

Forecasting the “Arab Spring” of 2011 Terrorist Incident Data from 2000–2010 Offered No Early Warning

Author(s): Richard J. Chasdi

Source: *Perspectives on Terrorism*, Vol. 7, No. 2 (April 2013), pp. 63–71

Published by: Terrorism Research Institute

Stable URL: <http://www.jstor.org/stable/26296924>

Accessed: 03-07-2018 14:20 UTC

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://about.jstor.org/terms>



This article is licensed under a Attribution 3.0 Unported (CC BY 3.0). To view a copy of this license, visit <https://creativecommons.org/licenses/by/3.0/>.



Terrorism Research Institute is collaborating with JSTOR to digitize, preserve and extend access to *Perspectives on Terrorism*

II. Research Notes

Forecasting the “Arab Spring” of 2011: Terrorist Incident Data from 2000-2010 Offered No Early Warning

by Richard J. Chasdi

Introduction

One of the single most predominant questions associated with the so-called “Arab Spring” is whether or not any social research indicators associated with terrorism data are available with predictive value for such profound structural political changes. The underlying aim of this “Research Note” is to take a first pass at the terrorism data and to compare certain terrorism data trends for four countries that experienced successful regime change in 2011, namely Tunisia, Egypt, Libya, and Yemen, to terrorism trends in nine countries where political strains and tensions did not result in full blown regime change. In this essay, those countries include Bahrain, Syria, Jordan, Morocco, Algeria, Kuwait, UAE, Lebanon, and Saudi Arabia. From the start, it should be clear that even though there was non-violent protest in many of these countries, this analysis places singular attention on what both Gurr and Ross and Miller call “oppositional” or “insurgent” terrorism where terrorist assaults are directed at state governments.[1]

In this research note, Iraq is considered a special case with dynamics at work elicited from the American occupation of Iraq in 2003. Therefore data on Iraq are excluded from the analysis for fear those data will skew results to the detriment of analysis of countries that experienced change primarily from internal factor influence as well as “contagion effect.”[2] Plainly, even though a more extensive analysis, inclusive of a broader range of explanatory variables and their influence on whether or not “regime change” happens, is beyond the scope of this article, the preliminary results offered here should offer a springboard for further analysis of terrorism data and equally important, broader political/social data trends such as rates of “political protest/violence” data, unemployment, and inflation rates that could serve as such indicators.

Data and Methodology

The data used for this analysis draw primarily on data compiled by the *National Consortium for the Study of Terrorism and Responses to Terrorism* (START) at the University of Maryland, with supplementary data culled from United States Department of State “Patterns of Global Terrorism” reports. The data categories used for the analysis draw from START data categories found in the “Global Terrorism Database” that have theoretical value for forecasting wider political events and those data categories include “Incidents over Time,” “Target-Type,” and

“Fatalities.” Plainly, there are some other descriptive categories found in that database that are theoretically more useful than others but indeed, some data categories as “weapons-type” and “assault-type” essentially remain theoretically threadbare in terms of serving as the basis for predictive hypotheses and theoretical relationships.[3]

The methodology used here for this first pass at “Arab Spring” terrorism predictors is relatively straightforward. With respect to the “Arab Spring” that commenced in Tunisia on December 18, 2010, each of the foregoing countries in the Middle East will be sorted out into “starter” and “non-starter” categories. First, there is hand-count tabulation of the frequency of terrorist events for a ten year period (2000-2010) for each “starter” and “non-starter” country prior to “Arab Spring” 2011 political events. In each case, the total number of terrorist assaults is summed and divided by ten to establish a mean for terrorist event frequencies. Next, I sum the total number of terrorist assaults for the two year interval (2008-2010) and divide by two to establish a mean for the two year interval (2008-2010).

The T tests revolves around whether or not a statistically significant difference of means exists for terrorist incident frequency when the “middle-run” 2000-2010 period is compared to the “short-run” 2008-2010 for each “starter” state. The central notion is that unspecified political factor effects might be associated with transformative events of 2011 and reflected by higher rates of terrorist assaults in that “short-run” period with greater intensification of political instability and social unrest as measured in terrorist events. One underlying assumption is the two year interval under consideration provides the time necessary for such explanatory factor effects to work themselves through the political system.[4]

As these are “paired samples” or “dependent samples,” we know the general theoretical direction of the hypothesized effects, namely that the 2008-2010 period prior to the “Arab Spring” should be characterized by a higher mean of terrorist assaults. Therefore, a “one-tailed” T test is conducted to determine if it is possible to reject the null hypothesis of no relation (i.e., no statistically significant difference of means). In a similar vein, I repeat this process for two other means of variables that might serve as indicators of structural political change, namely frequency of terrorist assaults with police and military targets and frequency of terrorist assaults with fatalities.

I had hoped to use another set of T tests to determine whether or not there is a statistically significant difference of means between “starter” states and “non-starter” states for the 2008 - 2010 time interval. However, there was substantial variation in the sample sizes for states suggesting the samples for “starter” and “starter” states were not normal bell shaped distributions but skewed instead. That condition and the very small difference in means observed, precluded the possibility of conducting independent T tests for independent samples across countries.

Explanatory Variable One – Frequency of Terrorist Assaults

The first possible terrorism indicator that might serve as a predictor of structural political change is the frequency of terrorist events. There are four “starter” countries in the Maghreb and Mashreq regions of the Middle East under consideration. A hand-count of terrorist assaults determined all “starter” countries had a mean of terrorist incidents for the 2008-2010 interval that was larger than the mean for the 2000-2010 period for “frequency of terrorist events.” As previously mentioned, it is found that the difference of means observed within the category of “starter” states was in most cases and with the exception of Yemen, very small. There was also variation with respect to the number of cases for each “starter” state with Yemen in the data set. That is a strong indication the distribution of the data set for “starter” states is not a normal bell shaped distribution but highly skewed, which limits even further the analysis possible.

To be more specific, the observed difference of means was extremely small to very small in the cases of Libya, Tunisia, and Egypt. For Libya, a mean of .2 terrorist events is found for the ten year period from 2000-2010 (2 events from 2000-2010) in comparison to a mean of .5 found for the “short-run” two year period between 2008-2010 with one chronicled terrorist assault. [5] For Tunisia, a mean of .7 is found for the ten year “middle-run” interval (7 terrorist events from 2000-2010) by contrast to a mean of 1 found for the “short-run” two year interval that preceded the “Arab Spring” (2 events from 2008-2010). Likewise in Egypt, a mean of 1.4 is found for the “middle-run” ten year period (14 events from 2000-2010) as compared to a mean 2.5 terrorist events in Egypt from 2008-2010 (2 events from 2008-2010).[6] In contrast, Yemen experienced greater numbers of terrorist assaults. For Yemen, the total number of terrorist assaults recorded from 2000-2010 is 206 events, by contrast to 112 incidents from 2008-2010 and therefore, the mean for 2000-2010 is 20.6, while the mean is 56 for the “short-run” 2008-2010 interval.[7]

Knowing that such small differences in means suggests that finding a statistically significant difference in means is highly unlikely, it is still possible to conduct a “one-tailed” T test because in the case of “starter” states, the samples are “dependent samples” otherwise known as “paired samples.” A “one-tailed” T-test was performed for “starter” states to determine whether or not there was a statistically significant difference in the means of terrorist assaults for the ten year period prior to the “Arab Spring,” (2000-2010) and for the two year period prior to the Arab Spring (2008-2010). At a theoretical level, it is anticipated that the means for terrorist assaults in the two year interval will be higher because of their proximity to the “Arab Spring.” We want to test if the difference between the means for the ten year “middle-run” period and the two year “short-run” period is statistically significant. The T obtained was 1.064 at 3 d.f. (d.f. = $n_p - 1 = 3$) and it was not possible to reject the null hypothesis at the .05 (95% confidence level) as T “critical” for a “one-tailed” T test at the .05 level at 3 d.f. is 2.353., In addition, it is not possible to reject the null hypothesis at the .10 level (90% confidence level) as T “critical” at 3 d.f. for a “one-tailed” T test is 1.638 at .10.[8]

In summation, there is no statistically significant difference of means found for terrorist incidents in “starter” countries when the “middle-run” from 2000-2010 and the “short-run” from 2008-2010 are compared. Put another way, there is no meaningful difference in the average number of terrorist assaults that happened in the interval immediately prior to the “Arab Spring” when compared to a much longer ten year period prior to the “Arab Spring” and it is necessary to conclude this terrorism data indicator, namely the rate of terrorist events, cannot be used as a broader indicator of structural political change to forecast “Arab Spring” political events.

Additional Explanatory Variables– Terrorist Assaults with “Police” and “Military” Targets; “Terrorist Assaults with Fatalities”

In similar fashion, two other explanatory variables from the START data coding framework scheme are tested to determine their suitability to predict “Arab Spring” events based on the difference of means T tests for “middle-run” and “short-run” intervals. Those two variables are “police” and “military” targets, and “terrorist assaults with fatalities.” As before, “one-tailed” T tests are conducted because the skewed nature of the data, the variation in the number of terrorist incidents across states examined, and the anticipated theoretical direction of change. The categories “police” and “military” targets were recoded and conflated in the process (i.e., “police/military”) to reflect attacks on the state. The central notion is that on the cusp of the “Arab Spring,” there should be an increase in terrorist assaults directed against targets representative of the state and its coercive capacity for “symbolic” reasons inclusive of anger and other similar sentiments.[9] The same underlying notion of an increase in fatal terrorist events prior to the “Arab Spring” applies here.

As before, a hand-count of terrorist assaults for both time periods for both variables was conducted and the mean was calculated for terrorist assaults with “police/military” targets and “terrorist assault fatalities” for the two time intervals under consideration. As before, there were small and in some cases exceedingly small differences in observed means between time intervals and variation in the numbers of terrorist assaults carried out in “starter” states.[10] For “starter” countries, a “one-tailed” T test is performed because these are “dependent samples” and the anticipated change or theoretical direction is a rise in the mean of terrorist events with “police/military” targets in the 2008-2010 period. The T test produced a “T” statistic of 1.049 at 3 d.f. which fell short of the critical “T” value of 2.353 at 3 d.f. at the .05 level (95% confidence level) and the critical “T” value of 1.638 at the .10 level (90% confidence level). Hence, it was not possible to reject the null hypothesis.[11] Hence, there is no statistically significant difference of means of terrorist events with “police” and “military” targets found for “starter” states when the 2000-2010 and 2008-2010 periods are compared.

In a similar vein, the same procedure is used to examine whether or not “terrorist assaults with fatalities” is a useful predictor for “Arab Spring” events. [12] Here too there was no statistically

significant difference of means found for the 2000-2010 “middle-run” period that preceded the “Arab Spring” by ten years and the “short-run” two year period immediately prior to the “Arab Spring.” That “one-tailed” T test produced an “obtained” T score of .9737 at 3 d.f. (d.f. = $n_p - 1 = 3$) and that does not exceed T “critical” that is 2.015 at 3 d.f. at the .05 level. Indeed, it does not exceed T critical at the .10 level (90% confidence level) for 3 d.f. which is 1.638. Therefore, it is not possible to reject the null hypothesis that no statistically significant difference of means exists between the “short-run” and “middle-run” intervals under consideration. Accordingly, lethal terrorist assaults are also found to be useless as an indicator of “Arab Spring” events in addition to the indicators “frequency of terrorist events,” and “frequency of terrorist events involving military and police targets.”

Plainly, those terrorism social indicators are not useful predictors of “Arab Spring” events at least as data indicators to capture the profound and lasting political changes associated with the “Arab Spring.” Still, it might be possible that terrorism indicators might be relevant as an intervening variable(s) and thus as a predictor of political dynamics that influence the shape and frequency of terrorism. Midlarsky, Crenshaw, and Yoshida suggested that international terrorism contagion effect is “hierarchal” in nature, essentially spreading from a nation state with “higher levels” of “diplomatic ranking” to countries with “lower levels of diplomatic ranking” when the scope of contagion under consideration is “regional.”[13] For Midlarsky, Crenshaw, and Yoshida, the spillover effect or “contagion” effect between Germany and Italy in the 1970’s was an example of such “hierarchal” transmission in the region of Western Europe.[14] For Midlarsky, Crenshaw, and Yoshida, that condition of “hierarchal” transmission contrasts with “reverse hierarchy” processes in place when “international terrorism” moves from the “developing world” to the “developed world.” In the case of “reverse hierarchy” processes, terrorism in the “developing world,” such as the activities of the Tupamaros in Uruguay, served as inspiration and elicited affiliation by disaffected groups or persons in “developed” nation-states. These contagion effects are worth exploring as it might be possible to cast some parameters of intervening factor effects that would be worth testing in future research.

It seems that Midlarsky, Crenshaw, and Yoshida’s “hierarchal” process of international terrorism contagion in a specific region of the world, namely the Maghreb and Mashreq portions of the Middle East, is primarily of interest here because it is possible to tweak the model to first look at the interaction of political protest and government reaction. Because a country such as Egypt is an example of high “diplomatic ranking” and “international status” the authors suggest it is more likely that its patterns of protests as well as its patterns of violence would be “imitated” by groups in other countries. But patterns of terrorist violence are influenced by internal factors such as government policies of repression, or ad hoc acceptance or degrees of acceptance of protest and only then would those terrorism outcomes be replicated in other countries and addressed by government policies. [15]

It follows that the choice by government to accept political protest or degrees of political protest or repression would by contrast, lead to an increase or a decrease of terrorist assaults and related activities that in turn would lead to more or less in the sphere of “Arab-Spring” like events.

Accordingly, those dynamics essentially place terrorism as an intervening variable in the dissemination process, which in turn, according to the Midlarsky, Crenshaw, and Yoshida model, influences terrorism patterns in that sequential process in other nation-states.

How terrorism patterns are influenced by political protest and government response to those protests in Country A, shapes activities in the first period of contagion in Country B but insofar as policies differ in various countries because of “contextual factor” effects, terrorist outcomes will be shaped by independent protests and policies in Country B in $t+1$ where in some cases more or less terrorism would be elicited. Those “contextual factors” include cultural factors and other factors such as specifics of economic and political marginalization, and what the authors call “group dynamics,” and “physical contacts.” [16] Plainly, it is that configuration of relationships and their connections that would help determine if patterns of terrorism resemble what Midlarsky, Crenshaw, and Yoshida called a condition of “reinforcement” where terrorism reappears in a specific country at a later date, “constancy” where presumably levels of terrorism remain the same, or a condition of “decline.” Further efforts at exploring the role of terrorism as an intervening variable between political protest and increases or decreases in government repression in other countries within the context of Midlarsky, Crenshaw and Yoshida’s model might prove fruitful.

Final Reflections

The underlying aim of this research note was to determine whether or not terrorism incident data can be used as predictors for profound structural political changes such as “Arab Spring” political events. It is clear that analysis of the START data on “starter” and “non-starter” countries has not illuminated any statistically significant difference of means in overall terrorist event frequencies, terrorist assaults characterized by attacks against “police” and “military” targets, and terrorist assaults with fatalities. That is the case for a “short-run” two year interval immediately preceding the “Arab Spring,” and a “middle-run” ten year interval preceding “Arab Spring” political events.

What appears to be a skewed distribution of the terrorist assault data is suggested by the large variance in sample means found and the very small to exceedingly small difference of observed means for “starter” states between those two time periods. That emergent reality constrained the framework of analysis employed. It is probably no exaggeration to say that makeshift and incomplete data might have contributed to the results; to be sure, this is no reflection on the quality of START data but more reflective of existing conditions for many developing countries, especially for those Middle Eastern countries shaped by the “Arab Spring” where more complete

data compilation is difficult because information is sketchy on more “pedestrian” terrorist assaults that might be reported in insufficient detail or ignored outright.[17]

It is possible that rates of terrorism and its “attributes” in specific countries might be an intervening variable in the dissemination process of profound and lasting political changes and that might explain why terrorism indicators are not able to illuminate patterns of change in time intervals immediately preceding the “Arab Spring” which would be useful for predictive purposes. Alternately, other social and economic indicators such as the thirty five year length of authoritarian rule, stagnant economic conditions, the level of political protest/demonstrations, and other unspecified political and economic variables might be more direct and better indicators of the profound and lasting change that has swept across much of the Middle East. It might be useful to build on the Midlarsky, Crenshaw and Yoshida model, perhaps by means of path analysis, to determine if a case can be made that terrorism serves as an intervening variable with respect to transnational dissemination of full blown political change or reform. It might be even more useful if data on governmental acts of repression would be collected next to data on non-state actors so that the two datasets can be juxtaposed. More often than not, it is violence that begets violence and one cannot understand non-state violence without studying the use of force – both the legitimate use and illegal uses – by state actors. We should also look at social and economic indicators: data on (youth) unemployment, government corruption, human rights violations, income distribution, and combating insurgencies could be usefully looked at. In this way, quantitative data might yield better results and our ability to forecast confrontations could be greatly enhanced.

About the Author: *Richard J. Chasdi is an Adjunct Assistant Professor at the Center for Peace and Conflict Studies at Wayne State University and an Adjunct Associate Professor of Political Science at the University of Windsor.*

Notes

[1] Jeffrey Ian Ross and Ted Robert Gurr. 1989. “Why Terrorism Subsides: A Comparative Study of Canada and the United States.” *Comparative Politics* 21 (4): 405-426; Jeffrey Ian Ross and Reuben Miller. “The Effects of Oppositional Political Terrorism: Five Actor-Based Models.” *Low Intensity Conflict and Law Enforcement*. 6 (3) (Winter 1997), pp. 76-107.

[2] Harvey Starr and Benjamin Most. 1976. “The Substance and Study of Borders in International Relations Research.” *International Studies Quarterly* 20 (4): pp.581-620; Harvey Starr and Benjamin Most. 1983. “Contagion and Border Effects on Contemporary African Conflict.” *Comparative Political Studies* 16 (1): pp. 92-117; Harvey Starr and Benjamin Most. 1985. “Patterns of Conflict: Quantitative Analysis and the Comparative Lessons of Third World Wars.” In: Robert E. Harkavy and Stephanie G. Neumann (Eds.) *Approaches and Case Studies*, Vol. 1 of *The Lessons of Recent Wars in the Third World*. Lexington, MA: D.C. Heath.

[3] For each “starter” and “non-starter” country under consideration, data from the *Global Terrorism Database* produced by the “National Consortium for the Study of Terrorism and Responses to Terrorism (START)” were used as primary data for analysis (<http://www.start.umd.edu/gtd>).

[4] In the case of START’s data category “Incidents over time” which I recode as “Average Number of Terrorist Assaults,” I also performed a “one-tailed” T test with data for “starter” states for a *four year interval* from 2006-2010; I could not reject the null hypothesis of no statistically significant difference of means.

[5] Those terrorist assaults in Libya include: (1) an “Unknown” event, #200703300012, “Date: 2007-03-30,” (2) a “Sudan Liberation Movement” event, #200808260001, “Date: 2008-08-26.”

[6] Those terrorist assaults in Tunisia include: (1) an “Unknown” event, #20000518000, “Date:2000-05-18,” (2) an “Armed Islamic Group (GIA) (suspected)” event, #20011025001, “Date: 2001-10-25,” (3) an “Al-Qa’ida” event, #200204110003, “Date: 2002-04-11,” (4) an “Individual” event, #200204110004, “Date: 2002-04-11,” (5) an “Unknown event,” #200701030002, “Date: 2007-01-03,” (6) an “Al-Qa’ida in the Lands of the Islamic Maghreb (AQLIM)” event, #200802220008, “Date: 2008-02-22,” (7) an “Al-Qa’ida in the Lands of the Islamic Maghreb (AQLIM)” event, #200811010022, “Date: 2008-02-22.”

For Egypt, terrorist assaults include: (1) an “Abdullah Azzam Brigades, Egyptian Tawhid and Jihad, Jamaa Al-Islamiya Al-Alamiya (World Islamist Group)” event, #200410070002, “Date: 2004-10-07,” (2) an “Abdullah Azzam Brigades, Egyptian Tawhid and Jihad, Jamaa Al-Islamiya Al-Alamiya (World Islamist Group)” event, #200410070003, “Date: 2004-10-07,” (3) an “Unknown” event, #200504300003, “Date: 2005-04-30,” (4) an “Abdullah Azzam Brigades, Egyptian Tawhid and Jihad” event, #200507230001, “Date: 2005-07-23,” (5) an “Individual” event, #200604010019, “Date: 2006-04-01” (6) an “Individual” event, #200604140017, “Date: 2006-04-14,” (7) an “individual” event #200604140018, “Date: 2006-04-14,” (8) an “Individual” event, #200604140019, “Date: 2006-04-14,” (9) an Egyptian Tawhid and Jihad” event, #200604240001, “Date: 2006-04-24,” (10) an “Unknown” event, #2200811110025, “Date: 2008-11-11,” (11) an “Unknown” event, #200902220004, “Date:2009-02-22,” (12) an “Unknown” event, #200905110035, “Date: 2009-05-11,” (13) an “Unknown” event, #201002210015, “Date: 2010-02-21,” (14) a “Bedouin tribesmen (suspected)” event, #201006270002, “Date: 2010-06-27.”

[7] Those patterns continue to hold in the case of the nine (9) “non-starter” states under consideration. The observed difference in means is also exceedingly small and many “non-starter” cases such as United Arab Emirates, Syria, Bahrain, Morocco, Jordan, Saudi Arabia, and Kuwait had very low rates of terrorism. In the UAE, there is a mean of .10 for the 2000-2010 interval (one act) while a mean of .5 is found for the 2008-2010 interval (one act). For Syria, a mean of .4 for 2000-2010 reflects four chronicled incidents while a mean of 1 for 2008-2010 in Syria reflects two recorded incidents. In the case of Jordan, a mean of 1.3 acts is tabulated from 13 acts chronicled from 2000-2010 while a mean of 1 reflects the two (2) incidents chronicled from 2008-2010. With a mean of .5 for 2000-2010, Bahrain also experienced very little terrorism with 5 acts over ten years; it experienced three (3) events from 2008-2010 for a mean of 1.5. A mean of .80 was found for Kuwait with a total of eight (8) events from 2000-2010 and a mean of 0 with zero (0) events from 2008-2010. For Morocco, a mean of 1.1 is found with 11 chronicled terrorist acts from 2000-2010 and a mean of 0 is found from the 2008-2010 period with zero (0) events. By contrast, Saudi Arabia experienced 43 events from 2000-2010 for a mean is 4.3 as compared to 3 terrorist assaults from 2008-2010 (a mean of 1.5). In contrast, Algeria experienced a much higher rate of terrorism than other “non-starter” states in both time periods under consideration. The mean for 2000-2010 is 122 and the mean for 2008-2010 is 157.5 as there were 1,220 recorded terrorist assaults from 2000-2010, and 315 chronicled for 2008-2010. In a similar vein, 152 acts are chronicled for Lebanon from 2000-2010 for a mean of 15.2 while 78 events are recorded for Lebanon from 2008-2010 prior to the start of the “Arab Spring” for a mean of 39.

[8] R. Mark Sirkin (1999), *Statistics for Social Sciences*. 2nd ed. Thousand Oaks, CA: Sage Publications, pp. 293-294, 250. There are four pairs of means examined here for the countries under consideration ($n_p=4$). First, Sirkin tells us to calculate the sample s (or standard deviation) which is the square root of s^2 (the variance). Here, the variance is 227.4 so the standard deviation is 15.08.

[9] For coding purposes, when there were combinations of "target-type" in the START data such as "business, military," "police, maritime," and "police, other" for example, targets were coded as single rather than multiple "police/military" target terrorist events in each case. In the case of "military, military" targets, the act was also coded as a single event. Incident examples include "Search Results – Yemen": (1) an "Al-Qa'ida in the Arabian Peninsula (AQAP)" event #201010110002, "Date: 2010-10-11," (2) an "Agmur (suspected)" event #201005160012, "Date: 2010-05-16," (3) a "Southern Mobility Movement (Yemen) (suspected)" event # 201009040006, "Date: 2010 -09-04," (4) a "Southern mobility Movement Yemen" event #201007270009, "Date: 2010-7-27," (5) an "Unknown" event #200807070041, "Date: 2008-07-07."

[10] For example, in the case of terrorist assaults with "police and military targets," Tunisia has a mean from 2000-2010 of .3 (3/10) and 0 (0/2) for the 2008-2010 period. For Egypt, the mean from 2000-2010 is .10 (1/10) and .5 (1/2) for the 2008-2010 period. For Yemen, the mean from 2000-2010 is 8.5 (85/10) by contrast to a mean of 39 (78/2) for the 2008-2010 interval.

[11] In the "one-tailed" T-test, the 10 year mean (2000-2010) constitutes the "before" sample and the 2 year mean (2008-2010) constitutes the "after" sample. In the case of the 10 year mean, Tunisia = .3; Egypt = .1; Libya = 0; Yemen = 8.5. In the case of the 2 year mean, Tunisia = 0; Egypt = .5; Libya = 0; Yemen = 39. The variance is 159.45 and the standard deviation is 12.62.

[12] Tunisia experienced 5 terrorist assaults with fatalities from 2000-2010 ($5/10 = .5$) for a mean of .5. There were no fatal terrorist assaults in Tunisia from 2008-2010. Egypt experienced 7 lethal terrorist events from 2000-2010 ($7/10 = .7$) with one (1) terrorist assault with fatalities from 2008-2010 ($1/2 = .5$). In Libya, there were no fatal terrorist assaults chronicled from 2000-2010. Yemen experienced much higher rates of lethal terrorism with 112 acts from 2000-2010 ($112/10 = 11.2$) and 95 acts from 2008-2010 ($95/2 = 47.5$). The variance is 250.26 and the standard deviation is 15.81.

[13] Manues I. Midlarsky, Martha Crenshaw, Fumihiko Yoshida. "Why Violence Spreads: The Contagion of International Terrorism." *International Studies Quarterly*, Volume 24, Issue 2 (June, 1980.) p. 264.

[14] *Ibid.*, p. 280.

[15] *Ibid.*, pp. 272-273.

[16] M.I. Midlarsky, M. Crenshaw, and F. Yoshida (1980), op. cit., pp. 286, 282 ; Richard J. Chasdi (2010). *Counterterror Offensives for the Ghost War World: The Rudiments of Counterterrorism Policy*, Lanham, MD: Lexington Books, pp. 51, 53, 68-69, 386-388.

[17] R. J. Chasdi (2010), op. cit.