

# Success of Leader Assassination as a Natural Experiment

One longstanding debate in the study of international relations concerns the question of whether individual political leaders can make a difference. Some emphasize that leaders with different ideologies and personalities can significantly affect the course of a nation. Others argue that political leaders are severely constrained by historical and institutional forces. Did individuals like Hitler, Mao, Roosevelt, and Churchill make a big difference? The difficulty of empirically testing these arguments stems from the fact that the change of leadership is not random and there are many confounding factors to be adjusted for.

In this exercise, we consider a *natural experiment* in which the success or failure of assassination attempts is assumed to be essentially random.

This exercise is based on: Jones, Benjamin F, and Benjamin A Olken. 2009. "Hit or Miss? The Effect of Assassinations on Institutions and War." *American Economic Journal: Macroeconomics* 1(2): 55–87.

Each observation of the CSV data set `leaders.csv` contains information about an assassination attempt. The variables are:

Name	Description
<code>country</code>	The name of the country
<code>year</code>	Year of assassination
<code>leadername</code>	Name of leader who was targeted
<code>age</code>	Age of the targeted leader
<code>politybefore</code>	Average polity score during the 3 year period prior to the attempt
<code>polityafter</code>	Average polity score during the 3 year period after the attempt
<code>civilwarbefore</code>	1 if country is in civil war during the 3 year period prior to the attempt, or 0
<code>civilwarafter</code>	1 if country is in civil war during the 3 year period after the attempt, or 0
<code>interwarbefore</code>	1 if country is in international war during the 3 year period prior to the attempt, or 0
<code>interwarafter</code>	1 if country is in international war during the 3 year period after the attempt, or 0
<code>result</code>	Result of the assassination attempt, one of 10 categories described below

The `polity` variable represents the so-called *polity score* from the Polity Project. The Polity Project systematically documents and quantifies the regime types of all countries in the world from 1800. The polity score is a 21-point scale ranging from -10 (hereditary monarchy) to 10 (consolidated democracy).

The `result` variable is a 10 category factor variable describing the result of each assassination attempt.

## Question 1

How many assassination attempts are recorded in the data? How many countries experience at least one leader assassination attempt? (The `unique` function, which returns a set of unique values from the input vector, may be useful here). What is the average number of such attempts (per year) among these countries?

## Answer 1

```

leaders <- read.csv("./data/leaders.csv")
## number of assassinations is number of rows
nrow(leaders)

## [1] 250

## number of countries in the data
length(unique(leaders$country))

## [1] 88

## average number of assassination attempts among these countries for
## each year, which then needs to be averaged across years
mean(tapply(leaders$country, leaders$year, length))

## [1] 2.45098

mean(table(leaders$year)) # alternative

## [1] 2.45098

```

The number of assassination attempts in the data is equal to the number of observations, 250. There are 88 countries in the dataset that have experienced at least one assassination attempt. The average number of attempts among all of these countries is equal to the average number of observations per year in the data, 2.45.

## Question 2

Create a new binary variable named `success` that is equal to 1 if a leader dies from the attack and to 0 if the leader survives. Store this new variable as part of the original data frame. What is the overall success rate of leader assassination? Does the result speak to the validity of the assumption that the success of assassination attempts is randomly determined?

## Answer 2

```

## create variable, 1 if died "from" attack, 0 otherwise
lev <- levels(as.factor(leaders$result))
lev # shows response categories

## [1] "dies between a day and a week"
## [2] "dies between a week and a month"
## [3] "dies within a day after the attack"
## [4] "dies, timing unknown"
## [5] "hospitalization but no permanent disability"
## [6] "not wounded"
## [7] "plot stopped"
## [8] "survives but wounded severely"
## [9] "survives, whether wounded unknown"
## [10] "wounded lightly"

leaders$success <-
  ifelse(leaders$result == lev[1] | leaders$result == lev[2] |
         leaders$result == lev[3] | leaders$result == lev[4], 1, 0)
## rate of success
mean(leaders$success)

## [1] 0.216

```

Assassination attempts are successful 21.6 percent of the time. It is unclear whether this can validate the assumption that attempts are randomly determined. It at least validates that not all attempts lead to the death of the leader. However, we do not know if other systematic factors, such as skill of the perpetrator, health of the leader, or security conditions, might be at work in determining success and failure of the attempts.

### Question 3

Investigate whether the average polity score over 3 years prior to an assassination attempt differs on average between successful and failed attempts. Also, examine whether there is any difference in the age of targeted leaders between successful and failed attempts. Briefly interpret the results in light of the validity of the aforementioned assumption.

### Answer 3

```
## avg polity score for successful/unsuccesful before
mean(leaders$politybefore[leaders$success == 1])
```

```
## [1] -0.7037037
```

```
mean(leaders$politybefore[leaders$success == 0])
```

```
## [1] -1.743197
```

```
## avg age for successful/unsuccesful
mean(leaders$age[leaders$success == 1])
```

```
## [1] 56.46296
```

```
mean(leaders$age[leaders$success == 0])
```

```
## [1] 52.71429
```

Prior to the attempt, countries with unsuccessful assassinations were somewhat less democratic on average than countries with successful attempts. The age of the leaders was relatively similar, although countries whose leaders died from the attack had slightly older leaders. These two findings suggest that there may be some systematic differences in the types of countries and types of leaders who are more susceptible to successful assassination attempts, though the differences may not be large.

### Question 4

Repeat the same analysis as in the previous question, but this time using the country's experience of civil and international war. Create a new binary variable in the data frame called `warbefore`. Code the variable such that it is equal to 1 if a country is in either civil or international war during the 3 years prior to an assassination attempt. Provide a brief interpretation of the result.

### Answer 4

```
## create `warbefore` variable
leaders$warbefore <- ifelse(leaders$interwarbefore == 1 |
                           leaders$civilwarbefore == 1, 1, 0)
```

```
## proportion war before successful/unsuccesful
mean(leaders$warbefore[leaders$success == 1])
```

```
## [1] 0.3518519
```

```
mean(leaders$warbefore[leaders$success == 0])
```

```
## [1] 0.372449
```

Countries with successful attempts were no more or less likely to be engaged in war prior to the assassination attempt than those with unsuccessful attempts. This finding is consistent with the assumption that the success of assassination attempts is random.

## Question 5

Does successful leader assassination cause democratization? Does successful leader assassination lead countries to war? Answer these questions by analyzing the data. Be sure to state your assumptions and provide a brief interpretation of the results.

## Answer 5

```
## compare polity scores before to scores after
diff.pol.succ <- mean(leaders$polityafter[leaders$success == 1]) -
  mean(leaders$politybefore[leaders$success == 1]) # successful
diff.pol.unsucc <- mean(leaders$polityafter[leaders$success == 0]) -
  mean(leaders$politybefore[leaders$success == 0]) # unsuccessful
## difference in differences
diff.pol.succ - diff.pol.unsucc
```

```
## [1] 0.09271857
```

To answer these questions, a difference-in-differences analysis is conducted. We take the difference in mean polity scores before and after the assassination attempts for countries with unsuccessful attempts and subtract this difference from the difference score for those with successful attempts. The assumption here is that the change in polity scores for countries with successful attempts would be the same as the change for those with unsuccessful attempts had their assassinations not been successful. The result, while positive, is so small as to suggest that successful attempts do not cause democratization.

Using the same difference-in-difference approach, we find very little difference in the proportion of countries engaged in war. Leader assassination does not seem to cause countries to engage in war.

```
## create variable for warafter
leaders$warafter <- ifelse(leaders$interwarafter == 1 |
  leaders$civilwarafter == 1, 1, 0)
## compare war before to war after among successful and unsuccessful
diff.war.succ <- mean(leaders$warafter[leaders$success == 1]) -
  mean(leaders$warbefore[leaders$success == 1])
diff.war.unsucc <- mean(leaders$warafter[leaders$success == 0]) -
  mean(leaders$warbefore[leaders$success == 0])
diff.war.succ - diff.war.unsucc # difference in differences
```

```
## [1] -0.07161754
```