ Joseph Winter, "Telecoms Thriving in Lawless Somalia," BBC, last modified November 19, 2004, <http://news.bbc.co.uk/2/hi/africa/4020259.stm>.

⁶⁰ Immigration and Refugee Board of Canada, "Somalia: Prevalence of Cell Phones and Internet Cafes in Mogadishu."

⁶¹ Magali Rheault and Justin McCarthy, "Disparities in Cellphone Ownership Pose Challenges in Africa," Gallup, last modified February 17, 2016, <https://news.gallup.com/poll/189269/disparities-cellphone-ownership-pose-challenges-africa.aspx>.

hawala, which al-Shabab can influence, or tax, more easily”.⁶² Nonetheless, a mobile phone has become a necessity as a way to transfer money safely without the fear of being extorted.

C. TYPES OF DATA STORED ON A SMARTPHONE

In the digital age, our lack of privacy has increasingly become a larger concern, as the world is considerably more connected than it was several decades ago. For example, individuals wear mobile devices, such as the Apple Watch, which can conduct advanced computations, far surpassing the desktop computers from several decades ago. Furthermore, they can connect to the world through the cellular technology that is able to fit into a space that is 1-by-1 inch wide and 5mm in depth. The miniaturization of technology has the potential for every individual on the planet to be connected to one another through these mobile devices and the internet, not to mention that these devices can track locations and sleeping habits, and call and messaging history.

This has led to recent security breaches and prompted the U.S. military’s recent banning usage of smartphones and fitness trackers with the geolocation features enabled while soldier are deployed in operation zones.⁶³ Before this shift, the military in 2012 had put out warnings to deployed soldiers not to take photographs with their smartphones and to disable the geo-location features of the phone.⁶⁴ Unbeknownst to soldiers at the time, photographs they had been taking while deployed in Iraq and Afghanistan had the GPS locations embedded in them, which posed security concerns. The GPS coordinates were recorded as a part of the EXIF data, data that tells what type of device took the picture as well as the aperture, shutter speed, and date/time. More recently in 2018, it was reported that Google applications still tracked an individual’s location despite the privacy setting

⁶² “Al-Shabab Bans Mobile Phone Money Transfers in Somalia,” BBC, October 18, 2010, <https://www.bbc.co.uk/news/world-africa-11566247>.

⁶³ “Pentagon Bans Use of Geolocators on Fitness Trackers, Smartphones,” CBS, August 6, 2018, <https://detroit.cbslocal.com/2018/08/06/pentagon-bans-use-of-geolocators-on-fitness-trackers-smartphones/>.

⁶⁴ Cheryl Rodewig, “Geotagging Poses Security Risks,” United States Army, last modified March 8, 2012, https://www.army.mil/article/75165/geotagging_poses_security_risks.

being set to “location history off.”⁶⁵ This informs us that mobile phone technology is able to track our movements.

The National Institute of Standards and Technology pinpoints the types of data that can be potentially stored on an individual’s phone, which are shown in Table 1.⁶⁶

Table 1. Types of Mobile Phone Data⁶⁷

Subscriber and equipment identifier	Geolocation data
Data/time, language, and other settings information	Phonebook/Contact
Calendar information	Text messages
Outgoing, incoming, and missed calls	Electronic mail
Photographs	Audio and video
Multi-media messages	Instant messaging
Web browsing activities	Electronic documents
Social media related data	Application related data

⁶⁵ Ryan Nakashima, “Google Tracks Your Movements, Like It or Not,” Associated Press, last modified August 13, 2018, <https://apnews.com/828aefab64d4411bac257a07c1af0ecb>.

⁶⁶ Rick Ayers, Sam Brothers, and Wayne Jansen, “Guidelines on Mobile Device Forensics” (National Institute of Standards and Technology, May 2014): 49, <https://doi.org/10.6028/NIST.SP.800-101r1>.

⁶⁷ Adapted from Rick Ayers, Sam Brothers, and Wayne Jansen, “Guidelines on Mobile Device Forensics” (Gaithersburg, MD: National Institute of Standards and Technology, May 2014): 49, <https://doi.org/10.6028/NIST.SP.800-101r1>

Given the amount of information about a user a mobile phone can hold, in 2014, the Supreme Court ruled unanimously in *Riley vs. California* that law enforcement must always use a search warrant before searching a subject's phone.⁶⁸ Before this ruling, law enforcement had been able to search a subject's phone under the search incident arrest exception to the Fourth Amendment, in order to find evidence on a phone before it could be destroyed.⁶⁹ Not only is the content on the device telling of a user but also is the metadata that surrounds the content of the cellular transmissions.

In 2016, Jonathan Mayer, Patrick Mutchler, and John Mitchell published a journal article titled, "Evaluating the Privacy Properties of Telephone Metadata," which evaluated the metadata generated from a mobile phone.⁷⁰ Metadata can be best understood as data about the data.⁷¹ For instance, subject A called subject B, and they discussed what their plans were for Friday afternoon. While the content of such a call would be what they discussed, Friday afternoon's plans, the metadata would include the duration of the call, the origin of the phone call, the destination of the phone call, and the date and time the call was made. The article was written in response to the NSA's surveillance program, which collected metadata on a significant number of Americans' mobile communications. The NSA argued that metadata was unidentifiable and could not be attributed to any one individual and that there were no privacy concerns. However, through the use of an Android application, Mayer, Mutchler, and Mitchell demonstrated that the recorded metadata of a mobile phone's historical call and text message log could make both "sensitive trait" and "relationship" inferences about the user. They concluded that

⁶⁸ *Riley v. California*, 13 U.S. 132 (2014).

⁶⁹ Jayme W. Holcomb and Nathaniel Counts, "Legal Digest: Searches Incident to Arrest in the Smartphone Age," FBI: Law Enforcement Bulletin, last modified December 10, 2013, <https://leb.fbi.gov/articles/legal-digest/legal-digest-searches-incident-to-arrest-in-the-smartphone-age>.

⁷⁰ Jonathan Mayer, Patrick Mutchler, and John C. Mitchell, "Evaluating the Privacy Properties of Telephone Metadata," *Proceedings of the National Academy of Sciences* 113, no. 20 (May 17, 2016): 5536–41, <https://doi.org/10.1073/pnas.1508081113>.

⁷¹ "Metadata Creation," University of California Santa Cruz, accessed April 15, 2021, <https://guides.library.ucsc.edu/c.php?g=618773&p=4306381>.

“telephone metadata is densely interconnected, can trivially be reidentified, and can be used to draw sensitive inferences.”⁷²

D. MOBILE PHONE DATA OF INTEREST

While it has been demonstrated that significant insight can be drawn from a mobile phone about its user, the primary data of interest when vetting a refugee applicant is the location data of the mobile phone, which can be accessed in several ways. Just as the passport is a travel document that serves to identify the bearer of the document, it also records the individual’s entrance into foreign countries. When an individual enters a foreign country, he/she will have an entry stamped into his passport with the date and time noted. As previously illustrated, an applicant will often not have any identity documentation let alone a passport. As a result, it is difficult to confirm an applicant’s travel history. However, metadata stored within the applications of the mobile phone can reveal the user’s travel. As previously explained, GPS coordinates can be saved in the photographs taken with the mobile phone. This can be done when the location services are turned on. Location services utilizes the phone’s GPS, cellular network, along with the surrounding wi-fi hotspots to determine the location of the mobile device.⁷³ Even with location services turned off, a user’s location can still be ascertained via a device’s sensory and non-sensory data.⁷⁴ The applications that run on a mobile phone utilize the locations services as well.⁷⁵ Another method of locating a mobile device is through cell site location information (CSLI). A mobile device is always searching for the nearest cellphone tower to transmit information. By utilizing triangulation techniques, the location of the mobile

⁷² Mayer, Mutchler, and Mitchell, “Evaluating the Privacy Properties of Telephone Metadata,” 5536.

⁷³ “Location Services,” *PCMAG*, accessed July 31, 2020, <https://www.pcmag.com/encyclopedia/term/location-services>.

⁷⁴ Arsalan Mosenia et al., “PinMe: Tracking a Smartphone User around the World,” *IEEE Transactions on Multi-Scale Computing Systems* 4, no. 3 (July 1, 2018): 2, <https://doi.org/10.1109/TMSCS.2017.2751462>.

⁷⁵ Jennifer Valentino-DeVries et al., “Your Apps Know Where You Were Last Night, and They’re Not Keeping It Secret,” *New York Times*, last modified December 10, 2018, <https://www.nytimes.com/interactive/2018/12/10/business/location-data-privacy-apps.html>.

device can be determined. Unfortunately, CSLI is not stored on the device but by the service providers.

A final method to infer the location of the device is based on the call log with criteria set forth by Mayer, Mutchler, and Mitchell.⁷⁶ The call log is an important area for investigation, as it can be screened against known phone numbers of nefarious actors and identify an immediate nexus to a national security concern for the applicant. Second, it could be used to make the inferences about the applicant as to his relationship status, health, religion, and political opinion.⁷⁷ However, a crucial piece of information that can be gleaned from call logs are the country and area codes. These codes can allow the investigator to infer the applicant's location history.

E. RE-IDENTIFICATION

Re-identification is the process by which anonymized data, such as metadata, can be used to reveal the identity of its user.⁷⁸ In the research conducted by Mayer, Mutchler, and Mitchell, one of the findings was that an individual's location could be inferred from the mobile phone's call log.⁷⁹ In this study, the mobile's phone call log was screened against the internet to identify the businesses and organizations whose phone numbers showed up in the call log. From there, the researchers were able to infer the individual's general geographic location in relation to the business, achieved by tagging the location of each business on a map. An individual is likely to contact those businesses that are near him/her. For instance, an individual is likely to visit a doctor's office that is near his home or order a pizza from a restaurant whose delivery zone encompasses the individual's location. As a result, the mobile phone user's location will likely reside in the cluster with the most contacts. Figure 3 illustrates the research.

⁷⁶ Mayer, Mutchler, and Mitchell, "Evaluating the Privacy Properties of Telephone Metadata."

⁷⁷ Mayer, Mutchler, and Mitchell, 538–539.

⁷⁸ Boris Lubarsky, "Re-Identification of 'Anonymized' Data," *Georgetown Law Technology Review*, no. 202 (April 12, 2017), 202–203, <https://georgetownlawtechreview.org/re-identification-of-anonymized-data/GLTR-04-2017/>.

⁷⁹ Mayer, Mutchler, and Mitchell, "Evaluating the Privacy Properties of Telephone Metadata," 538–539.

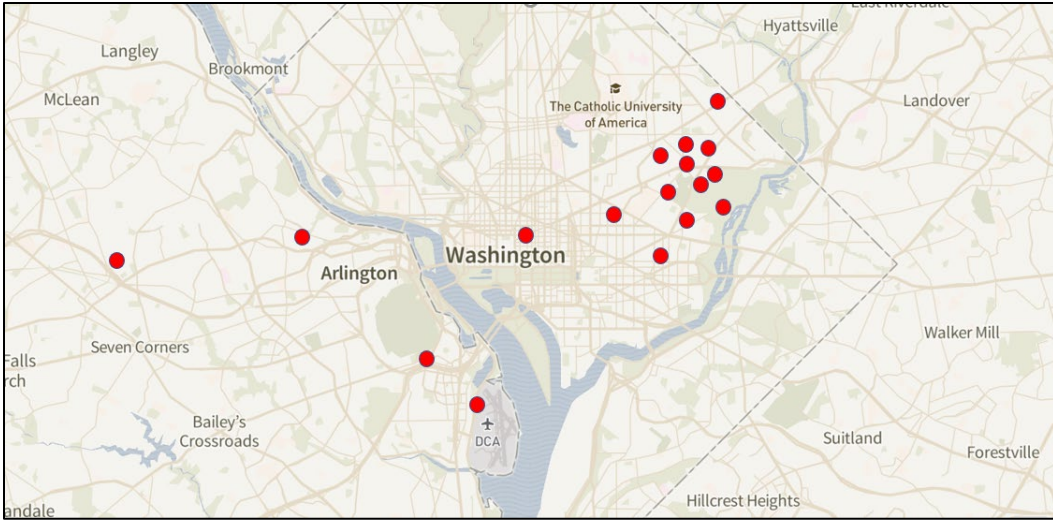


Figure 3. Re-identification

In addition to screening the call logs against the internet for open-source records, the country codes of the telephone numbers called by the applicant can be indicative of the refugee’s flight. They can indicate through which country and region the applicant crossed through by utilizing location inference. For example, in a report of a refugee who fled from Syria to Germany, the individual crossed through Turkey, Greece, Macedonia, Serbia, Hungary, and Austria to seek asylum.⁸⁰ If the applicant made phone calls to a person or business in any of these countries, both the country code and area code would be stored within the memory of the device. It is likely the applicant would purchase separate SIM cards along his journey due to the prohibitive cost of dialing a local number with an international phone number. Even with switching out the SIM card, the call log would remain on the device. Figure 4 demonstrates how the country and area code stored within a mobile device could show the travel route of a refugee.

⁸⁰ Rossalyn Warren, “Here Is the Long Route Many Refugees Take to Travel from Syria to Germany,” BuzzFeed, last modified September 14, 2015, <https://www.buzzfeed.com/rossalynwarren/here-is-the-long-route-many-refugees-take-to-travel-from-syr>.

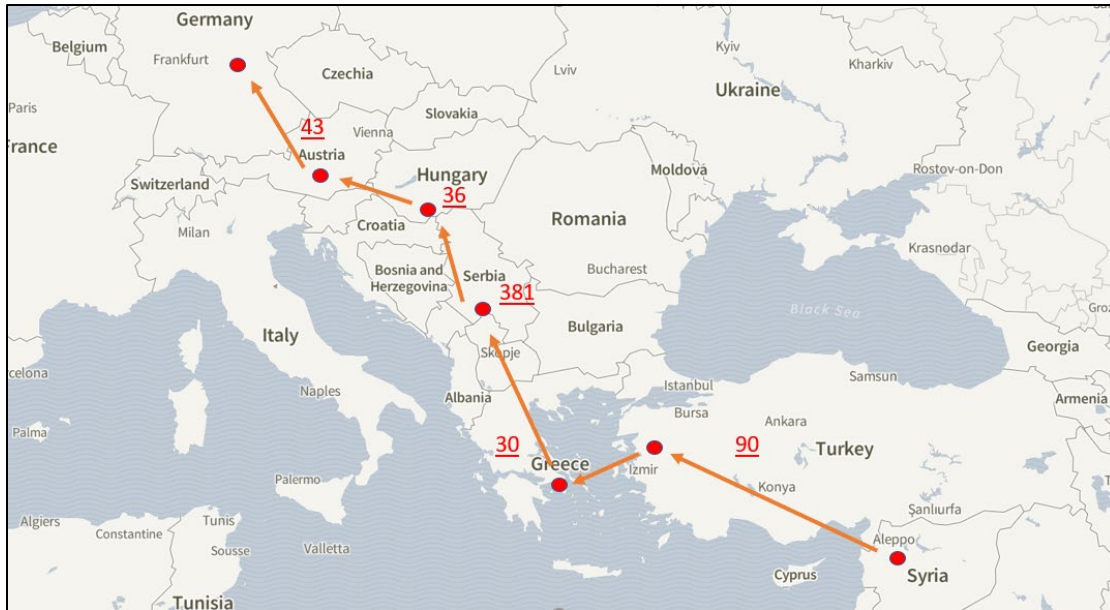


Figure 4. Location Inferences

F. OBSTACLES FOR IMPLEMENTATION

It could be argued that a nefarious actor, knowledgeable of metadata and re-identification, could thwart detection if the USRAP implemented mobile phone screening. First, the actor could come before the U.S. immigration officer and claim to not have a mobile phone. Second, the actor could utilize “anti-forensics.” “Anti-Forensics” is a term used to describe techniques designed to hinder a forensic investigation. An actor could alter the data contained within the phone in order not to raise flags by the investigator. For instance, the metadata that is contained within the EXIF data could be changed. As previously illustrated, the EXIF data contains GPS coordinates, and that information could be fabricated; these two methods are demonstrated in the following scenario.

1. Scenario—Syrian Refugee

It is 2016, due to the Syrian Civil War, thousands of Syrians are fleeing Syria fearing the Syrian government and the terrorist organizations that have taken hold throughout the country. An applicant is scheduled for an interview with a U.S. refugee officer at a United Nations facility in Istanbul, Turkey. The applicant is a Syrian national who fled from Syria and arrived in Turkey. The applicant is claiming refugee status based

on persecution by the Syrian government. Prior to the interview, the refugee officer reviews the applicant's case history, including his flight path from his home with addresses and the time periods the applicant resided at each address. The refugee officer believes the applicant may not have been forthcoming with his address history and may have stayed in terrorist-controlled territory. As a result, the officer requests a mobile phone device extraction be conducted on the applicant's mobile phone. The applicant had in fact stayed in a terrorist-controlled territory and had regular interaction with a terrorist organization, which would bar him from being admitted to the United States as a refugee. As such, the applicant would be labeled a nefarious actor for the remainder of this scenario. The following are two methods as to how this nefarious actor could avoid detection.

2. Response A

The applicant arrives for his interview, and when asked by the refugee officer for his mobile phone, he states that he does not have one. When questioned as to the number listed on his refugee application, he states that it is a landline phone number or a number belonging to a family member or a neighbor.

3. Response B

The applicant arrives for his interview, and when asked by the refugee officer for his mobile phone, he provides it to the officer. The mobile phone is then connected to a mobile forensic extraction device. The extraction device collects all the data contained on the mobile phone and produces a report for the mobile phone forensic expert accompanying the refugee officer. Unbeknownst to the officer, the nefarious actor altered the EXIF data ("anti-forensics") of the photographs to put his location (GPS coordinates) in a territory not held by a terrorist organization. While this anti-forensic technique may appear complex for the typical actor, "how-to-guides" and software are readily available on the internet that can assist him in the process.⁸¹

⁸¹ Ngan Tengyuen, "6 Free Tools To Change Photo's Exif Data, Remove Metadata and Hide Dates," GeckoandFly, last modified January 5, 2020, <https://www.geckoandfly.com/7987/how-to-change-exif-data-date-and-camera-properties-with-free-editor/>.

4. Mitigation Measure to Response A and B

To mitigate the situation in response A, if the nefarious actor claims not to have a phone, the refugee officer would refer the case for additional security vetting to RAD's SVPI unit. The absence of a mobile phone would be an indicator of fraud and/or national security concern that would require additional security screening.

To mitigate the situation in response B, the alteration of the EXIF data could be detected by comparing the GPS coordinates and associated timestamps to other metadata contained on the mobile phone, specifically in other software applications. Research has been conducted to identify ways in which anti-forensic techniques are deployed, for instance, taking the source metadata and comparing it to similar metadata stored on other applications within the phone. In this scenario, the altered GPS coordinates in the EXIF data could be compared to GPS coordinates stored in other software applications on the phone such Facebook or Instagram. If the GPS coordinates and timestamps do not match, then the mobile phone forensic expert would know an anti-forensic technique has been used. The refugee officer, armed with this information, could confront the nefarious actor with this information.

G. SUMMARY

It is apparent that the mobile phone has become a necessary survival tool for a refugee in the developing world. While a refugee is often without identity documents, he is often in possession of a mobile phone. A mobile phone can be used to identify a refugee applicant and verify his persecution story to include his flight from the persecutor. The vetting of an applicant's mobile phone would be an additional security measure in the screening process; however, a nefarious actor could use anti-forensic techniques to thwart the digital forensic investigation. Despite a nefarious actor's efforts, there are mitigation measures that could be used to limit their effectiveness. Specifically, in the above scenario the suspected altered metadata could be compared to other metadata on the phone to determine its validity.

The next chapter contains a policy analysis if mobile phone screening were adopted and implemented in the USRAP. It examines how other countries have utilized mobile

phone screening to vet their refugee population and explores three policy alternatives and the adoption and implementation of the best alternative.

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IV. SMARTPHONE AS VETTING TOOL

A. IDENTIFYING REFUGEES VIA MOBILE PHONES

Refugees are problematic to vet during the security screening process as they are often without identity documents. The lack of documentation requires U.S. officials to screen the applicant's claimed identity without the ability to verify it. This is a vulnerability in the USRAP screening process. In the previous chapters, it was demonstrated that refugees are often in possession of mobile phones and that mobile phones hold a plethora of identifiable information that could aid in verifying a refugee applicant's identity. This chapter examines the pros and cons associated with adopting a mobile phone vetting program within the USRAP. First, this chapter assesses the significance mobile phone vetting has had in the German context to determine what lessons can be learned. This will inform the policy analysis and how to structure it. Then, three policy alternatives are provided to screen a refugee's phone

The pros and cons of each policy option are examined based on a set of evaluative criteria. Based on the results, a recommendation is made for the policy alternative that has the highest return on investment if adopted.

B. MOBILE PHONE VETTING BY GERMANY

In 2011, western Europe faced an onslaught of Syrian refugees fleeing Syria for Europe during the Syrian civil war.⁸² In 2015, Germany accepted over 1.1 million refugees and housed the most Syrian refugees in the European continent with a total of 532,000 individuals.⁸³ However, with terrorist attacks such as the Berlin Christmas Market attack

⁸² Zoe Todd, "By the Numbers: Syrian Refugees Around the World," PBS, last modified May 3, 2021, <https://www.pbs.org/wgbh/frontline/article/numbers-syrian-refugees-around-world/>.

⁸³ Todd; Yermi Brenner and Linnea Kessing, "Germany's New Migration and Asylum Legislation: Extraordinary Opening, Shrinking Protection Space, or Both?," Mixed Migration Centre, last modified August 20, 2019, <http://www.mixedmigration.org/articles/germanys-new-migration-and-asylum-legislation-extraordinary-opening-shrinking-protection-space-or-both/>.

that killed 12 people, which was executed by a Tunisian asylum seeker, Germany has sought stricter asylum laws.⁸⁴

In 2017, legislation was passed giving the Federal Office for Migration and Refugees (“Bundesamt für Migration und Flüchtlinge”), BAMF, the authority to search an applicant’s mobile phone if there was no alternative way of identifying the applicant.⁸⁵ According to BAMF’s website, “Evaluating mobile data media—Analysing mobile data media helps to determine identity and origin on the basis of metadata stored on the mobile phone (including geodata)”.⁸⁶ The new law attracted criticism as opponents stated it violated an asylee’s personal liberties, specifically his or her right to privacy.⁸⁷ Since the law’s enactment, there have been no publicly available data to show that the law has assisted in apprehending nefarious actors within the German asylum system. Opponents of the law have claimed that since the law came into effect, that it has not aided in apprehending these illicit actors. Currently, a lawsuit has been brought against the German government challenging the law.⁸⁸

While there has been no publicly available data to support Germany’s efforts to combat fraud and terrorism with this new law, it does not mean it has not nor will it be ineffective in the future. With regard to the U.S. immigration system, applicants within the USRAP must demonstrate they qualify as refugees. If they cannot demonstrate this to the satisfaction of the U.S. refugee officer, their claim will be denied. There is no legal

⁸⁴ Anthony Faola, Stephanie Kirchner, and Souad Mekhennet, “Tunisian Suspect in Berlin Christmas Market Attack Faced Past German Terror Probe, Official Says,” *Washington Post*, last modified December 21, 2016, https://www.washingtonpost.com/world/german-police-in-search-for-new-suspect-in-deadly-christmas-market-attack/2016/12/21/066055d8-c6fd-11e6-acda-59924caa2450_story.html?hpid=hp_hp-top-table-main_berlin-630am%3Ahomepage%2Fstory&utm_term=.f48759e4ba2f&itid=lk_inline_manual_27.

⁸⁵ “German Parliament Passes Tighter Asylum Laws,” Deutsche Welle, accessed July 13, 2020, <https://www.dw.com/en/german-parliament-passes-tighter-asylum-laws/a-38897488>.

⁸⁶ “The Stages of the German Asylum Procedure,” Federal Office for Migration and Refugees, accessed July 13, 2020, https://www.bamf.de/SharedDocs/Anlagen/EN/AsylFluechtlingsschutz/Asylverfahren/das-deutsche-asylverfahren.pdf?__blob=publicationFile&v=12.

⁸⁷ Marion MacGregor, “Migrants Sue German State over Mobile Phone Searches,” InfoMigrants, last modified May 6, 2020, <https://www.infomigrants.net/en/post/24574/migrants-sue-german-state-over-mobile-phone-searches>.

⁸⁸ MacGregor.

requirement barring the U.S. Refugee Affairs Division from requesting the applicants' mobile phone data to assist them in making their determination. Legally, refugee applicants are not afforded the same constitutional rights afforded to U.S. citizens/residents and those documented/undocumented immigrants residing within the borders of the United States. The Fourteenth Amendment affords rights to immigrants both legally and illegally present in the U.S., but that does not include refugees.⁸⁹ Refugee applicants are not entitled to these liberties until they are within the U.S. Similarly, when individuals, including U.S. citizens, seek to enter the United States at a port of entry, their property is subject to search by U.S. immigration officials.⁹⁰

There are two key takeaways from Germany's experience. First, the BAMF will only utilize mobile phone screening if there are no other methods to determine the asylee's origin. It is used as a last resort. Second, it brings to light an ethical consideration pertaining to an asylee's right to privacy. In the context of the USRAP, refugees are not afforded those rights reserved for individuals, legally and illegally residing in the United States, as outlined in the Fourteenth Amendment. As a result, they do not have a right to privacy from a constitutional standpoint. However, from an ethical viewpoint, the refugee's privacy should be taken into consideration when formulating the policy. Refugees are a population that face persecution, and as such, their identities must be protected.

C. ALTERNATIVES

Currently, the USRAP does not screen a refugee's mobile phone. An alternative to the absence of a mobile phone vetting program would be the presence of one. This policy analysis will examine the feasibility of three policy alternatives. To

1. Maintain the status quo of applicants' mobile phones not being screened.
2. Implement mandatory screening of all applicants' mobile phones.

⁸⁹ U.S. Constitution, amendment 14, section 1.

⁹⁰ "Search of Persons, Baggage, and Merchandise, C.F.R. title 19" Department of Homeland Security, 162, <https://www.govinfo.gov/app/details/CFR-2020-title19-vol2/CFR-2020-title19-vol2-sec162-6>.

3. Administer a threat based targeted approach where only the phones of those applicants whose cases have fraud and/or national security indicators be screened.

D. EVALUATIVE CRITERIA

To assess the pro and/cons of the three policy alternatives, it is necessary to provide evaluative criteria for assessing each policy. Each alternative will be evaluated on the following criteria: (1) efficiency, (2) risk to national security, (3) and ethical consideration. These criteria were selected based on topics previously discussed. Mobile phone screening has the potential of decreasing processing times for refugees whose cases have been flagged for fraud or national security concerns. The ability to resolve a case sooner with the aid of mobile forensics makes security processing more efficient in terms of time and cost. The risk posed to national security by refugees was a topic of interest under the Trump administration.⁹¹ While it will be demonstrated that refugees pose the least risk out of all immigrant groups, there is value in assessing if an alternative can minimize the risk to national security. Finally, the ethical consideration of privacy is pertinent based on the German experience as well as that of a refugee. A refugee is subject to persecution, and his identity must be protected to ensure his safety.

Several other criteria were ultimately not included in this analysis but were considered. They were effectiveness (versus efficiency), political acceptability (versus ethical consideration), and legality. Effectiveness is an important criterion as it is essential that a policy is attaining the desired results. However, for this analysis, it will not be used as a part of the evaluative criteria for the three policy alternatives. It will be used to evaluate the final policy following its implementation. Finally, the political acceptability of the different alternatives is valuable in evaluating the political climate of the United States. During the Trump administration, there was criticism of Trump's restrictive immigration policies to include a travel ban of immigrants from seven predominantly Muslim

⁹¹ "Improved Security Procedures for Refugees Entering the United States," Department of Homeland Security, October 24, 2017, <https://www.dhs.gov/news/2017/10/24/improved-security-procedures-refugees-entering-united-states>.

countries.⁹² Following this executive order, a nationwide injunction order went into effect preventing the enforcement of Trump's travel ban (Trump vs. Hawaii). Ultimately, the travel ban was upheld by the Supreme Court. The purpose of this thesis is to provide a means of identification for a refugee, via his mobile phone, while addressing the impact on the screening process and that of the refugee himself. As previously addressed, refugees do not have the legal rights reserved for individuals residing in the United States both legally and illegally. As a result, there would be no benefit in comparing the three alternatives as they would all be legal according to U.S. law.

1. Efficiency

Efficiency, gauged by time and cost, was chosen as an evaluative criterion because the investors, in this case, the U.S. taxpayer, will want to see what was accomplished and produced and for how much. Specifically, How many nefarious actors were detected and how much did it cost to attain the desired result? If a program is not producing results, then it should not be funded, as that constitutes government waste.⁹³ Furthermore, cost was combined with time into a single criterion because they directly affect one another. The more time it takes to complete a task, the more money it will cost and vice versa.

The amount of time saved or added to the security screening of a refugee applicant by analyzing the mobile phone data is a quantifiable and relevant measure. Mobile phone screening would increase case processing time due to the time needed to extract the digital information and to analyze it. To both quantify and to provide a measurement for policy comparison, the requisite time needed to complete a digital extraction and analysis will be set at 1 hour. The analysis consists of reviewing the timestamped GPS coordinates stored within the device.

The mobile phone vetting has the potential to decrease the case processing time as well. If a case is flagged for fraud or national security, it is referred for further investigation.

⁹² Donald J. Trump, Executive Order 13769, "Protecting the Nation From Foreign Terrorist Entry Into the United States," C.F.R., title 3 (2017 comp.): 8977–8982.

⁹³ Romina Boccia, *Eliminating Waste and Controlling Government Spending*, 2960 (Washington, DC: The Heritage Foundation, 2014), 2, <https://www.heritage.org/budget-and-spending/report/eliminating-waste-and-controlling-government-spending>.

This further investigation could take months or even years to complete. However, mobile phone screening has the potential of dispelling those concerns and allowing the case to resume normal processing. As such, mobile phone vetting would precede other USCIS vetting activities.

1 hour = Time needed to extract and analyze mobile phone data

The financial cost includes funding a mobile forensic program and the time of the USRAP personnel. This entails the cost of a mobile forensic examiner as well as the requisite digital forensic equipment and software. The salary of a digital forensic specialist is \$103,690 based on the Office of Personnel Management’s pay schedule for 2021.⁹⁴ Additionally, there is a cost associated to processing an applicant, who is not eligible for refugee status, but that proceeds in the process until it is determined whether they are a nefarious actor. The cost also involves the time and salary of the refugee officer and supporting personnel. Mobile phone vetting offers the opportunity to identify nefarious actors sooner in the process rather than waste resources that could be dedicated to an actual refugee.

2. Risk to National Security

The U.S. continually vets inbound travelers to the United States both biographically and biometrically. During the screening process, refugees submit to these checks. As previously stated, the problem is refugees are often without identity documents to verify their claimed identities. By inspecting a refugee’s mobile phone as proof of identity, the USRAP could mitigate the risk posed by immigrants without identity documents. The risk pertains to nefarious actors who seek entry into the United States but who do not disclose their identities to avoid detection.

Risk will be defined as the threat to U.S. national security and will be ranked as (1) low, (2) medium, and (3) high. To assess the significance of this criterion, it is necessary

⁹⁴ “Digital Forensic Specialist (Mobile Device Exploitation),” USA Jobs, June 16, 2021, <https://www.usajobs.gov/GetJob/ViewDetails/604892500>.

to analyze the number of terrorists admitted as refugees as well as the deaths caused by immigrant groups. Since the inception of the USRAP in 1975 until 2015, only 20 terrorists have entered the U.S. out of the 3 million admitted refugees.⁹⁵ Those numbers pale in comparison to the other 134 foreign-born terrorists who committed attacks on the U.S. homeland. Additionally, the 134 foreign-born terrorists were responsible for 3,021 deaths, while the 20 admitted refugees were responsible for just 3 deaths.⁹⁶ It also is important to note that of the 3,024 deaths by foreign-born terrorists, that 2,977 of the deaths were the result of the 9/11 attacks.⁹⁷ Based on the available research, it is reasonable to claim that this immigrant group has posed minimal risk to U.S. nationals' security compared to other immigrant/non-immigrant populations. For this policy analysis, the degree at which mobile phones are screened among the refugee population will decrease the risk posed by nefarious actors. Since the risk posed by this group is minimal and current screening practices have proven sufficient, this criterion will not have the same weight as compared to the other criterion.

3. Ethical Consideration: Privacy

Based on the German experience, there is value in recognizing the privacy concerns of an applicant and how each policy will have an aggregate effect on the privacy of a population that is one of the most vulnerable in the world. The privacy of refugees is paramount and is recognized by the United States, which was a ratifying member of the Universal Declaration of Human Rights that was adopted by the United Nations in 1948. In Article 12 of the declaration, it states that “no one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.”⁹⁸

⁹⁵ Alex Nowrasteh, *Terrorism and Immigration: A Risk Analysis*, 798 (Washington, DC: CATO Institute, 2016), 8, <https://www.cato.org/policy-analysis/terrorism-immigration-risk-analysis>.

⁹⁶ Nowrasteh, 8–11.

⁹⁷ “September 11 Terror Attacks Fast Facts,” CNN, July 27, 2013, <https://www.cnn.com/2013/07/27/us/september-11-anniversary-fast-facts/index.html>.

⁹⁸ United Nations, *Universal Declaration of Human Rights* (Paris, France: United Nations, 1948), <https://www.un.org/en/about-us/universal-declaration-of-human-rights>.

It specifically states an individual should not be subject to “arbitrary interference with his privacy.” Based on the declaration, the United States is responsible for ensuring an individual’s freedom is not infringed upon, and this includes the refugee population. While privacy is a concern for refugees, it must be balanced with the U.S. need for national security. The U.S. screening of a refugee’s mobile phone would be in accordance with the declaration as long as the screening is not arbitrary. There would need to be a reason for the screening of a refugee’s phone. Despite, the criticism of Germany’s mobile phone vetting of asylee’s phones, it complies with the Declaration of Human Rights, as their vetting is not arbitrary and is meant as a last resort. As an evaluative criterion, the alternative will be rated on its ability to minimize arbitrariness in which refugees’ mobile phones are screened.

E. OUTCOMES/TRADEOFFS

Each of the policy alternatives will have varying results in terms of efficiency, risk to national security, and the privacy of the refugee applicant.

1. Alternative: Status Quo

By maintaining the status quo of mobile phone not being vetted it incurs additional time and cost that could be alleviated. The status quo minimizes arbitrariness, but it does not minimize the risk to national security.

a. Time and Cost

Costs are incurred by the Refugee Affairs Division even without implementing a mobile phone screening program. It consists of the time and money required to vet cases with fraud and/or national security concerns. It is the cost of the salaries of U.S. government personnel needed to do additional research to vet cases with fraud and/or national security concerns. Mobile phone vetting, conducted prior to other USCIS vetting activities, could dispel these concerns and thus eliminate the need for additional government personnel cost. To demonstrate, the following scenario will be used:

A team of refugee officers are deployed to country A to interview a group of 100 refugee applicants. Approximately 10 percent of the applicants will have national security or fraud indicators requiring additional security vetting. Figure 5 illustrates the scenario.

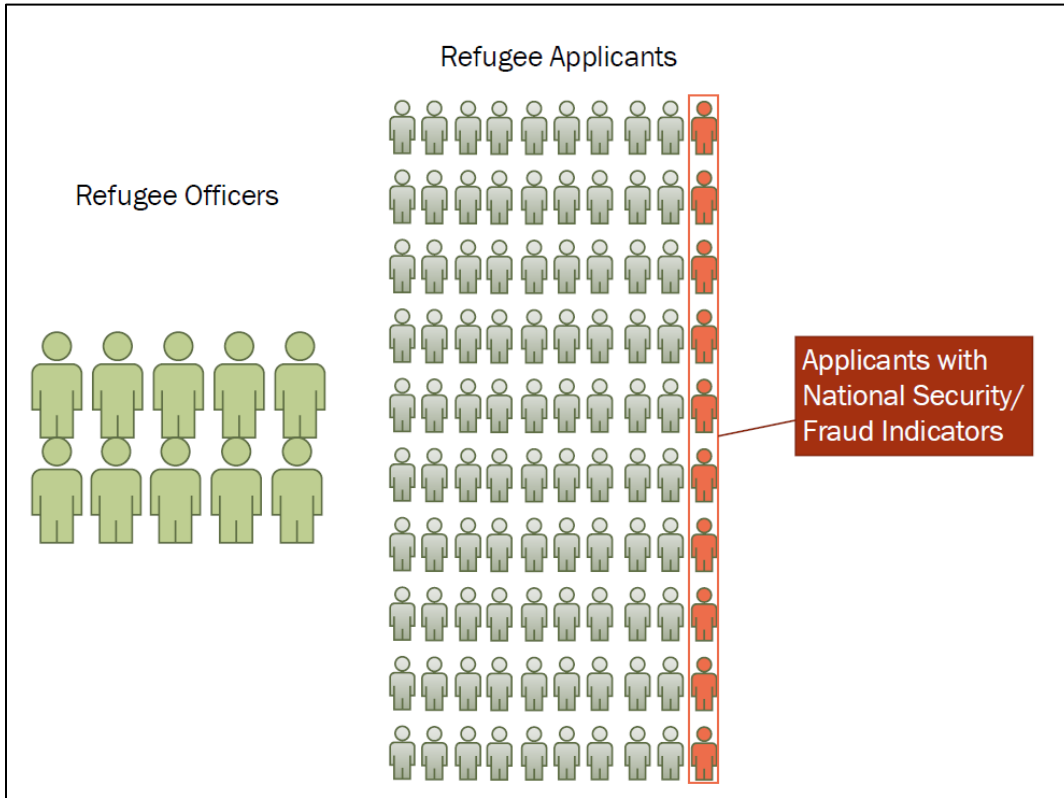


Figure 5. Scenario

In the scenario, 10 applicants will have fraud/national security concerns. These cases will require additional time to research and decide. To demonstrate the point, each applicant's case will be put on hold following his refugee interview. It will take an Immigration Officer approximately three hours to conduct additional research and render a determination. It will then take the Supervisory Immigration Officer one hour to conduct a review of the officer's decision. The base hourly salary of an Immigration Officer is \$49.68, and a Supervisory Immigration Officer is \$58.71. The total cost to conduct additional vetting for an applicant's case is approximately \$200. The total cost to vet the 10 applicants with security concerns is approximately \$ 2,000 in this scenario. Maintaining

the status quo incurs a cost to the Refugee Affairs Division and its agency, U.S. Citizenship and Immigration Services, that could otherwise be avoided through mobile phone vetting. While the total cost may appear miniscule in the scenario, if taken into context with the total number of refugees admitted in any given year, it can be quite significant. For instance, in 2017, the ceiling for refugee admissions was set at 110,000.⁹⁹ This has and continues to be the highest admission level to date. If 10% of the refugee population had security concerns, it would incur a cost of \$2.2 million to conduct the additional vetting. For purposes of comparing the three policy alternatives, the number of refugees admitted in a single year is 85,000. If 10% of them have concerns, it will require 34,000 hours to vet these individuals at a cost of \$1.7 million.

b. Risk to National Security

As previously illustrated, the number of terrorists that have entered through the USRAP has been minimal. There is no evidence to indicate mobile phone vetting would have prevented the entry of them. However, it can be logically deduced that the more vetting there is the greater the chance of detecting a nefarious actor. This alternative does the least to minimize the threat.

c. Ethical Consideration

There are no privacy concerns as the mobile phones of refugees are not being screened. This alternative ultimately minimizes arbitrariness. However, mobile phone vetting could expedite case processing times of those who are flagged for fraud/national security concerns but who ultimately are not determined a threat. Unfortunately, this is a common scenario that delays the refugees' resettlement in the U.S., thus placing them in continued harm. For example, Turkey continues to host a significant refugee population consisting of 3.6 million Syrians and over 300,000 other nationalities.¹⁰⁰ Unfortunately,

⁹⁹ Ryan Baugh, *Refugees and Asylees: 2019*, (Washington, DC: Department of Homeland Security, 2020), https://www.dhs.gov/sites/default/files/publications/immigration-statistics/yearbook/2019/refugee_and_asylee_2019.pdf.

¹⁰⁰ "Refugees and Asylum Seekers in Turkey," United Nations High Commissioner for Refugees, accessed July 12, 2021, <https://www.unhcr.org/tr/en/refugees-and-asylum-seekers-in-turkey>.

within the Syrian population, there has been the targeting of xenophobic attacks that has been exacerbated by Turkey's waning economy.¹⁰¹

2. Alternative: Screening of ALL Applicants' Mobile Phones

This alternative requires significant time and cost while also maximizing the arbitrariness of the process. However, screening all applicants increases the likelihood of identifying a nefarious actor.

a. Time and Cost

The mandatory screening of all refugee applicants' mobile phones, and the cost and time to both extract and analyze the data on the devices for every refugee applicant could be counterproductive. At the height of the refugee crisis with Syria in 2016, USRAP admitted approximately 85,000 refugees.¹⁰² The federal salary of a mobile forensics expert is approximately \$103,690 a year (\$49.68/hour) in addition to the cost to purchase a data extraction device (approx. \$15,000).¹⁰³

Table 2. Mobile Forensic Cost

Mobile Forensic Examiner	\$103, 690 (49.68/Hr)
Mobile Forensic Device	~\$15,000

Screening 85,000 applicants would require teams of forensic experts. If we were to assume each of the 85,000 refugees possessed a mobile phone, then it would require a cumulative 85,000 hours to screen them. It must be noted that not every refugee applicant will have a mobile phone, and a mobile phone may be shared among a group of refugees that are a family unit; however, for simplicity, it will be assumed that each applicant

¹⁰¹ "Syrians Victims of Xenophobic Attacks in Turkey," Middle East Online, October 7, 2019, <https://middle-east-online.com/en/syrians-victims-xenophobic-attacks-turkey>.

¹⁰² Jens Manuel Krogstad, "Key Facts about Refugees to the U.S.," Pew Research Center, last modified October 7, 2019, <https://www.pewresearch.org/fact-tank/2019/10/07/key-facts-about-refugees-to-the-u-s/>.

¹⁰³ Office of Personnel Management, "Digital Forensic Specialist (Mobile Device Exploitation)."

possesses a mobile phone. This would require 41 mobile forensic experts at a salary cost of approximately 4.3 million to the U.S. government. This cost does not take into consideration the money the U.S. government also pays into retirement and health expenses. The overall cost is much higher than \$4.3 million; however, for this analysis, a comparison is made using the salary instead of the overall compensation package for the government employee. Figure 6 illustrates the time required to process the mobile phones of 85,000 refugees.

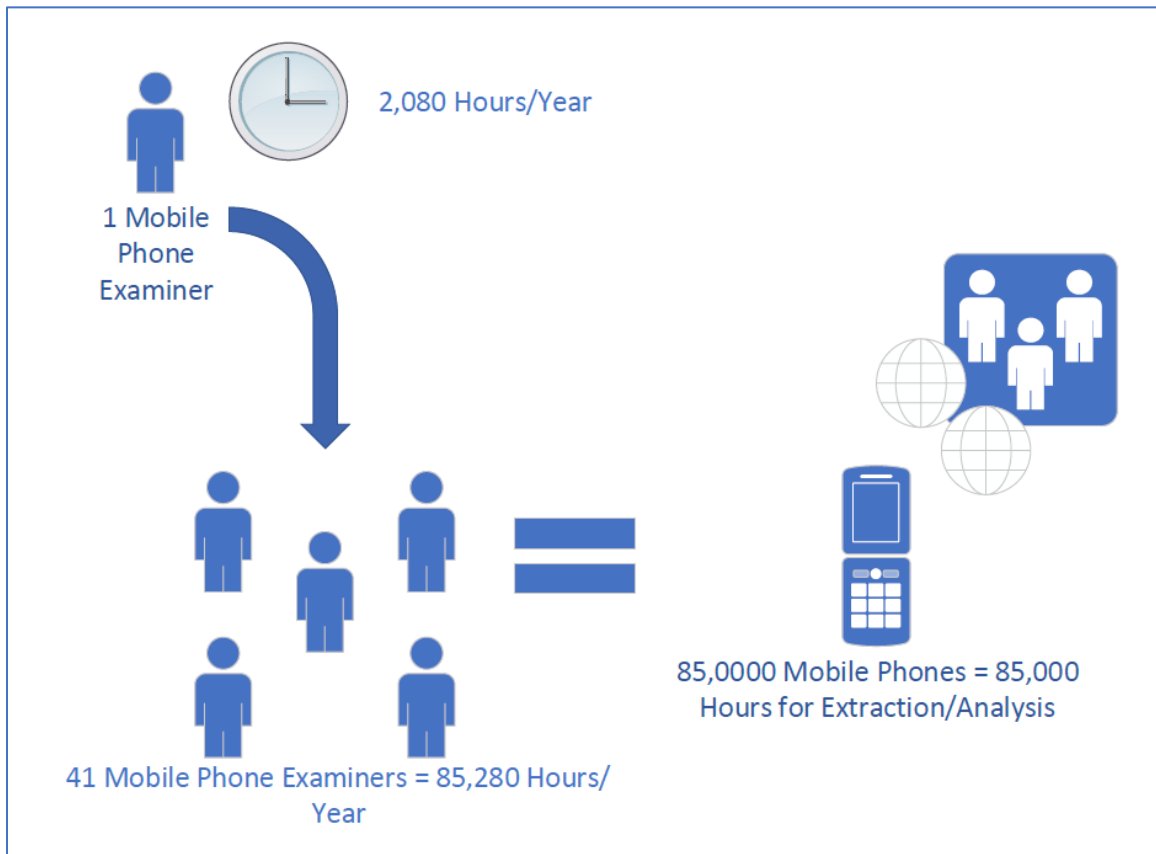


Figure 6. Mobile Phone Extraction by Hours

The screening of all mobile phones would increase refugee processing times, but it would be minimal as mobile phone data extraction/analysis would take approximately an hour. The extraction/analysis could be conducted while the applicant is being interviewed by the refugee officer so additional time would not incur.

b. Risk to National Security

By screening all mobile phones, it is logical to assume that by “casting a larger net” there is a greater probability to identify a terrorist that would not have been identified. This logic would infer this method has the highest potential for mitigating risks to national security. This alternative, the screening of all applicants’ mobile phones, does the most to minimize the threat.

c. Ethical Consideration

This approach does not minimize “arbitrary interference” as every refugee’s phone is screened and without cause. This immigrant population would be singled out compared to other immigrant groups, despite them posing the least risk.

3. Alternative: Threat-Based Targeted Approach

This approach strategically utilizes resources by focusing on those refugee applicants whose cases have been identified as having fraud/national security indicators. This minimizes the time and cost, the arbitrariness, and risk to national security.

a. Time and Cost

USRAP could target those groups that have been identified as having a national security and/or fraud concern for mandatory mobile phone screening. In the previous scenario, 10% of all refugee cases have a national/fraud concern. Out of the 85,000 refugee applicants, 8,500 applicants would be flagged. Five Mobile Phone Examiners would suffice for this group at a cost of approximately \$518,000. Figure 7 demonstrates the scenario.

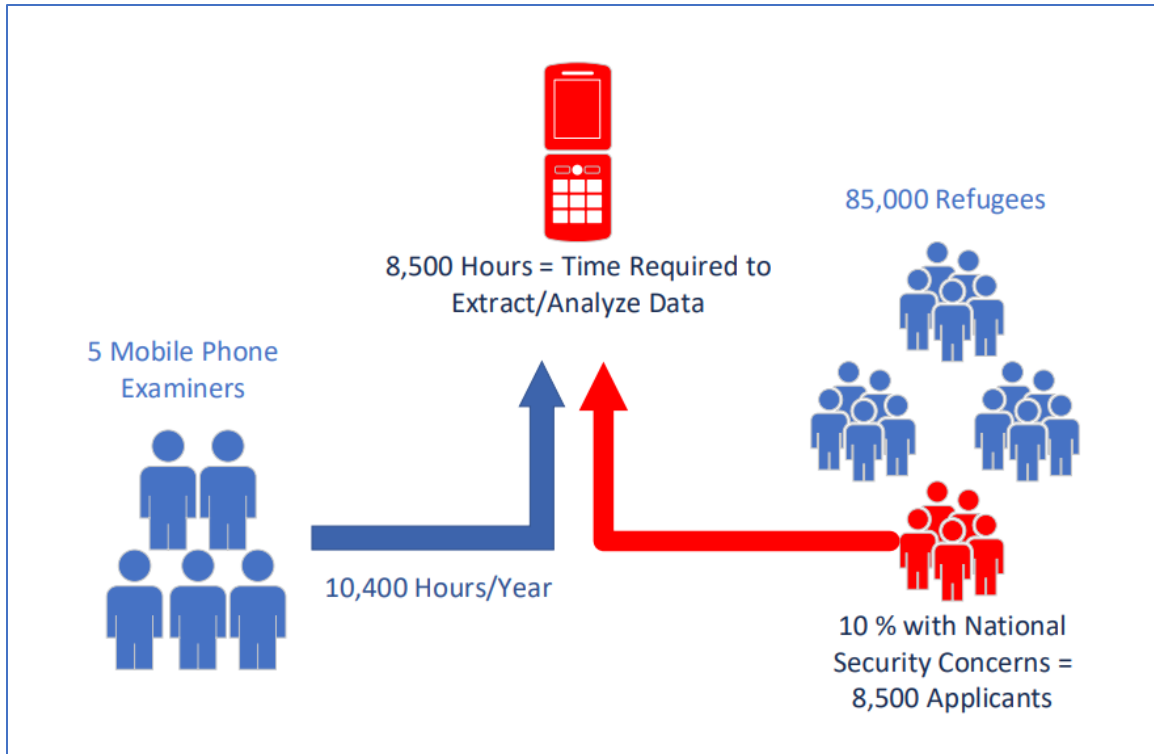


Figure 7. Mobile Phone Examiners for 85,000 Refugees

b. Risk to National Security

This alternative also minimizes the risk to national security like the second alternative. However, mobile phone screening is used on those groups that have already been identified as having fraud/national security concerns. Resources are used to focus on this subset of the refugee population.

c. Ethical Consideration

The mobile phone examination has the potential of confirming or dismissing the national security and/or fraud indicator that is uncovered. Under the current process in which no mobile phones are screened, an applicant's case that has been flagged for concerns may take months if not years until additional vetting can be completed. This proves problematic if the applicant is not a risk to national security as he is left to wait often in dangerous conditions. This alternative allows for the applicant's case to be streamlined so his case is not left in limbo for additional vetting to be conducted.

F. BEST POLICY ALTERNATIVE

The best policy alternative is a threat-based targeted approach as it ranks the highest against all three evaluative criteria. It optimizes the efficiency compared to other two alternatives by reducing the time and cost already experienced in the current environment. Additionally, the optimized efficiency proves to be of a humanitarian benefit as it would expedite the screening for refugees whose cases were flagged for fraud/national security concerns but were ultimately determined not to be a concern. For the second evaluative criterion, it minimizes the arbitrariness by selecting the subset of the refugee population whose cases have concerns. Lastly, while refugee population historically has posed the least threat among immigrant groups, it can be logically deduced that by focusing screening efforts on a subset of refugees whose cases have been flagged for fraud/national security concerns, that it would rank “high” in minimizing the risk to national security compared to Alternative 1.

Table 3. Policy Alternatives

Policy Alternative	Optimizes Efficiency		Ethical Consideration: Minimizes Arbitrariness	Minimize Risk to National Security
	Time	Cost		
Alternative 1: Status Quo	34,000 hours	\$ 1.7 million	High	Low
Alternative 2: Mandatory Screening of ALL Refugee Applicants’ Phones	85,000 hours	\$ 4.3 million	Low	High
Alternative3: Threat Based Targeted Approach of Screening Refugee Applicants’ Mobile Phones	8,500 hours	~ \$518, 000	High	High

G. POLICY ADOPTION

U.S. Citizenship and Immigration Services is composed of multiple directorates including the Fraud Detection and National Security (FDNS) directorate as well as the Refugee, Asylum, and International Operations (RAIO) directorate. Both directorates are responsible for vetting applicants and ensuring that they qualify as refugees. FDNS is concerned with the security aspect of the USRAP while RAIO is focused on humanitarian aspects. Each directorate's input would be necessary in the adoption of such a vetting initiative. It would require an interagency forum consisting of USCIS and its stakeholders, to include law enforcement and the intelligence community. A key stakeholder in the initiative would be CBP's National Vetting Center (NVC). The NVC's purpose is to both consolidate and coordinate the process of vetting individuals that seek entry into the United States.¹⁰⁴ The center would be an integral component in the adoption of such a policy.

H. POLICY IMPLEMENTATION

Prior to the implementation of mobile phone vetting program, the director of USCIS will consult with the designated Department of Homeland Security official in accordance with the Executive Order on Rebuilding and Enhancing Programs to Resettle Refugees and Planning for the Impact of Climate Change on Migration.¹⁰⁵ This senior-level employee, designated by the Department of Homeland Security, will be responsible for "coordinating the review and any revision of policies and procedures regarding the vetting and adjudications of USRAP refugee applicants."¹⁰⁶ In order for the mobile phone vetting program to be implemented, approval would be required by the senior-level official. After the approval, the following lines of effort (LOE) will be observed to ensure the successful implementation and maintenance of the program: (1) communication, (2) privacy, and (3) training.

¹⁰⁴ "National Vetting Center," U.S. Customs and Border Protection, accessed July 19, 2021, <https://www.cbp.gov/border-security/ports-entry/national-vetting-center>.

¹⁰⁵ Joseph Biden, Executive Order 14013, "Rebuilding and Enhancing Programs to Resettle Refugees and Planning for the Impact of Climate Change on Migration." Code of Federal Regulations, title 3 (2021 comp.): 8841.

¹⁰⁶ Biden, 8841.

1. Line of Effort (LOE) 1: Communication

Prior to the initiation of the USRAP vetting program and during its operation, a communication campaign will be employed by the U.S. Refugee Affairs Division. The campaign will convey the purpose of the mobile phone vetting program, the safeguards to the refugee's privacy, and the benefits of mobile phone screening. This information will be disseminated publicly by USCIS via already established communication channels. All international organizations and non-governmental organizations (NGOs) that work with USCIS will be notified of the additional vetting procedure. It is important that all internal and external parties are aware of the vetting procedure to include the refugee applicant himself. The message must be conveyed that mobile phone vetting is used as a last resort when screening applicants whose cases have been flagged for security concerns. The new procedure offers a benefit by potentially alleviating extended security processing times associated to cases with security concerns. All federal agencies responsible for the resettlement and security screening of refugees will be informed of the change.

2. Line of Effort (LOE) 2: Privacy

USCIS will establish a system to store the metadata collected from a refugee's mobile phone. The collection of metadata from an applicant's mobile phone would be temporarily stored within USCIS systems. In accordance with the Privacy Act of 1974, the data would be classified as a system of record as it could be retrieved by a person's name or other unique identifier.¹⁰⁷ This classification would require USCIS to issue a system of record (SORN) notice by means of the Federal Register as required by the act.

As required by law, a privacy impact assessment (PIA) would be required prior to USCIS issuing a SORN. The PIA informs the public what personally identifiable information (PII) is being collected, why it is being collected, and how it is being stored and shared. Part of the PIA is to determine the retention period of the collected data and the risks posed by the length of its retention. It will provide mitigation measures to protect the data from being compromised.

¹⁰⁷ "Systems of Records - Privacy Act," U.S. General Services Administration, accessed June 1, 2021, <https://www.gsa.gov/reference/gsa-privacy-program/systems-of-records-privacy-act>.

3. Line of Effort (LOE) 3: Training

The recruitment and training of certified mobile forensics is paramount to the success of a mobile phone screening program. The ability to attract mobile phone experts within the ranks of USCIS is a key priority as has been the need of DHS to recruit experienced information technology professionals.¹⁰⁸ Following the hiring of the needed expertise, initial and annual training will be needed to maintain a mobile phone forensics examiner's certification on a data extraction and analysis device. The selection of the mobile phone extraction device and software will be open to for public bid. Current companies involved in mobile phone forensics include Cellebrite, Oxygen, Grayshift, and EnCase.

I. POLICY EVALUATION

Finally, in accordance with the Foundations for Evidence-Based Policymaking Act of 2018, the mobile phone screening program will be evaluated from data collected during the screening process.¹⁰⁹ With the tentative launch of START,¹¹⁰ a new information data system set to launch in December 2021, additional datapoints will need to be added to the system.¹¹¹ START is a refugee case management system that proceeds its predecessor, the Worldwide Refugee Admissions Program System (WRAPS). Specifically, when a case has been flagged for a national security concern, there will need for a datapoint noting when a refugee case has been resolved, either by confirming or not confirming the fraud/national security concern, due to the mobile phone screening process. The ability to track this data will allow officials the ability to assess the effectiveness of the additional screening process. Furthermore, the time a case has been actively flagged as having a national

¹⁰⁸ Jory Heckman, "DHS Set to Launch Its 'Most Significant Hiring Initiative' as Part of Cyber Workforce Sprint," Federal News Network, last modified May 6, 2021, <https://federalnewsnetwork.com/cybersecurity/2021/05/dhs-set-to-launch-its-most-significant-hiring-initiative-as-part-of-cyber-workforce-sprint/>.

¹⁰⁹ Foundations for Evidence-Based Policymaking Act of 2018, H.R. 4174, 115th Cong., 1st sess. (January 14, 2019), <https://www.congress.gov/bill/115th-congress/house-bill/4174/text>.

¹¹⁰ This is not an abbreviation, but the name of the data system.

¹¹¹ National Conference on Citizenship, *A Roadmap to Rebuilding the U.S. Refugee Admissions Program* (Washington, DC: National Conference on Citizenship, 2020), 25, <https://ncoc.org/new-release-a-roadmap-to-rebuilding-the-u-s-refugee-admissions-program/>.

security/fraud concern until it is confirmed/not confirmed will be actively tracked and compared to prior time periods when there was not a mobile phone forensic program in place.

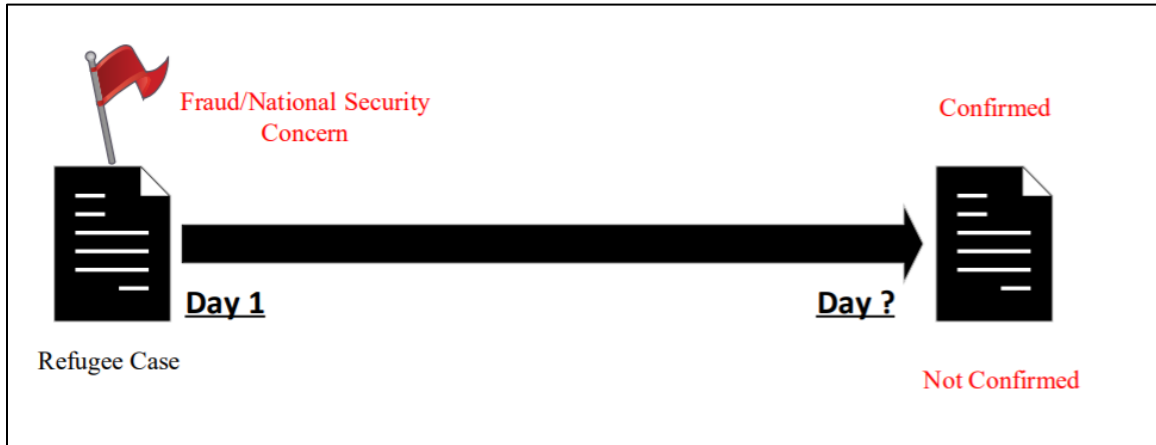


Figure 8. Policy Evaluation

The Refugee Affairs Division (RAD) can average the time spent resolving these cases and compare it to past averages when a mobile phone forensic program was not in existence. It would be expected that mobile phone forensic screening would decrease the security screening times currently experienced within RAD. It could then be determined if the cost to fund the program is commensurate with the result.

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V. CONCLUSION

The USRAP has come a long way since its inception in terms of vetting and the number of refugees that have been admitted into the United States. At the writing of this thesis, the refugee admission ceiling in the coming fiscal 2022 is anticipated to be 125,000 refugees, according to President Joe Biden.¹¹² This is in a stark contrast to former President Donald Trump's administration, which set the ceiling to the historical low levels of 15,000 refugees. With such an ambitious goal, it will prove difficult to meet due to the limited resources of the Refugee Admission Program. But as the USRAP begins to rebuild, it will need to seek more efficient and creative ways of vetting refugees.

This thesis has demonstrated that mobile phones play a significant role in the developing world. The mobile device's functions go well beyond it being just a communication tool. It can transfer money, give directions, and document an individual's life to name a few. As a result, these devices are indispensable to the refugee populations in the developing world. Refugees are often without community and security in the countries they reside. They continue to be in harm's way until they are permanently resettled; however, the mobile device allows refugees to stay connected to their communities regardless of the geographical divide and to receive important information necessary for their survival.

Additionally, it has been shown that the mobile device is a unique identifier of its user. The user's locations history and contacts can be reviewed among the other data stored within in the device. The mobile phone can serve as a proof of identity for the refugee similar to that of a passport or travel document. For the USRAP, the device enables the refugee officer to confirm the refugee's flight path from persecution among other datapoints. This could assist refugee officers in reviewing cases that are flagged as having fraud or national security concerns and being able to resolve the case in the field rather

¹¹² Joseph Biden, "Statement by President Joe Biden on Refugee Admissions," The White House, last modified May 3, 2021, <https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/03/statement-by-president-joe-biden-on-refugee-admissions/>.

than putting it on hold for further vetting, which would delay processing of the refugee's case.

If a mobile phone vetting program were adopted, the best policy alternative is for there to be a threat-based targeted approach. Only the mobile phones of those refugees' whose cases are flagged for fraud or national security would be vetted. Ultimately, a determination would be made based on the following evaluative criteria: (1) efficiency, (2) risk to national security, and (3) ethical consideration. The threat-based targeted approach optimizes efficiency and minimizes risk to national security while taking into consideration the privacy the refugees. For the policy to be adopted, an interagency forum that includes CBP's National Vetting Center is necessary. To successfully implement the program, several lines of effort would be required: (1) communication, (2) privacy, and (3) training. After implementation, the program would be evaluated on its ability to decrease vetting times compared to the time prior to the program's implementation. With the U.S. seeking to increase its humanitarian presence once again, the mobile phone serves as a form of identification that can verify refugees' identity.

It is the recommendation of this thesis that efforts be taken to initiate an interagency forum to discuss the vetting of refugees' mobile phones with the purpose of adopting and implementing the best policy alternative (threat-based targeted approach). It has been demonstrated that mobile phones can be utilized as a form of identification and that refugees are often in possession of them. The end result of such a program would be reduced vetting times, minimization of risk to national security, and consideration for the privacy of refugees.

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