The possible causes behind US flights arrival delays IN 2015

Nothing bothers airline passengers more than delays. This is because delays could be crucial for some passengers as they may miss their transite flights leading them to pay extra or miss important meetings. In this report I will discuss the possible reasons and causes for the plane's arrival delays.

The origin airports that cause the most arrival delays visualisation 1:
Visualisation:
https://public.tableau.com/views/Book1_16540149821620/TheOriginairportswiththemostdelays?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

This visualisation is considered the starting point in identifying and interpreting the different aspects for arrivals delays. From the visualisation we can find that Chicago O'Hare International Airport, Dallas/Fort Worth International Airport, and Denver International Airport are the airports associated with the most arrival delays. We can also observe that Hartsfield–Jackson Atlanta International Airport is in the top five airports that cause the most arrival delay.

The delay reasons in the top 3 airports with the resulting arrival delay visualisation 2.
Visualisation:
https://public.tableau.com/views/Book2_16540160299940/Delaycausesforthetop3airports?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

From the visualisation we can see that the most dominant reason for arrival delay is aircraft delay. This is the case for the top 3 origin airports causing arrival delays. The second most dominant reason for arrival delays is the total airline delay which is true for the top 3 airports. The third reason for arrival delays is air system delay which is the case for the 3 airports. Finally weather and security delays were the final reason for arrival delays, though this type of delay was not as dominant as the previous types, which is the case for the 3 airports.

Is the number of flights departing from the airport a factor for delay visualisation 3.
Visualisation:
https://public.tableau.com/views/Book3_16540231119910/Totalnumberofflightsforeachairport?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

The visualisation surprisingly shows that the number of flights the airport has to handle doesn't necessarily mean that the airport will cause arrival delays. For reference Hartsfield–Jackson Atlanta International Airport has the highest number of flights to manage for departure, this is followed by Chicago O'Hare International Airport, Dallas/Fort Worth International Airport, and Denver International Airport in the same order. This indicates that the number of flights might have some cause for delays but not significantly.

Concluding the visualisations.

Visualisation:https://public.tableau.com/views/Book4_16540237724870/Dashboard1?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

We identified the airports that cause the most duration for arrival delays which are Chicago O'Hare International Airport, Dallas/Fort Worth International Airport, and Denver International Airport. We found that the main causes for arrival delays for these airports are aircraft delay, airline delay, air system delay, and weather and security delays. We also found that the number of flights that the airport should handle does not directly relate to arrival delays.

Design choices:

1. For **visualisation 1**, the bar chart is the most convenient choice to represent the airports along with the total arrival delays caused by them. As for the filter, range filter is a good choice for filtering the airports based on the delay duration as it gives us control on the specific range we want to consider.
2. After identifying the top 3 airports, the pie chart in **visualisation 2** is very convenient for showing the different aspects of arrival delay for each airport individually. Having the three pie charts on top of each other enables us to easily compare the different aspects of delay for all the airports. The filters enable us to specifically choose the airports and the different delays of interest easily.
3. The bubble chart in **visualisation 3** looks great for visualising the intensity and the difference of the number of flights for each airport enabling the viewer to easily identify the airport with the greatest number of flights. A filter that utilises the number of flights is used to only show the airports with the high flight number only and to make it visually appealing for the viewer.