Class 9

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Exam Practice

Today we will practice some analysis. You will work on the practice by yourself. I will answer questions as if this were an exam.

Time management will be important during the midterm. You should be able to answer the questions below in less than 60 minutes

We will analyze the relationship between indiscriminate violence and insurgent attacks using data about Russian artillery fire in Chechnya from 2000 to 2005.

This exercise is based on: Lyall, J. 2009. "Does Indiscriminate Violence Incite Insurgent Attacks?: Evidence from Chechnya." *Journal of Conflict Resolution* 53(3): 331–62.

Some believe that indiscriminate violence increases insurgent attacks by creating more cooperative relationships between citizens and insurgents. Others believe that indiscriminate violence can be effective in suppressing insurgents' activities.

```
chechen <- read.csv("chechen.csv")
```

Name	Description
village	Name of Chechnya village
groznyy	Variable indicating whether a village is in Groznyy (equal to 1) or not (equal to 0)
fire	Whether Russians struck a village with artillery fire (equal to 1) or not (equal to 0)
deaths	Estimated number of individuals killed during Russian artillery fire
preattack	The number of insurgent attacks before Russian artillery fire
postattack	The number of insurgent attacks after Russian artillery fire

Question 1

1.1. How many unique villages were hit by Russian fire? Note that villages will appear multiple times (one record for each time the Russians fired).

```
length(unique(chechen$village[chechen$fire == 1]))
```

```
[1] 75
```

Answer: 75

1.2. Which village had the largest number of deaths across **all** attacks?

```
tapply(chechen$deaths, chechen$village, sum, na.rm = T)
```

Achireshki	Achkoi-Martan
0	0
Agishbatoi	Agishty
0	25
Akhkinchu-Barze	Alkhan-Kala
0	0
Alkhan-Yurt	Alkhazurovo
0	0
Argun	Aslanbek-Sherpivo
35	0
Avarskoye	Avtury
0	0
Bachi-Yurt	Bas-Gordali
0	0
Belgatoy	Benoy
34	0
Berdakel	Borzoi
0	0
Chechen-Aul	Chiri-Yurt
1	0
Dachu-Borzoi	Dai
0	0
Dargo	Dolinskoe
0	0
Duba-Yurt	Dutsu-khote
0	0

Dyshne-Vedeno	Dzhalka
4	1
Dzhugurty	Elistanzhi
0	1
Ersenoi	Eshilkhatoy
0	1
Evli	Gansolchu
0	0
Gargachi	Gatin-Kali
2	0
Gekhi (Blagodatnoye)	Gekhi-Chu
0	0
Geldagan (Gel'dygen)	Germenchuk
0	0
Gikalo	Gikalovskiy
0	0
Goichu	Goity
0	2
Goryacheistochnenskaya	Grozny (Zavodskiy)
0	3
Grozny (Leninskiy)	Grozny (Zavodskiy)
21	2
Grushevoye	Gudermes
0	0
Guni	Ilaskhan-Yurt
0	0
Ishtiburi	Isti-Su
0	0
Khal-Keloi	Khambi-Irze
0	0
Kharsenoi	Khatuni
0	1
Khidi-Khutor	Kirov-Yurt
0	0
Kirova	Komsomolskoe
0	0
Kulary	Kurchaloi
0	0
Leshkoroy	Lipovka
0	0
Makhkety	Maloye (Malyye Varandy)
14	0
Malye Shuani	Marshen-Kali

0	0
Martan-Chu	Mayrtup
0	7
Mesedoy	Mesker-Yurt
0	1
Michurina	Morzoi-Mokkh
20	0
Musolt-Aul	Nadrech'ye
0	0
Neftyanoye	Nikolaevskaya
0	0
Nizhny Dai	Novogroznenskoi
0	0
Novye Aldy	Novye Atagi
2	5
Oktya'brskoe	Oktyabr'skiy (Groznyy)
0	0
Ortsi-Yurt	Pamyatoy
0	0
Pervomayskaya	Petropavlovskaya
0	2
Podgornyy	Prigorodny
0	0
Regety	Regety (Regita)
0	0
Roshni-chu	Sel'mentauzen
0	2
Serzhen-Yurt	Shaami-Yurt
37	1
Shali	Sharo-Argun
5	1
Shatoi	Shena (Shuani)
2	0
Shirdi-Mokhk	Sovetskoye
0	0
Sredniye kurchali	Staraya Sunzha
0	0
Staropomyslovskiy (Groznyy)	Starye Atagi
0	5
Tangy-Chu	Tashi
0	0
Tazen-Kale	Tevzena
1	0

```
              Tolstoy-Yurt            Trekhgor'ye
                       0                       0
              Tsa-Vedeno             Tsotan-Yurt
                       0                      16
               Ulus-Kert             Urus-Martan
                       2                       1
                 Valerik                  Vedeno
                       1                       6
             Verkhny Dai           Yalkhoy-Mokhk
                       0                       0
            Yermolovskiy              Zakan-Yurt
                       1                       0
                  Zumsoj
                       0
```

```r
sort(tapply(chechen$deaths, chechen$village, sum, na.rm = T),
    decreasing = T)[1]
```

```
Serzhen-Yurt
          37
```

Answer: Serzhen-Yurt

Question 2

2.1. Did Russian artillery result in a greater number of deaths in Groznyy compared to the villages outside of Groznyy? Compute the mean difference in deaths for the two groups.

```r
round(mean(chechen$deaths[chechen$groznyy == 1], na.rm = T) -
    mean(chechen$deaths[chechen$groznyy == 0], na.rm = T), 2)
```

```
[1] 2.14
```

Answer: 2.14

2.2. Conduct the same comparison but use median differences.

```r
round(median(chechen$deaths[chechen$groznyy == 1], na.rm = T) -
    median(chechen$deaths[chechen$groznyy == 0], na.rm = T),
    2)
```

```
[1] 3
```

Answer: 3

Question 3

3.1. Compare the average number of insurgent attacks after Russian fire for villages hit by artillery fire and those that were not hit.

```
round(mean(chechen$postattack[chechen$fire == 1]) - mean(chechen$postattack[chechen$fire ==
    0]), 2)
```

```
[1] -0.55
```

Answer: -.55

Question 4

4.1. Compute the mean difference in the `diffattack` (the difference between preattack and postattack) variable between villages shelled and villages not shelled.

```
chechen$diffattack <- chechen$preattack - chechen$postattack

round(mean(chechen$diffattack[chechen$fire == 1]) - mean(chechen$diffattack[chechen$fire ==
    0]), 2)
```

```
[1] 0.52
```

Answer: .52

Question 5

5.1. How many villages in the dataset are located in Groznyy?

```
length(unique(chechen$village[chechen$groznyy == 1]))
```

```
[1] 5
```

Answer: 5

5.2. What is the total number of insurgent attacks (both preattack and postattack) recorded in villages outside of Groznyy?

```
sum(chechen$preattack[chechen$groznyy == 0], na.rm = TRUE) +
    sum(chechen$postattack[chechen$groznyy == 0], na.rm = TRUE)
```

```
[1] 708
```

Answer: 708

Question 6

6.1. Compute the proportion of villages that were hit by Russian artillery fire at least once.

```
length(unique(chechen$village[chechen$fire == 1]))/length(unique(chechen$village))
```

```
[1] 0.6
```

Answer: .60

Question 7

7.1. What is the average number of deaths per attack in villages that were shelled?

```
round(mean(chechen$deaths[chechen$fire == 1], na.rm = TRUE),
    2)
```

```
[1] 1.67
```

Answer: 1.67

7.2. What is the maximum number of postattack insurgent attacks recorded in any village?

```
max(tapply(chechen$postattack, chechen$village, sum, na.rm = TRUE))
```

```
[1] 89
```

Answer: 89

7.3. What proportion of villages where artillery fire occurred had zero deaths reported?

```
length(unique(chechen$village[chechen$fire == 1 & chechen$deaths ==
    0]))/length(unique(chechen$village[chechen$fire == 1]))
```

[1] 0.7733333

Answer: .77