

The Root of Evil

A Quantitative Study of the Origins and Rise of ISIL in Iraq

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ABSTRACT

The meteoric rise of the Islamic State of Iraq and the Levant (ISIL) over the last few years presents a complex problem for international security. Though the group only gained international renown in the last two years, ISIL's roots can be traced back to the turn of the century. Thus far, military interventions have failed to permanently defeat ISIL. This thesis seeks to explore, quantitatively, the potential merits of certain "soft" interventions designed to address the underlying societal conditions that may have contributed to ISIL's rise in Iraq over the last decade. Contrary to many prominent counterterrorism theories, my analysis finds no evidence that educational assistance or economic aid would prove effective in undermining ISIL. Rather, it seems that issues of ethnicity and legal rights may lie at the core of the problem. My analysis suggests that policies focused on increasing the strength and equality of the Iraqi population's legal rights – particularly across ethnic lines – may be a promising path to peace in Iraq.

There are a thousand hacking at the branches of evil to one who is striking at the root.

- Henry D. Thoreau, 1854

CHAPTER 1

INTRODUCTION

INTRODUCTION

A More Permanent Solution

In 2006, the US successfully coordinated a military campaign with Sunni tribal leaders in Iraq's northwestern Anbar province to drive Al-Qaeda in Iraq (AQI) from the region.¹ Since the US invasion of Iraq in 2003, AQI had emerged as a prominent terrorist threat and had used Anbar as an operating base from which to plan and coordinate attacks. Disenchanted with AQI's harsh and uncompromising ideology, the local Sunnis joined with US forces and rose up against the terrorist group in a movement known as the Sunni or Anbar Awakening. The joint intervention is widely regarded as a case study for exemplary counterterrorism; it is credited with stabilizing the country, and many call for the model's replication to defeat other terrorist threats. In a sense, the Awakening was a success: The combined forces did prevail against AQI and believed the group to be defeated.

The success, however, was short lived. Within a year of the Awakening, AQI had regrouped and risen again to its pre-Awakening level of activity. Ultimately, AQI evolved into The Islamic State of Iraq and the Levant, the group now famous for terrorizing the Middle East. Though the military success achieved in the Awakening worked in degrading the group, even this gold standard of counterterrorism only served as a temporary solution. Further, it attacked only at the symptoms of the problem. A more permanent solution, it seems, may require a deeper understanding of the roots from which groups like ISIL spring. It would address the preconditions of the countries in which such groups operate that allow for their continued resurgence.

¹ The entirety of this paragraph refers to the following source: Wilbanks, M., & Karsh, E. (2010). How the

Combatting terrorism indirectly through “soft” measures intended to address the preconditions that seem to incubate extremism is not foreign to policy discussions; common intervention options include improving education, providing economic aid, and reforming government behaviors. This thesis seeks to analyze the potential merit of such non-military strategies in combatting ISIL by shedding light on the underlying societal conditions that may have contributed to the group’s rise in Iraq. Contrary to many prominent theories, my analysis finds no evidence that either educational or economic improvements would be effective means of countering ISIL. Rather, it seems that issues of ethnicity and legal rights lie at the core of the problem. A pivotal factor in ISIL’s success is people’s willingness to accept – or even tolerate – the group as an alternative to the central government. Feelings of marginalization and distrust in the government among Iraq’s Sunni minority have tipped the balance in favor of ISIL in much of the country. My analysis suggests that policies focused on increasing the strength and equality of legal rights—particularly across ethnic lines—may be a promising path to peace in Iraq.

MOTIVATION

Introduction to the Problem

The current presence of the Islamic State of Iraq and the Levant (ISIL) in the Middle East poses a complex threat to security in the region and beyond. Since 2012, the group has experienced an unprecedented rise in power and support, and it currently controls a large portion of both Iraq and Syria.² Beyond its meteoric rise, ISIL has attracted international attention through its violent methods and uncompromising,

² Kagan, K., Kagan, F., & Lewis, J. (2014). A Strategy to Defeat the Islamic State. *Institute for the Study of War*.

extremist ideology. ISIL is widely regarded as a terrorist organization, but unlike typical extremist groups, ISIL's ultimate mission is to establish and rule an Islamic State that operates under a strict and ancient interpretation of Sharia law, the law of Islam.³ This paper does not delve deeply into ISIL's ideology, but it is important to note that ISIL identifies as a Sunni group, though many dispute the exact nature of its relation to Sunni Islam.⁴ ISIL's systematic and repeated human rights violations have inspired international outcry and the start of some international military efforts to “degrade and ultimately destroy” the group.⁵

Though ISIL only gained international renown following its spike in activity in 2012, its roots can be traced back 15 years. The group that would ultimately evolve into the ISIL we know now was originally called Jamā‘at al-Tawḥīd wa-al-Jihād (JTJ), or The Organization of Monotheism and Jihad, and was founded in 1999. Following the US invasion of Iraq in 2003, JTJ adopted the name Al Qaeda in Iraq (AQI) and concentrated its efforts on expelling US forces from and destabilizing the government of Iraq.⁶ AQI's presence and impact continued to grow in Iraq, rebranding itself as the Mujahidin Shura Council (MSC) in 2006 and soon after as the Islamic State of Iraq (ISI) at the end of the same year. After taking over parts of Syria in 2012, ISI became known as The Islamic State of Iraq and Syria (ISIS) or The Islamic State of Iraq and the Levant (ISIL).⁷ Though the group again rebranded in 2014 as The Islamic State (IS), key players in the fight against the group do not recognize this final name change. This paper adopts the same

³ SHARIA LAW - Islamic Sharia Law Explained. (n.d.).

⁴ Wood, G. (2015, March 30). What ISIS Really Wants. *The Atlantic*.

⁵ Timm, J. (2014, September 3). President Obama: We will “degrade and destroy” ISIS. *MSNBC*.

⁶ Simonelli, C. (2014, June 1). The Evolution of the Islamic State of Iraq and the Levant. *National Consortium for the Study of Terrorism and Responses to Terrorism*.

⁷ *ibid*

nomenclature used by President Obama in referencing the group – ISIL – which the balance of this paper will use to refer to any phase in the group’s evolution.

Motivation & Research Questions

The international community generally agrees that ISIL poses a serious threat. The most effective means through which to permanently defeat the group and restore peace to the area, however, remains a topic of discussion. Typically, the primary and predominant response to terrorist threats is military action. The response to ISIL has been no exception; at multiple times throughout the group’s history, the US and others have launched extensive military campaigns to defeat it. Some counterterrorism theories, however, argue for the use of “soft,” non-military measures to address the preconditions that might have spawned terrorism activity in the first place. The potential effectiveness of such soft measures is a common topic of study in existing academic literature. Many scholars have attempted to apply quantitative methods to uncover the relationships of certain societal phenomena with terrorism prevalence.

Military action has proven ineffective thus far in permanently destroying ISIL’s presence in Iraq, so this paper seeks to explore the potential for the application of “soft” interventions in the fight against ISIL. Specifically, this paper builds off existing research designs of quantitative studies on the origins of terrorism to create a customized quantitative methodology that sheds light on the relationships of certain socio-economic and cultural phenomena with ISIL activity in Iraq. In the end, this paper adopts a two-part research question: What can a quantitative analysis of the societal conditions in Iraq tell us about the most promising “soft” means through which to undermine ISIL? And what is

the potential for using such socio-economic and cultural data to create predictive models of ISIL's behavior?

EXISTING THEORIES & STUDIES

As context for my customized analytic methodology, this section explores existing scholarship and theories on the preconditions for and origins of terrorism. Particular emphasis is placed on quantitative studies that examine the socio-economic and cultural conditions that might breed terrorism. The purpose of this section is twofold. First, it provides an overview of existing scholarship methods and the resulting theories regarding the relationship of three types of phenomena with terrorism: educational phenomena, economic statistics, and issues of governance. Secondly, it describes some limitations inherent in these studies and how my own analysis seeks to overcome the limitations in a customized analysis specific to ISIL.

Theories of the societal preconditions that spawn terrorism generally argue for the relevance of three types of characteristics. Some scholars view the education level of a population as a critical factor. Other theories hold that economic variables possess significant predictive power with regards to terrorism. Finally, issues of governance and the government's treatment of its populations emerge as common topics of discussion. The majority of the quantitative studies regarding terrorism apply cross-country regression analyses on the relationships of certain indicators with terrorism incidence. On most fronts, no consensus exists as to the specific direction or nature of such relationships. The next sections provide a high level overview of the existing terrorism theories resulting from quantitative studies.

Theories of Education & Terrorism

Following the September 11th terrorism attack on the US, many counterterrorism theories called for increased educational assistance to end terrorism.⁸ The theory holds that terrorism stems from lack of opportunity, and education represents a prime way to increase societal mobility. Even now, President Obama believes that US efforts in Iraq should include interventions focused on increasing the education level of the population.⁹ The majority of academic work on the subject, however, finds little evidence for any relationship between education and terrorism. Krueger & Maleckova (2003) investigated the causal connections between several societal conditions and people's propensity to join and support terrorist organizations but found no reason for optimism that an increase in education would result in decreased levels of international terrorism.¹⁰ On the other hand, Zimmermann (2011) proposed a model in which the decision to resort to terrorist activities is based on a cost-benefit analysis. He argues the opportunity cost of terrorism increases with education.¹¹ Though the link between education and terrorism makes sense in theory, little quantitative backing has been found to support the relationship.

Theories of Economics & Terrorism

Similar to education, counterterrorism theories often call for economic aid and development. The argument holds that groups unhappy with the economic status quo may find it rational to resort to extremism to bring about the change they desire; economic interventions could thus strike at the root of the problem. Academic work on the subject,

⁸ Krueger, A., & Maleckova, J. (2003). Education, Poverty, and Terrorism: Is There a Causal Connection? *The Journal of Economic Perspectives*, 17(4).

⁹ President Obama Speaks with VICE News. (2015, March 17). *VICE News*.

¹⁰ Krueger & Maleckova, (2003)

¹¹ Zimmermann, E. (2011). Globalization and terrorism. *European Journal of Political Economy*.

however, finds mixed evidence of the link between economic variables and terrorism. Regarding the overall strength of the economy, Blomberg et. al. (2004) found that economies with low growth rates have higher incidences of terrorism, positing an inverse relationship between economic strength and terrorism.¹² Freytag et. al. (2011) reached a similar conclusion but presented a more nuanced picture of the relationship; the cross-country study found higher levels of consumption, trade openness, and investment to be negatively correlated with terrorism. The study also found a non-linear relationship of per capita income with terrorism, suggesting that up to a certain level, more income induces more terrorism. Beyond that point, however, more income leads to less terrorism, as the income effect takes place.¹³ Such studies point to economic development as an effective means of reducing terrorism.

Other studies, however, have shown opposing trends or evidence of no significant relationship. Kis-Katos et. al. (2011) found that terrorism incidence increases with GDP per capita and is more likely to originate from wealthier countries, contradicting the notion that terrorism is rooted in economic deprivation.¹⁴ Abadie (2006) and Krueger and Maleckova (2003) reached a similar conclusion but found no evidence of a significant association in either direction between poverty measures and terrorism.¹⁵ These results suggest that poverty and other economic variables have no direct causal impact on terrorism. They afford little reason for optimism that a reduction in poverty would effectively decrease extremist behavior. Though economic aid continues to feature

¹² Blomberg, S., Hess, G., & Weerapana, A. (2004). Economic conditions and terrorism. *European Journal of Political Economy*, 20(2), 463-478.

¹³ Freytag, A., Kruger, J., Meierrieks, D., & Schneider, F. (2011). The origins of terrorism: Cross-country estimates of socio-economic determinants of terrorism. *European Journal of Political Economy*, 27(1).

¹⁴ Kis-Katos, K., Liebert, H., & Schulze, G. (2011). On the origin of domestic and international terrorism. *European Journal of Political Economy*, 27(1), S17-S36.

¹⁵ Abadie, A. (2006). Poverty, Political Freedom, and the Roots of Terrorism. *The American Economic Review*, 96(2), 50-56. and Krueger & Maleckova, (2003).

prominently in counterterrorism discussion, no consensus has emerged in academia as to its potential effectiveness.

Theories of Governance & Terrorism

Across the board, quantitative studies on the origins of terrorism find strong evidence of the relationship between issues of governance, a government's treatment of its citizens, and terrorism incidence. Scholars point to a few different aspects of government behavior as significant, but the most consistent findings center on the government's protection of its population's civil and political rights and freedoms. Krueger and Maleckova (2003), as previously discussed, analyzed a number of political and economic indicators and found a lack of civil rights to be the strongest predictor of terrorist participation; namely, terrorists are more likely to come from countries with a lack of civil rights.¹⁶ Abadie (2006) also concluded that the lack of political freedom provides the most significant explanation for terrorism.¹⁷ In separate studies, scholars have concluded that unstable and failing governments serve as incubators for terrorism. These scholars call for policies aimed at stabilizing and strengthening regimes.¹⁸ Though these studies referenced describe different lines of reasoning connecting governance to terrorism, they all make some connection. In general, weak states that fail to protect the civil liberties of their citizens suffer higher rates terrorism incidence.

Current Research

¹⁶ Krueger & Maleckova, (2003), p14.

¹⁷ Abadie, (2006), p51.

¹⁸ Blomberg, et. al. (2004), p477; & Freytag et. al. (2011), p14; & Kis-Katos et. al. (2011), p29

This paper seeks to build on the insights and methods of the existing literature to create a customized analysis specific to ISIL. Though the following chapters provide detail of my analytic methodology, this section outlines how my study differs from existing work. In general, the studies reviewed above apply cross-country regression analyses to yield insights on the relationships of a limited number of socio-economic and cultural phenomena with terrorism incidence. The result is a series of generalized conclusions regarding the factors that make a country susceptible to terrorism activity. Such a methodology poses challenges to studying a specific terrorist group, challenges that this paper seeks to overcome through a more customized analytic model.

First, most studies focus on testing the quantitative validity of specific theories of the origins of terrorism, so they only include a limited number of variables. This paper adopts a more exploratory approach by including hundreds of variables, as I seek not just to test existing theories but to uncover any other relationships that might be relevant in explaining ISIL's rise. As such, I discriminate based on the quality rather than the content of the data. Further, though most studies glean insights from cross-country comparisons, this paper focuses solely on Iraq – ISIL's primary country of operation. To gain a more nuanced understanding of ISIL's activity in the country, I not only perform analyses on variations of certain phenomena over time on the national level, but I also study ISIL activity on the subnational level, comparing characteristics of Iraq's states that seem to contribute to their relative levels of vulnerability to ISIL attacks. Finally, this paper does seek to discover the relationships of specific phenomena with ISIL conflicts, but I also wish to know which types of socio-economic and cultural characteristics are significant in explaining ISIL's activities on a more general level. As such, I apply a factor analysis

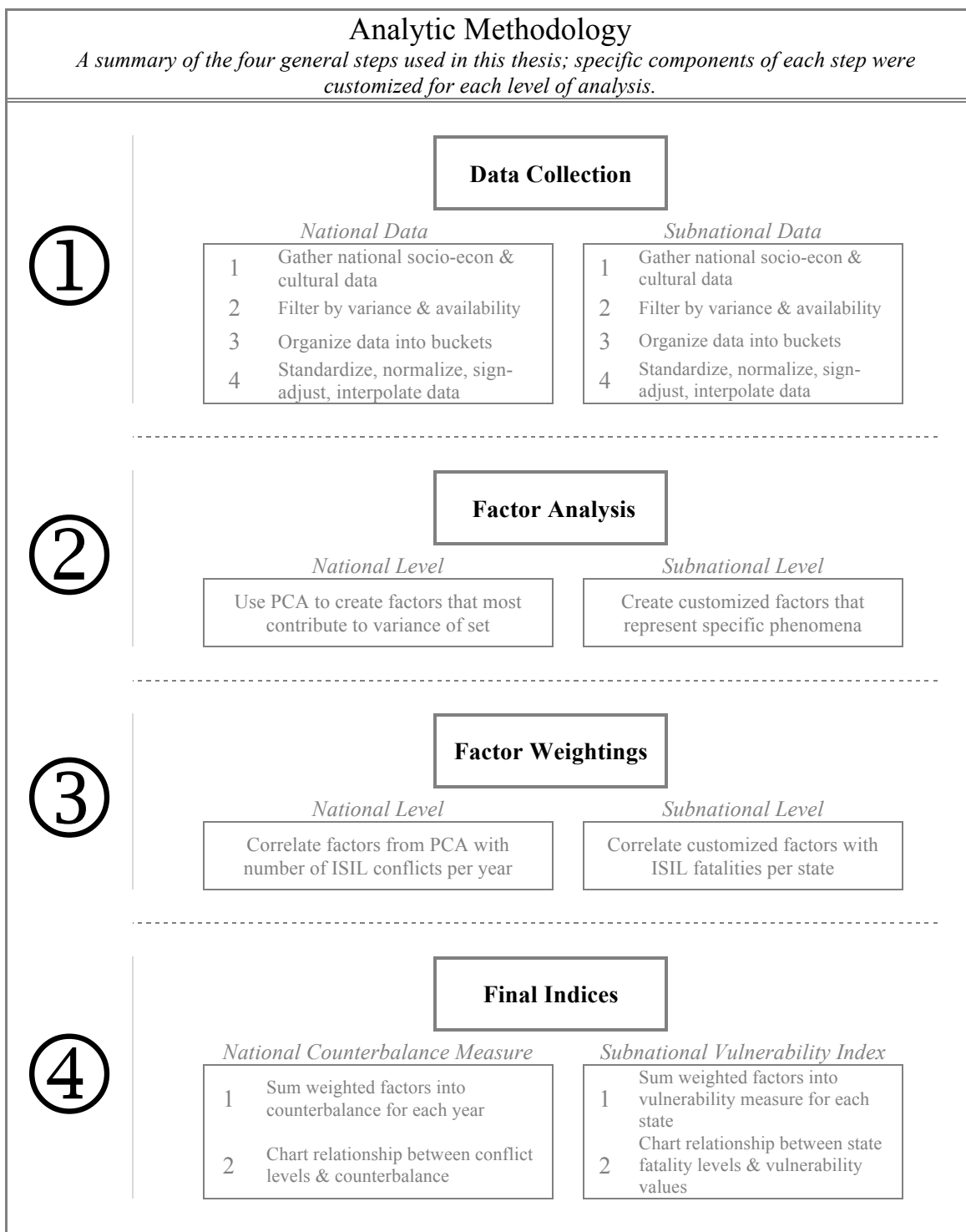
to form groups of similar indicators – called factors – that can be correlated with ISIL conflicts as composite measures. Though the customized methodology adopted in this paper still presents some limitations, which will be discussed in subsequent chapters, it allows for a more nuanced view of the conditions that may have mattered in ISIL's rise.

ANALYTIC METHODOLOGY & PAPER OVERVIEW

Quantitative Analyses on the National & Subnational Levels

The analytic methods employed in this thesis seek to discover the relationships of ISIL's conflict patterns with the socio-economic and cultural characteristics of Iraq on two levels: the national scale and the first subnational administrative level. Each level of analysis adopts a different research question, which requires slightly different methods. The national level analysis focuses on the conditions under which ISIL seems to find success, while the subnational analysis centers on the question of vulnerability, seeking to understand the characteristics that make Iraqi states prime targets for ISIL attacks. As a brief overview, I will outline the four-step methodology adopted in both, highlighting the differences in how it applies at each level of the analysis, and the statistical tools and data I use in each. In the end, the methodology used in this thesis serves two purposes. First, it allows me to determine the relationships of specific socio-economic and cultural phenomena with ISIL conflicts. Second, and on a more abstract level, both levels of analysis show the potential for creating comprehensive indices of socio-economic indicators that can help explain and predict the behavior of extremist groups like ISIL.

Methodology Summary



Analytic & Statistical Tools Used

For the bulk of my analysis on both levels, I use the same two statistical tools. While slightly customized for each section, I use factor analysis to create groupings of indicators that comprehensively represent important socio-economic and cultural phenomena in the Iraqi population. I also apply a correlation analysis to unveil the relationships between the factors and different measures of ISIL activity. Though only for the subnational analysis, the final analytic tool I use – a geographic information system (GIS) software – helps visually analyze and display my findings and certain cultural trends. The following is a summary of the three main analytic tools I use in this thesis.

<i>Analytic Tools</i> <i>Overview of the three analytic tools used in this thesis</i>		
Factor Analysis <i>Applied a Principal Component Analysis (PCA) on the national level and a customized factor analysis for the subnational analysis</i>	STATA Correlation Matrix <i>A statistical tool used in both analysis sections to determine raw relationships between factors and ISIL conflicts</i>	Geographic Information System (GIS) <i>A tool used to analyze and display relationships and trends geospatially (applied only for the subnational analysis)</i>

Thesis Roadmap

The remainder of this thesis is divided into three parts. The subsequent two chapters present the content and findings of the quantitative analysis that represents the original contribution of this paper, while the final chapter discusses the policy implications of the analysis more broadly. Chapter 2 is an in-depth study of the national-level characteristics of Iraq that might serve as counterbalances to ISIL conflict. Chapter

3 performs a similar study, but at the subnational level, to understand the factors that contribute to an area's vulnerability to ISIL attack. Finally, Chapter 4 brings the results together and discusses the implications of this paper's findings for policy decisions regarding ISIL.

Conclusions

The conclusions of this thesis stem from the results of my two quantitative analyses and from the implications of these results for counterterrorism policy. The major conclusions from each level of analysis are summarized below; the quantitative backing for these conclusions will be provided in the content of Chapters 2 and 3.

National-Level Analysis <i>Major Conclusions from Factor Correlations</i>	
①	Phenomena of all types bear significant relationships with conflict; at least one factor from every bucket appears in one of the two poles of the correlation spectrum.
②	Iraq's exportation and potential for production of agricultural products relates negatively with conflict.
③	A factor that includes a measure of the strength of legal rights has the strongest negative correlation with conflict.
④	Measures of energy imports and per capita energy use relate negatively with ISIL conflict levels.
⑤	The strength of Iraq's economy appears to be positively related to ISIL conflicts.
⑥	Social phenomena may be powerful predictors of ISIL conflicts; a social factor had the strongest positive correlation with conflict.
⑦	Conflict levels increase with the quality and comprehensiveness of Iraq's education system.
⑧	The relationship of health phenomena with conflict is unclear from this analysis.
⑨	ISIL conflicts appear to increase with greater levels of geographic and digital connectivity.

Subnational Analysis <i>Final Conclusions from Factor Correlations</i>	
①	Education and social factors are the strongest and most consistent predictors of an area's vulnerability to ISIL attacks.
②	Better education levels make a state more vulnerable to ISIL attacks.
③	ISIL attacks are concentrated primarily in majority-Sunni states.
④	States with higher levels of ethnic fractionalization experience higher fatality counts.
⑤	Health and wealth factors show no significant positive or negative association with fatality levels.

In terms of policy implications, this thesis uses the findings listed above to evaluate the relative merits of different “soft” interventions as applied to defeating ISIL. I find no evidence that interventions focused on education or economics would have any impact on ISIL’s success. Rather, my results, along with the context of the country’s ethnic tensions, suggest that strengthening the population’s legal rights and providing equal protection – especially across ethnic lines – may prove a promising path to undermining ISIL and may address the preconditions that allowed ISIL to rise in the first place.

CHAPTER 2

NATIONAL-LEVEL ANALYSIS

INTRODUCTION

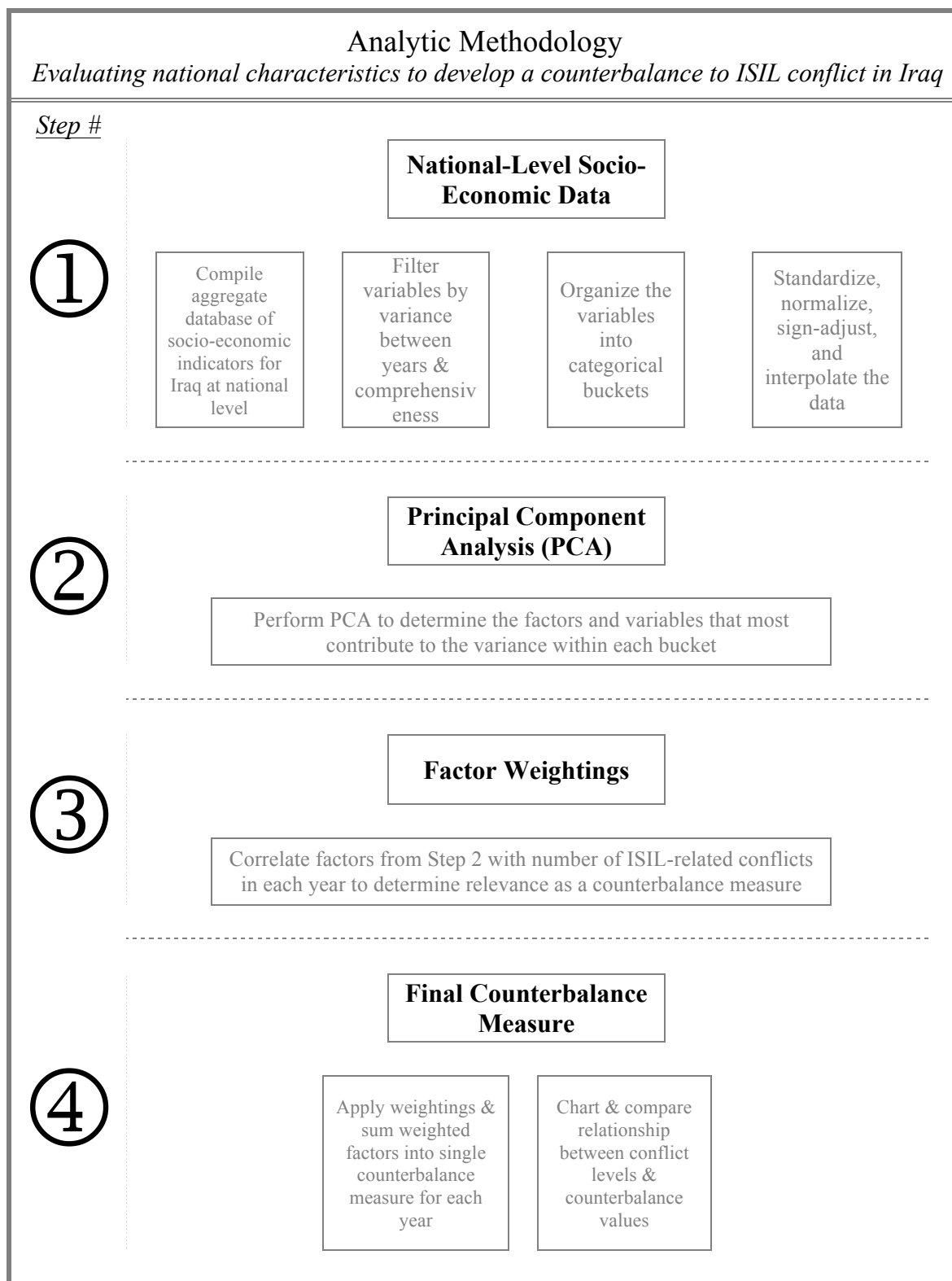
In developing theories of why and how a terrorist group emerges and how to prevent the same events from occurring in the future, it is important to examine the time before the group gained widespread recognition. There, we understand the cultural and societal conditions present in its area of operation that may have allowed it to emerge. As such, the purpose of this chapter is to comprehensively identify the variables that appear to matter in explaining the variance in ISIL conflict levels over time in Iraq. I use socio-economic data for Iraq and analyze its variance in contrast with the level of ISIL activity in the country to best understand the societal conditions that are at play in the rise and fall of ISIL over the past 12 years. In the end, this chapter sheds light on the relationships between national phenomena and ISIL conflict levels and produces a set of indicators that can serve as a counterbalance to conflict, helping us better understand how changes in Iraq's population and culture interact with ISIL activity.

METHODOLOGY

Constructing a Counterbalance Measure

The following chart outlines the broad steps that were taken to develop a counterbalance measure to ISIL conflict in Iraq from the group's first recorded conflict in 2002 until 2013, the last year in which conflict data are available. The subsequent sections of this chapter present each of the following steps in detail.

Overview of Methodology



Analytic Tools Used in Methodology

Analytic Tools	
<i>Overview of the two main analytic tools used in this chapter</i>	
Principal Component Analysis (PCA) <i>A form of factor analysis used to determine the factors (groupings of indicators) most responsible for the variance within each bucket of indicators</i>	STATA Correlation Matrix <i>A statistical tool used to determine raw relationships between factors derived from PCA and ISIL conflicts</i>

STEP 1: SOCIO-ECONOMIC DATA

Data Aggregation and Initial Filtering

Data on the national characteristics of Iraq were drawn from the World Bank's World Development Indicators (WDI). The WDI lists several thousand characteristics of hundreds of countries around the world.¹⁹ This chapter focuses solely on the national data, while Chapter 3 uses subnational data on Iraq to make comparisons between states. Having selected and downloaded the World Development Indicators in its entirety for Iraq, I next filtered the data down to only those necessary and sufficient for the analysis.²⁰ In this regard, four criteria were employed to filter down the variables, leaving exactly 180 indicators that met the following four standards.

<i>Data Filtering Standards</i>	
1. Non-Zero Variance	3. No Overlap with Other Variables
2. Over 50% Availability (2002-13)	4. Relevance to Analysis at Hand

¹⁹ World Development Indicators, The World Bank.

²⁰ For this step in the analysis, all manipulations were done in excel.

Bucketing Indicators

I next bucketed the 180 remaining indicators into seven categorical buckets.

Table 2.1: Categorical Indicator Buckets & Definitions

<i>Indicator Buckets</i>		
Bucket Title	Number	Details
1. Agriculture	8	<i>Indicators relating to agricultural capacity and/or yields</i>
2. Health	46	<i>Economic points & general attributes related to the population's health status</i>
3. Wealth	55	<i>Most economic variables & all financial info on the population</i>
4. Education	23	<i>Indicators relating to educational levels and achievements of the population</i>
5. Social	18	<i>Information about population and demographics of the people</i>
6. Infrastructure	9	<i>Characteristics and the sophistication of public and private infrastructure</i>
7. Government	21	<i>Indicators related to government activity and international interactions</i>

The methodology for selecting the buckets was relatively organic; I sifted through the data multiple times, condensing categories until I was left with seven that could not be synthesized further. This method of bucketing indicators has one major positive and one major negative implication when it comes to the factor analysis. On the positive side, this method proves useful later in the process as one can neatly divide the factors based on buckets; in other words, it will require less post-analysis manipulation to ensure buckets consist of similar variables. On the negative side, this method does not allow factors to be made up of indicators in more than one bucket. As such, any cross-bucket factors would be omitted.

Final Data Preparations

In order to perform a factor analysis on the 180 indicators, there were four final cleaning steps to get the data into a usable format. First, within each bucket, I standardized the data to either the population of Iraq or the total area of the country, depending on the type of variable. Standardization was used to put the data in a format that allows for comparison across indicators. The purpose of the analysis presented in this chapter is to determine which indicators are most responsible for the variance in the dataset; as such, absolute measures—such as total GDP or total arable land—make cross-indicator comparisons more difficult than relative measures—such as GDP per person or arable land as a percentage of total land area. I next sign-adjusted the data such that positive values represent “good” phenomena for which higher magnitudes are more desirable, and negative values indicate “bad,” undesirable phenomena. To this end, I made a judgment call for each variable, multiplying all those designated “bad” by negative one to reverse the sign.

Factor analysis relies on comparisons between different variables over a period of time, so values had to be present for each year of interest for every variable. As mentioned above, all indicators with data availability of 50% or more were included, so the missing values had to be interpolated. Interpolation is a statistical method that combines imputation, which is the process of replacing missing data points with estimated values determined by the available data points²¹, and extrapolation, which is the process of estimating values beyond the original range of raw data.²² Interpolation was done using the PCHIP (Piecewise Cubic Hermite Interpolation Polynomial) function

²¹ Imputation. (n.d.). In Wikipedia.

²² Extrapolation (n.d.). In Wikipedia.

in MatLab. This method was selected over linear interpolation, as linear interpolation assumes a linear relationship of the data, which does not apply for the data set at hand. Within each bucket, the data were interpolated across the entire time-series in question (2002-2013).²³

The final step in preparing the data for analysis was to normalize the data. This step proved especially necessary when dealing with the variety of types of data presented in the WDI. As the goal, again, is to perform comparisons across different types of indicators, the units and scales of the data had to be translated into a common form. While there are many methods for normalization, I chose to translate all the values for an indicator into Z scores, a method that normalizes based on deviations from the norm, as Z scores allow for easy comparisons across indicators with different units.

<i>Z Score Equation</i>
$Z \text{ Score} = [(value - mean) / (standard deviation)]$

After this final step, all 180 indicators were fully standardized, sign-adjusted, interpolated, and normalized within their respective buckets. As such, each variable could be analyzed statistically and compared to assess relevance to the questions at hand.

STEP 2: FACTOR ANALYSIS²⁴

Introducing Factor Analysis

²³ The interpolation code was based partially off one developed by Preston Kemeny for the class GEO 499, sent out 10/19/2014.

²⁴ The methodology for the factor analysis draws heavily from the methodology outlined in a handout distributed by Professor Greg van der Vink in GEO 499 that describes proprietary methods of his company, Novametrics LLC.

With the data set clean and ready for analysis, I next performed a factor analysis to identify factors most responsible for the variance in the data. The reasoning here is twofold. The first stems from the idea that indicators are not equal in their importance to a data set; while I have 180 indicators in my set, it is likely that a smaller subset of them control the majority of the variability. Factor analysis provides a rigorous method for identifying the most significant indicators. The second reason rests on the premise that some indicators may be related in how they influence a data set. In this regard, factor analysis proves useful as it groups indicators based on their contributions to the variance.

Regarding the specific type of factor analysis performed, I used exploratory (as opposed to confirmatory) factor analysis. Exploratory factor analysis is used when the researcher has no preconceived hypothesis about factor compositions.²⁵ For my purposes, I modified the exploratory nature of the analysis slightly by deriving the factors from within each bucket rather than across the entire dataset. Determining the factors within each bucket eliminates some of the potential for the inclusion of unrelated indicators in the composition of factors by ensuring each factor draws only from variables in the same category. Typically in factor analysis, one must go through the factors after the initial analysis to make sure the variables in a factor make logical sense; the method outlined here, however, makes this final step less necessary.

Analysis Methodology

To determine the factors, I used Principal Component Analysis (PCA) in STATA. PCA is used to identify the variables that have the most impact on the variance of the data and output them in the form of factors. Factors are not individual indicators; rather

²⁵ Exploratory factor analysis (n.d.). In Wikipedia.

they are groups of indicators bundled together with different weights.²⁶ Taken together, the factors PCA outputs make up the total variance of all the indicators. The factors are constructed based on analyzing the covariance of indicators to determine appropriate groupings.

There are three major steps in performing PCA: 1) Running the initial factor analysis, 2) Deciding on the number of factors for each bucket, and 3) Extracting the individual indicators from the factors.²⁷ Thus, I first imported the cleaned data for each bucket into STATA and ran an initial factor analysis to group the indicators into factors and show their relative contributions.²⁸ The most common method for deciding on the number of factors to include within each bucket is to generate a scree plot. A scree plot shows how much variance each factor can account for by calculating its “eigenvalue” - a measure of the variance a factor accounts for. Typically, only factors with eigenvalues over 1.00 are included, while the rest are disregarded.²⁹ I used this method to filter the number of factors. Finally, the actual composition of the factors was determined by finding the “factor loadings,” which represent the weights of each indicator in an individual factor.³⁰ The final output of this analysis consisted of tables showing the indicators included in each factor and their relative weights. The PCA outputs can be found in Appendix B, while Table 2.2 shows the full list of final factors:

²⁶ Novametrics LLC Packet, p15

²⁷ *ibid*, p16

²⁸ The STATA function “factor” was used in this step.

²⁹ Novametrics LLC Packet, p17

³⁰ The STATA function “rotate” was used in this step. To limit the indicators included to only those with significant contributions, I used the command “blanks=0.5” so that only indicators with factor loadings of 0.5 or higher were included.

Table 2.2: Final Compositions of Factors by Categorical Bucket

Agriculture Factors

AGR 1	AGR2
A1: Agricultural raw materials exports (% of merchandise exports)	A2: Cereal production (metric tons)
A3: Permanent cropland (% of land area)	A6: Crop production index (2004-2006 = 100)
A4: Agricultural land (% of land area)	A7: Food production index (2004-2006 = 100)
A5: Arable land (% of land area)	A8: Land under cereal production (hectares)

Health Factors

HLT1	
H4: Prevalence of wasting (% of children under 5)	H24: Improved sanitation facilities (% of population with access)
H5: Improved sanitation facilities, urban (% of urban population with access)	H26: Mortality rate, under-5 (per 1,000 live births)
H6: Prevalence of anemia among pregnant women (%)	H27: Maternal mortality ratio (modeled estimate, per 100,000 live births)
H8: Life expectancy at birth, male (years)	H28: Improved water source, rural (% of rural population with access)
H10: Prevalence of anemia among children (% of children under 5)	H29: Births attended by skilled health staff (% of total)
H11: Prevalence of anemia among non-pregnant women (% of women ages 15-49)	H31: Improved sanitation facilities, rural (% of rural population with access)
H12: Lifetime risk of maternal death (%)	H32: Malnutrition prevalence, height for age (% of children under 5)
H13: Mortality rate, neonatal (per 1,000 live births)	H36: Tuberculosis case detection rate (% , all forms)
H14: Birth rate, crude (per 1,000 people)	H38: Mortality rate, adult, male (per 1,000 male adults)
H15: Improved water source (% of population with access)	H39: Lifetime risk of maternal death (1 in: rate varies by country)
H16: Malnutrition prevalence, weight for age (% of children under 5)	H40: Health expenditure per capita (current US\$)
H17: Incidence of tuberculosis (per 100,000 people)	H41: Renewable internal freshwater resources per capita (cubic meters)

H18: Mortality rate, infant (per 1,000 live births)	H44: Fertility rate, total (births per woman)
H21: Prevalence of undernourishment (% of population)	H45: Improved water source, urban (% of urban population with access)
H22: Survival to age 65, male (% of cohort)	

HLT2	
H2: Health expenditure, private (% of GDP)	H34: Death rate, crude (per 1,000 people)
H3: Life expectancy at birth, total (years)	H37: Out-of-pocket health expenditure (% of total expenditure on health)
H19: Adolescent fertility rate (births per 1,000 women ages 15-19)	H42: Nurses and midwives (per 1,000 people)
H23: Physicians (per 1,000 people)	H43: Life expectancy at birth, female (years)
H25: Mortality rate, adult, female (per 1,000 female adults)	H46: Survival to age 65, female (% of cohort)
HLT3	
H1: Hospital beds (per 1,000 people)	H30: Immunization, measles (% of children ages 12-23 months)
H20: Tuberculosis treatment success rate (% of registered cases)	H33: Immunization, DPT (% of children ages 12-23 months)

HLT4	
H7: Health expenditure, public (% of GDP)	H9: Health expenditure, total (% of GDP)

HLT5	
H35: Newborns protected against tetanus (%)	

Wealth Factors

WLT1	
W1: Adjusted net national income per capita (current US\$)	W30: Industry, value added (current US\$)

W2: Employment in agriculture (% of total employment)	W31: Labor force, female (% of total labor force)
W3: Employment in industry (% of total employment)	W33: Merchandise exports (current US\$)
W4: Employment in services (% of total employment)	W34: Employees, agriculture, female (% of female employment)
W8: Employment to population ratio, ages 15-24, female (%) (modeled ILO estimate)	W35: Merchandise imports (current US\$)
W12: Consumer price index (2010 = 100)	W36: Merchandise imports from developing economies outside region (% of total merchandise imports)
W14: Export value index (2000 = 100)	W38: Net primary income (BoP, current US\$)
W15: Export volume index (2000 = 100)	W42: Price level ratio of PPP conversion factor (GDP) to market exchange rate
W18: GDP per capita (current US\$)	W43: Ratio of female to male labor force participation rate (%) (modeled ILO estimate)
W20: Goods exports (BoP, current US\$)	W44: Ratio of female to male labor force participation rate (%) (national estimate)
W21: Goods imports (BoP, current US\$)	W45: Employees, agriculture, male (% of male employment)
W22: Gross capital formation (current US\$)	W47: Total natural resources rents (% of GDP)
W26: Gross national expenditure (current US\$)	W53: Employees, industry, male (% of male employment)
W27: Household final consumption expenditure, etc. (current US\$)	W54: Employees, services, female (% of female employment)
W28: Imports of goods and services (current US\$)	W55: Employees, services, male (% of male employment)
W29: Imports of goods, services and primary income (BoP, current US\$)	

WLT2	
W5: Employment to population ratio, 15+, female (%) (modeled ILO estimate)	W25: Gross fixed capital formation (current US\$)
W6: Employment to population ratio, 15+, male (%) (modeled ILO estimate)	W48: Trade (% of GDP)
W7: Employment to population ratio, 15+, total (%) (modeled ILO estimate)	W49: Unemployment, female (% of female labor force) (modeled ILO estimate)
W9: Employment to population ratio, ages 15-24, male (%) (modeled ILO estimate)	W50: Unemployment, male (% of male labor force) (modeled ILO estimate)

W10: Employment to population ratio, ages 15-24, total (%) (modeled ILO estimate)	W51: Unemployment, total (% of total labor force) (modeled ILO estimate)
W23: Depth of the food deficit (kilocalories per person per day)	

WLT3	
W16: Food exports (% of merchandise exports)	W46: Real interest rate (%)
W32: Livestock production index (2004-2006 = 100)	W52: Employees, industry, female (% of female employment)
W39: Net secondary income (BoP, current US\$)	

WLT4	
W24: Gross domestic savings (current US\$)	W41: Net trade in goods and services (BoP, current US\$)
W40: Net trade in goods (BoP, current US\$)	

WLT5	
W17: GDP growth (annual %)	W19: GDP per capita growth (annual %)

WLT6	
W11: Energy imports, net (% of energy use)	W13: Energy use (kg of oil equivalent per capita)

WLT7	
W37: Net income from abroad (current US\$)	

Education Factors

EDU1	
E1: Primary education, pupils (% female)	E13: Ratio of girls to boys in primary and secondary education (%)

E2: Secondary education, vocational pupils	E15: Pupil-teacher ratio, primary
E3: Secondary education, teachers	E16: School enrollment, tertiary (% gross)
E4: Ratio of female to male primary enrollment (%)	E17: Primary education, teachers (% female)
E5: Primary education, teachers	E18: Pupil-teacher ratio, secondary
E7: Secondary education, pupils	E19: Ratio of female to male tertiary enrollment (%)
E8: Primary education, pupils	E20: Ratio of female to male secondary enrollment (%)
E11: Adjusted net enrollment rate, primary, male (% of primary school age children)	E21: School enrollment, secondary (% gross)
E12: School enrollment, primary (% gross)	E22: Children out of school, primary, male

EDU2	
E6: Children out of school, primary	E14: School enrollment, preprimary (% gross)
E9: Adjusted net enrollment rate, primary, female (% of primary school age children)	E23: Children out of school, primary, female
E10: Adjusted net enrollment rate, primary (% of primary school age children)	

Social Factors

SOC1	
S1: Age dependency ratio (% of working-age population)	S12: Age dependency ratio, young (% of working-age population)
S2: Population density (people per sq. km of land area)	S15: Internally displaced persons (number, low estimate)
S5: Population, female (% of total)	S16: Population ages 0-14 (% of total)
S7: Rural population (% of total population)	S17: Population ages 15-64 (% of total)
S9: Urban population (% of total)	S18: Population ages 65 and above (% of total)
S11: Age dependency ratio, old (% of working-age population)	

SOC2	

S3: Population growth (annual %)	S10: Urban population growth (annual %)
S4: Population in urban agglomerations of more than 1 million (% of total population)	S13: Battle-related deaths (number of people)
S6: Proportion of seats held by women in national parliaments (%)	S14: Internally displaced persons (number, high estimate)
S8: Rural population growth (annual %)	

Infrastructure Factors

IFS1	
I2: Commercial bank branches (per 100,000 adults)	I7: Road density (km of road per 100 sq. km of land area)
I3: Electric power consumption (kWh per capita)	I8: Secure Internet servers (per 1 million people)
I5: Internet users (per 100 people)	I9: Telephone lines (per 100 people)

IFS2	
I1: Automated teller machines (ATMs) (per 100,000 adults)	I6: Mobile cellular subscriptions (per 100 people)
I4: Fixed broadband Internet subscribers (per 100 people)	

Government Factors

GOV1	
G1: Research and development expenditure (% of GDP)	G11: Presence of peace keepers (number of troops, police, and military observers in mandate)
G4: Foreign direct investment, net outflows (% of GDP)	G14: Net official flows from UN agencies, IAEA (current US\$)
G6: General government final consumption expenditure (current US\$)	G15: Net official flows from UN agencies, UNFPA (current US\$)
G7: Foreign direct investment, net inflows (% of GDP)	G20: Arms imports (SIPRI trend indicator values)
G8: Military expenditure (% of GDP)	

GOV2	

G2: Grants, excluding technical cooperation (BoP, current US\$)	G10: Armed forces personnel (% of total labor force)
G3: Net official development assistance and official aid received (current US\$)	G13: Net ODA received per capita (current US\$)
G5: Net bilateral aid flows from DAC donors, Total (current US\$)	G21: Net bilateral aid flows from DAC donors, United States (current US\$)

GOV3	
G9: Strength of legal rights index (0=weak to 12=strong)	G19: Net official flows from UN agencies, UNHCR (current US\$)
G12: Net official flows from UN agencies, UNTA (current US\$)	

GOV4	
G16: Net official flows from UN agencies, UNDP (current US\$)	G18: Net official flows from UN agencies, UNICEF (current US\$)
G17: Net official flows from UN agencies, WFP (current US\$)	

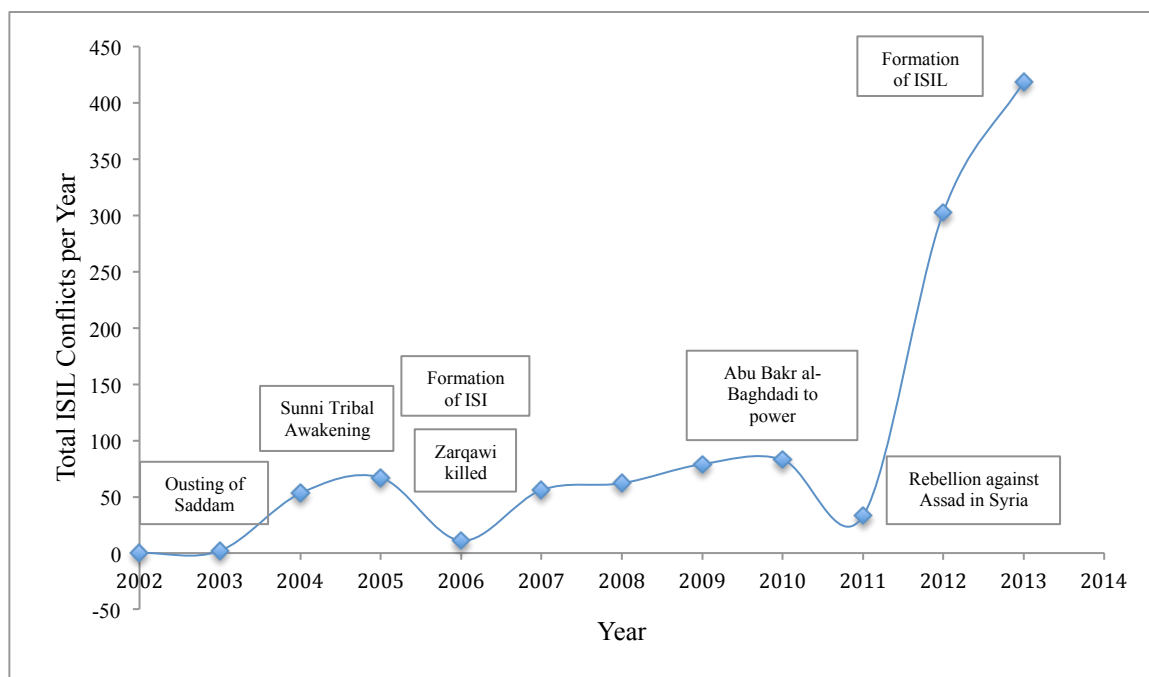
STEP 3: FACTOR WEIGHTINGS

ISIL Conflict Data

The conflict data used to correlate against the factors comes from a timeline I developed of ISIL activity from 2002-2013.³¹ There are multiple measures of conflict that one could use to correlate against the factors. The first and most obvious is the absolute number of attacks in a given year. Figure 2.1 below shows the total number of ISIL conflicts in Iraq from the years 2002 to 2013. The figure incorporates all 1,168 recorded ISIL conflicts in Iraq since 2002. For this figure, both fatal and non-fatal conflicts were included. The figure is annotated with key events that help explain the change in levels of ISIL conflict over the years.

³¹ Source for conflict data: Global Terrorism Database. *START*

Figure 2.1: Total Number of ISIL Conflicts in Iraq
(2002-2013)



Data Sources: *ISIL conflict data from the Global Terrorism Database*³²; *key events from Wikipedia*³³

Figure 2.1 shows a time series of the total number of ISIL-related conflicts in Iraq per year from 2002 to 2013 labeled with key events. It was not until the US invaded Iraq and displaced Saddam Hussain that ISIL's violent activity in Iraq began. Despite a slowdown around 2006 when combined US and Iraqi Sunni forces nearly destroyed the group, conflict levels remained relatively consistent from 2004 to 2011, when a new leader and a new mission to form an Islamic State ramped up ISIL conflicts to unprecedented levels.

Rather than absolute numbers of conflicts, fatality levels could also be used as a proxy for ISIL activity. In deciding which measure of conflict to use in this analysis, it is important to return to the question at hand. The purpose of this section is to identify the indicators with the most significant potential impact on ISIL's success in order to construct a counterbalance measure. While the number of people dying as a result of ISIL conflicts is a key indicator of the negative impact of the group, this section focuses more on the socio-economic and cultural conditions that underlie and help explain the level of ISIL activity. As such, I used the total number of conflicts - both fatal and non-fatal - to

³² Global Terrorism Database. *START*

³³ Timeline of Events Relating to the Islamic State of Iraq and the Levant. (p.d.). In Wikipedia.

correlate with the factors. Total numbers of conflicts gives a clean indication of levels of activity, while numbers of fatalities may be skewed by other factors (such as the type of attack or weapons used) and more serve as a proxy for the group's impact rather than level of activity.

Correlating Factors with Conflict

Having selected a measure of ISIL conflict, the next step was to find the relative weights of each factor to ultimately determine its significance as a counterbalance measure. The method used to assign weightings was to run a correlation between total numbers of conflicts per year and the factors. I first averaged the Z scores of each factor within a given year so that each factor could be condensed into a single value per year. I then ran a correlation matrix between all the factors and the total numbers of ISIL conflicts. The correlation values of each factor to conflict are listed in Table 2.3 below.

Table 2.3: Raw Correlations of Factors with Conflict in Ascending Order
(2002 – 2013)

<i>Raw Correlations with ISIL Conflicts In ascending order</i>	
Factor	Correlation
GOV3	-0.5858
AGR1	-0.5317
WLT6	-0.5209
GOV2	-0.2363
GOV4	-0.2044
SOC2	-0.1433
HLT5	-0.1249
HLT3	-0.1018
AGR2	-0.049
WLT5	0.0906

WLT7	0.1692
HLT4	0.1956
WLT3	0.2105
EDU2	0.2461
WLT2	0.3676
IFS2	0.4796
WLT4	0.5318
HLT2	0.5918
GOV1	0.6541
WLT1	0.7338
IFS1	0.7366
HLT1	0.754
EDU1	0.8756
SOC1	0.8804

Discussion of Factor Correlations

The raw correlations of each factor with conflict levels (which are listed in ascending order above) suggest some powerful insights. On a high level, the strength of factor correlations with conflict levels are not equal on either side of the spectrum; on the negative pole, only three factors show correlations with absolute values greater than 0.5, while the positive pole contains eight factors with correlations of 0.5 and higher. Further, the most negative correlation of a factor is -0.58 , while positive correlations rise as high as 0.88 . The two poles of the correlation spectrum represent the factors with the strongest relationships with conflict and are listed below for reference.³⁴

Table 2.3a: The Negative Pole
Three Factors most Negatively Related to Conflict

GOV3	-0.5858
AGR1	-0.5317
WLT6	-0.5209

³⁴ The 0.5 correlation cutoff is an arbitrary threshold. As there were stronger correlations on the positive side of the spectrum, I chose to delineate the poles by the magnitude of factors' correlations rather than including a certain number of factors from each extreme.

Table 2.3b: The Positive Pole
Eight Factors most Positively Related to Conflict

WLT4	0.5318
HLT2	0.5918
GOV1	0.6541
WLT1	0.7338
IFS1	0.7366
HLT1	0.754
EDU1	0.8756
SOC1	0.8804

The composition of the poles suggest that phenomena of all types bear significant relationships with conflict; each bucket of indicators has at least one factor present in the poles. Before proceeding with this chapter's analytic steps, the following sections discuss the most relevant insights from the direction and strength of the factor correlations from each of the seven categorical buckets.

Discussion of AGR Factors

The second most negatively correlated factor with conflict levels – AGR1 – represents Iraq's agricultural export levels and various measures of land fertility. Agriculture represents a significant portion of Iraq's economic activity, and it seems that the exportation of agricultural products along with the country's potential for production inversely relates to ISIL conflict levels. This relationship could either be a causative factor or a result of ISIL conflicts; lower levels of agricultural activity could make Iraq more susceptible to ISIL attacks or could be the result of the economic environment ISIL's presence has created. However, AGR2 – which measures actual production levels – does not bear a strong relationship with conflict levels, suggesting that the trade environment and potential for production are the more relevant phenomena.

Discussion of GOV Factors

Government factors appear in both poles of the correlation spectrum. On the negative side, GOV3 – which combines the country’s strength of legal rights with several measures of aid volumes – bears the single strongest negative relationship with conflict. As aid-flow indicators are present in multiple factors, the more significant insight stems from the inverse correlation between the strength of legal rights and conflict levels. Simply put, stronger legal rights co-present with years of relatively low levels of ISIL conflicts, and vice versa. As with any of these relationships, the causal direction is difficult to prove. It is possible that falling legal rights reflected the weakness of the government and gave ISIL fertile ground to gather support and ramp up activities without significant challenge. Alternatively, the relationship could be merely associational; ISIL’s presence likely strains the government and could result in weaker legal rights.

This finding proves especially relevant in light of the emphasis placed on legal rights in the literature on the roots of terrorism. Scholars consistently highlight political freedoms and rights as key indicators in understanding terrorism. Generally, the theory holds that weak and failing states that do not provide adequate political and civil liberties serve as incubators for terrorism, as such conditions breed unrest and rebellion.³⁵ As discussed in Chapter 1, Krueger & Maleckova (2003)³⁶, Blomberg et. al. (2004)³⁷, and Abadie (2006)³⁸ all concluded that a lack of legal and civil rights and freedoms provides the strongest predictor of terrorism activity. My results fall in line with these theories and

³⁵ Freytag, et. al. (2011), p29

³⁶ Krueger & Maleckova (2003) p13

³⁷ Blomberg et. al. (2004), p466

³⁸ Abadie (2006), p51

suggest a strong inverse relationship between Iraq's legal rights and ISIL's activity levels.

On the opposite end of the correlation spectrum, GOV1 – which encompasses government military expenditures, numbers of government peacekeepers, and aid flows from the UN – bears a strong 0.65 correlation with conflict. This relationship likely reflects government responses to the threat ISIL presents. ISIL aims to overthrow the current government and replace it with an Islamic State, so the Iraqi government has increased its military expenditures and personnel to fight the growing threat.

Discussion of WLT Factors

With three factors in the two poles, wealth factors feature the most prominently in the extremes. On the negative pole, WLT6 – which measures net energy imports and per capita energy use – is the third most negatively correlated factor with conflicts. In the literature I have surveyed, no discussions of the roots of terrorism or counterterrorism measures have commented on energy trade and use, either with regard to its effect on terrorism or as a proxy for other economic trends. As such, these results provide some unique insight. Though the direct function of energy-related matters in issues of terrorism is not obvious, it appears that the strength of Iraq's international energy trade agreements and its population's access to energy are inversely related with the level of ISIL conflict in the country.

On the positive side of the spectrum, two wealth factors – WLT1 and WLT4 – bear strong positive correlations – 0.73 and 0.53 respectively – with conflict. Though made up of a variety of indicators, both of these factors generally measure the strength of

the Iraqi economy; they include phenomena such as employment numbers, international trade levels, price levels, and GDP per capita. These results suggest that the strength of Iraq's economy is positively related to levels of ISIL conflicts. Though post-September 11th political rhetoric has often focused on increasing economic development to combat terrorism, academic work on the subject has come to varied conclusions.³⁹ The case for economic aid as a counterterrorism strategy rests on the idea that extremist behavior is born from lack of opportunity and poverty, and while some scholars have found evidence of this trend through an inverse relationship between the strength of a country's economy and terrorism incidence⁴⁰, others have found contrary results.⁴¹ My results fall in line with the latter of these conclusions. However, it should be noted that each of the studies cited above measured the relationships of individual economic indicators with terrorism, while my wealth factors represent composite measures of economic strength that incorporate many aspects of Iraq's economy. Regardless, my results suggest that the strength of Iraq's economy is directly linked to the incidence of ISIL conflicts.

Discussion of SOC Factors

My analysis only included two factors in the social bucket, but one of them – SOC1 – showed a 0.88 correlation with ISIL conflicts, the highest of any factor. The factor includes measures of age dependency ratios, population density, internally displaced persons, and the female percentage of the population. In times of high conflict, rates of population displacement typically spike, so the link between internally displaced persons and ISIL conflicts comes as no surprise. Of the other three phenomena included

³⁹ Krueger & Maleckova (2003), p1

⁴⁰ Blomberg et. al. (2004), p466

⁴¹ Kis-Katos et. al. (2011)

in this factor, only population density is a common subject of study in terrorism related work. Some work has found a direct relationship between population size and terrorism, citing the demographic stress that results from densely populating areas as the cause.⁴² My results suggest a similar conclusion regarding population density in Iraq. In the end, however, it appears that these select social phenomena have the highest predictive power with regards to ISIL conflicts of any combination of indicators.

Discussion of EDU Factors

By a small margin, EDU1 is the second most strongly correlated factor (a 0.88 correlation) with conflict. The factor is made up of 18 indicators, and all but one represent desirable educational indicators; the factor includes phenomena such as enrollment numbers, numbers of teachers, and teacher-pupil ratios. The desirable nature of the phenomena captured in EDU1 along with its strong positive correlation suggests a counterintuitive conclusion: ISIL conflict levels, it seems, rise and fall in direct relationship with Iraq's educational attainment and quality levels. This conclusion is particularly significant in light of the emphasis current policy theories place on education as a counterterrorism strategy: Along with poverty initiatives, many post-September 11th counterterrorism theories have called for increased educational assistance to end terrorism.⁴³ My results point to an opposing conclusion. As a small caveat, however, the other education factor, which consists almost entirely of negative educational phenomena, does not fall on the other side of the spectrum with a strong positive association with conflict; rather, it bears an insignificant positive correlation with

⁴² Freytag, et. al. (2011), p12

⁴³ Krueger & Maleckova (2003), p1

conflict. Positive, rather than negative, education characteristics seem the more powerful predictors of ISIL conflicts. Though relatively high education levels may not directly increase Iraq's vulnerability to ISIL attacks – the causal mechanism of the relationship is difficult to determine – increasing education seems unlikely to be effective in undermining ISIL.

Discussion of HLT Factors

The direction and magnitude of health factor correlations with conflict present unclear conclusions. HLT1 bears a 0.75 correlation with conflict, the third highest of all my factors, but it is made up of relatively even numbers of positive and negative measures of the population's health status. The factor includes indicators such as the incidence of different diseases, health risks, and mortality rates, but it also incorporates measures such as the prevalence of improved health facilities and government health expenditures per capita. HLT2, which also has a strong 0.59 correlation with conflict levels, is similarly made up of contradictory variables that capture both desirable and undesirable health attributes of the society. Though at first glance, one might conclude that these strong correlations make health factors important in understanding ISIL conflicts, the composition of the factors render any conclusions about the nature of the relationship between health phenomena and conflict unclear and difficult to determine.

Discussion of IFS Factors

Both of the infrastructure factors analyzed had positive correlations with ISIL conflicts, and IFS1 showed the fourth highest positive correlation with a 0.74 value. IFS1

can generally be described as measuring different aspects of connectivity in the country; it includes indicators of geographic connectivity – such as road density – and indicators of digital connectivity – such as telephone lines and Internet servers/users standardized to population. ISIL, it seems, finds more success and higher levels of activity in a more connected country. Studies of the underlying conditions in which terrorist groups thrive generally focus on population and government characteristics, but the strong relationship of this “connectivity factor” with conflict suggests that infrastructure variables play a pivotal role as well. It is possible that a more connected country provides an ideal environment for coordination and communication and allows extremist groups such as ISIL a greater degree of freedom and flexibility in their activities.

In sum, the following table outlines the most significant conclusions derived from the factor correlations with ISIL conflict levels.

<i>Major Conclusions from Factor Correlations</i>	
①	Phenomena of all types bear significant relationships with conflict; at least one factor from every bucket appears in one of the two poles of the correlation spectrum.
②	Iraq's exportation and potential for production of agricultural products relates negatively with conflict.
③	A factor that includes a measure of the strength of legal rights has the strongest negative correlation with conflict.
④	Measures of energy imports and per capita energy use relate negatively with ISIL conflict levels.
⑤	The strength of Iraq's economy appears to be positively related to ISIL conflicts.
⑥	Social phenomena may be powerful predictors of ISIL conflicts; a social factor had the strongest positive correlation with conflict.
⑦	Conflict levels increase with the quality and comprehensiveness of Iraq's education system.
⑧	The relationship of health phenomena with conflict is unclear from this analysis.
⑨	ISIL conflicts appear to increase with greater levels of geographic and digital connectivity.

Determining Factor Weightings

Returning to the quantitative analysis, the next step was to appropriately weigh the factors so as to be able to construct a final counterbalance measure. I first squared the correlation values seen above so as to lend greater significance to larger correlations. I then reversed the signs of the raw correlation values. Thus, factors that are positively correlated with increased conflict levels represent a negative counterbalance measure, while those values negatively correlated with conflict take on positive counterbalance values. Table 2.4 below shows the final weightings for each factor.

Table 2.4: Final Factor Weightings

<i>Final Factor Weightings</i>	
Factor	Weight
AGR1	0.283
AGR2	0.002
HLT1	-0.569
HLT2	-0.350
HLT3	0.010
HLT4	-0.038
HLT5	0.016
WLT1	-0.538
WLT2	-0.135
WLT3	-0.044
WLT4	-0.283
WLT5	-0.008
WLT6	0.271
WLT7	-0.029
EDU1	-0.767
EDU2	-0.061
SOC1	-0.775
SOC2	0.021
IFS1	-0.543
IFS2	-0.230
GOV1	-0.428
GOV2	0.056

GOV3	0.343
GOV4	0.042

STEP 4: FINAL COUNTERBALANCE MEASURE

Final Calculations

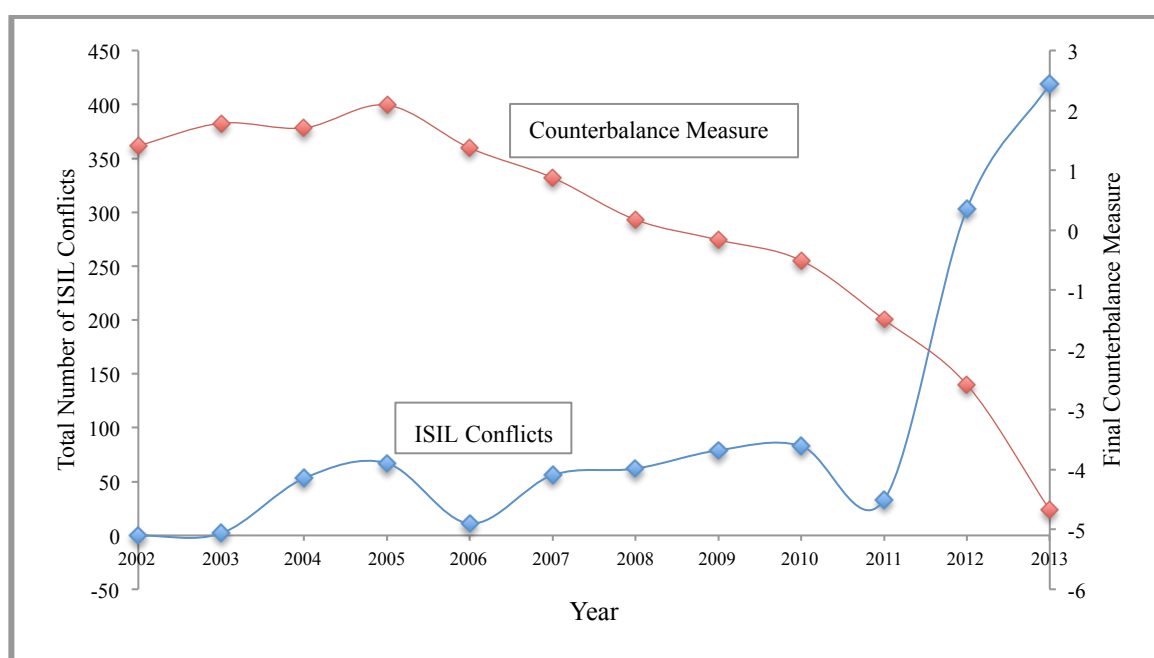
Having determined the relative weights of each factor based on its correlation to conflict, the final step was to construct an overall counterbalance measure to ISIL conflict in Iraq. I thus determined a single value for each year that represented Iraq's level of counterbalance to ISIL conflict in that year. After applying the factor weightings to the yearly values for each factor, so that the values of each factor were scaled to the magnitude of that factor's correlation with conflict, I summed the weighted factor values for each year to create a final counterbalance measure. Table 2.5 below shows the final results:

Table 2.5: Final Counterbalance Values to ISIL Conflict in Iraq

<i>Counterbalance Score</i>	
Year	Final Value
2002	1.412
2003	1.787
2004	1.709
2005	2.089
2006	1.373
2007	0.876
2008	0.175
2009	-0.162
2010	-0.506
2011	-1.493
2012	-2.582
2013	-4.676

Figure 2.2 graphically depicts the counterbalances to ISIL conflict in Iraq. The final counterbalance values listed above were plotted against a time series of the level of ISIL conflict for each year. The number of conflicts is scaled to the primary vertical axis while the counterbalance values are scaled to the secondary vertical axis on the right.

Figure 2.2: Counterbalance to ISIL Conflict in Iraq
(2002 – 2013)



Data Source: *ISIL conflict data from Global Terrorism Database*⁴⁴

Figure 2.2 relates the total number of ISIL-related conflicts in Iraq to the composite counterbalance measure constructed in this chapter for the years 2002 to 2013. There is a clear inverse relationship between the movement of the counterbalance values and the levels of ISIL conflicts, which is a positive indicator for the strength of the counterbalance measure constructed in this chapter.

Discussion of Results

As displayed in Figure 2.2 above, the results of this analysis make intuitive sense. In general, the counterbalance measures are inversely related to the level of conflict in that year, which logically follows from the methodology as the weighting for each factor

⁴⁴ Global Terrorism Database. *START*

was constructed using the inverse of that factor's correlation with conflict. The most striking parts of Figure 2.2 come at the end of the time series, when conflict levels reach an absolute peak and counterbalance levels an absolute trough. The drastic movement of the two measures in the last few years overshadows the variance in previous years. However, some interesting trends emerge from the first eight years of ISIL activity as well.

First, the counterbalance measure moves more gradually than the conflict levels. Despite widely varying levels of conflicts from 2002 to 2006, the counterbalance measure remains relatively constant. As mentioned previously, the 2006 dip in ISIL conflicts came as a result of the Sunni Tribal Awakening, in which Sunni tribal leaders joined with US forces to drive ISIL out of Anbar. As 2006 represents the lowest level of ISIL conflict in the time period, one might expect the counterbalance measure to reach an all time high in the same year. However, the counterbalance measure actually peaked right before the Sunni Awakening in 2005, suggesting that changes in the counterbalance measure, which is meant to reflect the underlying societal conditions of Iraq, might precede any related changes in ISIL conflict levels.

Though ISIL conflicts did not rise above 100 per year until the sudden spike in 2012 to 2013, the corresponding downward trajectory of the counterbalance measure happened more gradually. Following the peak in 2005, the counterbalance measure fell at a relatively constant rate until it reached an absolute trough when ISIL conflicts peaked. This gradual fall suggests a temporally offset relationship between the counterbalance index and ISIL conflicts: Changes in the underlying societal conditions, it seems, come before spikes in conflict. Further, the sudden spike in conflicts following a gradual fall in

the counterbalance might suggest a threshold effect, whereby societal conditions must fall below a certain point to create the perfect environment for a group like ISIL to rise. Regardless of the exact reasoning for the relationship in Figure 2.2, the results of this analysis and the strong inverse relationship between the counterbalance measure constructed in this chapter and conflict levels indicate that, using properly weighted socio-economic and cultural phenomena, one can create a powerful predictive model for ISIL conflicts verified through hindcasting.

DISCUSSION

Analysis Limitations

There are a few limitations to my analytic methodology that the reader should consider when contextualizing any conclusions derived. The limitations primarily stem from the data used and aspects of the methodology designed for this analysis. Regarding the data, and as described early in this chapter, the World Development Indicators provides one of the most comprehensive overviews of a country's socio-economic and cultural characteristics. However, it should be noted that some national phenomena are inevitably not included either for lack of availability or due to difficulties in quantification. As such, and as the content of this analysis was limited to the WDI, there are societal characteristics not included in this analysis. It is possible that some of the indicators and phenomena most important to understanding ISIL conflict variations are not captured in the WDI. In this case, there is no way for any such insights to be reflected in my results. Any conclusions I derive from this analysis are inherently limited to relative comparisons of the available and quantifiable phenomena and thus should not be regarded as absolute conclusions.

Beyond the data, there are three limitations one should note regarding the methodology presented in this chapter. The first stems from my use of Principal Component Analysis to determine the factors used in this chapter. Though PCA is a quantitatively rigorous method of combining indicators into factors, it also results in factors made up of many different characteristics. The correlations found in this chapter, from which many of my major conclusions were derived, reflect the relationships of the overall combinations of indicators rather than particular phenomena on their own. Though some granular conclusions can be determined through this analysis, insights about the relationships of individual indicators with conflict are more difficult to determine. The reason for selecting this form of factor analysis was that it affords a layer of analytic complexity that cannot be achieved through a standard regression analysis. PCA gives insight not only into groups of indicators that might otherwise not have been associated but also into the high level relationships of different categories of phenomena with ISIL conflicts.

The second limitation this methodology presents comes from the use of a correlation matrix to relate the factors to conflict. Correlation, as is widely known, does not necessarily imply causation. I cannot prove the mechanism through which the factors I have constructed are related to Iraq's susceptibility to ISIL conflicts; in other words, I cannot say with certainty that the phenomena captured in my factor analysis directly caused the rises and falls in ISIL activity. As such, the conclusions I derive serve to characterize the socio-economic and cultural conditions in Iraq during the years of heightened ISIL activity. They provide significant insight but do not speak to causal mechanism.

Finally, a third limitation applies to the predictive power of the final counterbalance measure. Recall that the purpose of the counterbalance measure was to quantitatively determine an index that could predict the years in which Iraq was most vulnerable to ISIL attacks. To create the index, I used the correlations of each factor with total yearly ISIL conflict numbers to determine the factors' weights in the counterbalance index. As such, the logic behind the construction of the index could be considered somewhat circular. This method does not diminish the overarching conclusion that socio-economic and cultural variables can be combined in such a way as to track with Iraq's susceptibility to ISIL conflicts, but it does have implications for the index's predictive power for future ISIL attacks. As demonstrated in Step 4 above, the robustness of the index can only be proven through hindcasting; any verification of the index's predictive power for future conflicts would require 2014 ISIL conflict data, which has not been published yet.

Results & Conclusions

The major conclusions from this chapter emerged from the final two steps of the analysis, in which I correlated my PCA-determined factors with ISIL conflict levels and developed a counterbalance measure meant to represent resilience to ISIL attacks over the time period of its existence. Turning first to the factor correlations, the results from this step gave insight into the relationships of socio-economic and cultural phenomena with ISIL conflicts. The major takeaways from this analysis are, again, listed below:

<i>Major Conclusions from Factor Correlations (repeated)</i>	
①	Phenomena of all types bear significant relationships with conflict; at least one factor from every bucket appears in one of the two poles of the correlation spectrum.
②	Iraq's exportation and potential for production of agricultural products relates negatively with conflict.
③	A factor that includes a measure of the strength of legal rights has the strongest negative correlation with conflict.
④	Measures of energy imports and per capita energy use relate negatively with ISIL conflict levels.
⑤	The strength of Iraq's economy appears to be positively related to ISIL conflicts.
⑥	Social phenomena may be powerful predictors of ISIL conflicts; a social factor had the strongest positive correlation with conflict.
⑦	Conflict levels increase with the quality and comprehensiveness of Iraq's education system.
⑧	The relationship of health phenomena with conflict is unclear from this analysis.
⑨	ISIL conflicts appear to increase with greater levels of geographic and digital connectivity.

The final step in my analysis combined the 24 factors, which were weighted by the strength of their relationship with conflict levels, into an index meant to characterize Iraq's resilience to ISIL conflicts in any given year. Though its predictive power can only be verified through hindcasting, Figure 2.2 shows that the counterbalance bears an inverse relationship with conflict levels, which speaks to the strength of the counterbalance index. It seems that the counterbalance values vary at a more gradual rate than conflict levels, which intuitively makes sense as socio-economic and cultural phenomena are likely to change at a slower rate than might be expected of terrorism incidence. Further, upward shifts in the counterbalance measure seem to be followed in the proceeding years by corresponding downward trends in conflict levels, and vice versa. On a year-by-year basis, the index cannot perfectly predict the level of ISIL conflicts. However, as a whole,

the results of this final step in my analysis show that properly weighted socio-economic and cultural phenomena can be combined to create a strong model of counterbalance to terrorism activity on the national level.

CHAPTER 3

SUBNATIONAL ANALYSIS

INTRODUCTION

The last chapter focused on a similar question to that which is explored by most academics studying the roots of terrorism; namely, it analyzed the factors and indicators that, on the national level, are significant in explaining the variance in ISIL activity over time in Iraq. This type of analysis addresses the threshold question of what, if any, socio-cultural and governmental factors set favorable conditions for the rise of an extremist group. However, this approach merely gives insight into where a group might emerge; it does not address the question of vulnerability of the citizenry at the subnational level and does not make comparisons between regions within the country.

The purpose of this chapter is to understand and characterize ISIL's activities on a more granular level. Very little academic work has operated at the subnational level; typically, data on different demographic groups in different areas within a country are limited. This is especially true for less developed countries such as Iraq. However, as ISIL's actions are primarily focused on Iraq, an analysis performed on the national level will yield little insight into the characteristics and conditions that make specific geographies prime targets for ISIL attacks. This chapter centers on vulnerability to ISIL attacks. By analyzing and comparing the states of Iraq on the subnational level, I seek to uncover the characteristics that can help predict an area's propensity to be targeted. This chapter investigates the question of where ISIL attacks.

The analysis in this chapter follows a similar logic to that of the previous chapter but with slightly different methods. While I will detail the exact methods used and the logic behind them below, on a high level, I still use socio-cultural data and analyze its variance in contrast with a measure of ISIL conflict. However, instead of analyzing the

variance in indicators over time, I examine differences between Iraqi states to gain insight into the societal conditions that make an area a more likely target for attack. In the end, this section will produce a set of indicators, weighted by their significance in explaining the variance in ISIL attacks, that will shed light on both the type of and specific factors that matter for explaining an area's vulnerability to attack. As such, the end use is twofold: to characterize ISIL's conflict patterns on the subnational level and to create a predictive model for an area's vulnerability to extremism.

Iraq's Administrative Levels

Before outlining the analytical methods used in this chapter, it is important to understand the subnational administrative levels Iraq, as my analysis centers on comparisons between states at the first administrative level. Administrative levels or divisions are subnational boundaries within a country delineated for the purpose of administration. The first administrative level refers to the largest political subdivisions in a country below the national level (e.g. States in the US), with second administrative levels and beyond further dividing the states into smaller political districts. Iraq's two primary administrative levels are called governorates (or provinces) and districts.

On the first administrative level, Iraq is divided into 18 governorates. The governorates vary widely in total area and population, but the more significant differences stem from their ties to the central government and their demographic makeups. Unlike the United States, many Iraqi governorates are only loosely tied to the central government. Years of internal conflict coupled with unstable levels of central authority have led to high levels of regional autonomy. Further, the 2004 Law of

Administration for the State of Iraq allocated broad powers to provincial authorities.⁴⁵ Under this law, the Northeast region of Iraqi Kurdistan effectively broke off from the rest of the country, with the three Kurdish governorates – Arbil, Dahuk, and Sulaymaniyah – falling wholly under the authority of the Regional Kurdish Government.⁴⁶ Further, though nominally under central Iraqi authority, many rural areas such as the Anbar province remain loyal to independent tribal sheikhs and violently resist encroachments from the central government.⁴⁷

While the Iraqi people tend to identify more with their province than their country, the population is also divided along ethno-religious lines. In terms of ethnicity and religion, Iraq is divided into three groups: Sunnis, Shias, and Kurds, with the majority of the population identifying as either Sunni or Shia. Of the two, the Shia majority currently occupies the ruling class, a dominance that has resulted in feelings of marginalization among the Sunni minority. Tensions between the two groups and grievances decried by the Sunni minority have been a constant source of tension in the country. The Kurds reside in the Northeast region of Iraqi Kurdistan and have adopted a separate identity from the rest of the country.

Issues of governance and identity have resulted in a country starkly divided along provincial and ethnic lines. As this analysis focuses on comparisons between the governorates of Iraq, it is important to understand the political and social dynamics at play in the country. These differences give insight into the qualities of a population that

⁴⁵ Jawad, S. N., & al-Assaf, I. (n.d.). Al Jazeera Center for Studies - Reports - The Empowerment of Governorates in Iraq [News].

⁴⁶ *ibid*

⁴⁷ Phillips, A. (2009). How al Qaeda lost Iraq. *Australian Journal of International Affairs*, 63(1), 64-84.

make them particularly vulnerable to ISIL attack. Table 3.1 below gives an overview of the 18 Iraqi governorates that comprise the first administrative level of Iraq.

Table 3.1: The 18 Governorates of Iraq

<i>The 18 Governorates of Iraq</i> <i>Iraq's 1st Subnational Administrative Level</i>					
Governorate	Code	Population <i>(thousands)</i>	Total Area <i>(sqkm)</i>	Pop. Density <i>(people/sqkm)</i>	Fatalities from ISIL Attacks <i>(per 10,000 people)</i>
Anbar	ANB	1,561	138,501	11	0.24
Arbil*	ARB	1,613	15,074	107	0.01
As Sulaymaniyah	SUL	1,879	17,023	110	0.00
Babil	BAB	1,821	5,119	356	0.31
Baghdad	BAG	7,055	4,555	1,549	0.48
Basrah	BAS	2,532	19,070	133	0.05
Dahuk*	DAH	1,129	6,553	172	0.00
Diala	DIA	1,443	17,685	82	0.78
Kerbala	KER	1,067	5,034	212	0.18
Kirkuk	KIR	1,396	9,679	144	0.29
Missan	MIS	971	16,072	60	0.02
Muthanna	MUT	719	51,740	14	0.01
Najaf	NAJ	1,286	28,824	45	0.05
Ninevah	NIN	3,270	37,323	88	0.20
Qadisiyah	QAD	1,134	8,153	139	0.05
Salaheldin	SAL	1,408	24,751	57	0.54
Thiqr	THQ	1,836	12,900	142	0.03
Wasit	WAS	1,211	17,153	71	0.04

**Arbil & Dahuk, two Governorates in Iraqi Kurdistan, were omitted from this analysis as the majority of sources used did not list any data for the two.*

Map 3.1: Iraq's 18 Governorates Colored by Ethnic Compositions

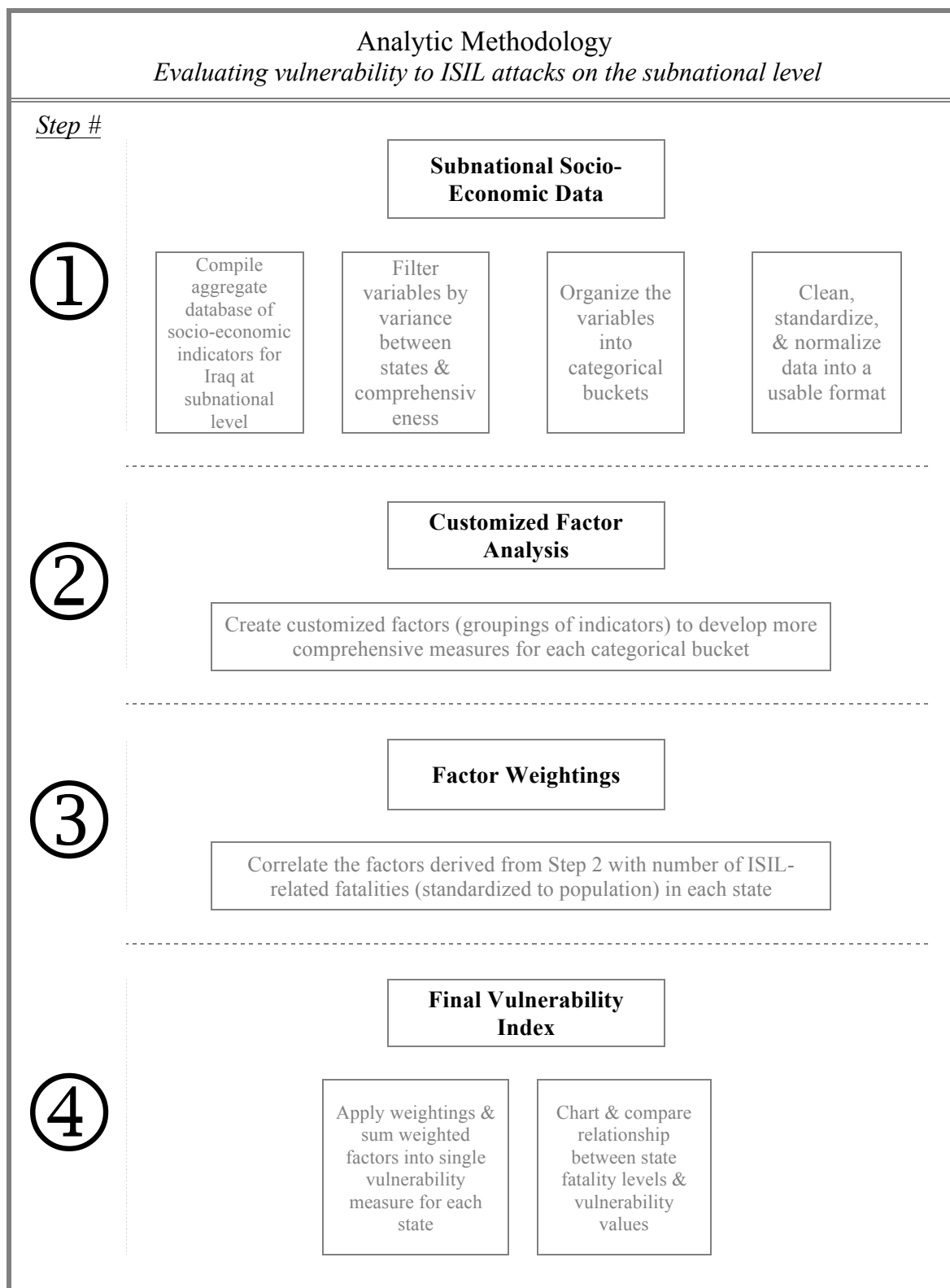


Data Source: Empirical Studies of Conflict (ESOC) Project⁴⁸

Map 3.1 clearly shows Iraq to be a country divided along ethno-religious lines. The Kurds primarily reside in Iraqi Kurdistan – the four most northern states. The Sunni population occupies the northwest region of the country, while the south is primarily made up of Shia populations.

⁴⁸ See The Empirical Studies of Conflict Project (ESOC).

Overview of Methodology



Analytic Tools Used in Methodology

Analytic Tools <i>Overview of the three analytic tools used in this chapter</i>		
Customized Factor Analysis <i>Adapted from STATA Factor Analysis, the creation of customized factors to capture socio-economic phenomena</i>	STATA Correlation Matrix <i>A statistical tool used to determine raw relationships between customized factors and ISIL conflicts</i>	Geographic Information System (GIS) <i>A tool used to analyze and display relationships and trends geospatially</i>

STEP 1: SUBNATIONAL SOCIO-ECONOMIC DATA

Data Collection

This chapter compares different regions within Iraq using data at the subnational level. As there is no comprehensive dataset for subnational indicators like the World Development Indicators, data collection proved a more cumbersome task. I first did a comprehensive search to find every available dataset on Iraq at the subnational level. The resulting database is a combination of many sources. While I will detail the sources used below, there are four key phenomena to note regarding subnational data collection for Iraq. These phenomena present several limitations to any interpretation of my results, which will be discussed in the conclusion of this chapter.

<i>Phenomena of Note in Iraq Subnational Data</i>
1. Available data fell into four categories: Education, Health, Wealth, & Social indicators
2. Most sources are highly specialized, only providing values for a couple variables each
3. The majority of the data was originally collected through household surveys
4. Time-series data is largely unavailable; no source provides values for more than two years for a given variable

Regarding the actual data collection, I primarily used data from seven sources with subnational data on Iraq. The first source I used was the World Bank, which publishes several subnational measures of poverty in Iraq.⁴⁹ By far, the most subnational data came from The Empirical Studies of Conflict Project (ESOC), which gathers and analyzes “micro-level” data on areas of the world stricken by conflict.⁵⁰ From ESOC, I collected health-related statistics, primarily regarding food and nutrition, and measures of subnational ethnic diversity. The second most fruitful source was the Institute for Health Metrics and Evaluation (IHME), which is an independent global health research shop from the University of Washington that employs a data-driven approach to solving world health problems.⁵¹ Through the Princeton data libraries, I accessed The Cross-National Time-Series Data Archives (CNTS), which listed several economic indicators at the subnational level.⁵² The majority of the health-related indicators I gathered came from the Complex Emergency Database (Ce-Dat), which publishes and monitors the health status of populations susceptible to complex emergencies, such as those in Iraq.⁵³ Finally, the richest source for subnational educational indicators was the World Inequality Database on Education (WIDE).⁵⁴ From WIDE, I gathered educational statistics organized by gender and age. The table below provides an overview of the sources accessed and their uses.

⁴⁹ See World Databank, The World Bank.

⁵⁰ See The Empirical Studies of Conflict Project (ESOC).

⁵¹ See The Institute for Health Metrics and Evaluation (IHME).

⁵² See The Cross-National Time-Series Data Archives (CNTS).

⁵³ See Complex Emergency Database.

⁵⁴ See World Inequality Database on Education (WIDE).

Table 3.2: Subnational Data Sources

<i>Subnational Data Sources Used</i>			
Data Source	Indicators Used	Date Accessed	Originally Found
1. The World Bank	Malnutrition & poverty statistics	12/10/14	http://data.worldbank.org/data-catalog/subnational-malnutrition-database
2. The Institute for Health Metrics & Evaluation (IHME)	Health statistics	12/10/14	http://ghdx.healthdata.org
3. The Cross-National Time-Series Data Archives (CNTS)	Economic, Social, Political Indicators	12/10/14	http://www.databanksinternational.com/Princeton/
4. The Empirical Studies of Conflict Project (ESOC)	Health/nutritional indicators & ethno-religious data	12/10/14	https://esoc.princeton.edu/files/iraq-wfp-survey-data
5. Complex Emergency Database (Ce-Dat)	Malnutrition, vaccination, and mortality statistics	12/10/14	http://www.cedat.be/tables/
6. World Inequality Database on Education (WIDE)	Educational indicators	12/15/14	http://www.education-inequalities.org/
7. Wikipedia	Governorate population values	12/15/14	https://www.wikipedia.org/

The social indicators used were a combination of values taken directly from data sources and new indicators I derived from those values. I gathered population and area values for Iraq's governorates from Wikipedia⁵⁵, and from these I calculated population density. From ESOC, I gathered the ethno-religious composition of each state, which came in the form of the proportion of each population that identifies as Sunni, Kurd, and Shia. As ethnic tensions are commonly cited as a source of conflict in Iraq, I also developed a measure of ethnic fractionalization⁵⁶. There are many ways scholars have

⁵⁵ Governorates of Iraq (n.d.). In Wikipedia.

⁵⁶ Ethnic fractionalization provides a measure of how divided an area is along ethnic lines.

measured ethnic fractionalization, but I decided to apply a customized version of the Herfindahl index. The Herfindahl index is an economic concept designed to measure fractionalization in and the competitive landscape of an industry.⁵⁷ The index is calculated by taking the sum of the squares of market shares of firms in an industry. Though designed for a different line of study, the Herfindahl index provides a useful framework for measuring the ethnic fractionalization of an area; by using proportions of each state's populations that fall in each ethnic category in place of firms' market shares, the same calculation will yield a measure of ethnic diversity. As a slight customization, I subtracted each state's fractionalization value from one to have higher values represent more heterogeneous states.

<i>Ethnic Fractionalization Calculation</i>
$EF = 1 - [(\text{prop. Sunni})^2 + (\text{prop. Kurd})^2 + (\text{prop. Shia})^2]$

Initial Data Filtering

Having aggregated a database of all indicators available at the first administrative level, I next filtered the variables down to only those that could be used in a cross-governorate analysis. As data at the subnational level is far sparser than at the national level, I used slightly less strict data filtering standards than in those listed in the previous chapter. Two main criteria dictated the standards for inclusion. First, I included only indicators for which the source listed a value for every governorate. Secondly, as some sources listed the same values for every state, which renders the variables useless for the

⁵⁷ Herfindahl index. (n.d.). In Wikipedia.

purposes of this analysis, only indicators with significant variance between governorates were included. 108 indicators met these two filtering criteria.

Bucketing Indicators

As with the national-level analysis, I next bucketed the 108 indicators into four categorical buckets. In general, each source only listed a certain type of indicator, so the categorization required little interpretation. Table 3.3 provides an overview of the four buckets.

Table 3.3: Categorical Indicator Buckets & Definitions

<i>Indicator Buckets</i>		
Bucket Title	Number	Details
1. Wealth	35	<i>Most economic variables & all financial info on the population</i>
2. Health	33	<i>Economic points & general attributes related to the population's health status</i>
3. Education	33	<i>Indicators relating to educational levels and achievements of the population</i>
4. Social*	7	<i>Information about population and demographics of the people</i>
*The social indicators were limited in availability, so the bucket only encompasses population, area, and ethnicity indicators.		

Final Data Preparations

As with the national-level analysis, I standardized the data to either the population or area of the governorates so as to allow for accurate cross-indicator and cross-governorate comparisons. The vast majority of the subnational indicators were already standardized to population, and none but population density required standardization to

area. I next normalized the data using the same Z score equation as described in the previous chapter.

Finally, I derived a single value for each governorate for each indicator. As noted above, the majority of the subnational indicators only listed values for one year. Some, however, listed values for up to a maximum of three years. In these cases, I averaged all of the yearly values available to designate a single value for the indicator. One obvious limitation that emerges from this method is that the indicators will have to be compared based on measures that may have come from different years. Given the limited data available in time-series form, inter-temporal analyses would have been ineffective. As such, instead of using the variables to show how governorates change over time, I instead use the subnational indicators to give a static snapshot of each governorate. This method changes the nature of the analysis, shifting the focus from the variance in indicators over time to the variance in certain measures between governorates. This final cleaning step left all 108 indicators standardized, normalized, and distilled down to a single value per governorate.

STEP 2: CUSTOMIZED FACTOR ANALYSIS

Introducing a Customized Factor Analysis

At the national level, I used Principal Component Analysis to find the groupings of indicators most responsible for the variance in the entire dataset. This chapter adopts a different approach to the construction of the factors due to two key differences in the data available at the subnational level. The first difference is that the data are far more limited in availability at the subnational level. The second difference, and the more significant one, stems from the nature of the indicators available at the subnational level. While the

indicators from the WDI were relatively comprehensive in the features they profiled, the subnational data set I compiled has a narrower scope of content. Though there are over 30 indicators in the health, education, and wealth buckets, many of the indicators in each bucket measure similar phenomena. One of the useful aspects of PCA is that it provides a quantitatively rigorous way of creating clearly delineated groupings of indicators when no divisions are abundantly evident from mere inspection of the data. PCA thus groups indicators together based on similarities in how they deviate from the mean. Though this applied at the national level, the subnational buckets I compiled all had very clear divisions of indicators. As such, I decided to construct the factors by hand, grouping together indicators based not on their deviations from the mean but rather based on the phenomena they measure.

The final compositions of the factors constructed in each bucket are named and grouped by the specific feature of the population they characterize. This method of constructing the factors has both positive and negative implications for my analysis. On the positive side, this method eliminates the possibility of indicators being grouped together by chance. Each factor falls along a singular vein of content, so there is no questioning the relatedness of the indicators. On the negative side, one might argue that grouping the indicators by inspection is quantitatively arbitrary and might eliminate any insights that could be derived from unexpected groupings of indicators.

Addressing these drawbacks in turn, I believe the natural divisions I saw in the available indicators produced factors that were similar enough to mitigate worries about arbitrary groupings. However, that is a subjective interpretation that should be assessed by the reader in inspecting the factor compositions below. With regards to the second

potentially negative implication of using customized factors, it is true that this method will not yield insight regarding unexpected relationships between indicators. However, grouping the indicators based on content also affords a valuable analytic benefit. In the end, the goal of this analysis is to understand which phenomena have significant relationships with ISIL activity. As such, organizing the factors around specific socio-economic features gives more pointed insight into the relationship of individual indicators and specific types of indicators with ISIL activity.

Factor Compositions

In the four categorical buckets combined, I constructed 36 factors – ten in the education bucket, sixteen in the wealth bucket, five in the health bucket, and five in the social bucket. Table 3.4 provides the full list of factors and their respective indicators.

Table 3.4: Final Compositions of Factors by Categorical Bucket

Education Factors

Poorly Educated	Average Education Level
E1: In bottom 20% of education distribution, Female	E16: Mean years of education Ages 20-24, Female
E2: In bottom 20% of education distribution, Male	E17: Mean years of education Ages 20-24, Male
E3: In bottom 20% of education distribution, Total	E18: Mean years of education Ages 20-24, Total
Never Been to School	Overage Primary School Attendance
E19: Never been to school, Female	E22: Overage primary school attendance (in primary school), Female
E20: Never been to school, Male	E23: Overage primary school attendance (in primary school), Male
E21: Never been to school, Total	E24: Overage primary school attendance (in primary school), Total

Undereducated	Secondary School Completion Rates
E4: Less than 2 years of schooling Ages 20-24, Female	E10: Lower secondary completion rate ages 15-24, Female
E5: Less than 2 years of schooling Ages 20-24, Male	E11: Lower secondary completion rate ages 15-24, Male
E6: Less than 2 years of schooling Ages 20-24, Total	E12: Lower secondary completion rate ages 15-24, Total
E7: Less than 4 years of schooling Ages 20-24, Female	E13: Lower secondary completion rate children, Female
E8: Less than 4 years of schooling Ages 20-24, Male	E14: Lower secondary completion rate children, Male
E9: Less than 4 years of schooling Ages 20-24, Total	E15: Lower secondary completion rate children, Total
Primary School Completion Rates	Pre-Primary Education Attendance
E28: Primary completion rate ages 15-24, Female	E25: Pre-primary education attendance Ages 3-4, Female
E29: Primary completion rate ages 15-24, Male	E26: Pre-primary education attendance Ages 3-4, Male
E30: Primary completion rate ages 15-24, Total	E27: Pre-primary education attendance Ages 3-4, Total
E31: Primary completion rate children, Female	
E32: Primary completion rate children, Male	
E33: Primary completion rate children, Total	
Female Education	Male Education
E1: In bottom 20% of education distribution, Female	E2: In bottom 20% of education distribution, Male
E4: Less than 2 years of schooling Ages 20-24, Female	E5: Less than 2 years of schooling Ages 20-24, Male
E7: Less than 4 years of schooling Ages 20-24, Female	E8: Less than 4 years of schooling Ages 20-24, Male
E10: Lower secondary completion rate ages 15-24, Female	E11: Lower secondary completion rate ages 15-24, Male
E13: Lower secondary completion rate children, Female	E14: Lower secondary completion rate children, Male
E16: Mean years of education Ages 20-24, Female	E17: Mean years of education Ages 20-24, Male
E19: Never been to school, Female	E20: Never been to school, Male
E22: Overage primary school attendance (in primary school), Female	E23: Overage primary school attendance (in primary school), Male
E25: Pre-primary education attendance Ages 3-4, Female	E26: Pre-primary education attendance Ages 3-4, Male

E28: Primary completion rate ages 15-24, Female	E29: Primary completion rate ages 15-24, Male
E31: Primary completion rate children, Female	E32: Primary completion rate children, Male

Wealth Factors

Average Income & Expenditures	High Expenditures
W29: Avg_monthly_exp	W20: %HH_per_expenditure_quintile HIGH
W30: Avg_monthly_income	W19: %HH_per_expenditure_quintile FOURTH
High Income	Low Expenditures
W25: %HH_per_income_quintile_HIGH	W22: %HH_per_expenditure_quintile SECOND
W24: %HH_per_income_quintile_FOURTH	W21: %HH_per_expenditure_quintile LOW
Poverty Count	Low Income
W32: Extremely_Poor<=35	W27: %HH_per_income_quintile_SECOND
W34: Poor<=90	W26: %HH_per_income_quintile_LOW
W35: Poverty headcount ratio at national poverty line (% of population)	
Mid Expenditures	Mid Income
W23: %HH_per_expenditure_quintile_THIRD	W28: %HH_per_income_quintile_THIRD
Occupation*	<p><i>*Note: Each indicator in the "Occupation" factor (W2-W8) was also used as a factor in itself.</i></p>
W2: %headHH_workingas_agrilaborer	
W3: %headHH_workingas_farmingselfemployed	
W4: %headHH_workingas nonfarmingselfemployed	
W5: %headHH_workingas_nonskilledlabor	
W6: %headHH_workingas_other	
W7: %headHH_workingas_publicservant	
W8: %headHH_workingas_skilledlabor	

Health Factors

Infant Health	Vaccinations
H11: Severe Acute Malnutrition(infant < 59mo)	H1: MCV Vaccinations (% population)
H16: Under 5 Mortality Rate (% live births)	
Stunting	Underweight
H2: NCHS_Stunting_Moderate	H5: NCHS_Underweight_Moderate
H3: NCHS_Stunting_Severe	H6: NCHS_Underweight_Severe
H4: NCHS_Stunting_Total	H7: NCHS_Underweight_Total
H12: Stunting	H17: Underweight
H13: Stunting_Moderate	H18: Underweight_Moderate
H14: Stunting_Severe	H19: Underweight_Severe
H15: Stunting_Total	H20: Underweight_Total
H25: WHO_Stunting_Moderate	H28: WHO_Underweight_Moderate
H26: WHO_Stunting_Severe	H29: WHO_Underweight_Severe
H27: WHO_Stunting_Total	H30: WHO_Underweight_Total
Wasting	
H8: NCHS_Wasting_Moderate	H23: Wasting_Severe
H9: NCHS_Wasting_Severe	H24: Wasting_Total
H10: NCHS_Wasting_Total	H31: WHO_Wasting_Moderate
H21: Wasting	H32: WHO_Wasting_Severe
H22: Wasting_Moderate	H33: WHO_Wasting_Total

Social Factors

Population & Population Density	
S2: Total Population	S3: Population Density
Sunni Proportion of Population	Kurdish Proportion of Population
S4: Sunni Proportion of Population	S5: Kurdish Proportion of Population
Shia Proportion of Population	Ethnic Fractionalization
S6: Shia Proportion of Population	S7: Ethnic Fractionalization

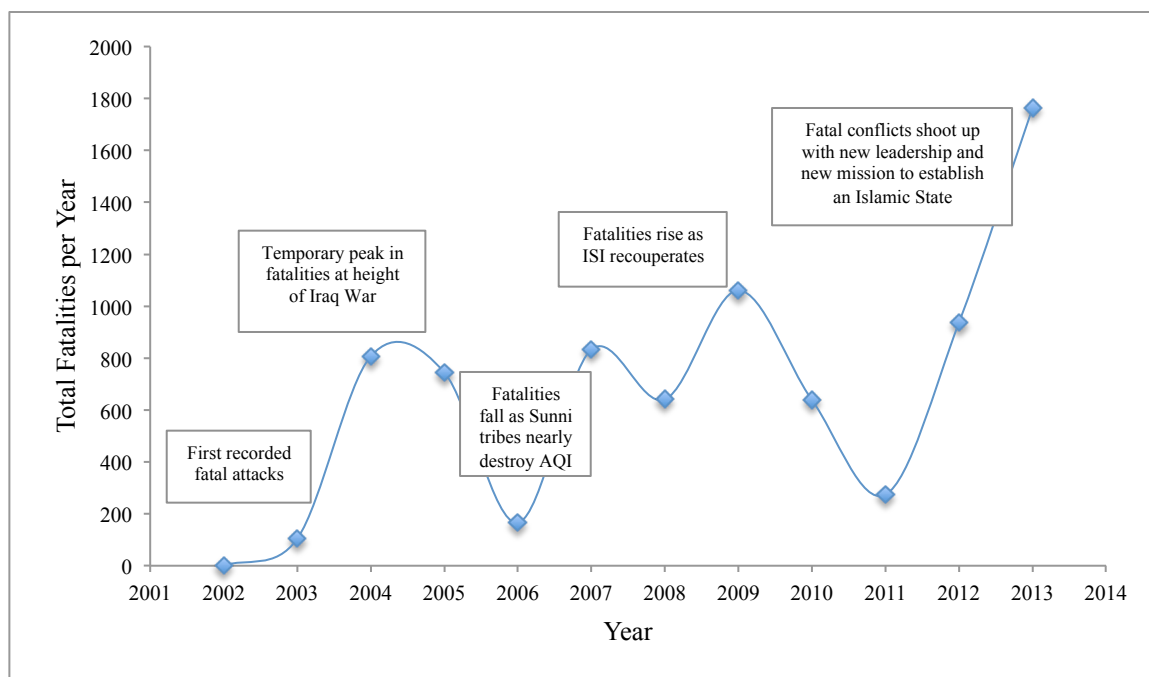
STEP 3: FACTOR WEIGHTINGS

The ultimate purpose of this step is to assign each factor a weight that reflects the strength and direction of its relationship with ISIL conflicts. As such, I again use the correlation between the factors and the level of ISIL impact in each governorate.

ISIL Conflict Data

As with the last chapter, the conflict data used to correlate against the factors comes from the Global Terrorism Database (GTD). However, the question driving the subnational analysis is slightly different from that of the national-level analysis. On the national level, I was concerned with the underlying conditions that allowed ISIL to emerge and that might have perpetuated their rise. I thus used the number of recorded ISIL conflicts in a given year as a proxy for the group's level of activity. In this chapter, I seek to go deeper into the dynamics of the group and understand what characteristics make an area particularly susceptible to ISIL attacks. This differs from the previous chapter's analysis in two key ways: First, it involves comparisons between governorates rather than between years, and second, it deals with the question of vulnerability to ISIL attacks rather than the level of ISIL activity. The number of ISIL attacks recorded in each governorate thus is not the most useful measure of ISIL impact in a region. The impact ISIL has had in a region, which is a better proxy for vulnerability, is more accurately captured in the number of fatalities suffered resulting from ISIL attacks. Figure 3.1 shows the total number of fatalities per year in Iraq resulting from ISIL conflicts.

Figure 3.1: Total Fatalities from ISIL Conflicts in Iraq
(2002-2013)



Data Sources: *ISIL conflict data from the Global Terrorism Database*⁵⁸; *key events from Wikipedia*⁵⁹

Figure 3.1 shows a time series of the aggregate fatalities per year in Iraq resulting from ISIL conflicts annotated with key events and trends. The movement of ISIL-caused fatalities follows the same general path as the conflict levels in Figure 2.1. Though 2013 marks the peak in both conflicts and fatalities, the spike in conflicts relative to previous years is far greater than the relative fatality spike, indicating a decreased fatality count per attack.

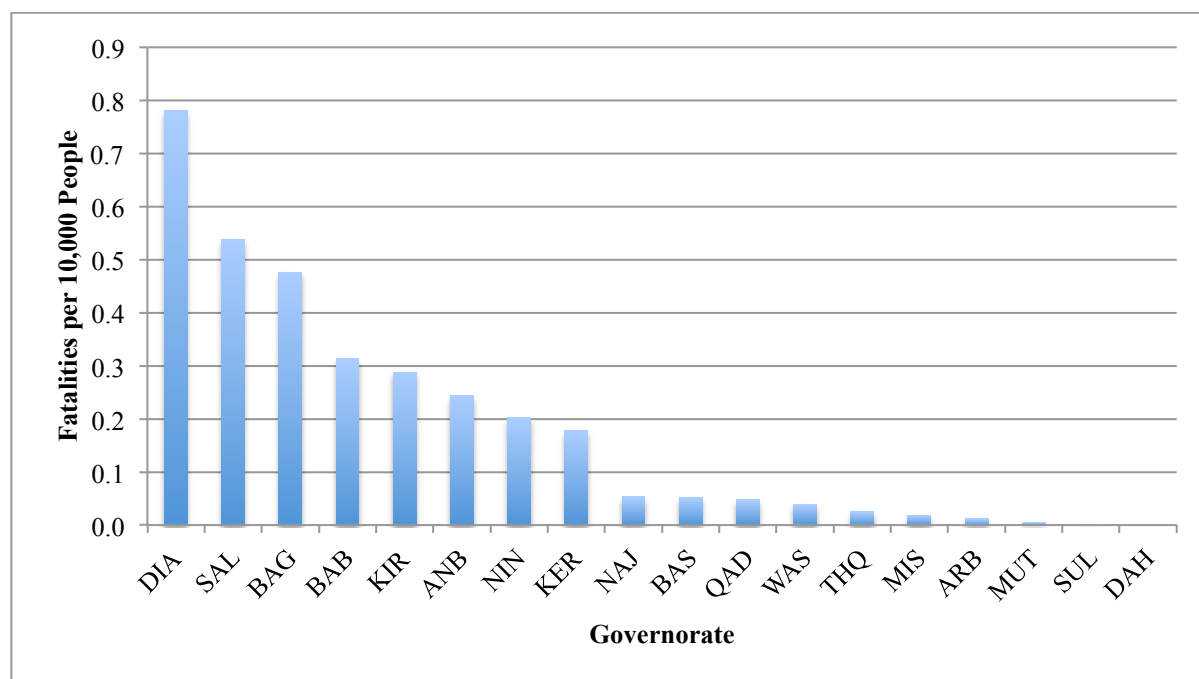
While Figure 3.1 provides insight into the fatalities resulting from ISIL conflicts over time, the subnational data used in this chapter is not in time-series, so the fatality measure had to be manipulated into a more usable format. Instead of using the total fatalities per year, I aggregated the total fatalities suffered in each governorate since the emergence of ISIL and averaged the yearly totals. The average number of fatalities in each governorate does not, however, provide the most accurate measure of vulnerability, as the population of the region may skew the numbers, with more populous areas being labeled as more vulnerable. As such, I standardized the average fatalities to the

⁵⁸ Global Terrorism Database. *START*.

⁵⁹ Timeline of Events Relating to the Islamic State of Iraq and the Levant. (p.d.). In Wikipedia.

population of each governorate to get a better picture of the areas most disproportionately affected by ISIL conflict. Figure 3.2 shows fatality values standardized by governorate.

Figure 3.2: Average Governorate Fatalities Per 10,000 People
(2004-2013)



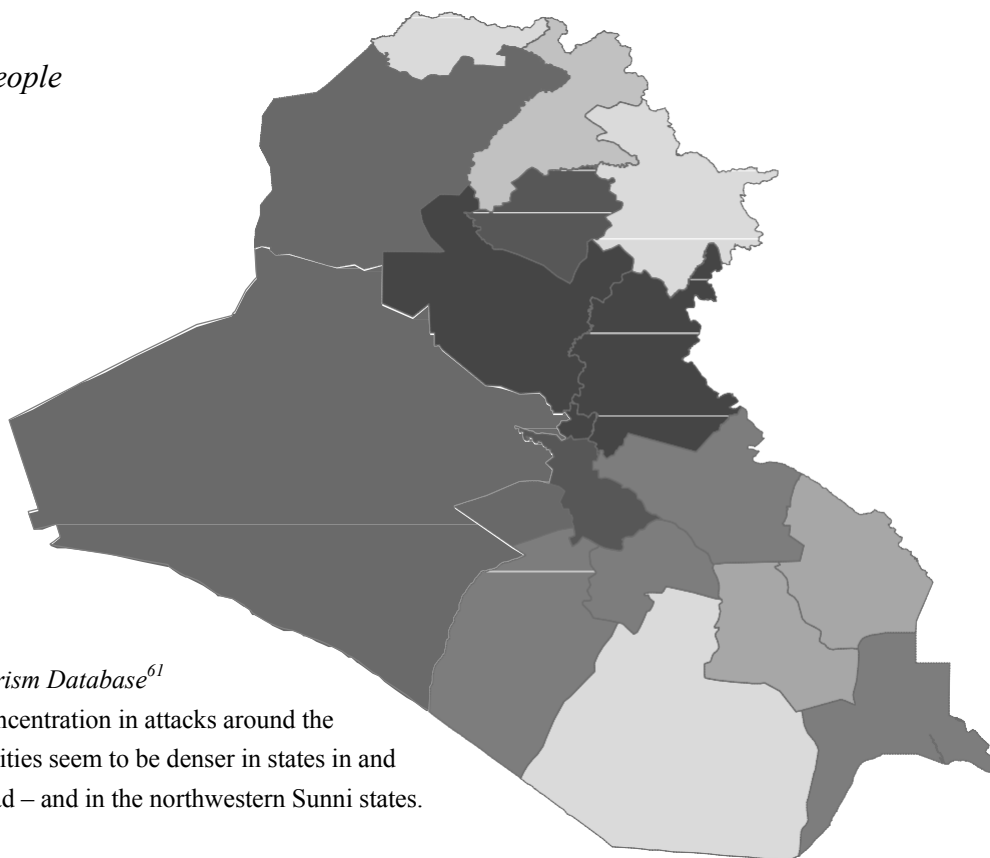
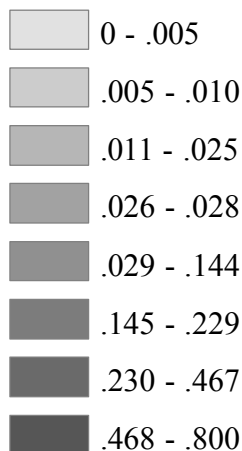
Data Source: *Global Terrorism Database*⁶⁰

Figure 3.2 displays the average yearly fatalities resulting from ISIL-related conflicts per governorate in Iraq. Fatalities are averaged from 2004 – the year of ISIL’s first recorded violent conflict in Iraq – to 2013 and are standardized to governorate population levels. As will be discussed below, states with the highest fatality averages are clustered in the center of the country around the capital Baghdad and in the northwest, Sunni-dominated areas of Iraq.

⁶⁰ Global Terrorism Database. *START*.

Map 3.2: Average Governorate Fatalities per 10,000 People
(2004 – 2013)

Fatalities per 10,000 People



Data Source: Global Terrorism Database⁶¹

Map 3.2 clearly shows a concentration in attacks around the middle of the country. Fatalities seem to be denser in states in and around the capital – Baghdad – and in the northwestern Sunni states.

A few notable observations emerge from the results of Figure 3.2 and Map 3.2.

First, in terms of location, the states most impacted by ISIL attacks are clustered in the center and northwest regions of the country; the northeast states of Iraqi Kurdistan and the southern states have been disproportionately unaffected by ISIL attacks. There are two likely explanations for this trend. The first is that ISIL is a Sunni extremist group, which proves relevant when considering the ethnic breakdown of Iraq. The Sunni populations primarily reside in the northwest and central areas of the country. It is in these areas that ISIL has historically based its operations, as the states' populations were more receptive to the group's presence. Though it does not intuitively follow that ISIL

⁶¹ Global Terrorism Database. *START*.

would disproportionately target primarily Sunni areas, the concentration of attacks in Sunni states may be more a reflection of where ISIL is able to operate. The group is inherently a violent one, so no matter the reception it receives from a local population, its presence will result in conflicts and increased fatality counts.

The second likely explanation for the clustering around the middle of the country stems from ISIL's overarching goal: to create an Islamic state in Iraq. As such, the group cannot be narrowly defined as a terror organization; it intends not only to destabilize but also to replace the existing political infrastructure. The capital of Iraq and the center of the country's political engine is Baghdad, which is the smallest Iraqi state in size and lies directly in the center of the country. In order to replace the regulatory body of the country, ISIL will have to take over Baghdad and overthrow the government. This insight is reflected in the data presented above. It seems that the biggest target areas for ISIL attacks all fall around the capital; the group is closing in on Baghdad. Returning to the standardized fatality values above, the top four most targeted states include Diala, Salah al-Din, Baghdad, and Babil. Besides the capital itself, each of these states is contiguous to Baghdad. Expanding beyond the top four, there is only one governorate in the top six in terms of fatalities – Kirkuk – that is not immediately adjoining the capital. This trend gives critical insight both into ISIL's activities and motives: The group, it seems, is focusing its energy on the political center of the country.

Correlating Factors with Fatality Levels

Using the average number of fatalities per governorate standardized to population, the next step was to determine the raw relationships of the 36 factors with ISIL-related

fatality levels. Ultimately, this step helps determine the relative weights of the factors as predictors of an area's vulnerability to ISIL attacks, but it also merits its own section, as significant conclusions can be drawn from the raw correlations of factors with fatalities. To this end, I ran a correlation matrix between the fatality values listed above and the factors. As with the national-level analysis, I first averaged the Z scores of each factor for each governorate to condense the factors into a single value per state. I then ran a correlation matrix between all the factors and the fatality values.⁶² The raw correlation values of each factor with conflict are listed in Table 3.5.

Table 3.5: Raw Correlations of Factors with Fatalities in Ascending Order

<i>Raw Correlations with Fatalities In Ascending Order</i>	
Factor	Correlation
Poorly Educated	-0.6114
Undereducated	-0.5872
Shia Proportion of Population	-0.5158
Overage Primary School Attendance	-0.4800
Never Been to School	-0.4118
Non-Skilled Laborers	-0.3628
Underweight	-0.3301
Occupation	-0.2493
Other Laborers	-0.2286
Female Education	-0.2060
Poverty Count	-0.1783
High Expenditures	-0.1652
Low Income	-0.1580
Infant Health	-0.1393
Skilled Laborers	-0.1209
Kurdish Proportion of Population	-0.0914
Agr Laborers	-0.0105
Public Servants	-0.0013
Avg Income & Expenditures	0.0335

⁶² The “correlate” function in the statistical software STATA was used for the correlation matrix.

Stunting	0.1163
Pre-Primary Education Attendance	0.1267
Vaccinations	0.1344
Mid Income	0.1353
Self-Employed Non Farmers	0.1783
Wasting	0.1796
Self-Employed Farmers	0.2087
High Income	0.2222
Low Expenditures	0.2227
Mid Expenditures	0.2351
Population & Population Density	0.3239
Male Education	0.3304
Secondary Completion Rates	0.4869
Primary School Completion Rates	0.5886
Avg Education Level	0.5919
Ethnic Fractionalization	0.6176
Sunni Proportion of Population	0.7893

Discussion of Factor Correlations

The results from the correlation matrix suggest some powerful insights. The table above is organized in ascending order, with the factors that are the most negatively associated with fatalities at the top and those most positively related to fatality values at the bottom. In other words, states that are most vulnerable to being targeted by ISIL attacks are more likely to have higher levels of the factors at the bottom of the table than those at the top. The most significant factors for this analysis are those that lie at the two extremes of the spectrum as they have the strongest relationships – either positive or negative – with fatality levels. The tables below show subsets of Table 3.5 and represent the six factors that make up each of the two poles of the correlation spectrum.

Table 3.5a: The Negative Pole
Six Factors Most Negatively Correlated with Fatalities

Poorly Educated	-0.6114
Undereducated	-0.5872
Shia Proportion of Population	-0.5158
Overage Primary School Attendance	-0.4800
Never Been to School	-0.4118
Non-Skilled Laborers	-0.3628

Table 3.5b: The Positive Pole
Six Factors Most Positively Correlated with Fatalities

Male Education	0.3304
Secondary Completion Rates	0.4869
Primary School Completion Rates	0.5886
Avg Education Level	0.5919
Ethnic Fractionalization	0.6176
Sunni Proportion of Population	0.7893

A few observations immediately emerge upon inspection of the results. First, at both ends of the spectrum, the factors – with one exception – fall within the education and social buckets. This in itself provides a critical insight: It seems that educational and social phenomena are the most significant predictors of an area’s vulnerability. Briefly, I will discuss each bucket in turn and finish with an analysis of the non-significant factors that lie in the center of the correlation matrix.

Discussion of Education Factor Results

A closer inspection of the table reveals that all of the education factors that are negatively associated with fatality values are undesirable educational phenomena, while those that are positively related to fatality levels are positive educational phenomena. Of

the six factors most negatively correlated with fatalities, four fall within the education bucket. On the other end of the spectrum, four of the six factors most positively correlated with fatality levels also fall within the education bucket. An inspection of the compositions of the poles displayed above both shows the strength of educational characteristics as predictors of ISIL attacks and the way that education indicators relate to fatality levels. Regarding the former, of the twelve factors that make up the negative and positive poles of factor correlations with fatality levels, the majority are education factors (eight of the 12). Further, recall that 10 education factors were included in this analysis, and that education factors comprised roughly one third of the total factors analyzed. As such, nearly every education factor (eight out of the 10 included) lies in the extremes of correlations with fatality levels, suggesting that, relative to the other factor categories in this analysis, educational phenomena across the board are strongly related to a state's vulnerability.

Education factors relate to ISIL fatality levels in two ways: Undesirable phenomena – such as the proportion of a population that is poorly educated or undereducated – are negatively related to fatality levels, while desirable phenomena – such as education completion rates and average education levels – are positively related to fatality levels. Simply put, education attainment levels are positively related to fatality levels; better-educated states are disproportionately vulnerable to ISIL attacks, while poorly educated populations are less severely impacted.

This finding proves significant in light of the emphasis placed on education in some counterterrorism theories. Following the September 11 attacks on the US, prominent observers called for, among other things, increased international educational

assistance to end terrorism.⁶³ The theory held that terrorism stemmed from a lack of opportunity; education is thus a powerful mechanism through which to provide social mobility. Though some scholars have found little evidence that increasing education reduces terrorism⁶⁴, the results presented above suggest that education may be connected with terrorism in a different way. As this chapter focuses on vulnerability to ISIL attacks, the results do not speak to the propensity of an area to spawn extremist behavior. As such, my results do not uphold or refute the theory that poorly educated populations breed terrorism. However, these findings do suggest that, at least in the case of ISIL, when an extremist group has already risen, it will disproportionately target better-educated peoples. While education initiatives could be successful in preventing the rise of terrorism in times of peace, it may not be an effective counterterrorism strategy in the face of an active threat.

Discussion of Social Factor Results

The other category of indicators featured prominently in the two poles of the correlation spectrum is the social bucket. Of the five social factors, three are included in the 12 factors making up the two poles, with one factor – Population & Population Density – coming in seventh in terms of positive correlations with fatality levels. Similar to the education bucket, the majority of social factors fall in the extremes of the correlation spectrum, suggesting social phenomena are also strongly related to fatality levels. On a more granular level, these results give insight into how different ethnic

⁶³ Krueger & Maleckova (2003)

⁶⁴ *ibid*, p1

groups have been affected by ISIL and the potential role of ethnic fractionalization in an area's vulnerability. I will briefly discuss each in turn.

Three of the five social factors measured relative ethnic proportions of governorate populations. As such, one would expect these factors' correlations with fatalities to balance each other. The results are consistent with this expectation. Two of the three ethnic variables fall on the negative side of the spectrum: The factor measuring the Shia proportion of the population is the third most negatively correlated factor, while the Kurdish proportion of the population falls near the middle with a slightly negative correlation. On the opposite side of the spectrum, the factor measuring the Sunni proportion of the population has the single strongest relationship with fatalities (a .79 correlation) by a wide margin; the second highest correlation was only .62. These results yield a significant conclusion: ISIL primarily targets Sunni areas, and the Sunni proportion of a governorate's population is the single strongest indicator of that state's vulnerability to ISIL attacks.

There is one likely explanation for this trend and several significant implications. In terms of an explanation, it is possible that the strong correlation between an area's Sunni population and its fatality levels merely reflects ISIL's primary areas of operation. As a Sunni group, ISIL has found sanctuary and support in majority Sunni states, and much of its activity has been organized and planned from predominately Sunni areas in northwest Iraq. ISIL is inherently a violent group, so even if it does not intentionally target Sunni people, its mere presence in an area will likely heighten violence levels and affect local populations. As such, this trend may be more of a reflection of where ISIL finds sympathizers than where it intends to target.

Regardless of ISIL's intentions, its disproportionate impact on Sunni populations may have serious implications. Literature on the roots and strategies of terrorism consistently highlights the importance of an extremist group's relationship with its "umfield," or its domestic audience and potential pool of sympathizers.⁶⁵ A terrorist group's umfield is regarded as critically important to the group's success, as it often relies on local populations for support, sanctuary, and resources. Alternatively, and as was demonstrated by the Anbar or Sunni Awakening in 2006⁶⁶, an unsupportive umfield is a serious impediment.⁶⁷ Considering ISIL's areas of operation and its Sunni ideology, the group's umfield primarily consists of local Sunnis. For ISIL to achieve its aim of establishing and ruling an Islamic state, the support of its umfield is critically important both for the support or opposition it could provide and because these are the very people ISIL intends to rule after establishing the state. In this light, the fact that ISIL conflicts primarily result in fatalities in Sunni areas proves problematic to the group's goals. The local population's decision to support or oppose a terrorist group typically takes the form of a simple cost benefit analysis regarding the potential benefits the group presents.⁶⁸ ISIL's track record of consistently targeting Sunni areas could sow discontent and jeopardize its overarching goals by alienating its most critical source of support.

A related insight comes from the strong correlation of ethnic fractionalization with fatality levels. Again, ethnic fractionalization here refers to how diverse and divided an area is along ethnic lines. Ethnic fractionalization was the factor with the second highest correlation (a value of .62) with conflict. This proves significant in two ways.

⁶⁵ Freytag et. al. (2011), p5

⁶⁶ In 2006, Sunni tribal leaders of the Anbar province, which had been ISIL's primary sanctuary, turned on the group. Allied with the US, the Sunni tribes nearly destroyed ISIL and drove them out of the region.

⁶⁷ Kydd, A., & Walter, B. (2006). The Strategies of Terrorism. *International Security*, 31(1).

⁶⁸ *ibid*, p69

First, it speaks to the overall importance of ethnic dynamics in understanding ISIL activity; the two factors most strongly correlated with fatality levels measure ethnic variables. Second, this factor's relationship with fatality levels gives a further insight into the ethnic dynamics that might make an area particularly vulnerable. Beyond merely operating in Sunni areas, ISIL seems to be targeting areas divided along ethnic lines. Cultural and religious tensions have always been pointed to as primary sources of conflict, especially in the Middle East, and the strong correlation of ethnic fractionalization with fatality levels may point to such tensions as strong predictors of an area's vulnerability to ISIL attack.

Discussion of Health & Wealth Factor Results

There was no significant explanatory value, either in terms of strength or direction of correlation, for the wealth and health buckets. The majority of wealth and health factors fell in the middle of the correlation spectrum. The only factor from either of the two buckets present in one of the poles was the factor measuring the number of non-skilled laborers, which was the sixth most negatively correlated factor with fatalities. These results are interesting considering many academics and policy makers believe issues of poverty and poor health may impact an area's propensity to be impacted by terrorism. The results found in this analysis do not suggest an opposite conclusion; rather, they point to the conclusion that, at least with regards to ISIL, wealth and health factors have no significant positive or negative relationship with an area's vulnerability.

In sum, the results from the correlation matrix yielded the following major conclusions:

<i>Final Conclusions from Factor Correlations</i>	
①	Education and social factors are the strongest and most consistent predictors of an area's vulnerability to ISIL attacks.
②	Better education levels make a state more vulnerable to ISIL attacks.
③	ISIL attacks are concentrated primarily in majority-Sunni states.
④	States with higher levels of ethnic fractionalization experience higher fatality counts.
⑤	Health and wealth factors show no significant positive or negative association with fatality levels.

Final Factor Weights

Returning to the quantitative analysis, the next step was to determine the final weights of the factors as predictors of an area's vulnerability to ISIL attacks. To this end, I squared each factor's correlation value with conflict to lend greater significance to larger correlations.⁶⁹

STEP 4: FINAL VULNERABILITY INDEX

Final Index Calculations

Having calculated the relative weight of each factor as to its raw correlation with conflict, the final analytic step was to construct an overall measure of a governorate's vulnerability to ISIL attacks. As the more granular conclusions about each state's vulnerability to ISIL conflicts were derived from the correlation matrix presented in the previous section, this final step serves as backing to check the robustness of this method in producing a vulnerability index. I first applied the final factor weights to the composite values of each factor so that the contribution of each factor to the vulnerability measure was scaled to the magnitude and direction of that factor's relationship with ISIL-related

⁶⁹ As the final factor weights represent a simple derivation of the raw correlations, they are not listed for reference.

fatalities. To distill the factors down to a single vulnerability measure, I then summed the weighted factor values for each governorate.

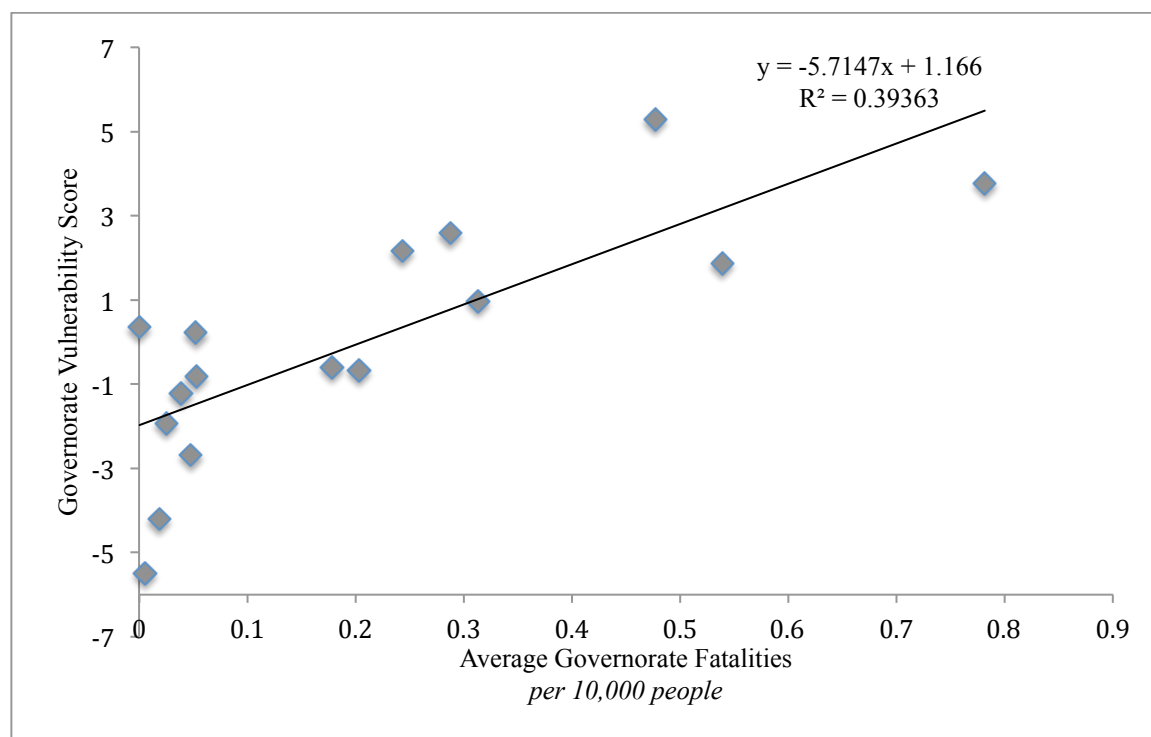
Table 3.7: Governorate Vulnerability Scores

<i>Governorate Vulnerability Scores</i>	
Governorate	Final Value
DIA	3.762
SAL	1.866
BAG	5.292
BAB	0.973
KIR	2.590
ANB	2.163
NIN	-0.675
KER	-0.605
NAJ	-0.811
BAS	0.225
QAD	-2.681
WAS	-1.217
THQ	-1.941
MIS	-4.195
MUT	-5.502
SUL	0.364

To summarize the meaning of the vulnerability measures listed above, the more positive a governorate's value is, the more vulnerable they should be to ISIL attack. In analyzing the vulnerability measures above, it is important to note that the governorates are ordered by their standardized fatality counts; Dialia, listed first, has suffered the highest number of fatalities relative to its population, while Sulaymaniyah, listed last, has experienced the fewest fatalities from ISIL attacks. At first glance, the vulnerability measures calculated in this chapter are clearly not perfect; ideally, one would want to see the numbers increase in value as you go down the list, but no such linear relationship exists. However, this does not necessarily render the results useless as a predictive model.

Instead, one must look at the overall relationship of the vulnerability scale with the average fatality values, as depicted in Figure 3.3 below.

Figure 3.3: Governorate Vulnerability Scores vs. Avg Fatalities per 10,000 People
ISIL Conflicts in Iraq (2004 – 2013)



Data Source: *ISIL conflict data from Global Terrorism Database*⁷⁰

Figure 3.3 relates the average fatalities from ISIL conflicts per 10,000 people in each Iraqi state (on the x-axis) to the vulnerability measures from this chapter (on the y-axis). There is a clear positive relationship between the variables; as governorates score higher on the vulnerability index, average fatality levels increase. The correlation between the variables is not perfect (a correlation value of .77), but the general positive relationship is a positive indicator for the predictive strength of the vulnerability index constructed in this chapter.

Discussion of Final Vulnerability Index

There is a strong relationship between the vulnerability index constructed in this chapter and the observed fatality levels in each state. Though not perfect, the correlation between my predictive model and state fatality levels is .77. Upon inspection of Figure

⁷⁰ See Global Terrorism Database. *START*

3.3, two main groups of data points (representing states) emerge. States with average fatalities of fewer than .1 – half the total states included – are mostly clustered around the middle of the vulnerability scale, with values between 1 and -3. Two low fatality states are outliers in terms of vulnerability scores, with values between -3 and -5. While the vulnerability levels of these low fatality states are generally low, which would be expected, they do not very cleanly fit the line of best fit.

The other half of the data points – representing states with average fatalities of .1 and higher – show a more linear relationship between vulnerability levels and fatality levels; the data points generally lie along the line of best fit. With the exception of some of the low fatality states that score near the middle of the vulnerability index, the overall trend in the data shows states with high fatality levels scoring highest on the vulnerability index and those with low fatalities scoring lowest on the index. In the end, this analysis shows that, using socio-economic indicators weighted by relative significance, one can create a strong predictive model of vulnerability to ISIL conflicts verified by hindcasting.

DISCUSSION

Analysis Limitations

There are numerous limitations inherent in the analysis presented in this chapter that are important to consider when contextualizing the conclusions derived. Though many limitations were discussed throughout the chapter, I will briefly outline the main drawbacks and resulting implications both of the data and methodology used. Starting with the indicators used, subnational data for Iraq was limited both in temporal comprehensiveness and content. As the data gathered were not in time series form, my

analysis was limited to comparisons between states rather than over time. A state's vulnerability as represented by its socio-economic characteristics could have changed over the time period observed, but any such trends would not be captured in my analysis. Regarding content, data were only available in a few of categories, so the reader must recognize that any conclusions derived are limited to relative comparisons of the available and quantified phenomena. It is possible, very likely even, that some of the most important factors in understanding vulnerability to ISIL attacks are ones for which no data were available. In this case, there is no way for my quantitative analysis to capture such predictors.

Regarding the analytic method I used, there are three limitations one should consider. First, and as discussed above, the factors used in this analysis were organized by specific socio-economic features in a manual, customized fashion. While this method eliminates the possibility of indicators being grouped together by chance, it could also be considered quantitatively arbitrary and would not capture any insights that might be derived from unexpected groupings of indicators. In defense of this method of factor construction, the available indicators presented certain natural divisions that I believe produced factors similar enough in content to mitigate worries about arbitrary groupings. However, that was a subjective interpretation that should be independently assessed by the reader. Further, though unexpected groupings of indicators would not emerge from this method, organizing the factors manually by content also gives more pointed insight into the relationship of specific types of indicators with ISIL activity.

The second limitation inherent in this methodology is my use of a correlation matrix to relate the factors to conflict. Correlation does not necessarily imply causation. I

cannot prove the mechanism through which the factors are related to an area's vulnerability to ISIL attacks; I cannot say with certainty that even the phenomena most strongly correlated with fatality levels in any way caused that area to be more vulnerable. As such, the conclusions I derive merely serve to characterize the areas that are most vulnerable to ISIL attacks. They provide significant insight but do not speak to causal mechanism.

Finally, the predictive power of the final vulnerability index is potentially limited by the method of construction employed. Recall that I used the correlations of each factor with average state fatality levels to determine its weight in the vulnerability index. As such, the logic behind the factor weightings could be considered somewhat circular. This method does not diminish the overarching insight that socio-economic characteristics can be combined in such a way as to determine an area's vulnerability, but it does have implications for the predictive power of the resulting index. Thus, the robustness of the index can only be proven through hindcasting; its predictive power for subsequent ISIL attacks could only be verified with conflict data for 2014 and beyond.

Results & Conclusions

The results of this chapter emerged from the final two steps of the analysis, in which I correlated the 36 customized factors with average state fatality levels and constructed an index to measure each state's vulnerability to ISIL attack. Turning first to the factor correlations, the results from this step gave insight into the relationships between specific socio-economic and cultural phenomena with ISIL conflicts. The major takeaways are, again, listed below.

<i>Final Conclusions from Factor Correlations (repeated)</i>	
①	Education and social factors are the strongest and most consistent predictors of an area's vulnerability to ISIL attacks.
②	Better education levels make a state more vulnerable to ISIL attacks.
③	ISIL attacks are concentrated primarily in majority-Sunni states.
④	States with higher levels of ethnic fractionalization experience higher fatality counts.
⑤	Health and wealth factors show no significant positive or negative association with fatality levels.

The final step in my analysis combined the 36 factors, which were weighed by the strength of their relationships with fatality levels, into an index meant to characterize each state's vulnerability to ISIL attacks. Though its predictive power can only be verified through hindcasting, the resulting index bore a strong correlation of 0.77 with average state fatalities per 10,000 people. Though still not linear, the relationship between vulnerability scores and fatality levels appears to be stronger for the eight states that have experienced an average of over .1 fatalities per 10,000 people than the eight states that fell below that threshold. Though on average the eight states least impacted by ISIL attacks had lower vulnerability scores, their distributions on the vulnerability scale appear to be relatively random and do not clearly relate to their fatality levels. On a state-by-state basis, this index is not a perfect predictor of an area's vulnerability. Taken as a whole, however, the results of this analysis show the potential for using properly weighted socio-economic and cultural factors in creating a predictive model of vulnerability to a terrorist group on a subnational level.

CHAPTER 4

POLICY IMPLICATIONS & CONCLUSION

POLICY IMPLICATIONS

In Pursuit of a More Permanent Solution

When determining counterterrorism strategies, military action is the predominant policy and first resort. United States involvement in Iraq has been no exception. Since 2003, military operations have defined US policy in Iraq; we invaded the country in response to terrorism attacks on US soil. We fought Al-Qaeda in Iraq – a predecessor of ISIL – by allying with Sunni tribes in the 2006 Awakening and through a 2007 “surge” in US troop deployment. Finally, we currently sustain an airstrike campaign⁷¹ to combat the spread of ISIL.

Once a group has reached ISIL’s present level of military strength, it is possible that military action is the only way to defeat it. However, as seen in Iraq over the last decade and a half – and particularly across the lifespan of ISIL in Iraq – military action merely provides a temporary solution to the problem. ISIL’s resurgence after its near-defeat in the Awakening and its spike in activity as soon as the US left Iraq in 2011 evidence the group’s resilience to setbacks. This feat suggests that the roots that led to the rise of ISIL cannot be vanquished through violent action alone; the group’s continued resurgence is rather a product of something deeply ingrained in Iraqi society. In pursuit of a more permanent solution, we must look to the environment on the ground, beneath their feet, and understand the conditions that spawned the group in the first place. If the ultimate goal is a peaceful country, free from terror, we must address the preconditions that made ISIL successful and led to such little resistance to its arrival.

⁷¹ Hubbard, B. (2014, November 8). U.S. Airstrikes in Iraq Target ISIS Leaders. *The New York Times*.

The Landscape of Non-Military Interventions

In assessing implications for US and international counterterrorism policy regarding ISIL, it is important to understand the threshold truth of how this thesis can and cannot be applied. On a high level, this thesis does not focus on the actual design and implementation of counterterrorism initiatives. Further, I do not attempt to comment on whether or how military intervention should be used; my findings are non-military in nature. However, my findings do have the capacity to shed light on the potential effectiveness of the different forms of non-military strategies. As such, the scope of my policy arguments is to evaluate the main spheres of non-military options in light of the results from my analysis.

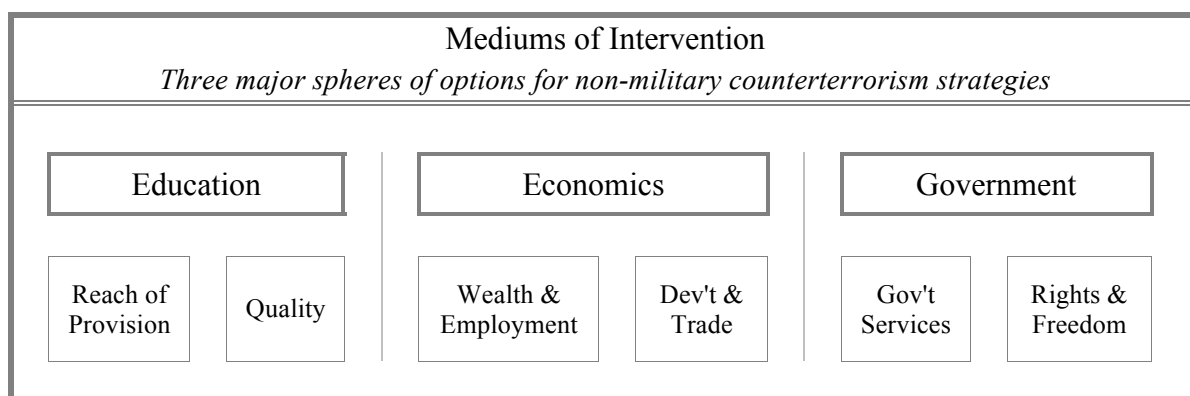
As discussed in previous chapters, non-military strategies already permeate counterterrorism discussions in academia and politics. In the aftermath of the September 11th attacks, political rhetoric often focused on economic development and educational initiatives to combat terrorism.⁷² An integrated civil-military strategy was also a centerpiece of US policy in the early years of the Iraq War. In an address to the Senate Committee on Foreign Relations in 2005, then Secretary of State Condoleezza Rice emphasized the roles of instilling a fair and strong government, establishing strong international trade relations, and boosting economic growth as central components of US policy in Iraq.⁷³ Even now, President Barack Obama argues that, when it comes to groups like ISIL, “we can’t keep thinking of counterterrorism and insurgency as entirely separate from diplomacy, development, and education.” Such “soft” measures, he continued, are “vital to our national security... and we should be thinking about investments there that

⁷² Krueger & Maleckova (2003), p1

⁷³ Rice, C. (2005, October 19). Iraq and U.S. Policy.

ultimately save our men and women from having to go and fight.”⁷⁴ Strategies designed to address the societal preconditions for extremism are not foreign to US counterterrorism policy.

The task that remains is to determine the relative merits of the options for non-military strategies in the case of ISIL. The main non-military strategies present in policy discussions generally fall into one of three categories: education initiatives, economic development, and government intervention. These three categories represent the mediums through which the US could influence the conditions that give rise to terrorism. Each medium presents various options for US policy strategies.



The mediums and options for intervention presented above provide a decision-making framework that can lend structure to a discussion of the policy implications of my findings. For each of the three categories, I will discuss what my findings tell us about their potential effectiveness in combatting ISIL. Applying the insights from my results, the following sections will evaluate these major non-military intervention options in the hope of identifying both the most effective sphere of focus and specific strategies for US counterterrorism in Iraq.

⁷⁴ VICE News (2015)

The Education System as a Medium of Intervention

Regarding the link between education and terrorism, some prominent theories hold that terrorism stems from unrest and a lack of opportunity in a population; improving education could thus be an effective countermeasure. Policy options in this area could focus on increasing the reach of the education system by getting more children in school or improving the quality of education provision. Though education initiatives possess merit in their own right, my results suggest that targeting education as a medium through which to combat and prevent terrorism would not be effective.

On both the national and subnational levels, the comprehensiveness and quality of Iraq's education system are positively related to the prevalence and impact of ISIL attack. On the national scale, increases in the number of ISIL-related conflicts co-presented with improvements on a number of desirable educational phenomena, suggesting a positive link between the two. Further, regarding vulnerability to ISIL attacks at the governorate level, it appears that fatalities from ISIL conflicts increase with the education level of the state. There are many potential explanations for the observed relationship. The disproportionate number of fatalities in better-educated states, for example, merely could reflect ISIL's attempts to overthrow the government by attacking areas integral to the running of the country, the populations of which might be better educated. My findings do not shed light on the causal relationship between ISIL activities and education statistics; it is possible that increasing education levels play a causal role in ISIL's rise, or the relationship could represent a coincidental or indirect link. Regardless, my analysis shows no evidence for the promise of combatting ISIL through education assistance and initiatives.

The Economy as a Medium of Intervention

Similar to education, many argue that a weak economy – both on the individual and national scale – plays a central role in the emergence of terrorism. In this vein, poverty and unemployment are thought to breed unrest and drive people to extreme behavior out of desperation. Some studies, as discussed in previous chapters, have found evidence for this correlation through an inverse relationship between various measures of individual wealth and economic growth with the incidence of terrorism. Such findings, however, are not universal, as other studies have shown opposing evidence and no significant relationship between economic variables and terrorism. As with education, economic initiatives may possess value in their own right, but my results suggest that the Iraqi economy may not be the most effective means of countering ISIL.

On the national level, I found a positive relationship between factors measuring the general strength of Iraq's economy – as captured in phenomena such as employment statistics, trade levels, and GDP per capita – and the number of ISIL conflicts each year. As a small caveat, however, the factor measuring net energy imports and per capita energy use bore a strong negative relationship with conflict, suggesting that not all economic phenomena are positively linked to ISIL activities. On the subnational level, I found no significant positive or negative relationship between numerous economic indicators and a governorate's vulnerability to ISIL attacks. Again, I cannot speak with certainty about the causal relationship of these findings. However, it appears that times of relative economic prosperity in Iraq do not co-present with an increased level of resilience to ISIL. Wealth statistics also do not seem to be significant in explaining

relative levels of vulnerability between Iraqi states. As such, I find little evidence for the potential effectiveness of undermining ISIL through targeted economic aid initiatives.

The Government as a Medium of Intervention

Any discussion of the government as a medium of intervention proves complex, as the government has its hands in all aspects of society.⁷⁵ In its potential as a medium of intervention, I am here referring to the government's function in two capacities: the provision of basic services and the protection of the rights and freedoms of its people. Every counterterrorism theory involves the role of the government, as it is widely accepted that the stability and behavior of the central governing body strongly influences a country's susceptibility to terrorism. Though my analysis did not point to government services as a promising means of intervention, my results did suggest that social and ethnic dynamics and the protection of legal rights are integrally related to the emergence of ISIL. As such, targeting the government as a medium through which to combat the underlying conditions that spawned ISIL may prove a promising and effective option.

Turning first to the provision of basic services, my analysis provided insight into the relationships of two measures of government services with ISIL conflict:⁷⁶ healthcare provision and infrastructure quality. On both the national and subnational levels, my results suggested no significant link between the population's health status and the level or impact of ISIL conflicts. Healthcare improvements may hold intrinsic value, but I find no evidence of the relevance of health-related issues to the topic of ISIL. Some measures of the quality of Iraq's infrastructure did show a strong relationship with conflict.

⁷⁵ Education and economic intervention would inevitably involve government action, but I differentiate them for the sake of evaluation.

⁷⁶ I do not include education factors in this portion of the discussion, as they were already discussed.

Specifically, measures of geographic and digital connectivity – as represented by variables such as road density, number of telephone lines, and prevalence of Internet servers – were positively related to ISIL conflict levels. At least with regard to these two aspects, my results do not support the potential for combatting ISIL through improving government services.

The most promising avenue for intervention emerging from my analysis relates to the protection of the rights and freedoms of the Iraqi people. On the national level, the factor most negatively correlated with the number of ISIL conflicts per year measures the strength of legal rights. Literature on the origins of terrorism consistently echoes this finding; many studies have highlighted poor legal rights and freedoms as the most significant condition that incubates terrorism. I cannot speak to the causal relationship of this finding; it is possible that declining legal rights directly led to ISIL's rise or that ISIL's violent presence rendered the protection of legal rights more difficult. Regardless, more than any other measure of prosperity or well being, my results suggest that initiatives focused on strengthening legal rights show promise as a means of combatting ISIL.

My subnational findings, though not directly related to legal rights and freedoms, provide a more nuanced picture of what might be going on. On the subnational level, the two phenomena with the strongest correlations to fatality levels were related to ethnic measures. Fatalities from ISIL attacks are concentrated primarily in majority-Sunni states and in states with higher levels of ethnic fractionalization. A critical insight emerges from these findings: Issues of ethnicity are central to understanding ISIL's conflict patterns. This insight in itself does not speak to a definitive course of action. Further, the small

availability of data on issues of ethnicity limits my ability to glean any actionable insights solely from my quantitative analysis. However, in light of the cultural and historical context surrounding ethnic dynamics in Iraq's recent history, and in light of ISIL's ideology, the paramount role of ethnicity in ISIL conflict patterns becomes clear.

For the past decade and a half, and throughout Iraq's history more broadly, ethnic tensions – particularly between Iraq's Sunni and Shia populations – have been a central source of conflict. Prior to the US invasion of Iraq in 2003, Sunnis held many key government positions. After overthrowing Saddam Hussein's Ba'ath Party, the US adopted a policy of “de-Ba'athification” that disqualified hundreds of thousands of Sunnis from jobs and essentially eliminated the Sunni presence in government.⁷⁷ The situation worsened for Iraqi Sunnis following the 2005 election, which saw a consolidation of power in the hands of religiously oriented Shiite parties. Many Sunni leaders called the elections illegitimate.⁷⁸ Ethnic grievances were exacerbated when the new Shiite government excluded Sunnis in its distribution of spoils.⁷⁹ The 2006 Sunni Awakening witnessed a slight reintegration of Sunni groups into government affairs, but this progress was destroyed following US troop withdrawals in 2010 – 2011; the Shiite government reneged on its promises of jobs and security to Awakening members and did not step in when ISIL started targeting Awakening members and their families.⁸⁰ The 2010 Iraqi elections further contributed to mounting discontent among Sunnis, who felt marginalized by the Shia-led government. Tens of thousands of Sunnis took to the streets

⁷⁷ Bremmer III, L. P. (2003, May 16). Iraq Coalition Provisional Authority Order Number One, De-Ba'athification of Iraqi Society. *Council on Foreign Relations*.

⁷⁸ Sunni Clerics Call Iraqi Elections Illegitimate. (2005, February 2). *Fox News*.

⁷⁹ al-Dagher, M. (2015, March 24). How Iraqi Sunnis really feel about the Islamic State. *Washington Post*.

⁸⁰ Kober, S. (2010, July 16). Did the surge work?. *Daily Caller*.

to rally against the new Shiite Prime Minister, Nuri al-Maliki.⁸¹ Tensions finally culminated in violence in 2013, when the Maliki government responded to peaceful Sunni demonstrations by killing scores of protesters.⁸² The mounting sense of injustice and marginalization among Sunnis elevated ethnic tensions and potentially set ideal conditions for the rise of ISIL.

Recall that ISIL identifies as a Sunni extremist group and claims to promote Sunni interests. Since its inception, ISIL has found sanctuary and support in the majority-Sunni states in northwest Iraq. As previously discussed, my data findings reflect this fact; I found a strong correlation between the Sunni proportion of each state's population and its average fatality levels, which I believe to be a reflection of ISIL's primary area of operation. Feelings of marginalization were high in these majority-Sunni states. ISIL exploited the discontent Sunnis felt to its advantage and gained support by presenting itself as an alternative to the Shiite government.⁸³ Though ISIL's appeal may be fragile in nature, as seen in the Awakening, Sunni dissatisfaction appears to be a central precondition for ISIL's rise in power and popularity. On a more granular level, it seems that people's willingness to accept ISIL as an alternative to the status quo is a pivotal factor in the group's success. As such, to strike the problem at its root, one must understand the exact nature of Sunni discontent to know what lies at the core of the decision not to resist ISIL's arrival.

Public opinion survey data collected by an Iraqi social research and marketing firm called IIACSS helps explain the factors contributing to Sunni Iraqis' decisions to

⁸¹ Markey, P., & Al-Salhy, S. (n.d.). Tens of thousands of Sunni Iraqis rally against Maliki. *Reuters*.

⁸² Dunlop, W. G. (2013, May 1). Iraq Violence Kills 460 In April. *Huffington Post*.

⁸³ al-Dagher (2015)

tolerate ISIL.⁸⁴ As context, the firm's data comes from over one million interviews with Iraqi citizens over the past decade, an effort unparalleled in modern Iraq. The survey research indicates that neither religion nor poverty are key factors in people's willingness to accept ISIL. Results showed that ISIL's ideology is incompatible with many of the residents of the territories it now occupies. The firm also found no gap in service provision or quality of jobs between Sunnis and Shias. Rather, the areas of disparity lie in security and justice. Sunnis feel underserved by the government and do not trust its judicial system. IIACSS concludes that the key factors that contribute to the acceptance of ISIL are a lack of trust in the government, deep feelings of injustice, and a growing sense of alienation among the Sunni minority.

My results identified strengthening legal rights as a promising means through which to combat ISIL. The context surrounding the sources of Sunni discontent casts this finding in higher resolution. Reforming the Iraqi government's protection of its population's rights and freedoms could potentially address one of the root causes of ISIL's rise. In addition to strengthening legal rights, providing equal protection under the law would instill a deeper level of trust in the government. In the end, my analysis suggests that defeating ISIL requires a change in social and political conditions present in Iraq. Iraqis must actively choose to follow their government and repel radical alternatives like ISIL. For this to happen, they need to believe their government protects them. Strong, universally equal legal rights, especially across ethnic lines, seems a promising path to peace.

⁸⁴ The entirety of this paragraph is in reference to al-Dagher (2015)

THE ROOT OF EVIL

The Islamic State of Iraq and the Levant poses a serious threat, both in the Middle East and abroad. The group's unprecedented rise in power and success since 2012 attracted the international eye, but its roots and origins run back to the turn of the century. International policy regarding ISIL primarily centers on the most effective way to fight, militarily, the group. In the face of a powerful and well-funded organization such as ISIL, military intervention may be necessary, but such a solution is palliative in nature. Consider again the case of the 2006 Awakening in the Anbar province. The US successfully coordinated a military campaign with local militias to drive Al-Qaeda in Iraq from the region. This joint intervention is widely regarded as a case study for exemplary counterinsurgency. Many are calling for the model's replication to defeat the current threat. In a sense, the Awakening was a success; the combined forces did prevail against AQI.

The success, however, was short lived. Within a year of the Awakening, AQI – the group that ultimately evolved into the ISIL we know now – had regrouped and returned to its pre-Awakening level of activity. Since its inception, resurgence has defined ISIL's response to violent setback. Though the military success achieved in the Awakening worked in degrading the group, it was a temporary solution that attacked only the symptoms of the problem. A more permanent solution requires a deeper understanding of the core roots from which groups like ISIL spring; we need to know why they arise in the first place to change the conditions that allow them to succeed.

Henry David Thoreau wrote:

“There are a thousand hacking at the branches of evil to one who is striking at the root.”

- Henry D. Thoreau, 1854 ⁸⁵

I believe this line beautifully frames the nature of the fight against extremism in Iraq. ISIL presents a complex problem, and the search for a solution should distinguish the palliative from the systemic; the fleeting from the permanent. Recent history reveals military action to be a temporary solution. A more permanent response must strike at the root of the problem, and this thesis argues that the lack of legal rights and the history of ethnic marginalization in Iraq provide the strongest explanation for the source of ISIL’s success. Policies focused on increasing the strength and equality of legal rights—particularly across ethnic lines—may prove an effective path to peace.

⁸⁵ Thoreau, H. D. (2010). *Walden*. Princeton University Press, p.98

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APPENDICES

Appendix A: Timeline of ISIL Activity in Iraq

Note: The following table shows a timeline of ISIL activity in Iraq since its inception in 1999. Conflict data was drawn from the Global Terrorism Database, and conflict information is aggregated into monthly totals. Entries in red represent key turning points in the group's history.

Timeline of ISIL Activity in Iraq						
Key Events & Conflict History in Iraq (January 1999 - June 2014)						
Date	Event	Description	Number of Conflicts	Fatalities	Injured	Notes
Jan-99	Group Founding	Original founding by Abu Musab al-Zarqawi under the name Jamā'at al-Tawhīd wa-al-Jihād, "The Organization of Monotheism and Jihad" (JTJ)	--	--	--	--
Oct-04	Name Change to Al-Qaeda in Iraq (AQI)	Name change to Tanzīm Qā'idat al-Jihād fī Bilād al-Rāfidayn, "The Organization of Jihad's Base in Mesopotamia", commonly known as Al-Qaeda in Iraq. (AQI)	--	--	--	--
Oct-04	Monthly Conflicts	AQI conflicts	3	54	19	--
Nov-04	Monthly Conflicts	AQI conflicts	0	0	0	Non-violent month
Dec-04	Monthly Conflicts	AQI conflicts	3	15	12	--
Jan-05	Monthly Conflicts	AQI conflicts	5	27	31	--
Feb-05	Monthly Conflicts	AQI conflicts	5	54	55	--
Mar-05	Monthly Conflicts	AQI conflicts	6	47	34	--
Apr-05	Monthly Conflicts	AQI conflicts	7	44	91	--
May-05	Monthly Conflicts	AQI conflicts	12	121	402	--
Jun-05	Monthly Conflicts	AQI conflicts	3	27	0	--
Jul-05	Ideological Shift	al-Qaeda's deputy leader Ayman al-Zawahiri outlines 4-stage plan to expand Iraq War in a letter to al-Zarqawi	--	--	--	The four stages included: Expelling US forces from Iraq, establishing an Islamic authority as caliphate, spreading the conflict to Iraq's secular neighbors, and engaging in Arab-Israeli conflict. Focus at this point is not singular.
Jul-05	Monthly Conflicts	AQI conflicts	17	135	194	--
Aug-05	Monthly Conflicts	AQI conflicts	1	8	20	--

Sep-05	Monthly Conflicts	AQI conflicts	5	210	625	--
Oct-05	Monthly Conflicts	AQI conflicts	1	1	0	--
Nov-05	Monthly Conflicts	AQI conflicts	1	35	25	--
Dec-05	Monthly Conflicts	AQI conflicts	2	36	72	--
Jan-06	Name Change to Mujahideen Shura Council	AQI merges with other insurgent groups to form Mujahideen Shura Council	--	--	--	--
Jan-06	Monthly Conflicts	Mujahideen Shura Council conflicts	1	2	15	--
Feb-06	Monthly Conflicts	Mujahideen Shura Council conflicts	1	0	0	--
Mar-06	Monthly Conflicts	Mujahideen Shura Council conflicts	0	0	0	Non-violent month
Apr-06	Monthly Conflicts	Mujahideen Shura Council conflicts	1	90	0	--
May-06	Monthly Conflicts	Mujahideen Shura Council conflicts	0	0	0	Non-violent month
Jun-06	Monthly Conflicts	Mujahideen Shura Council conflicts	2	7	59	--
Jun-06	Leadership Change	Al-Zarqawi killed	--	--	--	--
Jul-06	Monthly Conflicts	Mujahideen Shura Council conflicts	0	0	0	Non-violent month
Aug-06	Monthly Conflicts	Mujahideen Shura Council conflicts	0	0	0	Non-violent month
Sep-06	Monthly Conflicts	Mujahideen Shura Council conflicts	0	0	0	Non-violent month
Oct-06	Monthly Conflicts	Mujahideen Shura Council conflicts	0	0	0	Non-violent month
Oct-06	Name Change to Islamic State of Iraq (ISI)	Mujahideen Shura Council merges with several more factions to form Dawlat al-'Iraq al-Islamiyah - Islamic State of Iraq	--	--	--	ISI comprised Iraq's six mostly Sunni Arab governates
Oct-06	Leadership Change	Abu Abdullah al-Rashid al-Baghdadi becomes "Emir" of state and Abu Ayyub al-Masri becomes Minister of War	--	--	--	--
Oct-06	Ideological Shift	After formation of ISI, participants in ceremony swear to free Iraq's Sunnis from Shia and foreign oppression	--	--	--	First direct mention of Sunni-based mission
Nov-06	Monthly Conflicts	ISI conflicts	0	0	0	Non-violent month
Dec-06	Monthly Conflicts	ISI conflicts	0	0	0	Non-violent month
Jan-07	Monthly Conflicts	ISI conflicts	2	5	2	--
Feb-07	Monthly Conflicts	ISI conflicts	0	0	0	Non-violent month
Mar-07	Monthly Conflicts	ISI conflicts	9	154	570	--
Apr-07	Monthly Conflicts	ISI conflicts	2	135	168	--
May-07	Monthly Conflicts	ISI conflicts	3	52	64	--
Jun-07	Monthly Conflicts	ISI conflicts	13	66	134	--
Jul-07	Monthly Conflicts	ISI conflicts	2	4	0	--
Aug-07	Monthly Conflicts	ISI conflicts	2	253	759	--
Sep-07	Monthly Conflicts	ISI conflicts	5	42	30	--

Oct-07	Monthly Conflicts	ISI conflicts	3	6	0	--
Nov-07	Monthly Conflicts	ISI conflicts	14	112	11	--
Dec-07	Monthly Conflicts	ISI conflicts	1	5	0	--
Jan-08	Monthly Conflicts	ISI conflicts	4	10	27	--
Feb-08	Monthly Conflicts	ISI conflicts	2	101	150	--
Mar-08	Monthly Conflicts	ISI conflicts	4	70	147	--
Apr-08	Monthly Conflicts	ISI conflicts	12	85	128	--
May-08	Monthly Conflicts	ISI conflicts	9	67	89	--
Jun-08	Monthly Conflicts	ISI conflicts	5	15	3	--
Jul-08	Monthly Conflicts	ISI conflicts	5	73	137	--
Aug-08	Monthly Conflicts	ISI conflicts	5	62	83	--
Sep-08	Monthly Conflicts	ISI conflicts	6	31	93	--
Oct-08	Monthly Conflicts	ISI conflicts	1	2	0	--
Nov-08	Monthly Conflicts	ISI conflicts	5	45	101	--
Dec-08	Monthly Conflicts	ISI conflicts	4	80	169	--
Jan-09	Monthly Conflicts	ISI conflicts	4	36	120	--
Feb-09	Monthly Conflicts	ISI conflicts	3	42	88	--
Mar-09	Monthly Conflicts	ISI conflicts	4	80	134	--
Apr-09	Monthly Conflicts	ISI conflicts	14	138	328	--
May-09	Monthly Conflicts	ISI conflicts	3	42	85	--
Jun-09	Monthly Conflicts	ISI conflicts	3	146	351	--
Jul-09	Monthly Conflicts	ISI conflicts	10	76	267	--
Aug-09	Monthly Conflicts	ISI conflicts	8	158	732	--
Sep-09	Monthly Conflicts	ISI conflicts	2	2	15	--
Oct-09	Monthly Conflicts	ISI conflicts	9	170	772	--
Nov-09	Monthly Conflicts	ISI conflicts	10	7	33	--
Dec-09	Monthly Conflicts	ISI conflicts	9	164	585	--
Jan-10	Monthly Conflicts	ISI conflicts	0	0	0	Non-violent month
Feb-10	Monthly Conflicts	ISI conflicts	16	89	268	--
Mar-10	Monthly Conflicts	ISI conflicts	3	102	156	--
Apr-10	Monthly Conflicts	ISI conflicts	8	54	103	--
May-10	Monthly Conflicts	ISI conflicts	14	101	634	--
May-10	Leadership Change	Abu Bakr al-Baghdadi assumes leadership after former leaders killed by US	--	--	--	al-Baghdadi is the current leader of ISIL
Jun-10	Monthly Conflicts	ISI conflicts	9	53	121	--
Jul-10	Monthly Conflicts	ISI conflicts	9	67	68	--
Aug-10	Monthly Conflicts	ISI conflicts	1	58	123	--
Sep-10	Monthly Conflicts	ISI conflicts	7	31	125	--
Oct-10	Monthly Conflicts	ISI conflicts	1	58	75	--
Nov-10	Monthly Conflicts	ISI conflicts	17	43	75	--
Dec-10	Monthly Conflicts	ISI conflicts	1	7	0	--
Jan-11	Monthly Conflicts	ISI conflicts	1	61	150	--

Feb-11	Monthly Conflicts	ISI conflicts	0	0	0	Non-violent month
Mar-11	Monthly Conflicts	ISI conflicts	1	68	95	--
Apr-11	Monthly Conflicts	ISI conflicts	1	2	0	--
May-11	Monthly Conflicts	ISI conflicts	0	0	0	Non-violent month
Jun-11	Monthly Conflicts	ISI conflicts	2	47	102	--
Jul-11	Monthly Conflicts	ISI conflicts	2	36	58	--
Aug-11	Monthly Conflicts	ISI conflicts	3	9	0	--
Sep-11	Monthly Conflicts	ISI conflicts	4	14	126	--
Oct-11	Monthly Conflicts	ISI conflicts	2	1	0	--
Nov-11	Monthly Conflicts	ISI conflicts	3	6	3	--
Dec-11	Monthly Conflicts	ISI conflicts	15	57	147	--
Jan-12	Monthly Conflicts	ISI conflicts	1	1	0	--
Feb-12	Monthly Conflicts	ISI conflicts	34	71	268	--
Mar-12	Monthly Conflicts	ISI conflicts	24	100	252	--
Apr-12	Monthly Conflicts	ISI conflicts	43	67	163	--
May-12	Monthly Conflicts	ISI conflicts	1	1	6	--
Jun-12	Monthly Conflicts	ISI conflicts	35	162	516	--
Jul-12	Strategic Shift	al-Baghdadi releases audio statement announcing the group was returning to the former strongholds from which US troops and Sunni allies had driven ISI prior to withdrawal of US troops. Planned a new offensive in Iraq called "Breaking the Walls" to free group members in Iraqi prisons.	--	--	--	Violence in Iraq escalated that month
Jul-12	Monthly Conflicts	ISI conflicts	47	155	369	--
Aug-12	Monthly Conflicts	ISI conflicts	20	112	231	--
Sep-12	Monthly Conflicts	ISI conflicts	58	130	545	--
Oct-12	Monthly Conflicts	ISI conflicts	18	63	101	--
Nov-12	Monthly Conflicts	ISI conflicts	2	33	56	--
Dec-12	Monthly Conflicts	ISI conflicts	20	36	83	--
Jan-13	Monthly Conflicts	ISI conflicts	32	117	375	--
Feb-13	Monthly Conflicts	ISI conflicts	16	106	222	--
Mar-13	Monthly Conflicts	ISI conflicts	29	171	269	--
Apr-13	Monthly Conflicts	ISI conflicts	6	54	114	--
Apr-13	Name Change to Islamic State of Iraq and the Levant (ISIL)	Name change to Islamic State of Iraq and al-Sham (or Islamic State of Iraq and the Levant or Islamic State of Iraq and Syria - ISIL/ISIS)	--	--	--	Name change followed expansion into Syria. The US government uses the name ISIL
May-13	Monthly Conflicts	ISIL conflicts	23	76	238	--
Jun-13	Monthly Conflicts	ISIL conflicts	44	157	405	--
Jul-13	Monthly Conflicts	ISIL conflicts	72	300	648	All-time monthly high in all conflict categories

Jul-13	Key Event	Group raids Taji and Abu Ghraib prisons, freeing more than 500 prisoners	--	--	--	Represents culmination of "Breaking the Walls" campaign
Aug-13	Monthly Conflicts	ISIL conflicts	55	208	655	--
Sep-13	Monthly Conflicts	ISIL conflicts	58	265	793	--
Oct-13	Monthly Conflicts	ISIL conflicts	29	95	186	--
Nov-13	Monthly Conflicts	ISIL conflicts	16	60	101	--
Dec-13	Monthly Conflicts	ISIL conflicts	39	157	316	--
Jun-14	Name Change to Islamic State (IS)	Name change to Islamic State	--	--	--	Name change mirrored declaration of a Caliphate
Jun-14	Ideological Shift	IS declares its government a Caliphate	--	--	--	Ideological shift mirrors name change to Islamic State, attempt to take control of the global jihadist movement

Appendix B: STATA PCA Factor Loadings

Note: The following tables show the outputs of running PCA Factor Analysis on each of the seven categorical buckets. Indicators (listed in the “variables” column below) were only included in the factor to which they had the greatest relative contribution. Relative weightings of each variable for each factor are listed under each factor label, but weightings are only listed below if the relative contribution exceeded 0.5).

Agriculture PCA Rotated Factor Loadings Blanks (0.5)

Variable	AGR1	AGR2	Uniqueness
A1	0.5466		0.6781
A2		0.8798	0.1825
A3	-0.8966		0.1428
A4	0.9721		0.0302
A5	0.975		0.0291
A6		0.887	0.2076
A7		0.8991	0.1492
A8	0.5765	0.6197	0.2836

Health PCA Rotated Factor Loadings Blanks (0.5)

Variable	HLT1	HLT2	HLT3	HLT4	HLT5	Uniqueness
H1			-0.6704			0.2543
H2		0.7808				0.0846
H3	-0.6531	0.7471				0.0024

H4	0.8276	0.5519		0.0009
H5	0.9984			0.0015
H6	0.9847			0.0026
H7			0.8395	0.0456
H8	-0.8242	0.5572		0.0022
H9			0.95	0.0447
H10	0.9199			0.0074
H11	0.8979			0.0048
H12	0.9619			0.0002
H13	0.9932			0.0002
H14	0.9955			0.0001
H15	0.9954			0.0003
H16	-0.7064	-0.7028		0.001
H17	0.9748			0.0163
H18	0.9933			0.0003
H19		0.9527		0.0071
H20			0.5892	0.1164
H21	-0.901			0.0036
H22	-0.7708	0.5944		0.0029
H23	0.5312	0.7681		0.0208
H24	0.9967			0.0003
H25		0.9498		0.007
H26	0.9944			0.0003
H27	0.9968			0.0002
H28	0.997			0.0001
H29	0.6722		0.52	0.0314
H30			0.9555	0.0435
H31	0.997			0.0002
H32	-0.8236	-0.5584		0.0008
H33			0.8809	0.0478
H34		0.9773		0.0032
H35		0.5714	0.6278	0.0802
H36	-0.8019			0.0326
H37		0.7796		0.019
H38	-0.812	0.5423		0.0024
H39	-0.9525			0.0003
H40	0.9243			0.0093
H41	-0.9972			0.0002
H42		0.9629		0.0026
H43	0.5624	0.8153		0.0013
H44	-0.9973			0.0002
H45	-0.9904			0.0087
H46	0.5274	0.8189		0.0053

*WLT PCA Rotated Factor Loadings
Blanks (0.5)*

Variable	WLT1	WLT2	WLT3	WLT4	WLT5	WLT6	WLT7	Uniqueness
W1	0.6643							0.0124
W2	0.8718							0.0093
W3	- 0.9086							0.0075
W4	-0.84							0.0382
W5	0.6252	0.7099						0.0012
W6		0.943						0.0029
W7		0.913						0.0016
W8	0.6735				- 0.5631			0.0019
W9		0.9654						0.0054
W10		0.9502						0.0049
W11						0.799 9		0.0103
W12	0.6498	0.5785						0.0244
W13						0.904 8		0.0236
W14	0.691			0.562 7				0.0095
W15	0.7948							0.0244
W16			0.8726					0.0073
W17					0.973			0.0023
W18	0.7742							0.0021
W19					0.9719			0.0024
W20	0.6882			0.603 6				0.0036
W21	0.9429							0.008
W22	0.778							0.0349
W23	- 0.5989	- 0.6179						0.0211
W24				0.692 4				0.0186
W25		0.6153						0.1263
W26	0.8399							0.0028
W27	0.8304							0.009
W28	0.8245							0.0209
W29	0.8876							0.0093

W30	0.741		0.508 2	0.002
W31	0.7673			0.0113
W32		0.5859	0.6293	0.0291
W33	0.6559		0.577	0.0088
W34	0.8645			0.0011
W35	0.8777			0.0071
W36	0.899			0.0117
W37				0.899 5
W38	0.6732	0.5163		0.0014
W39			- 0.8898	0.0165
W40			0.751 7	0.0058
W41			0.753 6	0.0103
W42	0.6741			0.0036
W43	0.7524			0.0105
W44	- 0.8411			0.0009
W45	0.8739			0.0104
W46			0.806	0.0995
W47	- 0.8014			0.0778
W48		- 0.7768		0.0655
W49		0.8452		0.0006
W50		0.9536		0.0043
W51		0.9434		0.0037
W52			0.8149	0.0124
W53	- 0.9234			0.0068
W54	- 0.8681			0.0015
W55	- 0.7766			0.0198

*EDU PCA Rotated Factor Loadings
Blanks (0.5)*

Variable	EDU1	EDU2	Uniqueness
E1	0.9857		0.0026
E2	-0.9994		0.0009

E3	0.9712		0.0206
E4	0.9807		0.0029
E5	0.9998		0.0004
E6	0.6977	0.7129	0.0051
E7	-0.8977		0.0213
E8	0.9995		0.0008
E9		0.9325	0.0482
E10	0.6515	0.7564	0.0034
E11	0.9134		0.0236
E12	0.9991		0.0012
E13	0.9971		0.0027
E14		-0.9859	0.013
E15	0.8074		0.2737
E16	-0.9945		0.0015
E17	-0.9389		0.061
E18	-0.9997		0.0005
E19	-0.772	-0.576	0.0723
E20	0.9976		0.0029
E21	-0.9115		0.0233
E22	0.9151		0.0239
E23		0.9606	0.0373

*SOC PCA Rotated Factor Loadings
Blanks (0.5)*

Variable	SOC1	SOC2	Uniqueness
S1	0.9553		0.0082
S2	0.896		0.0078
S3		0.9551	0.0344
S4		0.9228	0.1188
S5	0.949		0.0702
S6		-0.8848	0.096
S7	-0.9004		0.0018
S8		0.9106	0.0514
S9	0.9004		0.0018
S10		0.9859	0.0235
S11	0.9647		0.0138
S12	0.9541		0.0077
S13		-0.7673	0.1705
S14		0.752	0.2759
S15	-0.6838	0.6397	0.1233
S16	-0.9556		0.0084

S17	0.9576	0.0094
S18	-0.9695	0.0191

IFS PCA Rotated Factor Loadings
Blanks (0.5)

Variable	IFS1	IFS2	Uniqueness
I1		-0.8908	0.2063
I2	0.7894	0.5556	0.0681
I3	0.954		0.0899
I4		0.9338	0.1118
I5	0.9045		0.0681
I6	0.5016	0.8371	0.0476
I7	-0.8027		0.3536
I8	0.659	0.6354	0.1619
I9	0.6261	0.5428	0.3133

GOV PCA Rotated Factor Loadings
Blanks (0.5)

Variable	GOV1	GOV2	GOV3	GOV4	Uniqueness
G1	-0.9857				0.0142
G2		0.9736			0.033
G3		0.9751			0.0313
G4	0.9265				0.0489
G5		0.9752			0.0314
G6	0.6491	-0.5001			0.1018
G7	0.9187				0.076
G8	0.9422				0.0198
G9			0.9601		0.0309
G10		-0.7399			0.1378
G11	0.9683				0.0112
G12			-0.9447		0.057
G13		0.9776			0.0301
G14	-0.9639				0.026
G15	0.726				0.0453
G16				-0.6491	0.2514
G17				0.7528	0.2709
G18				0.6679	0.497
G19			0.9721		0.0497
G20	0.9388				0.0372
G21		0.9491			0.0615

This thesis represents my own work in accordance with University Regulations.

-- *Carter Bradley*