Introduction to Infographics and Data Visualization (Spring 2023)

20231 - JMM622-O

5th Assignment, Final Version

Yuri Souza

Project One: Homelessness

Yuri Souza

2023-04-02

This file contains the workflow I used for the project topic Homelessness

First Version

I choose to work with homeless students in New York state. I picked up this topic because this is probably the social class most affected by homelessness, given that they are young and must make decisions that will guide and impact adult life. The infographic is based on The Economist magazine style. Everything I used here is also available on my *GitHub*.

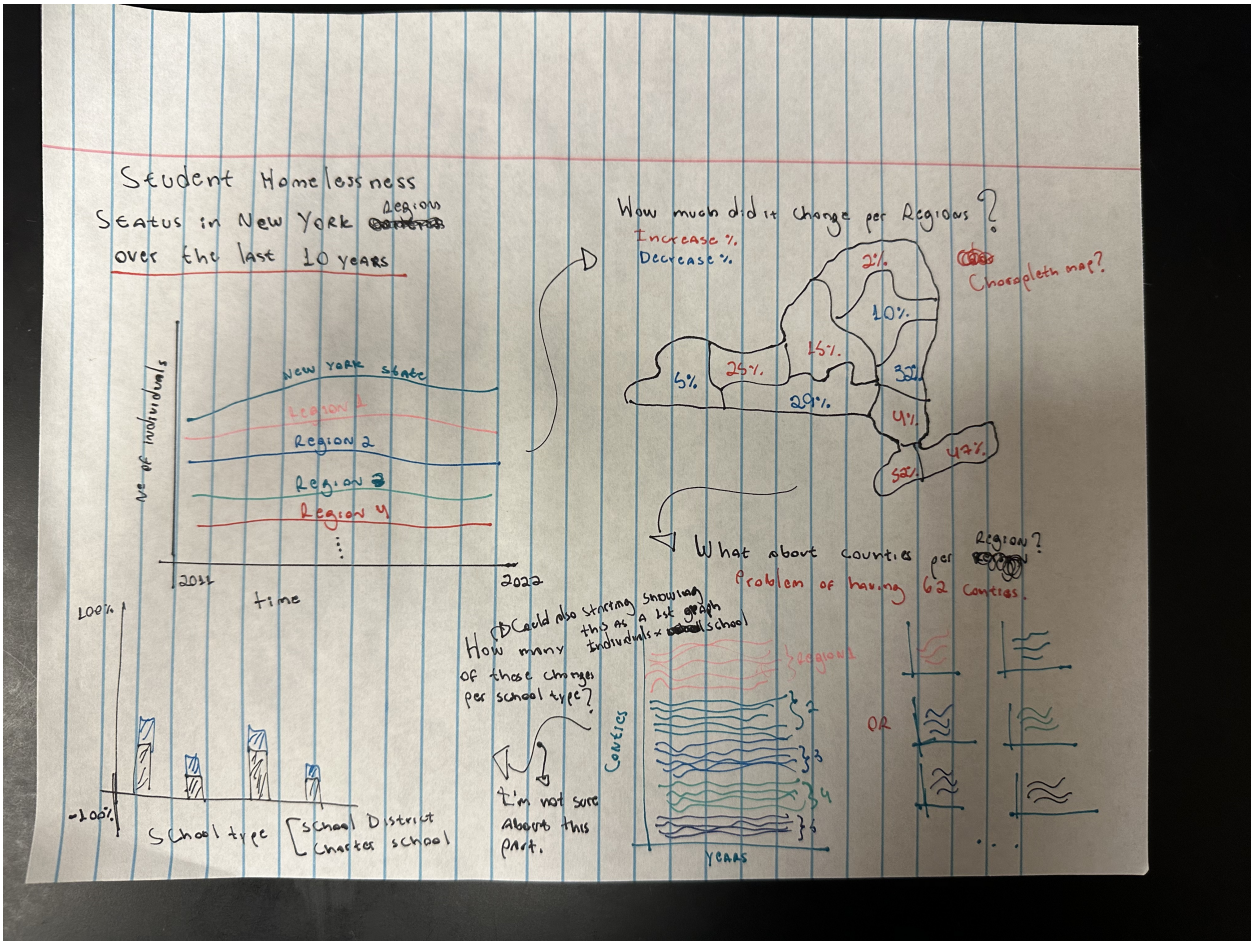
The infochartic was designed mainly in four sections. **1.** The first section includes a chart containing the total number of homeless students from 2009 to 2021. I decided to use a line chart because it is easier to see trends in time. Aligned with this chart, I included a map of students' homeless per county in New York state. I decided to use counties because I want to show that this problem is happening across the whole state.

2. Given that New York has 62 counties and it would be hard to make a chart representing each of them well, I tried to show these changes in the second section using the New York economic region's boundaries. I chose a stream chart to display the data over time because I wanted to show trends in the increased proportion between the areas simultaneously. Besides, it allowed me to avoid lines overlapping within the chart. I included a map showing the proportion increase in 2021 compared to 2009 per economic region. My idea of plotting both chart and map is to show that the rise in homeless students is unrelated to the region area size and that only looking at the percentage increase does not represent the number of students per region well.

3. In the third section, I use a line chart to show which schools these students attend and how disproportional it is over time. I also included a bar chart showing the proportion changes in 2021 compared to 2009.

4. The fourth section is dedicated to the show the students' proportion per school grade over time, using a bumpchart. My choice for a bumpchat was because it allowed me to show the overlap between lines and trends better than the line chart. This section also has a bar chart comparing 2021 to 2009 for each grade. Since I do not have the data relative to students' age, I considered using grades to proxy how old these people living in homeless conditions are.

The figure below is a free-hand draft I made before designing the infographic using Adobe Illustrator®.


Student Homelessness
Seatus in New York Region
over the last 10 years
No. of individuals
New York state
Region 1
Region 2
Region 3
Region 4
2011
2022
time
How much did it change per Regions?
Increase %
Decrease %
Choropleth map?
2%
10%
15%
5%
25%
30%
20%
4%
47%
5%
What about counties per Region?
Problem of having 62 Counties.
How many of those changes per school type?
Could also starring showing this as a bar graph individuals x school
I'm not sure About this part.
100%
-100%
School type
School District
Charter school
Region 1
Region 2
Region 3
Region 4
Counties
years
OR

The page below is the first version of the project proposed here. Some considerations I have for the second version:

1. Maybe remove the bar chart of section three or include it within the line chart in this section since this bar chart seems a little redundant.

2. Finding some neat way to replace or show the bumpchat chart in section four.

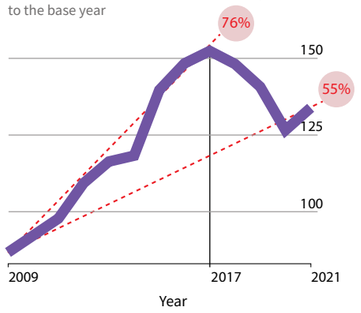
3. Draw an image at the top of the last chart of section four.

4. Include information about where these students live when they are not in school.

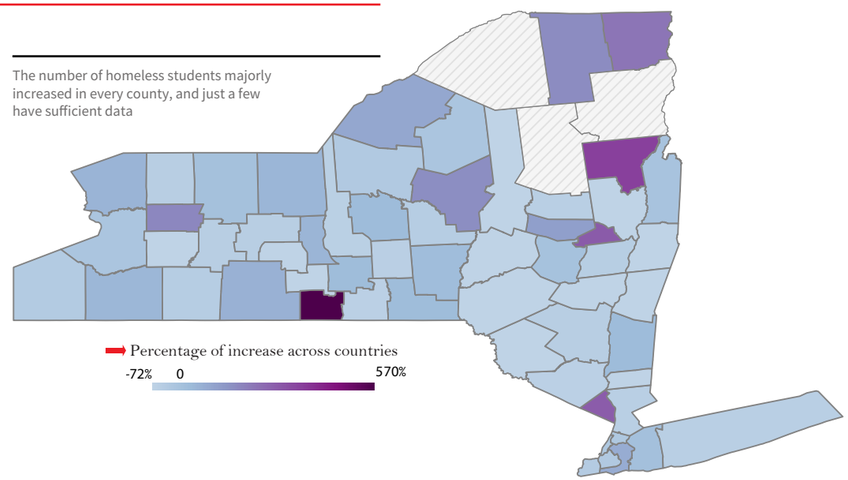
New York homelessness students increased over the last decade

Number of individuals in thousands

The total number of students under homeless conditions and the main differences compared to the base year

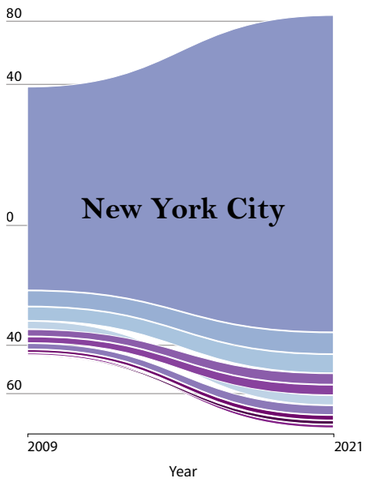


The number of homeless students majorly increased in every county, and just a few have sufficient data

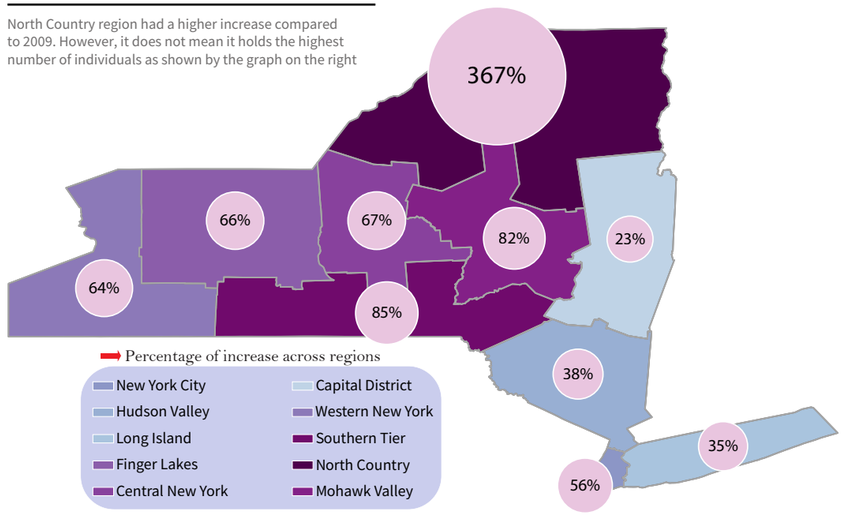


Number of individuals in thousands

Homelessness students increased across all economic regions and were more significant in the New York City region.



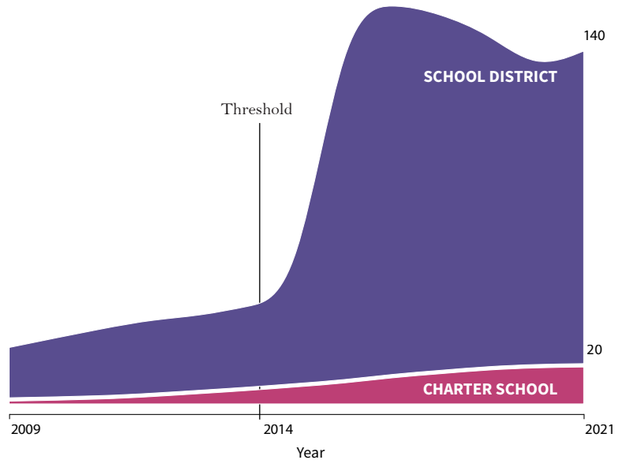
North Country region had a higher increase compared to 2009. However, it does not mean it holds the highest number of individuals as shown by the graph on the right



New York State has experienced a considerable increase in students living under homeless conditions over the past 12 years, reaching its apex in 2017.Even though there was a decrease in later years, it was not enough to mitigatethe problem and might increase again. Numbers of increases are in a scale of thousands across all over the state, and here we highlight the proportion of increase from 2009. The raised threshold started in 2014 and mainly impacted public schools, such as *Charter Schools* and *School District*, being much higher in the last one. The disproportion was also different within students' age, as we can see by the number of students per school grade, which reflect higher numbers of homeless for middle and high school students. The *Advocate for Children of New York* reports that 1 in 10 students was homeless in 2021, studing and facing the reality of living under extreme conditions.

Number homeless students in thousands

The more significant part of the homeless students frequents the School District instead of Charter Schools. In both schools, the frequency of these students increases after 2014.



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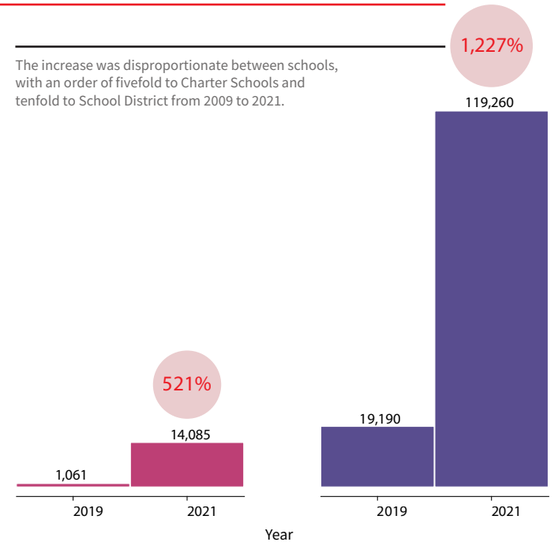
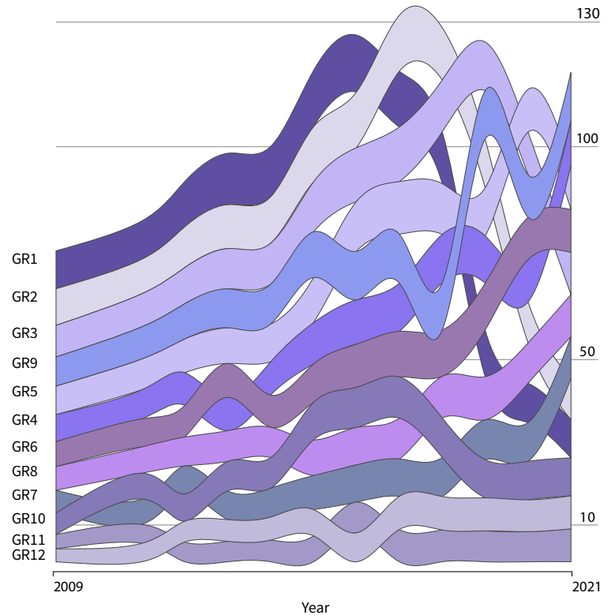
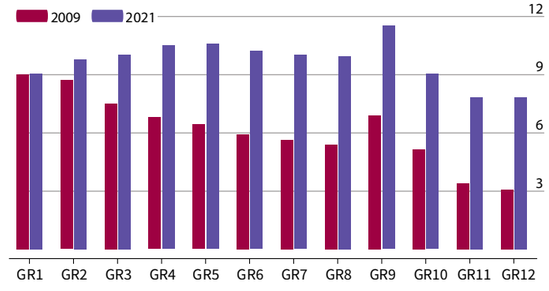


Number of homeless students per grade

Over time the increase was constant or slight for older students than younger ones. However, until 2014 younger students increased exponentially



Homeless students' proportion from 2009 to 2021 almost increase at the same rate. Students in primary grades tended to have the same ratio, and the gap between them increased for those attending later grades.



Source: https://www.nysteachs.org/data-on-student-homelessness and https://www.advocatesforchildren.org/

Second Version

In the second version, I changed the second graph to a slope chart to avoid the repetition of chart aesthetics. Using a Sankey chart, I also included information about where these students live when they are not in school. I also tried filling the white/empty space with some information or aesthetics.

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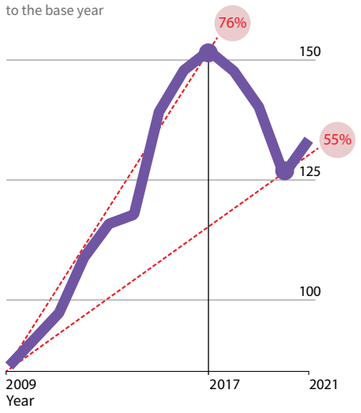
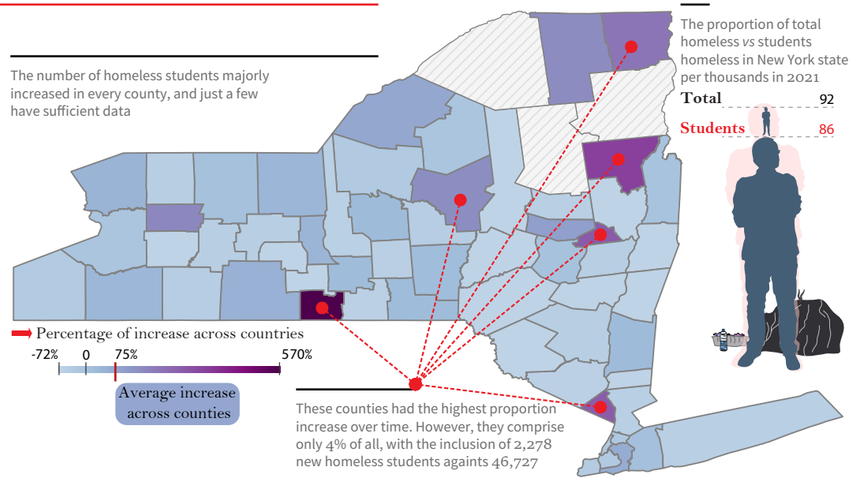


The number of homeless students majorly increased in every county, and just a few have sufficient data



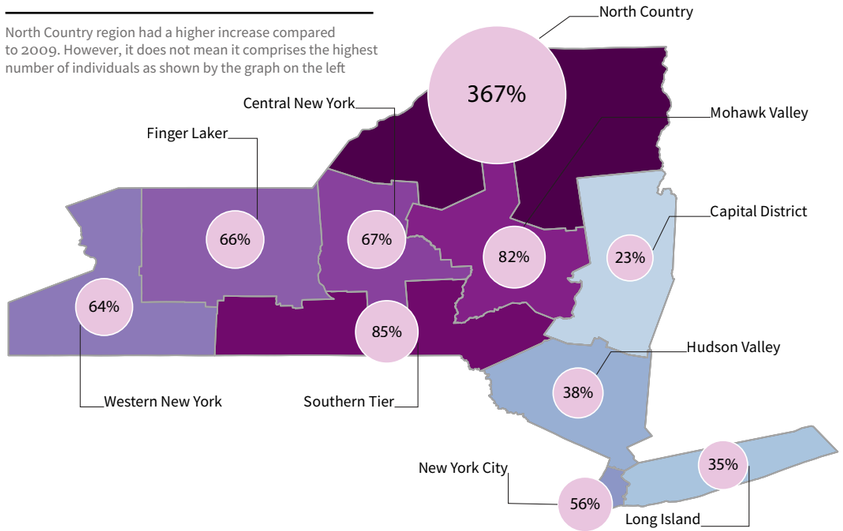
These counties had the highest proportion increase over time. However, they comprise only 4% of all, with the inclusion of 2,278 new homeless students againts 46,727

The proportion of total homeless *vs* students homeless in New York state per thousands in 2021

Changes per region over time

Homelessness students increased across all economic regions and were more significant in New York City region

North Country region had a higher increase compared to 2009. However, it does not mean it comprises the highest number of individuals as shown by the graph on the left



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Primary Nighttime Residence

Schools options available for homeless students

The more significant part of the homeless students frequents the School District instead of Charter Schools. In both schools, the frequency of these students increases after 2014

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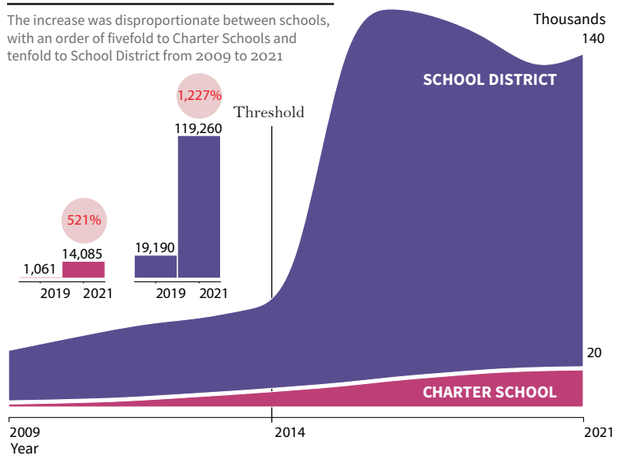
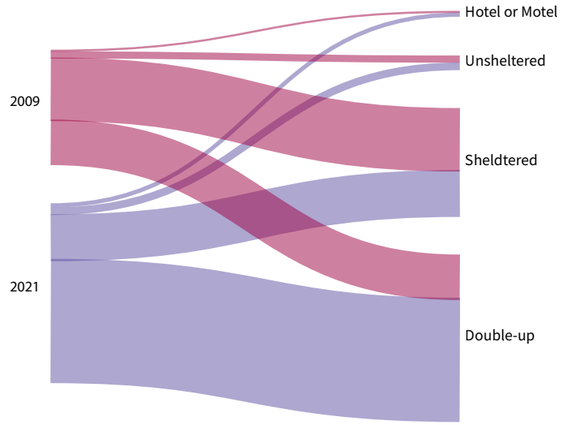


Students night time residence

There are mainly four options for students to overnight while not in school time or periods, and the trend kept almost the same since 2009 but increased nearly fourfold for homeless students in shared living arrangements double-up places.



Total of homeless students per grade over time

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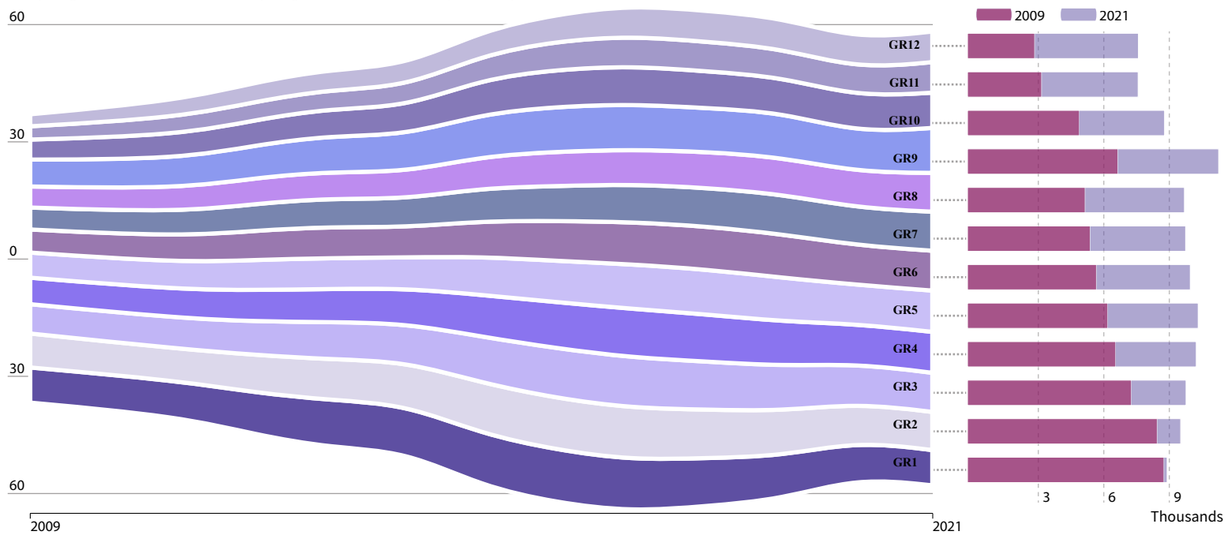

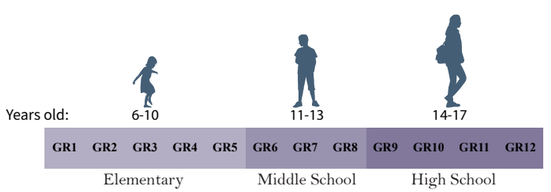

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Third Version

I changed the third and fourth charts to a line and bar chart in the third version, respectively. The reason was to make the stylish less chaotic and to highlight the last chart, as it is the main chart on the infographic. Besides, using bar charts seemed more reasonable to compare the years and to get the point straight to the point.

I also removed the illustrations because they did not fit the story well and the magazine's style. I changed the colors according to The Economists requirements.

I am considering changing charts three and four about the homeless home after school for the fourth version since it seems to occupy considerable space and bring more attention than they should. For graph three, I am considering plotting the line chart above its respective bar graph, keeping them the same size. For graph four, I am thinking of splitting it into four charts (one for each type of home)

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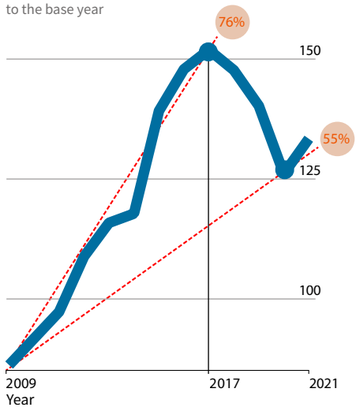

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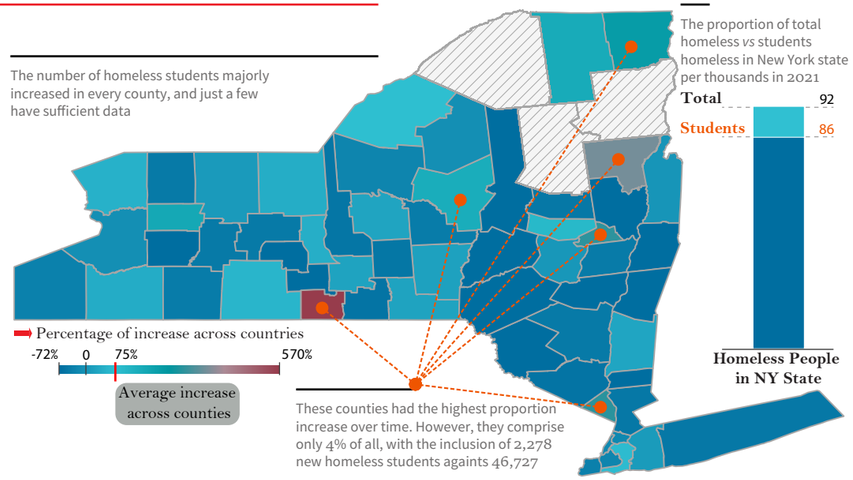

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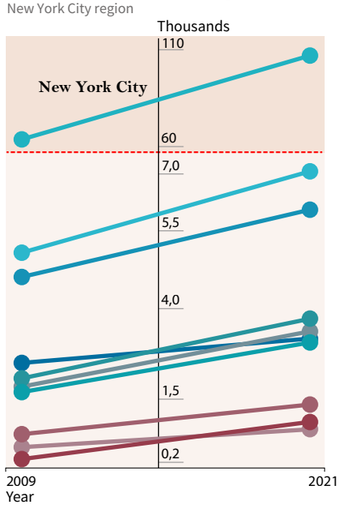

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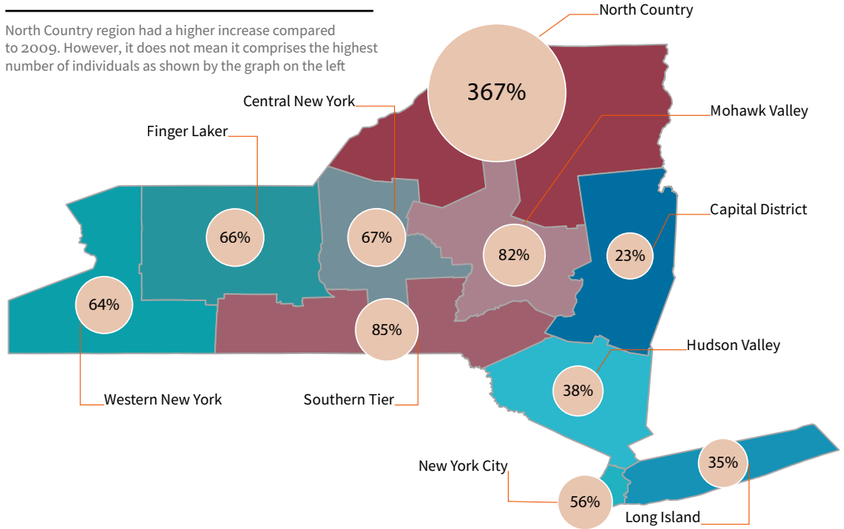

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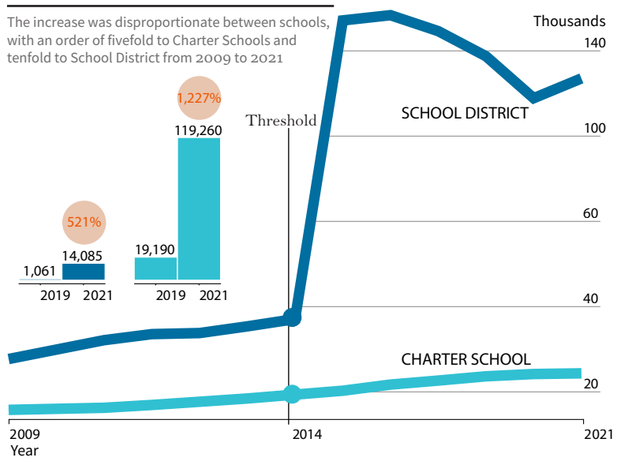

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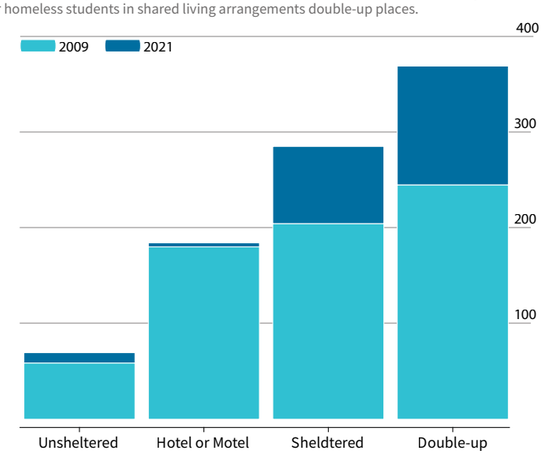

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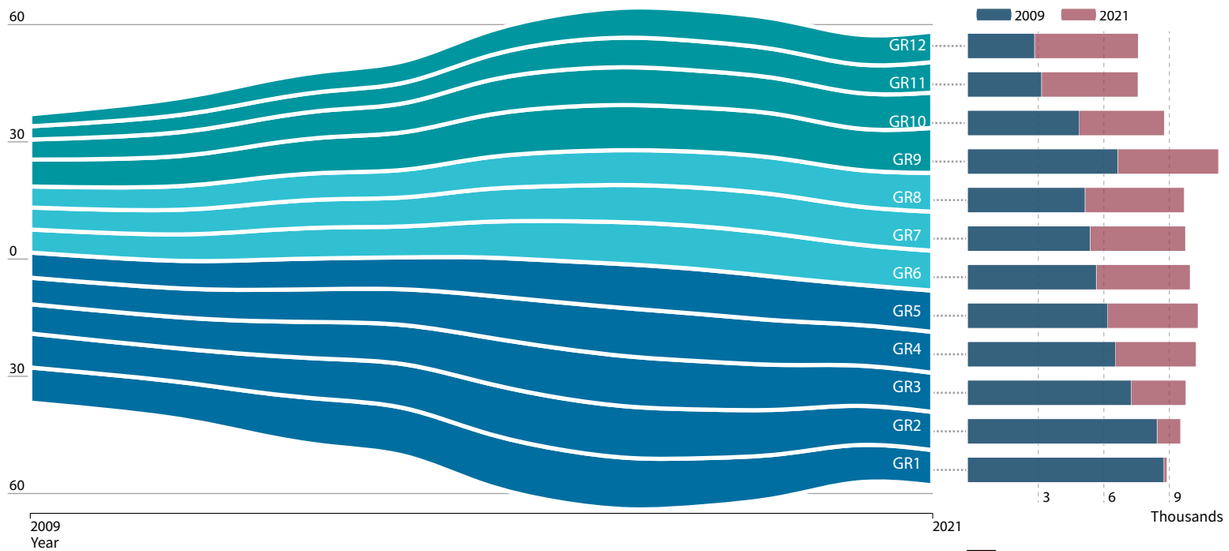
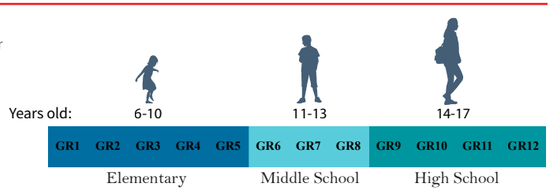


Homeless students' proportion from 2009 to 2021 almost increase at the same rate. Students in primary grades tended to have the same ratio, and the gap between them increased for those attending later grades.

Students age

The student's grades gave us an overall idea of their ages. Most homeless students are older, and their proportion decreases towards younger students. This shows us that teenagers homeless students struggle more to be adopted, while the chance seems to be higher as younger you are



Forth/final Version

In the fourth and final version, I kept the same structure but focusing more on fixing typos and spaces between boxes. I also changed the text font size. The last chart, the main one, looked weird because of the curve lines that were so thick, so I tried to make it thin, and I think it looked better. However, when saving it as PDF, there was no change.

I also tried to change the two charts on the top of the second page, trying to make them separate, but they looked very weird. First, there was a big blank space because the proportion of the residence places is very different. Second, I tried to fix it by changing the scale, but then the reader would need to read each scale independently to compare each bar chart against another. So, I decided to keep just one bar chart setting the same numerical scale for every bar of home places, which looked better, in order to see the difference and compare them.

This way, the final version of this project has seven charts approaching different topics.

I used two line charts and one bump chart to show differences over time in the number of homeless students, the schools these students used to attend, and how many of them were in each school's grades. For the last one, I also included a bar chart for each school grade showing the absolute difference between 2009 and 2021. These two approaches also allowed having an idea of how old these students were.

I used a slope chart to show the trends and absolute differences across New York state economic regions. I aimed to show that a higher proportion of increase does not necessarily mean a high number of students. Most charts and infographics on the internet used to show differences using percentage differences, but we need to be careful using this approach because we may end up making assumptions that might impact human resources decisions. I used two maps to show these differences across New York state, one for counties and another one for economic regions.

I tried to use bar charts to show the differences between 2009 and 2021 for each data and information I had, including school types and residences these students spent overnight after school.

The story of this project shows that New York state has many students under homeless conditions, which increased from 2009 to 2021. They comprise 93% of the total homeless people in the whole state. Some counties and economic regions have more increase in proportion or several students than others. Just looking at the ratio is not enough to decide on this matter. School district type has disproportionately received more students than charter schools, which might result in an overpopulation of students and management issues. However, many students seem to have a place to stay overnight rather than on the streets. Over time, there were more old homeless students in school than younger ones, maybe because it is easier to be adopted as young as you are.

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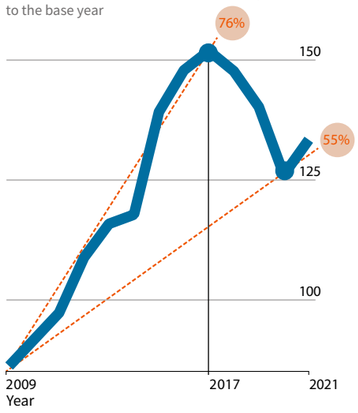

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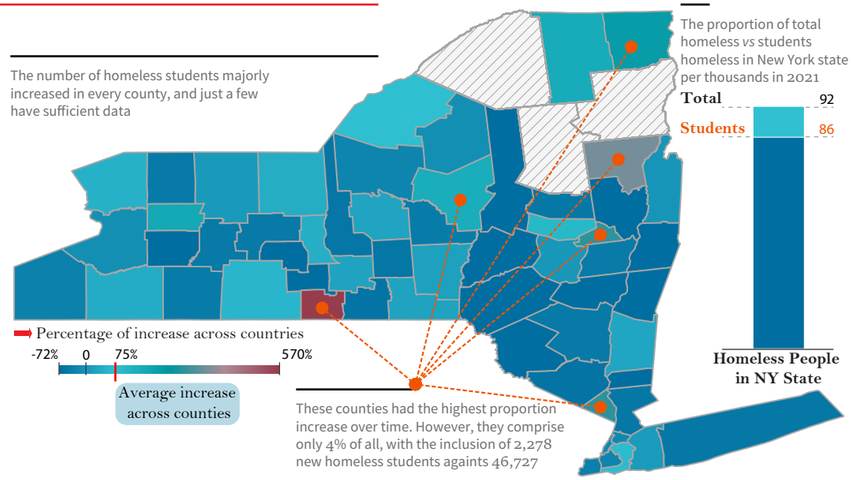

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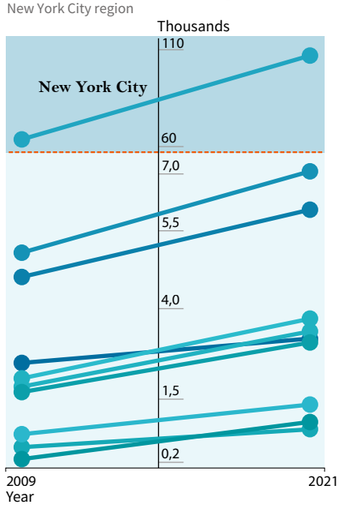

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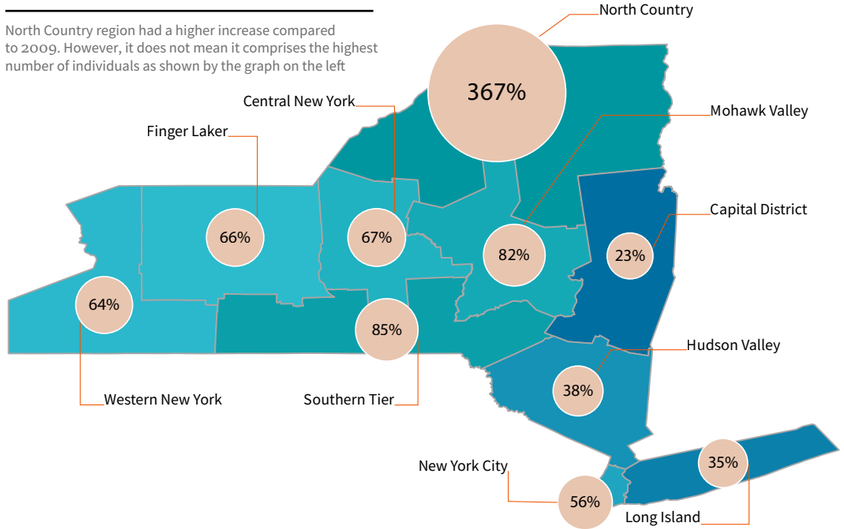

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Source: https://www.nysteachs.org/data-on-student-homelessness and https://www.advocatesforchildren.org/

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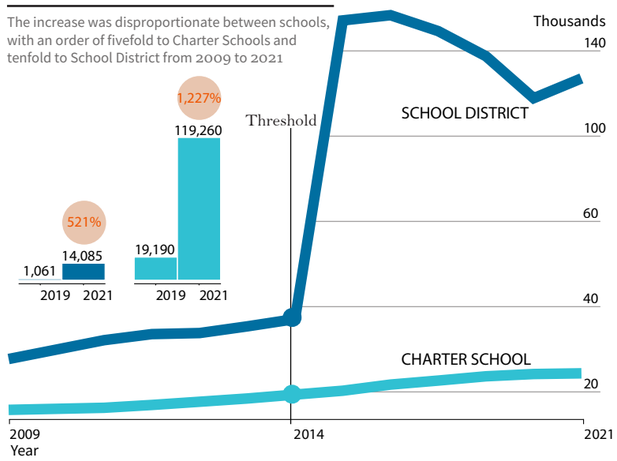

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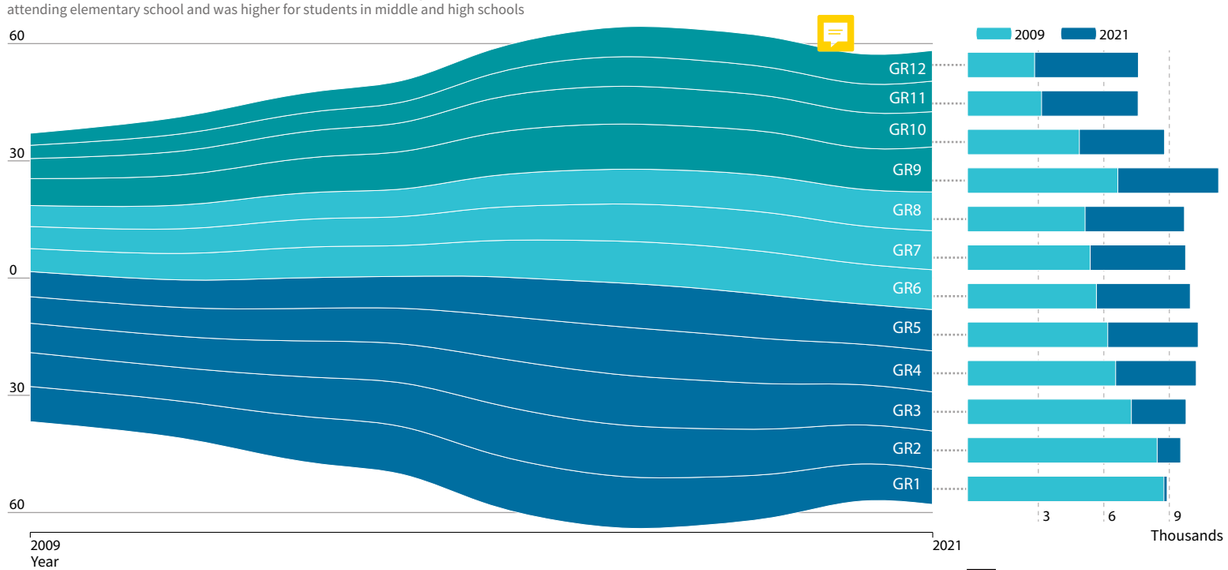

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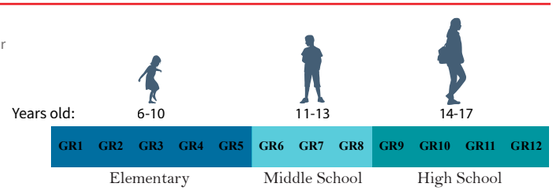

Scripts

Loading the packages

```
if(!require(tidyverse))install.packages("tidyverse", dependencies = TRUE)
if(!require(readxl)) install.packages("readxl", dependencies = TRUE)
if(!require(purrr)) install.packages("purrr", dependencies = TRUE)
if(!require(writexl)) install.packages("writexl", dependencies = TRUE)
if(!require(openxlsx)) install.packages("openxlsx", dependencies = TRUE)
if(!require(data.table)) install.packages("data.table", dependencies = TRUE)
```

Setting directories and reading tables

```
path <- "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
path
```

```
## [1] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_clas
```

```
regions <- readr::read_csv("C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_
  unique()
regions
```

```
## # A tibble: 62 x 2
##    COUNTY      REGION
##    <chr>       <chr>
##  1 ALBANY      Capital
##  2 ALLEGANY    Western
##  3 BROOME      Southern Tier
##  4 CATTARAUGUS Western
##  5 CAYUGA      Central
##  6 CHAUTAUQUA  Western
##  7 CHEMUNG     Southern Tier
##  8 CHENANGO    Southern Tier
##  9 CLINTON     North Country
## 10 COLUMBIA    Capital
## # ... with 52 more rows
```

```
file_path <- list.files(path, pattern="\\.xlsx$", full.names = TRUE)
file_path
```

```
##  [1] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
##  [2] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
##  [3] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
##  [4] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
##  [5] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
##  [6] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
##  [7] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
##  [8] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
```

```
##  [9] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
## [10] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
## [11] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
## [12] "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infographic_I/01_cla
```

```
#For each file in file_path
homeless.tables <- purrr::map(file_path, ~
                        #For each sheet
                        purrr::map(2:3, function(i) {
                          #Read the file with particular sheet nummber
                          openxlsx::read.xlsx(.x, sheet=i, startRow=1)}) %>%
                        purrr::reduce(dplyr::full_join) %>%
                        #Remove all NA rows
                        #dplyr::filter(Reduce(`|`, across(.fns = ~!is.na(.)))) %>%
                        #Add Year column at 1st position
                        dplyr::mutate(YEAR = tools::file_path_sans_ext(basename(.x)), .before = 1))

homeless.tables
```

```
## [[1]]
##                      YEAR        LEA.TYPE       COUNTY TOTAL.HOMELESS
## 1   INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY            466
## 2   INF_SED_SIRS2009-10  CHARTER SCHOOL       ALBANY             56
## 3   INF_SED_SIRS2009-10  CHARTER SCHOOL       ALBANY              0
## 4   INF_SED_SIRS2009-10  CHARTER SCHOOL       ALBANY              0
## 5   INF_SED_SIRS2009-10  CHARTER SCHOOL       ALBANY              0
## 6   INF_SED_SIRS2009-10  CHARTER SCHOOL       ALBANY              0
## 7   INF_SED_SIRS2009-10  CHARTER SCHOOL       ALBANY              9
## 8   INF_SED_SIRS2009-10  CHARTER SCHOOL       ALBANY              0
## 9   INF_SED_SIRS2009-10  CHARTER SCHOOL       ALBANY              0
## 10  INF_SED_SIRS2009-10  CHARTER SCHOOL       ALBANY              0
## 11  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY              0
## 12  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY             12
## 13  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY             14
## 14  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY             94
## 15  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY             43
## 16  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY              6
## 17  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY             20
## 18  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY             13
## 19  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY              7
## 20  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY              0
## 21  INF_SED_SIRS2009-10 SCHOOL DISTRICT       ALBANY             35
## 22  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              0
## 23  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              5
## 24  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              5
## 25  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              s
## 26  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              8
## 27  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              6
## 28  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              6
## 29  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              s
## 30  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              7
## 31  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              0
## 32  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY             32
## 33  INF_SED_SIRS2009-10 SCHOOL DISTRICT     ALLEGANY              0
```

```
## 34  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME            13
## 35  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME            68
## 36  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME             6
## 37  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME            12
## 38  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME            12
## 39  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME            16
## 40  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME             6
## 41  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME            17
## 42  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME           128
## 43  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME            32
## 44  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME            15
## 45  INF_SED_SIRS2009-10 SCHOOL DISTRICT       BROOME             0
## 46  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS             0
## 47  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS             s
## 48  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS             0
## 49  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS             s
## 50  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS             s
## 51  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS             0
## 52  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS             5
## 53  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS            14
## 54  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS             5
## 55  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS             s
## 56  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS             0
## 57  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS            15
## 58  INF_SED_SIRS2009-10 SCHOOL DISTRICT  CATTARAUGUS            22
## 59  INF_SED_SIRS2009-10 SCHOOL DISTRICT       CAYUGA            85
## 60  INF_SED_SIRS2009-10 SCHOOL DISTRICT       CAYUGA             s
## 61  INF_SED_SIRS2009-10 SCHOOL DISTRICT       CAYUGA            10
## 62  INF_SED_SIRS2009-10 SCHOOL DISTRICT       CAYUGA             s
## 63  INF_SED_SIRS2009-10 SCHOOL DISTRICT       CAYUGA            12
## 64  INF_SED_SIRS2009-10 SCHOOL DISTRICT       CAYUGA            10
## 65  INF_SED_SIRS2009-10 SCHOOL DISTRICT       CAYUGA            19
## 66  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             s
## 67  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             0
## 68  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             s
## 69  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             5
## 70  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA            13
## 71  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             0
## 72  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA            75
## 73  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             0
## 74  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             s
## 75  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA            27
## 76  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             s
## 77  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             0
## 78  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA            76
## 79  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             s
## 80  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             0
## 81  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             0
## 82  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA             0
## 83  INF_SED_SIRS2009-10 SCHOOL DISTRICT   CHAUTAUQUA            19
## 84  INF_SED_SIRS2009-10 SCHOOL DISTRICT      CHEMUNG            19
## 85  INF_SED_SIRS2009-10 SCHOOL DISTRICT      CHEMUNG             s
## 86  INF_SED_SIRS2009-10 SCHOOL DISTRICT      CHEMUNG             s
## 87  INF_SED_SIRS2009-10 SCHOOL DISTRICT     CHENANGO            18
```

```
## 88  INF_SED_SIRS2009-10 SCHOOL DISTRICT     CHENANGO             8
## 89  INF_SED_SIRS2009-10 SCHOOL DISTRICT     CHENANGO             s
## 90  INF_SED_SIRS2009-10 SCHOOL DISTRICT     CHENANGO            15
## 91  INF_SED_SIRS2009-10 SCHOOL DISTRICT     CHENANGO            20
## 92  INF_SED_SIRS2009-10 SCHOOL DISTRICT     CHENANGO             6
## 93  INF_SED_SIRS2009-10 SCHOOL DISTRICT     CHENANGO             s
## 94  INF_SED_SIRS2009-10 SCHOOL DISTRICT     CHENANGO             0
## 95  INF_SED_SIRS2009-10 SCHOOL DISTRICT      CLINTON             s
## 96  INF_SED_SIRS2009-10 SCHOOL DISTRICT      CLINTON             7
## 97  INF_SED_SIRS2009-10 SCHOOL DISTRICT      CLINTON             s
## 98  INF_SED_SIRS2009-10 SCHOOL DISTRICT      CLINTON             0
## 99  INF_SED_SIRS2009-10 SCHOOL DISTRICT      CLINTON            20
## 100 INF_SED_SIRS2009-10 SCHOOL DISTRICT      CLINTON             0
## 101 INF_SED_SIRS2009-10 SCHOOL DISTRICT      CLINTON            22
## 102 INF_SED_SIRS2009-10 SCHOOL DISTRICT      CLINTON             0
## 103 INF_SED_SIRS2009-10 SCHOOL DISTRICT     COLUMBIA             s
## 104 INF_SED_SIRS2009-10 SCHOOL DISTRICT     COLUMBIA            25
## 105 INF_SED_SIRS2009-10 SCHOOL DISTRICT     COLUMBIA             6
## 106 INF_SED_SIRS2009-10 SCHOOL DISTRICT     COLUMBIA             6
## 107 INF_SED_SIRS2009-10 SCHOOL DISTRICT     COLUMBIA           116
## 108 INF_SED_SIRS2009-10 SCHOOL DISTRICT     COLUMBIA            16
## 109 INF_SED_SIRS2009-10 SCHOOL DISTRICT     COLUMBIA             s
## 110 INF_SED_SIRS2009-10 SCHOOL DISTRICT     CORTLAND             s
## 111 INF_SED_SIRS2009-10 SCHOOL DISTRICT     CORTLAND            15
## 112 INF_SED_SIRS2009-10 SCHOOL DISTRICT     CORTLAND             s
## 113 INF_SED_SIRS2009-10 SCHOOL DISTRICT     CORTLAND            24
## 114 INF_SED_SIRS2009-10 SCHOOL DISTRICT     CORTLAND            10
## 115 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             0
## 116 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             0
## 117 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             6
## 118 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             0
## 119 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             0
## 120 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             s
## 121 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             s
## 122 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             s
## 123 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE            49
## 124 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             5
## 125 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             0
## 126 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DELAWARE             0
## 127 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS            61
## 128 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS             s
## 129 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS            42
## 130 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS             9
## 131 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS             0
## 132 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS            17
## 133 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS            84
## 134 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS            86
## 135 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS             0
## 136 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS             s
## 137 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS             s
## 138 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS            75
## 139 INF_SED_SIRS2009-10 SCHOOL DISTRICT     DUTCHESS             s
## 140 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE             6
## 141 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE             5
```

```
## 142 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE             11
## 143 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              8
## 144 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              s
## 145 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE            697
## 146 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 147 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 148 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 149 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 150 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE             27
## 151 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 152 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 153 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 154 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 155 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 156 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 157 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 158 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 159 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE             11
## 160 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              7
## 161 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              5
## 162 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              7
## 163 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              6
## 164 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              s
## 165 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE             15
## 166 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              9
## 167 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              s
## 168 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE             27
## 169 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              0
## 170 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              8
## 171 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              0
## 172 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE             15
## 173 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              5
## 174 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              0
## 175 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 176 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              7
## 177 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              s
## 178 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              s
## 179 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE             28
## 180 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE              7
## 181 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE            222
## 182 INF_SED_SIRS2009-10  CHARTER SCHOOL         ERIE              0
## 183 INF_SED_SIRS2009-10 SCHOOL DISTRICT         ERIE             24
## 184 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              0
## 185 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              0
## 186 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              0
## 187 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              0
## 188 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              0
## 189 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              s
## 190 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              0
## 191 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              0
## 192 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              s
## 193 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              0
## 194 INF_SED_SIRS2009-10 SCHOOL DISTRICT        ESSEX              0
## 195 INF_SED_SIRS2009-10 SCHOOL DISTRICT     FRANKLIN              0
```

Binding the tables in a single one

```
homeless.tables.bind <- data.table::rbindlist(homeless.tables,
                                              use.names=TRUE,
                                              fill=FALSE,
                                              idcol=TRUE) %>%
  dplyr::rename_all(., .funs = toupper) %>%
  dplyr::filter(!"TOTAL.HOMELESS" == "s") %>%
  dplyr::mutate(TOTAL.HOMELESS = as.numeric(TOTAL.HOMELESS),
                YEAR = as.numeric(stringr::str_extract(YEAR, ".0.."))) %>%
  dplyr::left_join(regions) %>%
  stats::na.omit() %>%
  dplyr::select(c(3,4,6,5,2))
```

```
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
```

```
homeless.tables.bind
```

```
##              LEA.TYPE   COUNTY        REGION TOTAL.HOMELESS YEAR
##    1: SCHOOL DISTRICT   ALBANY       Capital            466 2009
##    2:  CHARTER SCHOOL   ALBANY       Capital             56 2009
##    3:  CHARTER SCHOOL   ALBANY       Capital              0 2009
##    4:  CHARTER SCHOOL   ALBANY       Capital              0 2009
##    5:  CHARTER SCHOOL   ALBANY       Capital              0 2009
##   ---
## 9806:  CHARTER SCHOOL RICHMOND New York City             14 2021
## 9807:  CHARTER SCHOOL RICHMOND New York City             13 2021
## 9808:  CHARTER SCHOOL RICHMOND New York City             17 2021
## 9809:  CHARTER SCHOOL RICHMOND New York City              9 2021
## 9810:  CHARTER SCHOOL RICHMOND New York City              8 2021
```

```
#write_csv(homeless.tables.bind, "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semest
```

Summarizing the tables by total individuals per year

```
homeless.tables.bind.year <- homeless.tables.bind %>%
  dplyr::group_by(YEAR) %>%
  dplyr::summarise(TOTAL.HOMELESS = sum(TOTAL.HOMELESS))
homeless.tables.bind.year
```

```
## # A tibble: 12 x 2
##     YEAR TOTAL.HOMELESS
##    <dbl>          <dbl>
##  1  2009          86172
##  2  2011          97250
##  3  2012         108791
##  4  2013         115813
##  5  2014         117731
##  6  2015         139137
```

```
##  7  2016         147826
##  8  2017         151879
##  9  2018         147629
## 10  2019         140194
## 11  2020         126046
## 12  2021         133345
```

```
#write_csv(homeless.tables.bind.year, "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_s

homeless.tables.bind.year.diff <- homeless.tables.bind.year %>%
  dplyr::filter(YEAR == 2009 | YEAR ==  2021) %>%
  tidyr::pivot_wider(names_from = YEAR, values_from = TOTAL.HOMELESS) %>%
  dplyr::mutate(DIFF = `2021`-`2009`,
                PCT_INCREASE = ((DIFF*100)/(`2009`))) %>%
  dplyr::filter(PCT_INCREASE != 0) %>%
  dplyr::filter_all(all_vars(!is.infinite(.)))
homeless.tables.bind.year.diff
```

```
## # A tibble: 1 x 4
##   `2009` `2021`  DIFF PCT_INCREASE
##    <dbl>  <dbl> <dbl>        <dbl>
## 1  86172 133345 47173         54.7
```

```
#write_csv(homeless.tables.bind.year.diff, "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_
```

Summarizing the tables by total individuals per year and region

```
homeless.tables.bind.year.region <- homeless.tables.bind %>%
  dplyr::group_by(REGION, YEAR) %>%
  dplyr::summarise(TOTAL.HOMELESS = sum(TOTAL.HOMELESS)) %>%
  dplyr::ungroup()
homeless.tables.bind.year.region
```

```
## # A tibble: 120 x 3
##    REGION   YEAR TOTAL.HOMELESS
##    <chr>   <dbl>          <dbl>
##  1 Capital  2009           2462
##  2 Capital  2011           2938
##  3 Capital  2012           2695
##  4 Capital  2013           2519
##  5 Capital  2014           2725
##  6 Capital  2015           2997
##  7 Capital  2016           3319
##  8 Capital  2017           3638
##  9 Capital  2018           3524
## 10 Capital  2019           3144
## # ... with 110 more rows
```

```
#write_csv(homeless.tables.bind.year.region, "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/0
```

```
homeless.tables.bind.year.region.diff <- homeless.tables.bind.year.region %>%
  dplyr::filter(YEAR == 2009 | YEAR ==  2021) %>%
  tidyr::pivot_wider(names_from = YEAR, values_from = TOTAL.HOMELESS) %>%
  dplyr::mutate(DIFF = `2021`-`2009`,
                PCT_INCREASE = ((DIFF*100)/(`2009`))) %>%
  dplyr::filter(PCT_INCREASE != 0) %>%
  dplyr::filter_all(all_vars(!is.infinite(.))) %>%
  tidyr::pivot_longer(cols = 2:3, values_to = "INDI", names_to = "YEAR") %>%
  dplyr::select(c(1,4,5,2,3))

homeless.tables.bind.year.region.diff
```

```
## # A tibble: 20 x 5
##    REGION        YEAR    INDI  DIFF PCT_INCREASE
##    <chr>         <chr>  <dbl> <dbl>        <dbl>
##  1 Capital       2009    2462   561         22.8
##  2 Capital       2021    3023   561         22.8
##  3 Central       2009    1912  1281         67.0
##  4 Central       2021    3193  1281         67.0
##  5 Finger Lakes  2009    2104  1385         65.8
##  6 Finger Lakes  2021    3489  1385         65.8
##  7 Hudson Valley 2009    5016  1885         37.6
##  8 Hudson Valley 2021    6901  1885         37.6
##  9 Long Island   2009    4453  1559         35.0
## 10 Long Island   2021    6012  1559         35.0
## 11 Mohawk        2009     510   418         82.0
## 12 Mohawk        2021     928   418         82.0
## 13 New York City 2009   66884 37389         55.9
## 14 New York City 2021  104273 37389         55.9
## 15 North Country 2009     234   859        367.
## 16 North Country 2021    1093   859        367.
## 17 Southern Tier 2009     811   686         84.6
## 18 Southern Tier 2021    1497   686         84.6
## 19 Western       2009    1786  1150         64.4
## 20 Western       2021    2936  1150         64.4
```

```
#write_csv(homeless.tables.bind.year.region.diff, "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_cour
```

```
homeless.tables.bind.year.region.pct.diff <- homeless.tables.bind.year.region %>%
  #dplyr::filter(YEAR == 2009 | YEAR ==  2021) %>%
  tidyr::pivot_wider(names_from = YEAR, values_from = TOTAL.HOMELESS) %>%
  dplyr::mutate(`2011i` = (((`2009`-`2011`)*100)/(`2009`)),
                `2012i` = (((`2011`-`2012`)*100)/(`2011`)),
                `2013i` = (((`2012`-`2013`)*100)/(`2012`)),
                `2014i` = (((`2013`-`2014`)*100)/(`2013`)),
                `2015i` = (((`2014`-`2015`)*100)/(`2014`)),
                `2016i` = (((`2015`-`2016`)*100)/(`2015`)),
                `2017i` = (((`2016`-`2017`)*100)/(`2016`)),
                `2018i` = (((`2017`-`2018`)*100)/(`2017`)),
```

```
                `2019i` = (((`2018`-`2019`)*100)/(`2018`)),
                `2020i` = (((`2019`-`2020`)*100)/(`2019`)),
                `2021i` = (((`2020`-`2021`)*100)/(`2020`))) %>%
  dplyr::filter_all(all_vars(!is.infinite(.))) #%>%
  #tidyr::pivot_longer(cols = 2:13, values_to = "DIFF_PCT", names_to = "YEAR") %>%
  #dplyr::select(c(1,3,2)) %>%
  #mutate(DIFF_PCT = round(DIFF_PCT, digits = 0),
  #       DIFF_STS = ifelse(DIFF_PCT >= 0, "Positive", "Negative"))


homeless.tables.bind.year.region.pct.diff
```

```
## # A tibble: 10 x 24
##    REGION  `2009` `2011` `2012` `2013` `2014` `2015` `2016` `2017` `2018` `2019`
##    <chr>    <dbl>  <dbl>  <dbl>  <dbl>  <dbl>  <dbl>  <dbl>  <dbl>  <dbl>  <dbl>
##  1 Capital   2462   2938   2695   2519   2725   2997   3319   3638   3524   3144
##  2 Central   1912   2332   2336   3000   3624   4135   4337   3635   3429   3281
##  3 Finger~   2104   3530   3755   3880   4119   4414   4584   4770   4565   4116
##  4 Hudson~   5016   5898   6528   6551   6549   6823   6994   7550   7506   6969
##  5 Long I~   4453   5397   8104   7382   8020   9041  10176  10184   8402   7682
##  6 Mohawk     510    898    690    677    709    656    785   1077   1105   1103
##  7 New Yo~  66884  71225  80535  87176  86671 105408 111538 114644 114037 109079
##  8 North ~    234    506    532    532    506    574   1304    791    690    626
##  9 Southe~    811   2278   1288   1274   1218   1356   1525   1767   1357   1388
## 10 Western   1786   2248   2328   2822   3590   3733   3264   3823   3014   2806
## # ... with 13 more variables: `2020` <dbl>, `2021` <dbl>, `2011i` <dbl>,
## #   `2012i` <dbl>, `2013i` <dbl>, `2014i` <dbl>, `2015i` <dbl>, `2016i` <dbl>,
## #   `2017i` <dbl>, `2018i` <dbl>, `2019i` <dbl>, `2020i` <dbl>, `2021i` <dbl>
```

```
#write_csv(homeless.tables.bind.year.region.pct.diff, "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_
```

Summarizing the tables by total individuals per year and county

```
homeless.tables.bind.year.county <- homeless.tables.bind %>%
  dplyr::group_by(COUNTY, YEAR) %>%
  dplyr::summarise(TOTAL.HOMELESS = sum(TOTAL.HOMELESS))
homeless.tables.bind.year.county
```

```
## # A tibble: 733 x 3
## # Groups:   COUNTY [62]
##    COUNTY  YEAR TOTAL.HOMELESS
##    <chr>  <dbl>          <dbl>
##  1 ALBANY  2009            775
##  2 ALBANY  2011            928
##  3 ALBANY  2012            787
##  4 ALBANY  2013            706
##  5 ALBANY  2014            690
##  6 ALBANY  2015            824
##  7 ALBANY  2016            978
##  8 ALBANY  2017           1105
```

```
##  9 ALBANY  2018           1154
## 10 ALBANY  2019           1042
## # ... with 723 more rows
```

```
#write_csv(homeless.tables.bind.year.county, "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/0
```

```
homeless.tables.bind.year.county.diff <- homeless.tables.bind.year.county %>%
  dplyr::filter(YEAR == 2009 | YEAR ==  2021) %>%
  tidyr::pivot_wider(names_from = YEAR, values_from = TOTAL.HOMELESS) %>%
  dplyr::mutate(DIFF = `2021`-`2009`,
                PCT_INCREASE = ((DIFF*100)/(`2009`))) %>%
  dplyr::filter(PCT_INCREASE != 0) %>%
  dplyr::filter_all(all_vars(!is.infinite(.))) %>%
  tidyr::pivot_longer(cols = 2:3, values_to = "INDI", names_to = "YEAR") %>%
  dplyr::select(c(1,4,5,2,3))
homeless.tables.bind.year.county.diff
```

```
## # A tibble: 118 x 5
## # Groups:   COUNTY [59]
##    COUNTY      YEAR   INDI  DIFF PCT_INCREASE
##    <chr>       <chr> <dbl> <dbl>        <dbl>
##  1 ALBANY      2009    775   172         22.2
##  2 ALBANY      2021    947   172         22.2
##  3 ALLEGANY    2009     69    17         24.6
##  4 ALLEGANY    2021     86    17         24.6
##  5 BRONX       2009  22938 10156         44.3
##  6 BRONX       2021  33094 10156         44.3
##  7 BROOME      2009    325   300         92.3
##  8 BROOME      2021    625   300         92.3
##  9 CATTARAUGUS 2009     61    66        108.
## 10 CATTARAUGUS 2021    127    66        108.
## # ... with 108 more rows
```

```
#write_csv(homeless.tables.bind.year.county.diff, "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_cour
```

Summarizing the tables by total individuals per year and school type

```
homeless.tables.bind.year.school <- homeless.tables.bind %>%
  dplyr::group_by(LEA.TYPE, YEAR) %>%
  dplyr::summarise(TOTAL.HOMELESS = sum(TOTAL.HOMELESS))
homeless.tables.bind.year.school
```

```
## # A tibble: 34 x 3
## # Groups:   LEA.TYPE [5]
##    LEA.TYPE        YEAR TOTAL.HOMELESS
##    <chr>          <dbl>          <dbl>
##  1 CHARTER SCHOOL  2009           1061
##  2 CHARTER SCHOOL  2011           1795
##  3 CHARTER SCHOOL  2012           2805
##  4 CHARTER SCHOOL  2013           3953
```

```
##  5 CHARTER SCHOOL  2014           5113
##  6 CHARTER SCHOOL  2015           6504
##  7 CHARTER SCHOOL  2016           7884
##  8 CHARTER SCHOOL  2017          10073
##  9 CHARTER SCHOOL  2018          11506
## 10 CHARTER SCHOOL  2019          13024
## # ... with 24 more rows
```

```
#write_csv(homeless.tables.bind.year.school, "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/0
```

```
homeless.tables.bind.year.school.diff <- homeless.tables.bind.year.school %>%
  dplyr::filter(YEAR == 2009 | YEAR ==  2021) %>%
  tidyr::pivot_wider(names_from = YEAR, values_from = TOTAL.HOMELESS) %>%
  dplyr::mutate(DIFF = `2021`-`2009`,
                PCT_INCREASE = ((DIFF*100)/(`2009`))) %>%
  dplyr::filter(PCT_INCREASE != 0) %>%
  dplyr::filter_all(all_vars(!is.infinite(.))) %>%
  tidyr::pivot_longer(cols = 2:3, values_to = "INDI", names_to = "YEAR") %>%
  dplyr::select(c(1,4,5,2,3))
homeless.tables.bind.year.school.diff
```

```
## # A tibble: 4 x 5
## # Groups:   LEA.TYPE [2]
##   LEA.TYPE        YEAR    INDI   DIFF PCT_INCREASE
##   <chr>           <chr>  <dbl>  <dbl>        <dbl>
## 1 CHARTER SCHOOL  2009    1061  13024        1228.
## 2 CHARTER SCHOOL  2021   14085  13024        1228.
## 3 SCHOOL DISTRICT 2009   19190 100070         521.
## 4 SCHOOL DISTRICT 2021  119260 100070         521.
```

```
#write_csv(homeless.tables.bind.year.school.diff, "C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_cour
```

Summarizing the tables by grades

```
homeless.ny_regions <- readr::read_csv("C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_
  unique()

homeless.ny_grades_regions <- readr::read_csv("C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/
  dplyr::left_join(homeless.ny_regions) %>%
  dplyr::select(c(20, 3:14,19)) %>%
  tidyr::pivot_longer(cols = 2:13, values_to = "Grades", names_to = "Age") %>%
  #readr::write_csv("00_data/ny_homeless_student_grades_region.csv") %>%
  dplyr::group_by(Year, Age) %>%
  summarise(value = sum(Grades)) %>%
  dplyr::ungroup() %>%
  dplyr::filter(Year == "2009" | Year == "2021") %>%
  tidyr::pivot_wider(names_from = "Year", values_from = "value") %>%
  dplyr::mutate(DIFF = `2021`-`2009`,
                PCT_INCREASE = ((DIFF*100)/(`2009`))) %>%
  dplyr::filter(PCT_INCREASE != 0) #%>%
  #readr::write_csv("00_data/ny_homeless_student_grades_region_diff.csv")
```

Summarizing the tables per overnighting

```
homeless.ny_regions <- readr::read_csv("C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_s
  unique()

homeless.ny_overnight_regions <- readr::read_csv("C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_course
  dplyr::left_join(homeless.ny_regions) %>%
  dplyr::select(c(7, 2:6)) %>%
  tidyr::pivot_longer(cols = 2:5, values_to = "Value", names_to = "Home") %>%
  dplyr::filter(!Value == 0) %>%
  dplyr::filter(Year == "2009" | Year == "2021") %>%
  dplyr::mutate(Year_fct = as.character(Year)) %>%
  readr::write_csv("C:/Users/Yuri/My Drive/PhD/00_UM/03_graduate/00_courses/02_2nd_semester/02_infograph
```