a) Cover page

b) Executive summary (overview or introduction, including dashboard URL)

c) Background: business context, user needs, requirements, processes, metrics, problems,

project goals, objectives, methodology, technologies, etc.

d) Data description (data dictionary): data source, data set, data format, data model,

explanation of data cleanse, tables, and columns, etc.

e) Dashboard design: present the wireframe; describe how you design the dashboard,

guiding principles, wireframe tools used, best practices you have followed, arguments of

design decisions, etc.

f) For each dashboard, describe each of the following (with screenshots):

The purpose of the dashboard

The contents on the dashboard, including charts, metrics, and supporting elements

like filters, etc.

A list of operations (analysis) and interactions. Explain how to use the dashboard.

g) Appendix: a list of the systems, tools, data sources, and learning resources you have used.

Provide all references and resource

**Visualization Development Project:**

Schools are currently navigating a range of critical challenges in reshaping the educational landscape. To effectively address these issues—whether it's planning for reopening, adapting to online learning models, or meeting the diverse needs of students—they require reliable, data-driven insights. Data visualization plays a pivotal role in empowering school leaders to make informed, strategic decisions at any stage. It is essential to select appropriate visualization methods to ensure accurate representation of the data.

This project aims to provide a comprehensive visual representation of Georgia school data, offering historical insights that will support decision-making for schools, students, parents, and educational administrators.

**Executive Summary:**

This project creates a visually dashboards that shows details clearly and effectively to aid in the interpretation of Georgia's school grades data and the identification of patterns that will help in future decision-making. Every year, Governor’s office of Student Achievement publishes Georgia school grades reports. I am using this data from 2017 to 2019 to provide detailed analysis so that it will help end users to make future decision. I have created two interactive dashboards for visualization purpose which makes easy to interact with the dashboard.

I have used various forms of charts such as Bar chart, Bubble chart, Pie chart line chart and maps to visualize Georgia school enrollment and performance from 2017 to 2019 in dashboards. I have used Actions, filters, and parameters in dashboards to make dashboards more interactive.

**Dashboard URLs:**

**School Enrollments and Accomplishments (Dashboard 1):**

<https://public.tableau.com/profile/ritu.choudhary#!/vizhome/IT7113DevelopmentProject_Dashboard1_rchoudh2/Dashboard1?publish=yes>

**School Academic Performance (Dashboard 2):**

<https://public.tableau.com/profile/ritu.choudhary#!/vizhome/IT7113DevelopmentProject_Dashboard2_rchoudh2/Dashboard2?publish=yes>

**Background:**

At all levels of public and private education, better decision-making is needed, and district/school transparency are being created and quickly deployed through K-12 and higher education to address this requirement. At all levels of public and private education, better decision-making is needed, and district/school transparency are being created. Visual analytics and innovative data visualization facilitate teacher, school, and district-level decision-making. Dashboards showing schools histories and status classification points can be useful visualizations for identifying which schools have highest enrollments, which counties had highest four-year generation rate.

**User Needs and Requirements:**

This project is developed for educators, students and district level so that they can analyze their data and improve based on the analysis.

The visualizations needed are:

* What are the top 10 schools with highest enrollment?
* What are the total enrollments per county?
* How many schools achieved Grade (A-F) from 2017 to 2019?
* What is the total single score per cluster (E, EM, EMH, H, M, MH) from 2017 to 2019?
* What are the top 10 counties with highest four-year graduation rate?
* What is the Average accelerated course taking, college readiness and four-year graduation rate from 2017 to 2019?

**Problems:** While reviewing the data from Georgia website, I learned that some of the fields were not matching in other datasets such as 2014-2016 data was not matching with 2017-2019. So, I used data from 2017 to 2019 to provide the better visualization.

**Project goals:** This project represents Georgia School data to provide School’s enrollment and Academic performance located in Georgia. The main goal of this project is to show the performance of the school in a visual manner in a way that is very easy to understand the meaning behind the visual. This project will help us answer the requirements mentioned above. Educators, School board, district level can analyze the data and make improvements based on data.

**Objectives:** Our goal is to show how analytics, creative and interactive data visualization techniques can deliver powerful decision-making aids for educators and school administrators. Here we focus on applications rather than methodologies. Our examples include: (1) Student Enrollment and Accomplishments dashboards for academic advising and support services, (2) School Academic performance to provide the academic performance advising.

**Processes followed:**

* Analyzed data downloaded from Georgia school website and cleaned the data in terms of user perspective and presented them using the best charts so that they can understand easily.
* The charts were made interactive so that users could see exactly what they wanted. Wherever action and filters were required, they were added so that the user could achieve information flow between the charts.
* Color palette was used effectively, allowing users to distinguish themselves clearly wherever it was required.
* Added relevant headings so that users can quickly identify what they're looking at.

**Methodology**: I have gone through several blogs and assigned reding by Professor to get an idea how I can make dashboards to achieve better visualization and interaction with the end user.

**Technologies:** I have used Tableau 2020.4 for visualization.

**Data description (data dictionary):**

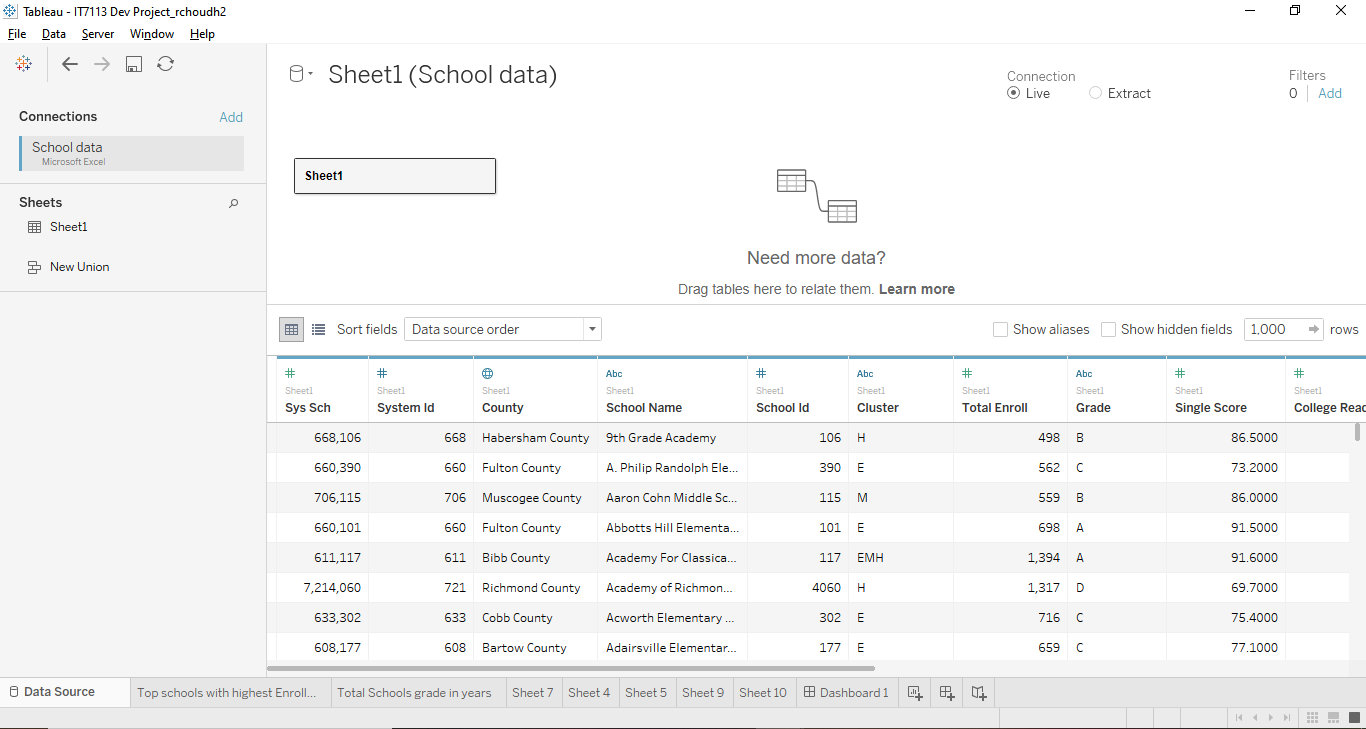
**Data source**: I have downloaded Georgia school data from below website:

Website- <https://schoolgrades.georgia.gov/dataset/school-level-data>).

**Data set:** I have used 2017, 2018 and 2019 data mentioned on the website. I have added all data to the school data.xlsx with additional column of year distinguishing data of 2017, 2018 and 2019 years.

**Data format**: Cleaned data is in excel format.

Below screenshot shows that School data.xlsx was loaded into Tableau.



**Data Model:** I am using single table data model to achieve the results.

**Explanation of data cleanse:** I have followed below steps to clean data:

* Downloaded data from website
* 2014–2016-year data did not have enough and mismatched data. So, I added 2017, 2018 and 2019 data into one excel file i.e School data.xlsx.
* I have kept the matching columns of 2017-2019 and removed columns which were not matching with another dataset.
* I have also added city and zip code column since, 2017 did not have zip code and city column.
* I added Year column to distinguish between 2017-2019 dataset.
* I have removed few rows which were null and some had wrong information such as county had school name in it which could give wrong visualization. I extensively cleaned the data to ensure there were no null values, duplicate rows, or data misinterpretation.

**Tables and columns:**

***County:*** This field represents the name of the county where school is located

***SchoolName:*** This field represents the name of the school

***SchoolId:*** This field represents Unique ID associated with the school.

***Cluster:*** This field represents Grade Cluster (elementary, middle, high, or a combination of these)

***total\_enroll:*** This field represents total enrollment.

***Grade:*** Parents, educators, and community members should be able to understand how their local schools are doing quickly and easily. The A-F scale is a widely used and recognized way of summarizing a school's results. The Georgia Department of Education calculates a school's letter grade based on its College and Career Ready Performance Index (CCRPI) ranking (GaDOE). The school performance snapshots allow for comparisons of schools and districts based on factors including literacy and graduation rates.

Letter grades from A to F provide simple details about a school. The letter grades provide information to parents, teachers, educators, and communities about the performance of their local schools. Stakeholders will be able to concentrate their change efforts on the most pressing issues thanks to improved visibility and consistent facts.

|  |  |
| --- | --- |
| **CCRPI Score** | **Letter Grade** |
| 90.0 and higher | A |
| 80.0 – 89.9 | B |
| 70.0 – 79.9 | C |
| 60.0 – 69.9 | D |
| Lower than 60.0 | F |

***SingleScore:*** This field represents CCRPI Single Score for entire school. School’s CCRPI Single Score is a weighted average of each grade cluster’s score based on enrollment in each grade cluster.

***College\_Readiness:*** Percentage of 12th Grade Students who are College & Career Ready. The percentage of students who: enter the Technical College System of Georgia (TCSG) or University System of Georgia (USG) without needing remediation; achieve a readiness score on the ACT, SAT, take two or more Advanced Placement (AP) exams, or two or more International Baccalaureate (IB) exams; pass a pathway-aligned end of pathway assessment (EOPA) resulting in a national or state credential; or complete a work-based learning program.

***Accelerated\_Course\_Taking:*** Percentage of 12th-grade students earning high school credit(s) for accelerated enrollment through Dual Enrollment, Advanced Placement (AP), or International Baccalaureate (IB) courses

***Four\_Year\_Graduation\_Rate:*** This field represents percentage of students who graduate high school in four years.

***Year:*** This field represents year of dataset.

***City:*** This field represents city of the school.

***State:*** This field represents state of the school.

***Zip\_code:*** This field represents Zip code of the school.

**Dashboard design**:

* Dashboards are used to display the most important and useful information. Here I have created two interactive dashboards which will help School board and educators making important decisions.
* I have created two dashboards- School Enrollments and Accomplishment and School Academic Performance.
* I have used various charts like bar graph, bubble, line chart, pie chart and map to illustrate the data.
* I chose the layout size as 1150 x 600 to fit in my screen.
* To make it easier to analyze, charts and data tables should be placed side by side or top to bottom without leaving any blank space. Filters are linked to respective worksheets in order for the user to be able to change the data as required.
* I have used Action filter, Action URL and Parameter in both dashboard
* I have used three colors; one for 2017, second is for 2018 and third one is for 2019 in both dashboards to create connection among all worksheets. I have avoided using multiple colors which make difficult to understand.
* I have further elaborated my dashboard design under Dashboard description

**Best practices followed:**

* All the charts are selected to provide the best information as possible for the users. These dashboards will give users a clear view of performance trends and potential problems to pay attention.
* I made sure that titles are easy to understand, and users can easily figure out what the chart and information is about.
* I have used Top 10 schools got highest enrollments in first dashboard. To make it more interactive, I have used parameter where user can also change the number and view Top 15 or 20 schools with highest enrollments.
* Dashboard names and Title names are clearly given.
* I have added action filter in dashboards so that user can view the required information. For example- If I select year 2017 from legends then only 2017 data will be selected from all charts.
* I have also used action url to direct to the Georgia school website data in case users want to view the raw data.
* Used colors to differentiate between all three years. For example- I have used Blue for 2017, Orange for 2018 and Red for 2019. I made sure that I used same three colors in all charts. Blue for 2017, Orange for 2018 and Red for 2019.
* I have also modified tooltip so that user can easily read and understand. For example- When you hover over Geographical map, it will display “In 2017, there are 2,249 enrollments in Long county”.
* Organized the filters in dashboard, so that user can either type or use drop down to fetch the information.
* I have also used highlighter to select the measure name which shows the measure name in drop down. User can easily select one of measure names to view the values on the line chart.

**Dashboards:**

I have created two dashboards School Enrollments and Accomplishments and School Academic Performance. Please find the description of the dashboards and the charts below:

**School Enrollments and Accomplishments (Dashboard 1):**

Below dashboard illustrates Total enrollments per county, Top schools with highest enrollments, Total score in years per cluster and Percentage of schools and their grades per years. Total enrollments can be seen via Geographical map, Top schools, and total score in years per cluster can be seen via Bar chart and Percentage of schools and their grades per years can be seen via bubble chart.

**Purpose of dashboard:**

* The purpose of the dashboard is to provide users with most asked questions and most helpful questions in decision making and improvements.
* This dashboard shows total enrollment per county so that Education board can review the highest and lowest enrollments from counties over years.
* Educators can find out the top schools with highest enrollments and lowest enrollments so that they can take example and work on improvements.
* Education board can view the total scores received per clusters (E,M,H,MH, EMH)
* Board can analyze percentage of schools and their grades received from 2017 to 2019. One can view the accomplishments of schools.
* Analysis is future explained below.

Graphical user interface

Description automatically generated

**How to use dashboard:**

* I have created Action URL which can be seen in top right-hand corner with the name “***Click on hyperlink to visit school website***” to view Georgia school data.

Graphical user interface, text, application

Description automatically generated

* I have also used filter to view top schools. Currently we have top 10 but User can also change the number from 10 to 15 or any number to view top schools with highest enrollments. By changing the number 15 will show top 15 instead of 10 schools.

**Top N schools with highest enrollment:**

Graphical user interface

Description automatically generated

* I have created action filter on the dashboard. There is Year filter which is differentiated by colors, User can view 2017, 2018 and 2019 data individually. If click on orange color on any chart it will display only 2018 data. Similarly, if we click on blue color, it will show 2017 data.

Graphical user interface

Description automatically generated

* There are different counties which are differentiated by colors. If user want to view any information related to that county, they can view hovering or clicking on it. For example- If we want to view Lauren county information in 2017 and click on it, then only 2017 data will be displayed.

Graphical user interface, application

Description automatically generated

* As you can see in above screenshot, I have also used interactive tooltip for better understanding. Just by hovering over, User will know what information is displayed there. For example- In above screenshot, it shows in 2017, there were 5,560 enrollments in Laurens county. Interactive tooltips are better way to visualize your data.

**Contents of the dashboard:** I have used variety of charts in my dashboard. Below are the followings:

**Top schools with highest Enrollments:**

Graphical user interface, text, application

Description automatically generated

**Analysis:**

* With the help of this chart, we can analyze these were top ten schools with highest enrollments.
* In case School boards or Educators want to view the data of schools who are doing good with enrollments. They can view which schools are doing good with enrollments and they can take their examples to improve the enrollments of the one who are doing so well. As shown in the screenshot above, Lakeside High school had 11,891 enrollments.
* User can also change the number from Top 10 to Top 15 or any number from right hand side filter. It makes chart more interactive; User can use this data as per their requirements.

**Percentage of schools and their grades per years:**

We are using bubble chart to illustrate percentage of schools are their grades per year. We have differentiated 2017-2019 data with colors.

2017 data- represents with blue color

2018 data- represents with orange color

2019 data- represents with red color

Chart, bubble chart

Description automatically generated

**Analysis:**

* User can analyze the percentage of schools were in A grade and percentage of school were in F grade in 2017 versus 2018 0r 2019.
* The size of circle is based on count of schools. Biggest circle shows highest number of schools achieved grade. In above screenshot shows that highest number of schools achieved grade C in 2019.
* As shown in screenshot above, we can see that there were 212 schools which is 3.571% of schools had grade A in 2017, there were 138 schools which is 2.324% of schools had grade A in 2018 and there were 197 schools which 3.381% of schools had grade A. It depicts that in 2017, school’s performance was good since there were 212 schools achieved grade A. In 2018, there was lowest number of schools achieved grade A.
* Similarly, we can see in screenshot below that 232 schools which is 3.908% of schools got grade F in 2017, 290 schools which is 4.885% schools got grade F in 2018 and 204 schools which is 3.436% schools got grade F in 2019. In 2018, highest number of schools got grade F.

Chart, bubble chart

Description automatically generated

For the reference, Grade is calculated based on below:

|  |  |
| --- | --- |
| **CCRPI Score** | **Letter Grade** |
| 90.0 and higher | A |
| 80.0 – 89.9 | B |
| 70.0 – 79.9 | C |
| 60.0 – 69.9 | D |
| Lower than 60.0 | F |

**Total single score in years per cluster:** We are visualizing single score achieved per cluster in 2017-2019 using Stacked Bar chart. Grade cluster is (elementary, middle, high, or a combination of these)

E- Elementary school

M- Middle school

H- High School

EM- Combination of Elementary and Middle School

MH- Combination of Middle and High school

EMH- Combination of Elementary, Middle and High school

Graphical user interface, application

Description automatically generated with medium confidence

**Analysis:**

* Stacked bar chart shows the numbers of school and their scores from 2017 to 2019.
* We can analyze the number of schools and highest scores achieved in those years.
* As clearly shown Elementary cluster had best total single score among all clusters.
* Elementary cluster has highest number of schools among all and highest single score.
* Although Elementary cluster had highest score, however still this score was changed over years. In 2017, the total score was 78,364, score was 81,300 in 2018 and score was 83,966 in 2019. Hence, Elementary cluster had highest score in 2019 and lowest score in 2017. It seems Elementary schools are doing better over years.
* EMH cluster has lowest score among all clusters. There were 13 schools in cluster EMH received total score 910, 14 schools received total score 848 and 13 schools received total score 874.

Chart

Description automatically generated with medium confidence

**Total enrollments per county:** Below dual axis geographical map shows the total enrollments per county. All counties are differentiated by colors. Sum of enrollments is illustrated by size. Bigger circle over county means, highest enrollments whereas small circle means lowest enrollments.

Map

Description automatically generated

**Analysis:**

* User can view the enrollments per county. All counties are differentiated by different colors.
* When you hover over any county it will show the enrollments of that county.
* Bubble size is changed according to enrollments done in county. Bigger size of bubble means higher enrollments, smaller size means lowest enrollments.
* As shown in screenshot above, you can see that Gwinnett county had highest enrollments in 2017 whereas counties like Echols had lowest enrollments in 2017.
* User can check the performance of counties who had higher enrollments.

**School Academic Performance (Dashboard 2):** I have created another dashboard which shows three Pie charts, Line chart and Bar chart. School Academic performance dashboard shows four year graduation rate, College Readiness, Accelerated course taking, Average of four year graduation rate, College Readiness, Accelerated course taking through line chart and Top 10 counties with highest four year graduation rate.

**Purpose of Dashboard:**

The purpose of school academic performance dashboard is to find out the percentage of four year graduation rate, college readiness and accelerated course taking from 2017-2019 years. Dashboard also shows these value together to find out the increments and decrements happened over years. Dashboard also shows top 10 counties with highest four year graduation rate. Purpose and analysis is explained in more details further.

***College\_Readiness:*** Percentage of 12th Grade Students who are College & Career Ready. The percentage of students who: enter the Technical College System of Georgia (TCSG) or University System of Georgia (USG) without needing remediation; achieve a readiness score on the ACT, SAT, take two or more Advanced Placement (AP) exams, or two or more International Baccalaureate (IB) exams; pass a pathway-aligned end of pathway assessment (EOPA) resulting in a national or state credential; or complete a work-based learning program.

***Accelerated\_Course\_Taking:*** Percentage of 12th-grade students earning high school credit(s) for accelerated enrollment through Dual Enrollment, Advanced Placement (AP), or International Baccalaureate (IB) courses

***Four\_Year\_Graduation\_Rate:*** This field represents percentage of students who graduate high school in four years.

Graphical user interface, chart, Excel, pie chart

Description automatically generated

**How to use the dashboard:**

* There are five charts I have used which consists of three pie charts, one line chart and one bar chart.
* All charts on dashboard three different colors, Blue color shows 2017 data, Orange color shows 2018 data and red color shows 2019 data. I have used these three colors for all charts.
* I have used action filter to show the connection between all charts I have used. If user wants to view only 2019 data which is shown by red color, then user can click on red color on any chart then all charts will automatically view only 2019 data. Similarly, if user wants to view only 2018 data which is shown by orange color, then user can click on orange color on any chart, all charts will automatically select 2018 data. Similarly, if user wants to view only 2017 data which is shown by blue color, then user can click on blue color on any chart, all chart will automatically select 2017 data. (Refer to the screenshots below)

**Graphical user interface, application

Description automatically generated2019 data**-

**2018 data-**

Graphical user interface, chart

Description automatically generated

Graphical user interface, application

Description automatically generated**2017 data:**

* I also have used Top N county filter to view Top counties with highest graduation rate from 2017-2019. We can also change the number in case we want to see more top counties with highest graduation rate.
* User can also filter clusters in case anyone want to view the data related to specific clusters
* User can also highlight measure name by select one of the three in the list from Highlight measure name panel. As you can see in the screenshot below, I have only selected Accelerated course taking, hence its showing only that data on line chart from 2017-2019.

**Highlight measure names:**

Graphical user interface, application

Description automatically generated

**Contents of the dashboard:**

**Four Year Graduation Rate:** Below pie chart show average percentage of four year graduation rate over years. Year 2017-2018 are differentiated by colors. Average of four year graduation rate is also differentiated by size. Coverage of more area mean higher percentage of four year graduation rate however, coverage of less area means lower percentage of four year graduation rate.

Graphical user interface, chart, application

Description automatically generated

**Analysis:**

* User can view average four year graduation rate from 2017 to 2019.
* As shown in above screenshot it shows that, average of four year graduation rate was 85.48% which was highest in 2019 whereas four year graduation rate was 83.73% in 2018 and four year graduation rate was 82.95%.

**College Readiness:** Below pie chart show average percentage of college readiness over years. Year 2017-2018 are differentiated by colors. Average of college readiness is also differentiated by size. Coverage of more area mean higher percentage of college readiness however, coverage of less area means lower percentage of college readiness.

Graphical user interface, chart, application, pie chart

Description automatically generated

**Analysis:**

* Users can view average college readiness from 2017 to 2019.
* As shown in above screenshot it shows that, average of college readiness was 57.735% which was highest in 2017 whereas average of college readiness was 56.617% in 2018 and average of college readiness was 56.904% which has slightly decreased over years.

**Accelerated course taking:** Below pie chart show average percentage of Accelerated course taking over years. Year 2017-2018 are differentiated by colors. Average of Accelerated course taking is also differentiated by size. Coverage of more area mean higher percentage of Accelerated course taking however, coverage of less area means lower percentage of Accelerated course taking.

Graphical user interface, chart, application

Description automatically generated

**Analysis:**

* Users can view average of accelerated course taking from 2017 to 2019.
* As shown in above screenshot it shows that, average of accelerated course taking was 76.58% which was highest in 2019 whereas average of accelerated course taking was 44.89% in 2018 and average of accelerated course taking was 47.17%. Overall average of accelerated course taking had improvements.

**Average Accelerated Course taking, College readiness and Four-year graduation rate per Cluster:** Below line chart shows average accelerated course taking, college readiness and four year graduation rate per cluster. Definition of these fields can be found in Data description. We have used filter to limit our view to High school or Middle school. User can view data of any cluster by selecting from filter. Years are differentiated by same three colors Blue, Orange and Red.

Graphical user interface, chart

Description automatically generated

**Analysis:**

* User can view average accelerated course taking, college readiness and four year graduation rate per cluster over years.
* Blue line shows 2017 data, Orange line shows 2018 data and Red line shows 2019 data.
* Three red lines means one is for accelerated course taking, second red is for college readiness and third red line is for four-year graduation rate in 2019.
* Similarly, three orange lines means one is for accelerated course taking, second red is for college readiness and third red line is for four-year graduation rate in 2018.
* Similarly, three blue lines means one is for accelerated course taking, second red is for college readiness and third red line is for four-year graduation rate in 2017.
* Above screenshot shows average four-year graduation rate was 83.08% for cluster EMH, four year graduation rate was 86.42% for cluster H and four year graduation rate was 74.49% for cluster MH in 2019.
* Average four-year graduation rate was 61.94% for cluster EMH, four year graduation rate was 85.48% for cluster H and four year graduation rate was 68.53% for cluster MH in 2018.
* Average four-year graduation rate was 65.73% for cluster EMH, four year graduation rate was 84.47% for cluster H and four year graduation rate was 61.48% for cluster MH in 2017.
* Average Accelerated course taking was 75.23% for cluster EMH, accelerated course taking was 77.32% for cluster H and accelerated course taking was 66.99% for cluster MH in 2019.
* Average Accelerated course taking was 48.98% for cluster EMH, accelerated course taking was 45% for cluster H and accelerated course taking was 42.41% for cluster MH in 2018.
* Average Accelerated course taking was 45.52% for cluster EMH, accelerated course taking was 47.20% for cluster H and accelerated course taking was 47.43% for cluster MH in 2017.
* Average college readiness was 62.58% for cluster EMH, college readiness was 57.55% for cluster H and college readiness was 47.43% for cluster MH in 2019.
* Average college readiness was 56.56% for cluster EMH, college readiness was 57.13% for cluster H and college readiness was 48.74% for cluster MH in 2018.
* Average college readiness was 59.20% for cluster EMH, college readiness was 57.13% for cluster H and college readiness was 68.83% for cluster MH in 2017.
* User can illustrate that Average of Four year graduation rate has increased over years in all three clusters (EMH, H and MH). Average of accelerated course taking has also increased from 2017 to 2019 in all three clusters (EMH, H and MH). Average college readiness for cluster EMH has slightly increase from 2017 to 2019, for cluster H, it average percentage was almost same however for cluster MH there is decrement over years from 68% to 47%. It shows that School board has to pay attention to college readiness.

**Top 10 counties with highest four year graduation rate:** Below bar chart shows top 10 counties with highest four year graduation rate. These graduation rate are further can be viewed with different years which is differentiated with Blue, Orange and Red colors

Graphical user interface, application

Description automatically generated

**Analysis:**

* Users can view top 10 counties who has highest or lowest graduation rate over years
* User can also change the number of counties to be viewed by changing the number in Ton N county box.
* As you can see from the screenshot above, Echols county had 100% four year graduation rate in 2019 whereas in 2018, county had 95.30% graduation rate and in 2017, 96.40% four year graduation rate. It shows that Echols county has made improvements over years.
* As of now, Union county has the highest graduation rate since this had decent percentage of graduation rate over years. In 2017, graduation rate was 98.80%, in 2018, graduation rate was 97.50% and graduation rate was 99.50% which is overall highest among all.

**Conclusion:**

The above dashboards are designed as per school requirements, and major goal of these visualizations is to provide with the metrics that help the School board and educators to improve.

**Acknowledgement**:

I would like to express my deep gratitude to Professor Dr. Jack Zheng for his guidance and assistance of this project.

# References

Georgia.gov. (n.d.). *Georgia School Grades Report FAQ*. Retrieved from https://schoolgrades.georgia.gov/faq#grade\_clusters