COMPUTATION AND VISUALIZATION

PROJECT 1
REPORT

Data Visualization and Analysis on
Work from home v/s Back to Office Policies

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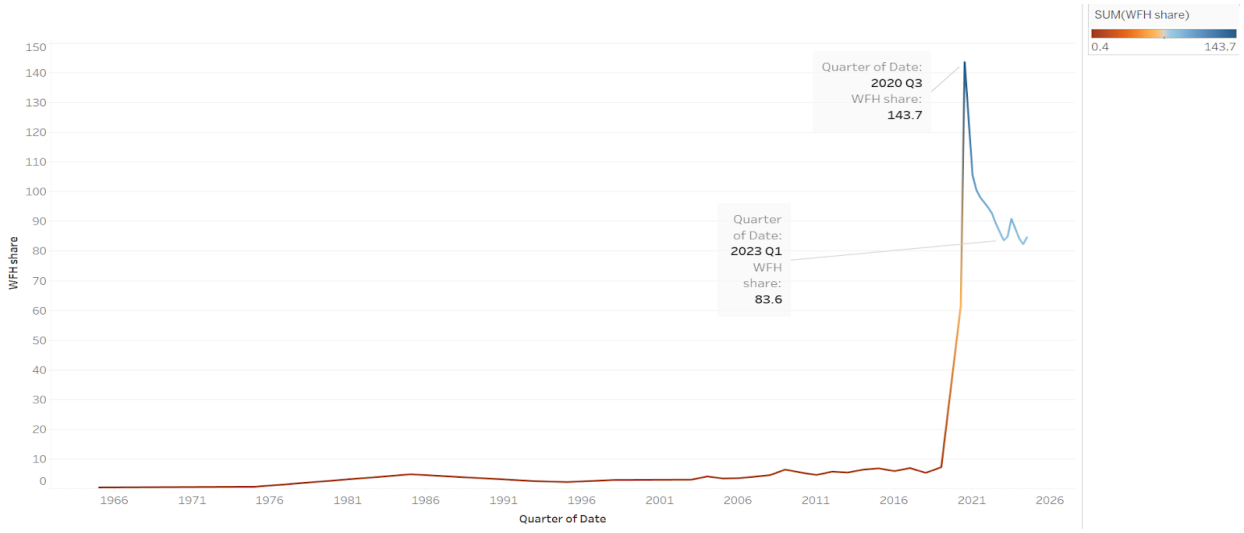
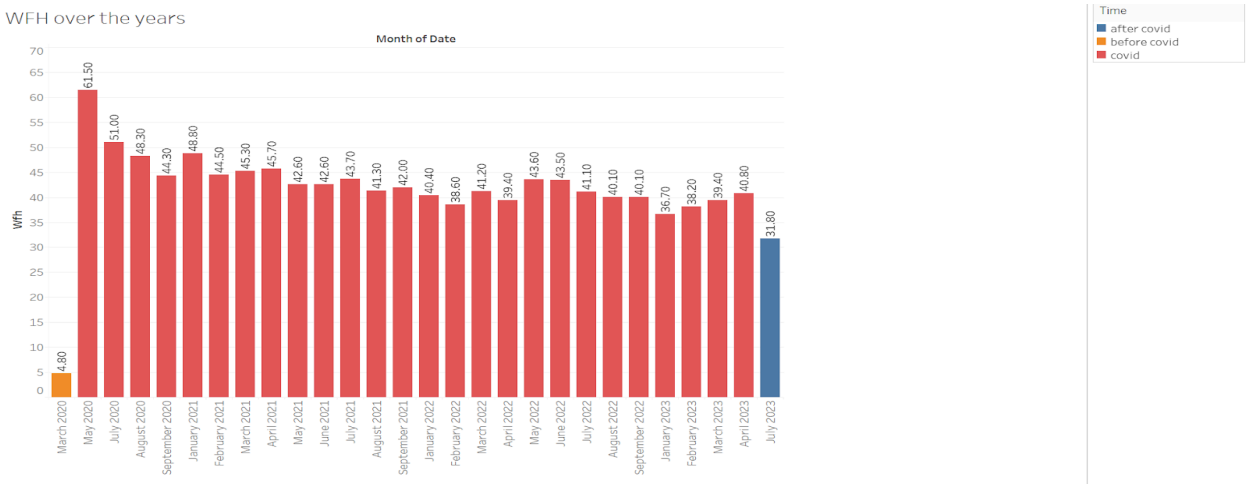
Data Selection:

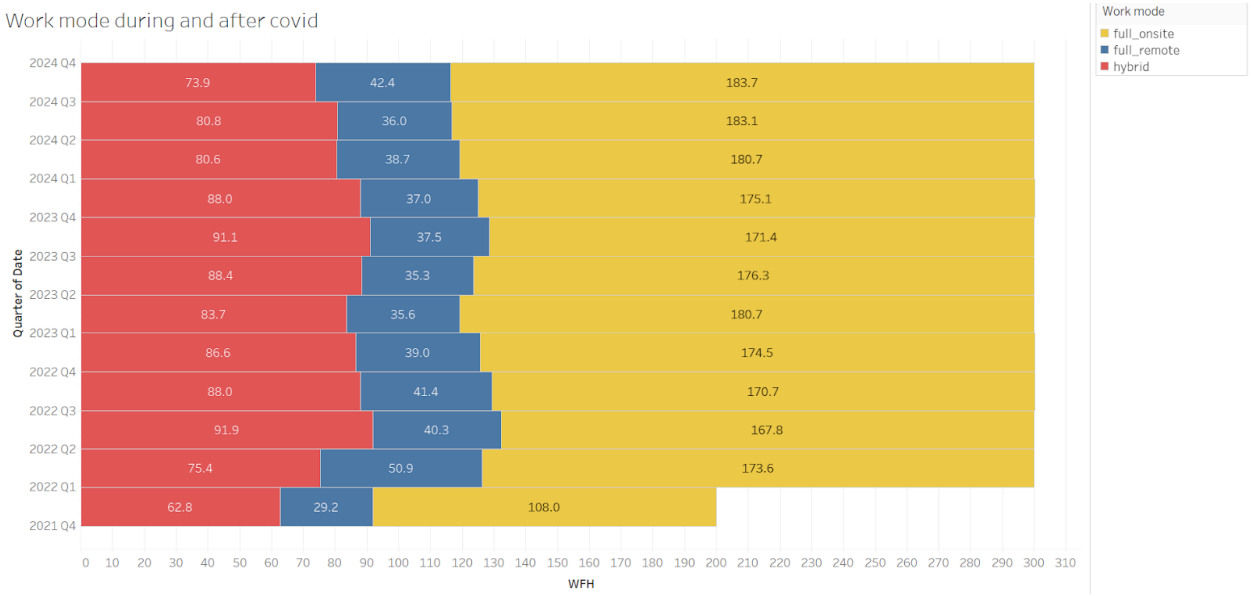
The work-from-home data is being analyzed from the WFH Research Database. The data downloaded from the website is in the form of an excel workbook. The different worksheets are being analyzed and the suitable ones that can be used for visualizations are being selected and then they can be cleaned.
The city, and industry excel sheets that are present in the workbook are present in the wide format. For better visualizations the data is then converted in the long form by converting them into a dataframe in Jupyter Notebook.
The data cleaning process includes changing the column names for better understanding, checking for null values and also removing redundant data.

Visualizations:

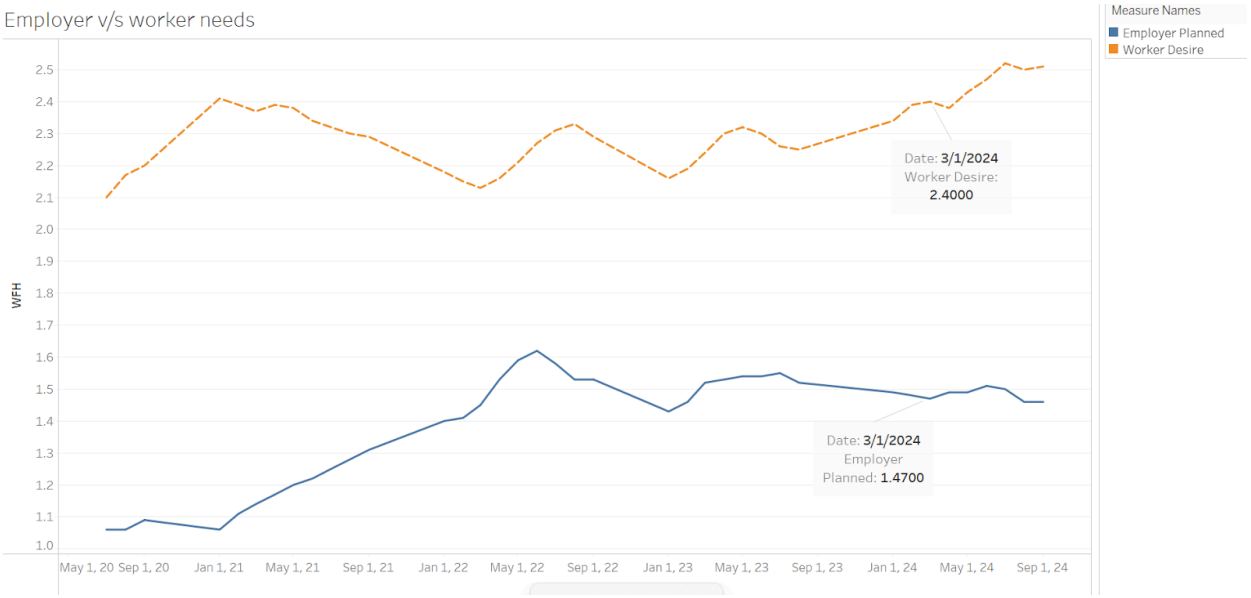




The concept of work from home and its requirement mainly arose during the COVID-19 pandemic. It can be seen clearly from the visualization that the need for the WFH mode of work started due to the pandemic. After the peak stage of the pandemic the WFH policies also kept changing based on the employer needs, therefore there are fluctuations noticed in the after period of COVID.

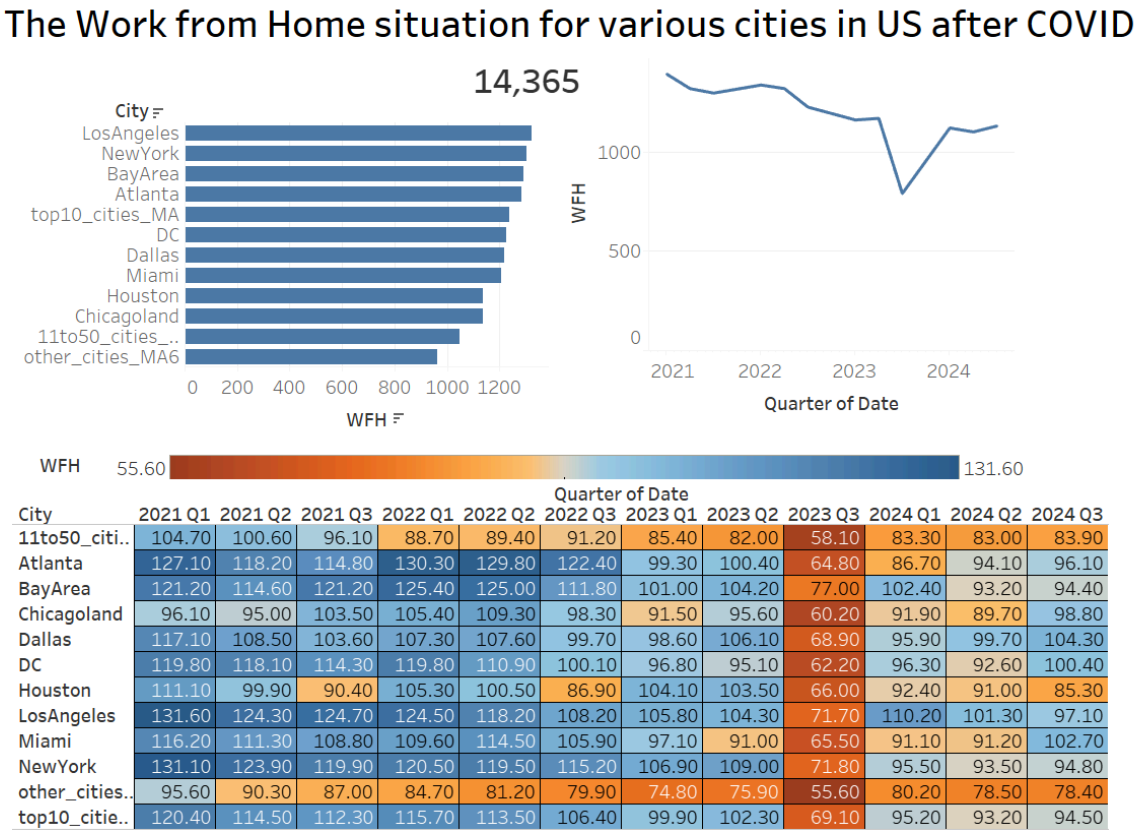


The distribution of the different work modes such as hybrid, remote and onsite is shown in the above visualization. The remote mode of work has taken a major jump from the end of 2021 to the start of 2022. Over the years based on the nature of the pandemic and the change in office policies the work modes are seen to be fluctuating. The onsite mode of work is still having a huge share followed by hybrid work as there are different industries to be considered and few of them may not be able to operate remotely.



The employer needs and the worker desires have a lot of differences according to the visualization above. We can clearly understand from the above that the workers are happy with the work from home mode and wish to continue in the same format even after the COVID. While the employer expects the workers to return to the back to office policies with maximum days onsite.

Dashboards:

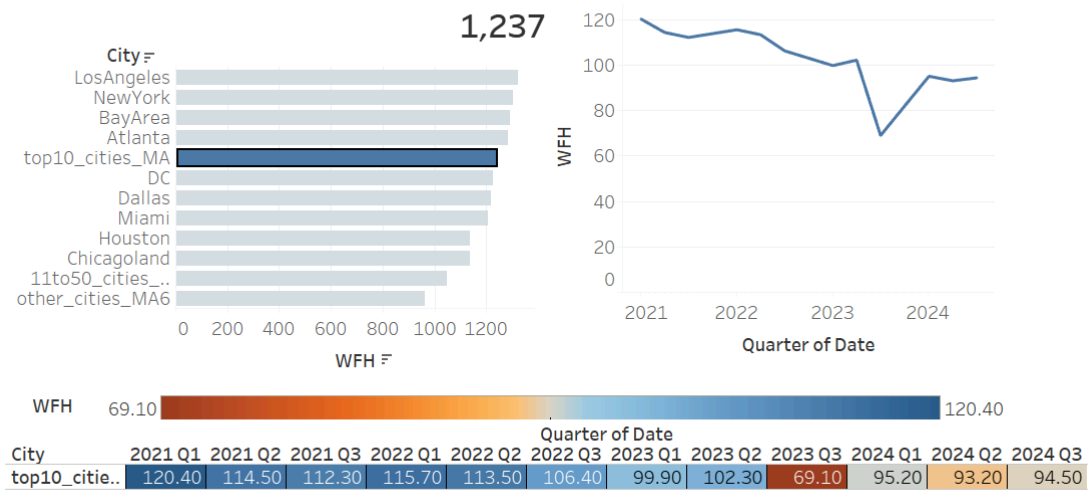


Quarter of Date

City	2021 Q1	2021 Q2	2021 Q3	2022 Q1	2022 Q2	2022 Q3	2023 Q1	2023 Q2	2023 Q3	2024 Q1	2024 Q2	2024 Q3
11to50_citi..	104.70	100.60	96.10	88.70	89.40	91.20	85.40	82.00	58.10	83.30	83.00	83.90
Atlanta	127.10	118.20	114.80	130.30	129.80	122.40	99.30	100.40	64.80	86.70	94.10	96.10
BayArea	121.20	114.60	121.20	125.40	125.00	111.80	101.00	104.20	77.00	102.40	93.20	94.40
Chicagoland	96.10	95.00	103.50	105.40	109.30	98.30	91.50	95.60	60.20	91.90	89.70	98.80
Dallas	117.10	108.50	103.60	107.30	107.60	99.70	98.60	106.10	68.90	95.90	99.70	104.30
DC	119.80	118.10	114.30	119.80	110.90	100.10	96.80	95.10	62.20	96.30	92.60	100.40
Houston	111.10	99.90	90.40	105.30	100.50	86.90	104.10	103.50	66.00	92.40	91.00	85.30
LosAngeles	131.60	124.30	124.70	124.50	118.20	108.20	105.80	104.30	71.70	110.20	101.30	97.10
Miami	116.20	111.30	108.80	109.60	114.50	105.90	97.10	91.00	65.50	91.10	91.20	102.70
NewYork	131.10	123.90	119.90	120.50	119.50	115.20	106.90	109.00	71.80	95.50	93.50	94.80
other_cities..	95.60	90.30	87.00	84.70	81.20	79.90	74.80	75.90	55.60	80.20	78.50	78.40
top10_citie..	120.40	114.50	112.30	115.70	113.50	106.40	99.90	102.30	69.10	95.20	93.20	94.50

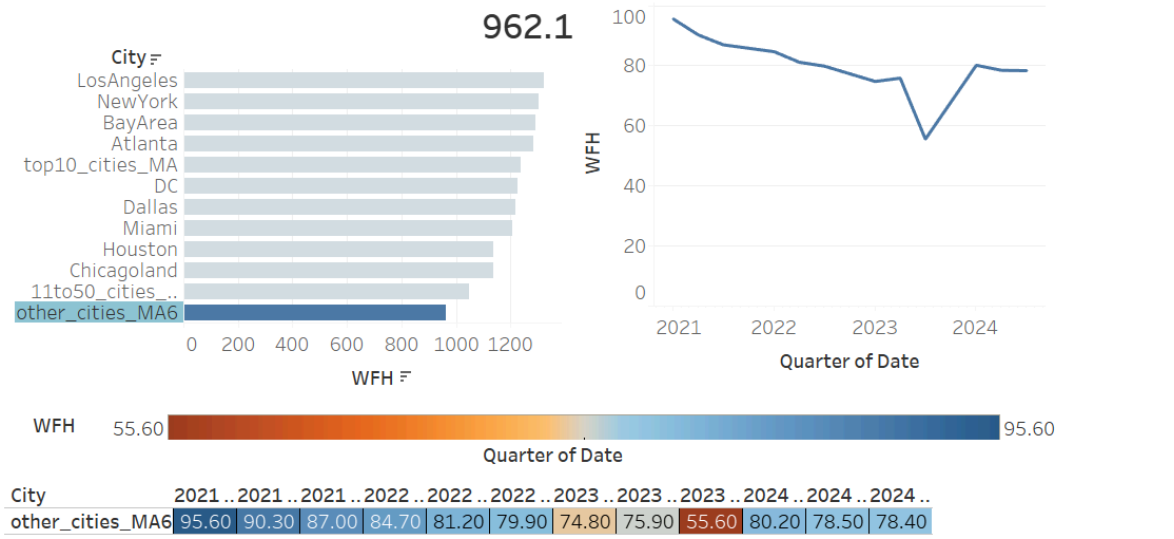
The work from home across the various cities in the US can be visualized in the above dashboard. This dashboard contains a numerical value which gives the total share of WFH, a line graph which shows the trend for the wfh trend over the years, bar chart which contains the wfh according to cities and a heatmap to show the exact values and the changes. The city bar graph is taken as a filter so that a user can easily select individual cities for a better visualization and to gain better insights.

The Work from Home situation for various cities in US after COVID

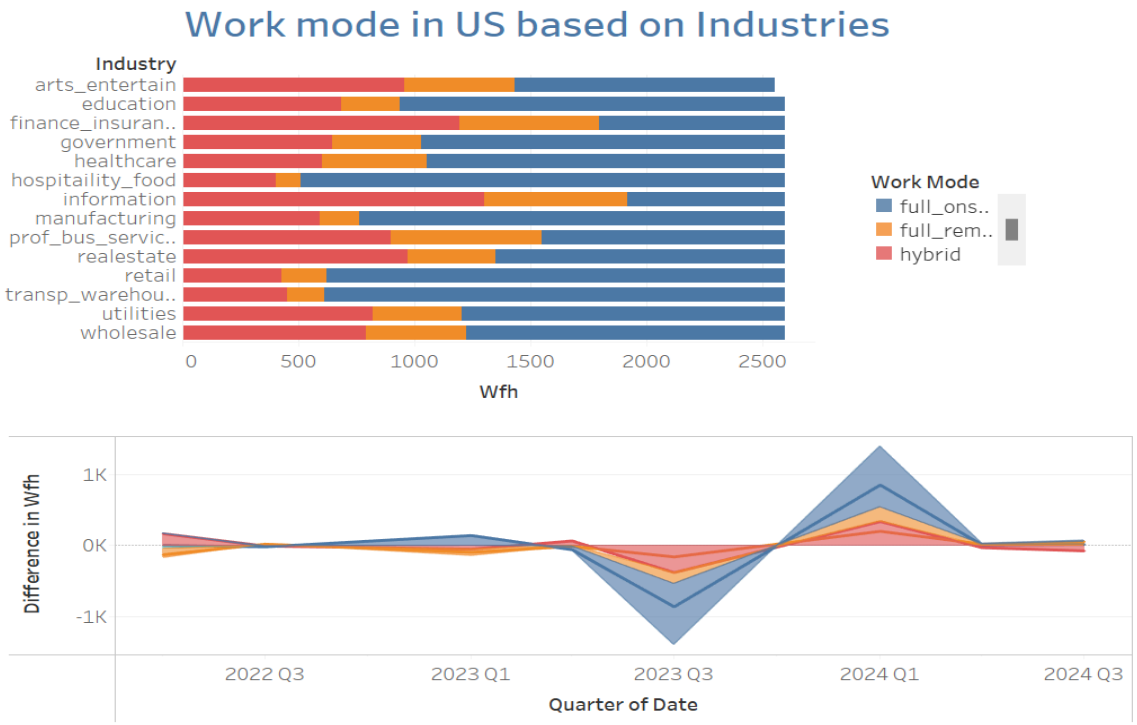


In the top cities in the US, we can notice that the WFH share is high. We can attribute this to the big tech companies situated in these cities and therefore a greater support towards the WFH mode of work.

The Work from Home situation for various cities in US after COVID

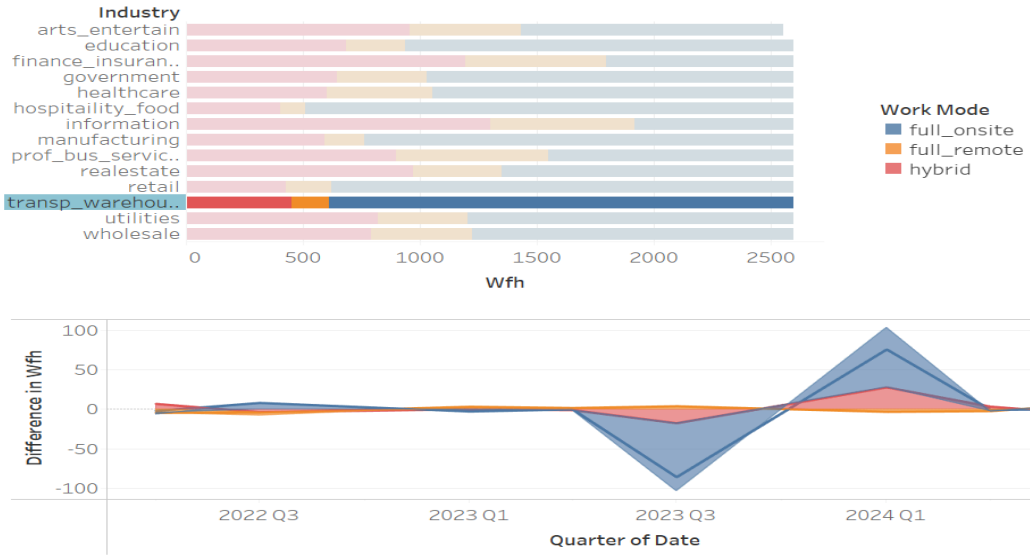


The moving average of the WFH share for the other cities in the US, which include the small cities and countryside areas, has a much lesser share of WFH opportunities. Therefore the policies related to the WFH depend on the location of the company.

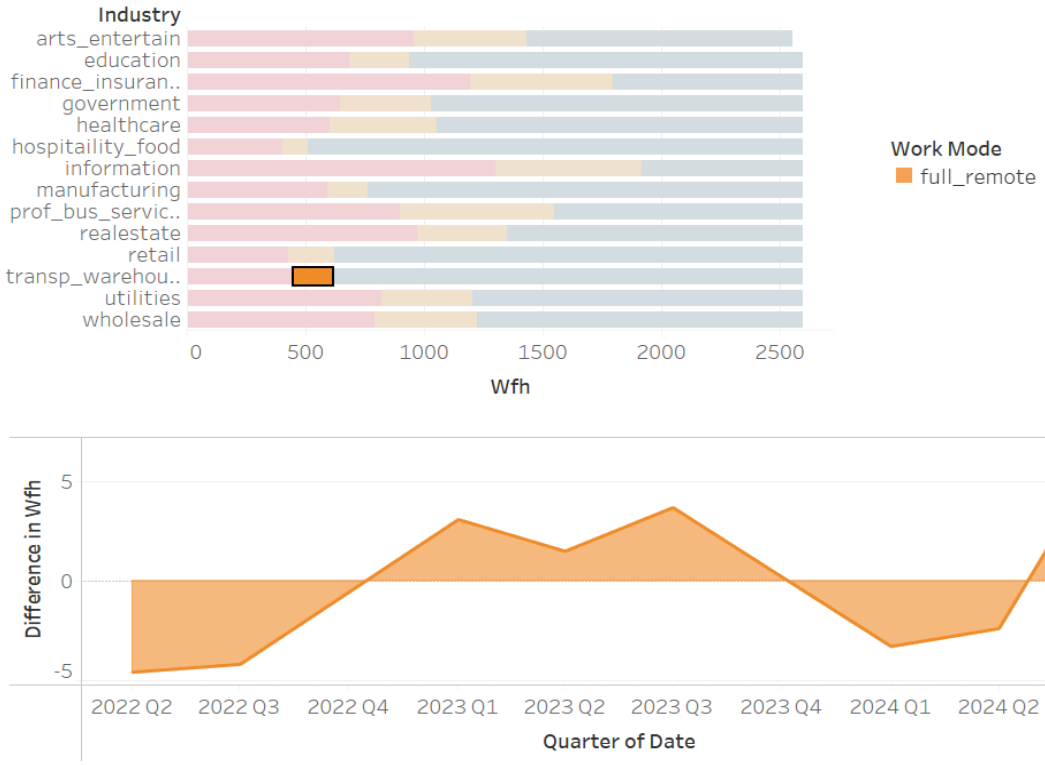


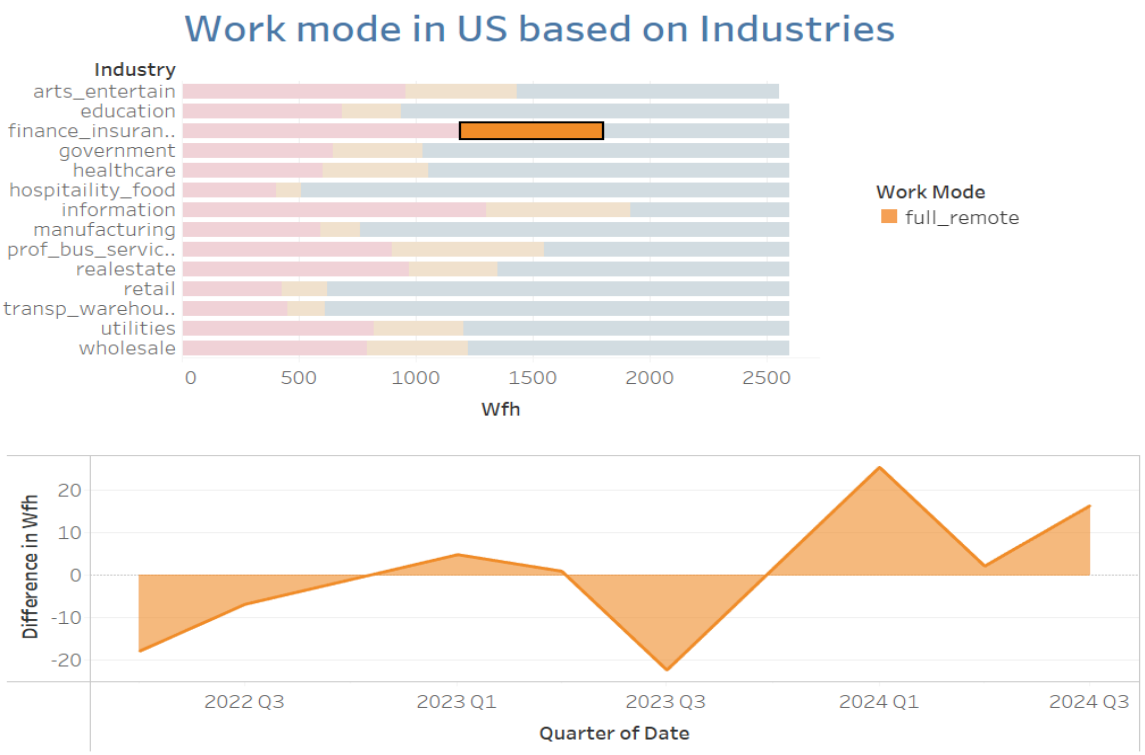
The work from home policies in the US also varies based on the industry type. Therefore the above dashboard gives the change in various work modes based on the industry type and also gives their time series/ difference over the years. By setting the Industry representation as a filter we can visualize the industry growth individually.

Work mode in US based on Industries



Work mode in US based on Industries





We can see that the industry transport warehouse does not support remote work mode. The transport warehouse requires its workers to work onsite or hybrid at the least. While the same is not the case with the finance insurance industry or the information industry where working remotely is not an issue.
Therefore the work mode depends majorly on the industry where the worker is employed.
The area and line marks are used to make the user understand easily that the values are hovering around 0, therefore the viewer can easily distinguish between the positive and negative values.

Insights:

Based on the visualizations we can clearly state a few trends and insights.

- There is a major difference between the worker's desire and the employer needs when related to the work from home policies. The workers are in favor of the work from home mode while the employer expects them to work onsite more days of the week.

- The work from home concept can be considered to be nil before the COVID pandemic. The work from home policies have come into picture only during the pandemic and the workers and employers are still yet to move back to the conventional back to office policies, hence there are fluctuations in the work mode after COVID.

- The top cities in the US are more lenient about the work from home and have more flexible modes of work such as hybrid and full remote when compared to the small cities or other places in US where the remote work is very minimal and the workers are expected to work onsite.

- The work from home policies also depend heavily on the type of industry. The tech industry, information and finance are a few which are still encouraging work from home policies. While the education, transportation and manufacturing industries are more keen towards the back to office policies and the workers have again resumed their roles fully onsite.