ARTICLE

How do Major, Violent and Nonviolent Opposition Campaigns, Impact Predicted Life Expectancy at birth?

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This study compared the effects of major violent and nonviolent opposition campaigns for regime change, on predicted life expectancy at birth. The study measured life expectancy five and ten years after the campaign ended, so that deaths which occurred during the campaign would not be included in the metric, and thus enabling the study of changes made in the state on the social determinants affecting longevity, after the campaign was over. Life expectancy is one of the best reported World Development Indicators and is considered to be a good indication of the overall health and general living conditions of the state and therefore is an ideal indicator to reflect the changes made in the state following a major campaign. The results of this analysis showed that states have a hard time recovering from a major opposition campaign and initially drop behind the growth trend in the world average for predicted life expectancy at birth. But, the type of campaign that was waged and whether it was successful, greatly affects the state's ability to recover. Encouragingly by a decade after the campaign ends, states that experienced a nonviolent campaign that was successful had caught up to the world average and inched ahead of it. This shows that on this important development indicator, new governments that were ushered into power by nonviolent social movements, had made positive changes in the state that enabled it to surpass world averages.

Introduction

With the recent occurrences of the "Arab Spring" researchers are questioning whether nonviolent campaigns have had a beneficial effect on the states that experienced them. With so much upheaval and disruption to commerce, tourism, and other industries, some are asking if it would not have been better had the campaign not occurred. Through the use of one of the most widely used developmental indicators this study is the first of its kind to measure the effect of

a major opposition campaign on the state. Additionally, recognizing that there will always be groups seeking to make changes in the state, this study also analyzed if the type of campaign that was waged, in terms of violent or nonviolent, makes a difference in the state's ability to recover and grow.

Major opposition campaigns don't leave the state where they found it. Charles Tilly and Sidney Tarrow explain that: "Contentious campaigns for change, whether violent or nonviolent, reshape the state's political relations, institutions, opportunities, threats, and modes of behavior; and they thereby promote within the state a change toward either democratization or autocratization"

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(2007: 67). Major opposition campaigns are those that are defined as involving at least one thousand people; and whether they are successful or fail in their efforts, they can bring significant change to the social determinants of the state. What are these changes and how does the recovery of states which experienced a violent campaign differ from those that experienced a nonviolent social movement? The truth is, we don't really know. Very little quantitative analysis has been done to compare states recovering from violent campaigns to those recovering from nonviolent ones. There is a good deal of literature describing the challenges that states go through in recovering from violent conflicts; but very little comparative analysis has been done to understand the differences between violent and nonviolent campaigns. Ackerman and Duvall explain that, "because violence became so widely accepted as a medication for injustice and tyranny, there was no incentive to consider less damaging alternatives for taking power, or to consider how effective these alternatives have been in the past. The work of nonviolent campaigns in the twentieth century led to independence for India, equal rights for African Americans and South Africans, democracy in Poland and the removal of dictators in the Philippines, Chile, and a litany of other countries. But never in the postwar period did a military insurrection or violent coup, extend freedom to the people in whose name power was taken" (2000: 459).

This study begins to fill this gap by comparing the recovery of states that experience violent conflicts to those that experienced nonviolent social campaigns and then further breaks this down by differences based upon whether the campaign was successful or failed to reach its goals; by analyzing the impact of the campaign on predicted life expectancy, at birth. This indicator is defined as the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life time. "Life expectancy is calculated by adding up the probabilities of surviving to every age and then applying one of several models to smooth out any random statistical fluctuations from one year of age to the next" (Sullivan and Sheffrin 2003).

In practice, life expectancy, at birth, is a World Development Indicator that provides a good indication of the overall health and general living conditions of the state. It incorporates all of the natural phenomena of climate, weather, geography, environmental factors, and global warming; as well as policy considerations including how well the state is doing in supplying health care, how the state addresses food supply considering both those who are starving as well as those who are obese, as well as how the state is dealing with epidemics including HIV/AIDS, malaria, flu, etc. (Robine and Ritchie 1991).

Literature Review

R. G. Wilkinson indicates that variations in life expectancy have been associated with a wide variety of measures of socioeconomic status, including: housing tenure, occupational class, overcrowding, education, and unemployment. His research brings to light "a significant tendency of lower mortality in countries with more egalitarian distribution of income; not necessarily higher income but more egalitarian" (1992: 165). This relationship has been identified in different countries, at different times, and with different measures of income distribution, suggesting that the effect is robust. Wilkinson cites specifically a comparison between Britain and Japan, whose income distribution and life expectancy were similar in 1970 and fairly typical of other OECD countries at that time. But, by 1992 Japan had the highest life expectancy in the world, with no obvious explanation in the form of changing diet or health services. He did, however, observe that by 1992 "Japan had the most egalitarian income distribution of any country on record. Britain on the other hand, had an income distribution that had widened since the mid-1980's while mortality among men

Stoddard: How do Major, Violent and Nonviolent Opposition Campaigns, Impact Predicted Life Expectancy at birth?

Art. 37, page 3 of 11

and women aged 15–44 years unfortunately increased greatly" (1992: 167). Wilkinson also states that if Britain were to adopt an income distribution more like the most egalitarian European countries the slope of the regression equation would suggests that about two years might be added to the population's life expectancy.

Health related concerns also impact life expectancy. Writing in the New England Journal of Medicine, S. Jay Olshansky et al. state that "from our analysis of the effect of obesity on longevity, we conclude that the steady rise in life expectancy during the past two centuries may soon come to an end" (2005: 1138). They explain that the trend in life expectancy throughout history has been characterized by a slow and steady increase; a pattern sometimes punctuated by volatility in death rates caused by epidemics and pandemic infectious diseases, famines, and war. "This volatility was dramatically curtailed in the mid-nineteenth century as infectious diseases yielded to improved living conditions, advances in public health, and medical interventions" (2005: 1139). However, during the past thirty years the rise in life expectancy at birth in the United States has decelerated relative to this historical pattern, such that now the gains in life expectancy are much smaller than they were in previous decades, and if this trend were to continue on the same trajectory, life expectancy will go into decline. This would mean that for the first time since the mid-nineteenth century, the next generation is not expected to live as long as the current one. "The proportion of people with extreme obesity has increased at an especially rapid rate such that now two-thirds of adults in the US today are obese or overweight. These trends have affected all major racial and ethnic groups, all regions of the country, and all socio-economic strata". Obesity has been shown to have a substantial negative effect on longevity, reducing the length of life of people who are severely obese by an estimated five to twenty years depending on the level of obesity (2005: 1140).

Another study looked at environmental factors and showed that life expectancy can be increased when there is a decrease in fine particulate air pollution. C. Arden Pope III et al. showed that "a decrease of 10 ug per cubic meter in the concentration of fine particulate matter was associated with an estimated increase in mean life expectancy of 0.61 years + or – 0.20 (p=0.004), holding constant changes in socioeconomic and demographic variables as well as a proxy indicator for the prevalence of cigarette smoking. In other words reductions in air pollution accounted for as much as 15 per cent of the overall increase in life expectancy in the study areas" (2009: 376). Although multiple factors affect life expectancy, these findings provide evidence that improvements in air quality have contributed to measureable improvements in human health and life expectancy. Interestingly they also state: "We found substantial variation around the regression line, indicating that the association with air pollution although significant, was only one part of the variation; clearly other important factors influence life expectancy" (2009: 380).

These studies point to some of the many aspects that impact life expectancy and the reasons why life expectancy is a good overall measure of how the state is managing environmental, socioeconomic, health care, and disease concerns.

The Model for This Study

This study investigated the impact of opposition campaigns on life expectancy for states that have experienced a major campaign for regime change. Life expectancy was measured at five and ten years after each campaign ended, to analyze if the changes made in states which experienced a violent campaign differed from those which experienced a major nonviolent campaign. Because life expectancy is a world development indicator, we are able to compare the impact of major campaigns to world averages to analyze if states that experienced campaigns, particularly those that experienced nonviolent ones,

are better or worse than world averages. A regression model was used to analyze the effects of violent and nonviolent campaigns on predicted life expectancy at birth. This was further broken down by analyzing any differences between campaigns that were successful and those that failed to achieve their goals.

The data used for this test is from the World Bank and the specific indicator chosen was: "Life expectancy at birth, total (years)" (2012). The World Bank's data is compiled from the following male and female life expectancy at birth sources: (1) United Nations Population Division. World Population Prospects, (2) United Nations Statistical Division. Population and Vital Statistics Report (various years), (3) Census reports and other statistical publications from national statistical offices, (4) Eurostat: Demographic Statistics, (5) Secretariat of the Pacific Community: Statistics and Demography Programme, and (6) U.S. Census Bureau: International Database.

The Nonviolent And Violent Campaigns and Outcomes (NAVCO 1.0) dataset was used to gather major opposition campaign data from 1975 to 2006. Opposition campaigns are defined as "a series of observable, continuous, purposive mass tactics or events in pursuit of a political objective. Campaigns are observable, meaning that the tactics used are overt and documented. A campaign is continuous and last anywhere from a few days or weeks to multiple years; distinguishing it from one-off events or revolts" (Chenoweth and Stephan 2008: 4). Campaigns are different than single events or one time occurrences and generally include numerous activities such as strategy, planning, mobilization, shifting to new strategies, more coordination and training, and then further mobilization.

The campaigns included in this dataset are considered 'major' in at least two aspects. First, they are limited to those that involved at least one thousand people, so they are major in size. Second, they must have "posed a major challenge to existing order, inasmuch as it produced a major government crackdown of campaign activists or resulted in the expulsion of a foreign occupier, or domestic regime" (Chenoweth and Stephan 2008: 4).

This definition of what distinguishes a major campaign is important to this study because life expectancy changes naturally over time and we are seeking to show that the trend can be impacted by a major campaign in the state. If the results show that nonviolent campaigns lead to changes that improve life expectancy it would be beneficial indeed and help to quell the fear that the disruption caused by the campaign has left the state in a worse condition.

For this study, campaigns that were longer in duration than two years were removed from the NAVCO dataset, because it was felt that trends in life expectancy would change normally over time, making it difficult to explain that a change in the indicator's value was due to a campaign when the campaign stretched on for numerous years. For example, some of the violent campaigns continued on for decades. The Burmese campaign lingered on for 58 years, the Chinese Communist movement for 47 years, the Colombia Revolutionary Armed Forces campaign went on for 43 years and the nonviolent campaign in West Papua continued for 42 years. These were the longest durations in the dataset, but give an indication of the enormous length of some of these campaigns. One would expect the value of life expectancy for the states in the study, to change somewhat naturally over these long time periods along with the rest of the world. For that reason it was determined to eliminate all campaigns from the dataset that were longer than two years in an effort to control for extraneous variables and show that any changes in the indicator were more likely to be due to the major campaign event that occurred.

The specific indicator used for the dependent variable from the World Development Indicators is "Life Expectancy at birth, total years" (World Bank 2012). Data for the inde-

Stoddard: How do Major, Violent and Nonviolent Opposition Campaigns,
Impact Predicted Life Expectancy at birth?

Art. 37, page 5 of 11

pendent variables are from the NAVCO dataset (Chenoweth 2012).

The first independent variable is a dummy variable indicating whether the campaign was primarily nonviolent (coded as one) or violent (coded as zero). Most campaigns are a mixture of both violent and nonviolent tactics. This variable records the main tactic that was used to affect the campaign result.

The second independent variable is another dummy variable measuring whether the campaign was successful (coded as one) or unsuccessful (coded as zero). Partial success, for example those that were scored as limited reforms, were marked unsuccessful (and coded as zero) as the protestor's goals were not truly (or not yet) fully realized, even though some of their goals were brought to fruition.

The third independent variable is an interaction term which is included to capture any additional effects of having both a nonviolent and a successful campaign over and above the violent/nonviolent and successful/unsuccessful variables. A tolerance test for co-linearity was performed to verify the regression model is not double counting the results through the interaction term. In this case, co-linearity would be a problem for example, if violent campaigns always failed and nonviolent campaigns were always successful; so that both variables were in essence measuring the same effect. It does not appear to be the case as both violent and nonviolent campaigns have been successful as well as unsuccessful; but the tolerance test will verify this statistically.

To handle the endogeneity prior to the event, a covariate is used to control for a measure of the indicator, five years before the campaign started. Endogeneity is the concern that there may be something about the state that leads campaign organizers to choose violent or nonviolent tactics, or to achieve successful results, which also correlates with the dependent variable. Adjusting for how the indicator is doing five years before the campaign begins, helps account for this problem because common cause of

both the event and the outcome are likely to be captured, at least somewhat, in the pretest level of the indicator. However, the analytical strategy does not address other possible confounding factors not captured by the pretest level of the indicator. As a result, the evidence of causation from these analyses remains limited as we seek to identify correlation.

Two regression tests were run, the first measuring the dependent variable five years after the campaign ended, the second measuring the dependent variable ten years after. Taking a measure of the dependent variable just after the governmental transition for a successful campaign, or at the end of a major campaign that was unsuccessful, is generally unwise as states usually experience a period of instability in the immediate aftermath of a major campaign.

The following equalization shows the regression model for an outcome on each indicator.

Outcome after = B0 + B1 (tactics) + B2 (success) + B3 (tactic x success) + B4 (outcome before) + error

The equation predicts the "outcome after" the campaign, and as mentioned both five and ten year follow-up periods will be tested. "Tactic" is coded 1 for nonviolent and 0 for violent, and "success" is coded 1 for a successful campaign and 0 for an unsuccessful one. There is an interaction term, "tactic x success" as well as a control for the level of the 'outcome before' the campaign to address the endogeneity prior to the event. The "B's represent the coefficients that will be estimated, including the constant (B0).

What are the predicted results?

As noted above major opposition campaigns don't leave the state where they found it. Sidney Tarrow, Doug McAdam, Charles Tilly, are among the authors who have shown that nonviolent campaigns have a better chance of bringing about democracy or, at least increasing the level of democracy in the state, as they force governments to comply with the demands of its citizens. Likewise

violent campaigns are often associated with ushering in a higher level of autocracy.

To the degree that it is expected that active participating citizens will demand services that promote greater health in the form of: universal healthcare, the availability of healthcare facilities, state funding to treat major health threats (HIV/AIDS, Malaria, Flu), safe living conditions, decrease in the threat of violent crime, quick recovery from natural disasters etc. it is expected that in states which experience nonviolent campaigns which usher in greater levels of democracy, we will see life expectancy increase as a result of these changes. This is hypothesis 1.

But for states that experience violent campaigns Tilly and Tarrow draw a different trajectory: "Lethal conflicts have special features that set them off from other forms of contentious politics. Killing, wounding, and the damaging effects of violent conflict, affect the survival of participants as well as non-combatants, well after the immediate struggle has ended. Violent campaigns have been known to break up families and communities, destroy available labor supply, and eliminate the means of production, transportation, communication as well as destroy the states' infrastructure" (2007: 136). Recovering from violent conflict takes a larger toll on society economically, structurally, and physically and lasts well beyond the campaign's end. In fact, Anke Hoeffler has shown that more people die in civil war from the spread of disease as they flee the fighting, then from actual battle deaths. Hoeffler found the percentage of battle deaths to total deaths from the civil wars in her sample, "indicate that deaths from military operations are less than one third of all deaths due to war" (2008: 9). The aftereffects, including disease, continue long after the fighting has ceased. It is therefore expected that states which have had a violent campaign will see a decrease in life expectancy even five and ten years after the campaign as they struggle to recover from its impact whether the violent campaign was successful or unsuccessful. This is hypothesis 2.

Additionally for violent campaigns which are successful and usher in autocratic governments that are repressive, exclusive, and unresponsive to citizen demands for healthcare services, but instead provide only those services as it serves the state; it is expected that overall life expectancy will decrease further for these states. This is hypothesis 3.
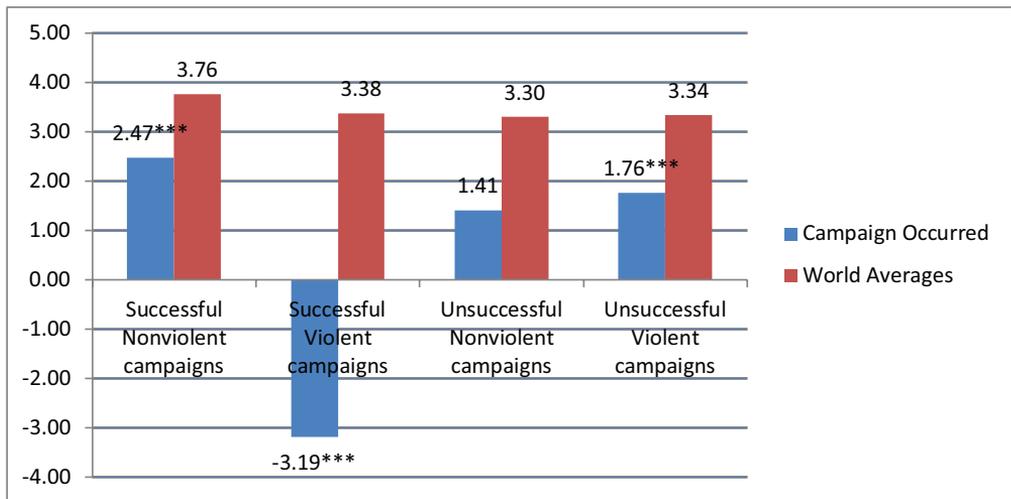
Results and Analysis

Figure 1 shows that states which experienced nonviolent campaigns, whether they were successful or unsuccessful, accomplished positive growth in life expectancy while states that experienced successful violent campaigns had a decrease in life expectancy. Surprisingly states that experienced violent campaigns that were not successful also showed positive growth in life expectancy.

There were no significant differences between the four lines of world averages (showing in red in figure 1). But the reason they are slightly different is due to the mix of states and time periods involved. States that experienced a successful nonviolent campaign tended to be slightly later in time when greater strides and growth rates in life expectancy were being experienced across the world.

Discussion of the results five years after the campaign ended

Regression analysis of the seventy-four historical cases that were studied from 1975 to 2006 revealed that states that had a major opposition campaign of any type saw less gains in life expectancy compared to world averages when measured five years after the campaign ended. This shows that states do have a rough time initially following a major campaign. The states that experienced a successful nonviolent campaign faired the best with 2.47 improvement in life expectancy in the five year period following the campaign but did not see as much growth as world averages for the same number of years. There is generally an interim period when the existing government has been ousted but

Stoddard: How do Major, Violent and Nonviolent Opposition Campaigns,
Impact Predicted Life Expectancy at birth?

Art. 37, page 7 of 11

Note: Predicted changes in years of Life Expectancy by transition type, five years after the campaign ended holding pre-campaign Life Exp. constant at the Mean. Squared Multiple R=0.833, *** p<0.01, N=74, Tolerance > 10% in all bars. All campaigns < two years in duration.

Figure 1: Predicted changes in years of life expectancy from birth, five years after the campaign ended compared to world averages.

new leaders are not yet elected so services, including health services, may be disrupted or suspended. During this period the state may be slower in recovering from natural disasters and violent crime may be up. Trust in the government may be affected, or other interruptions may be occurring in the areas effecting life expectancy.

Successful violent campaigns faired the worse, revealing the policy changes that were put in place by the new government in the aftermath of the successful violent campaign decreased the states' life expectancy from birth by 3.19 years. Babies that were born five years after a new government was ushered into power following a successful violent campaign are predicted to live 3.19 years less than those born before the campaign began; while the world average increase by 3.38 years during the same time. This in essence drops these states back six and a half years, from the rest of the world.

The results for states which experienced unsuccessful nonviolent campaigns were in the positive direction but made the least gains of all four types of campaigns. The results were not statistically significant and

could have occurred by chance. The results reveal a growth in life expectancy of 1.41 years which is less than half of the world average for the same five years. Recall that the dataset includes only those campaigns that were designated as 'major' and saw at least one thousand participants involved in the campaign that lead to the major government crackdown. It's interesting that a movement that size did not significantly alter the predicted life expectancy at birth, such that it could be separated from chance, for these states. It shows how entrenched the factors that impact life expectancy are, and how remarkable the other results are which were able to modify life expectancy trajectories.

Surprisingly the results for unsuccessful violent campaigns were also in the positive direction, in contrast to violent campaigns that were successful, and this result was statistically significant. These campaigns did not usher in a new regime, but the existing regime must have made changes that brought life expectancy forward. Perhaps there was some accommodating to the demands of the violent protestors even though their goals were not obtained. These
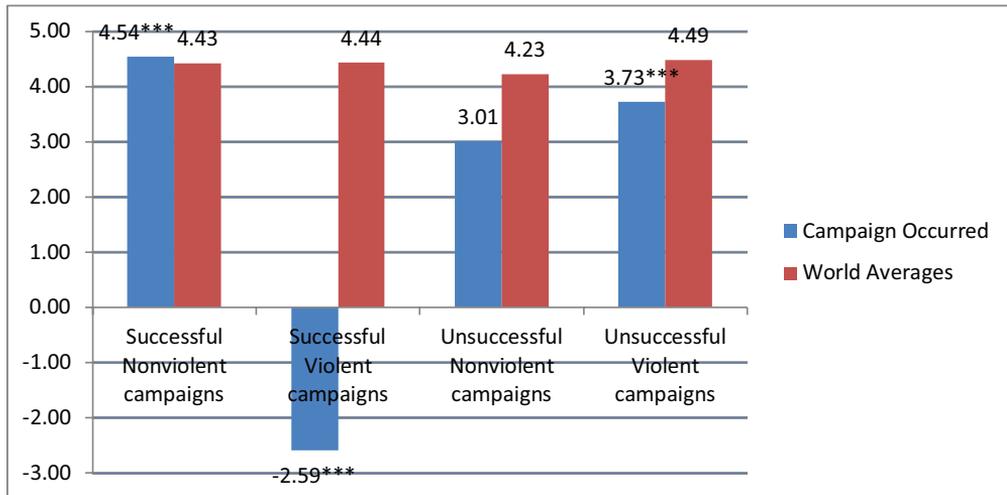
Note: Predicted changes in years of Life Expectancy by transition type, ten years after the campaign ended holding pre-campaign Life Exp. constant at the Mean. Squared Multiple R=0.791, *** p<0.01, N=67, Tolerance > 10% for all bars. All campaigns < two years in duration.

Figure 2: Predicted changes in years of life expectancy from birth, ten years after the campaign ended compared to world averages.

results show that the campaign itself did not have a lasting negative impact on the state trend in life expectancy. This contrasts with violent campaigns that were successful and ushered in new governments that made changes which negatively impacted life expectancy. It shows that it was not the campaign that brought the negative result but the changes implemented by the government following the campaign.

Discussion of the results 10 years after the campaign ended

The second regression analysis reveals the progress of states in life expectancy ten years after the campaign ended and shows that states which experienced campaigns of any type improved in life expectancy at a greater rate than world averages. Although world averages increased across the board, states that experienced a campaign grew at faster rates, although most of these were catching-up after having fallen behind.

By ten years after the campaign ended states that experienced a successful nonviolent campaign again performed the best in growth of life expectancy. For these states

life expectancy increased from 2.47 years five years after the end of the campaign to 4.54 years, by ten years after, moving slightly ahead of the world average. So, these states not only recovered from the campaign but caught up and moved ahead of where they would have been, had there not been any campaign. This positive effect points to the value of waging nonviolent campaigns over violent ones. This indicates that the states in our study made positive advances in the component areas that effect life expectancy as compared to those that experienced a violent campaign. More funding could have been moved to health care, income could have been made more equal, environmental conditions could have been improved, and/or additional funding could have been allocated to recovery from natural disasters. We cannot tell from these results if the new government itself, or perhaps even new international partners aided these states in their quest to improve living conditions and life expectancy. But it can be said that the state either put more funding aside for these improvements on its own, or better positioned itself with partners who provided funding in these

areas. Successful nonviolent campaigns were the only type of campaign that caught up to world averages and surpassed them, thereby confirming hypothesis 1.

The regression analysis revealed that successful violent campaigns also saw gains, as these states' predicted life expectancy improved from -3.19 years which was measured five years after the campaign end, to -2.59 years ten years out; although, this was the least improvement in growth of all four types of campaigns and the only one still behind comparatively to where the state was before the campaign began. The new regimes that violent campaigns ushered into office, continued to make changes which held their state back in the areas that promote growth in life expectancy confirming hypothesis 3. New leaders know that they were successful in coming into power through violence and they tend to redirect funds from healthcare and other social services to invest in high military spending, in an attempt to maintain their new position. "Governments in post-conflict societies are well aware that they are living dangerously. Typically, they react to this risk by maintaining their military spending at an abnormally high level" (Collier 2007: 27).

Measured ten years after the campaign ended unsuccessful nonviolent campaigns continued to see gains, improving from 1.41 years measured five years after, to 3.01 years measured ten years after. But again these results were not statistically significant.

Interestingly, violent campaigns which were not successful and did not usher in a change in government, saw life expectancy increases from 1.76 years, as measured five years after the campaign end, to 3.73 years measured ten years after, thereby contradicting the second hypothesis. This group experienced the second highest rate of improvement (after nonviolent successful campaigns). Perhaps leaders in these states put more resources into accommodating the people in the form of greater availability of health care, improved infrastructure, greater availability of food supplies etc., in the hopes

of preventing future opposition campaigns. Perhaps they felt that funding in these areas was a better way of staying in office then increasing military spending as the new leaders who were ushered into power through a successful violent campaign were doing.

A second possible explanation is that unsuccessful campaigns did not usher in a new regime with high military spending. It is very probable that the existing regime might also redirect funds to military spending to respond to the security risk from rebel movements, but it appears not as much as those governments that won their way into office through violence. Existing governments that survived violent campaigns were surprisingly able to reverse the trends of violence and increase those factors that promote extended life.

Summary and Conclusions

This study looked at the impacts of major violent and nonviolent opposition campaigns on state's predicted life expectancy at birth in an attempt to respond to the concerns that we see in the media regarding major opposition campaigns, even nonviolent ones, being so disruptive to the state that it would have been better that they not occur at all. Little is known about how states differ in their rates of recovery due to the type of campaign that was waged, and how they compare to development in world averages. Life expectancy was chosen for the development indicator for this study because it is a good overall measure of the state's health and general living conditions, environmental factors, as well as how the state is doing in supplying healthcare, dealing with epidemics and natural disasters that arise.

The results showed that there were big differences in the recovery rates of different types of campaigns. States that experienced nonviolent campaigns that were successful saw the greatest improvements in life expectancy. By ten years after the campaign ended, these states had recovered from all of the effects of the campaign and moved ahead of world averages, showing that these states

were better off because of the campaign. It does take a long time but the gains are clear.

States that experienced successful violent campaigns saw the most decline in predicted life expectancy at birth, leaving these states worse off for having experienced the campaign, while all other types of campaigns saw improvements. Even ten years after the campaign ended these states were still struggling to bring their life expectancy up to where it had been before the campaign began. This should inform future campaign organizers, and the governments that support them, to think seriously about other options and other means of waging campaigns if they have the well-being of the state's people in mind.

Surprisingly, states that experienced violent campaigns that were not successful saw positive gains in life expectancy and moved closer to world averages when measured at both the five year and ten year after campaign marks. In contrast to violent campaigns that were successful these states recovered from the campaign and moved ahead albeit at a slower rate than the rest of the world.

Future studies should verify if the trajectories continue fifteen and twenty years after the campaign has ended. It would be interesting to note if states that experienced nonviolent campaigns continue to improve their predicted life expectancy rate and continue to out-pace world averages. This would indeed be very encouraging news for today's advocates of nonviolence.

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Stoddard: How do Major, Violent and Nonviolent Opposition Campaigns, Impact Predicted Life Expectancy at birth?

Art. 37, page 11 of 11