Tableau Visualization for Air Traffic Data

File created on: 8/31/2023 11:30:43 AM

Tableau Story

1.1 | 1.2 | 1.3 | 2.1 | 2.2 | 2.3 | 2.4

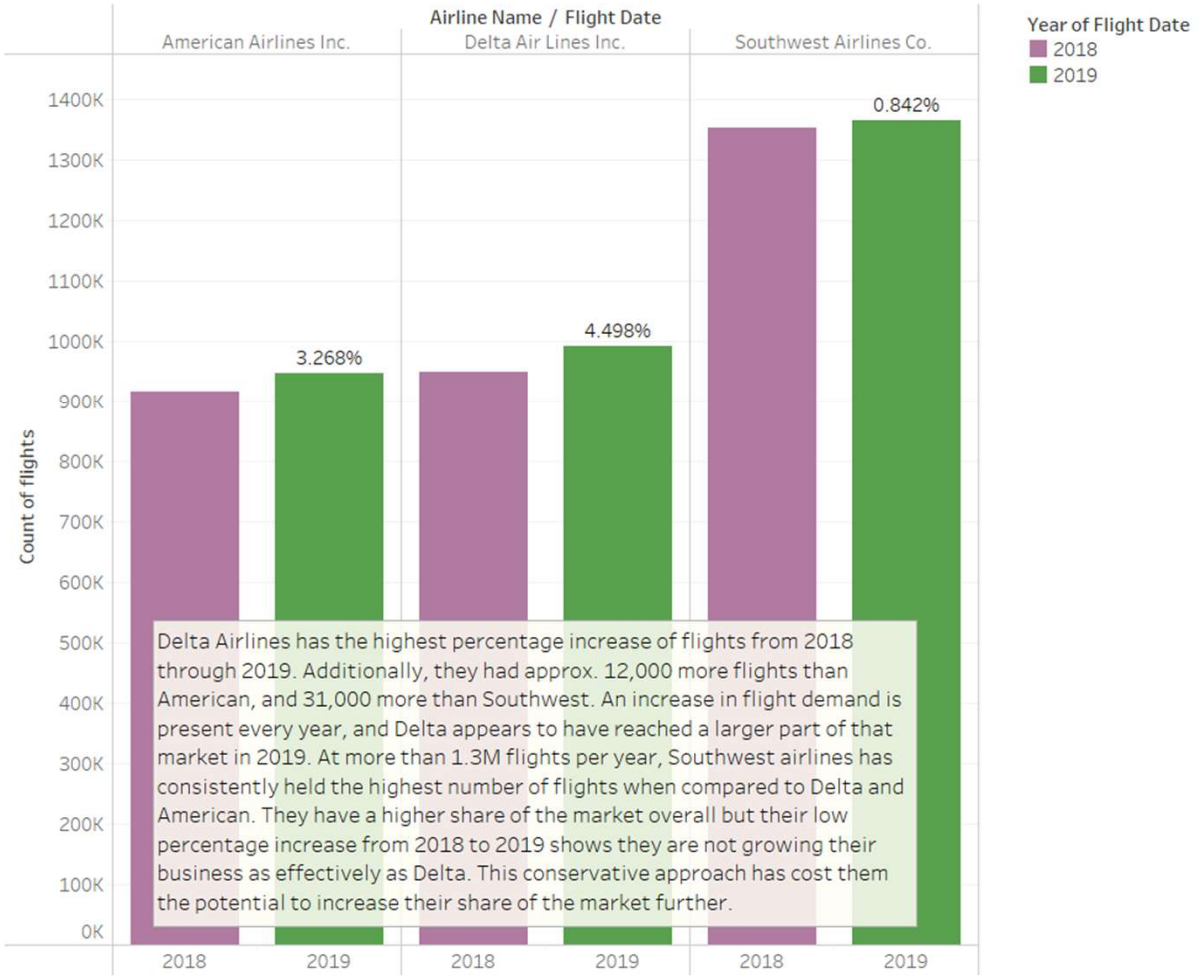


Tableau Story

1.1 | 1.2 | 1.3 | 2.1 | 2.2 | 2.3 | 2.4

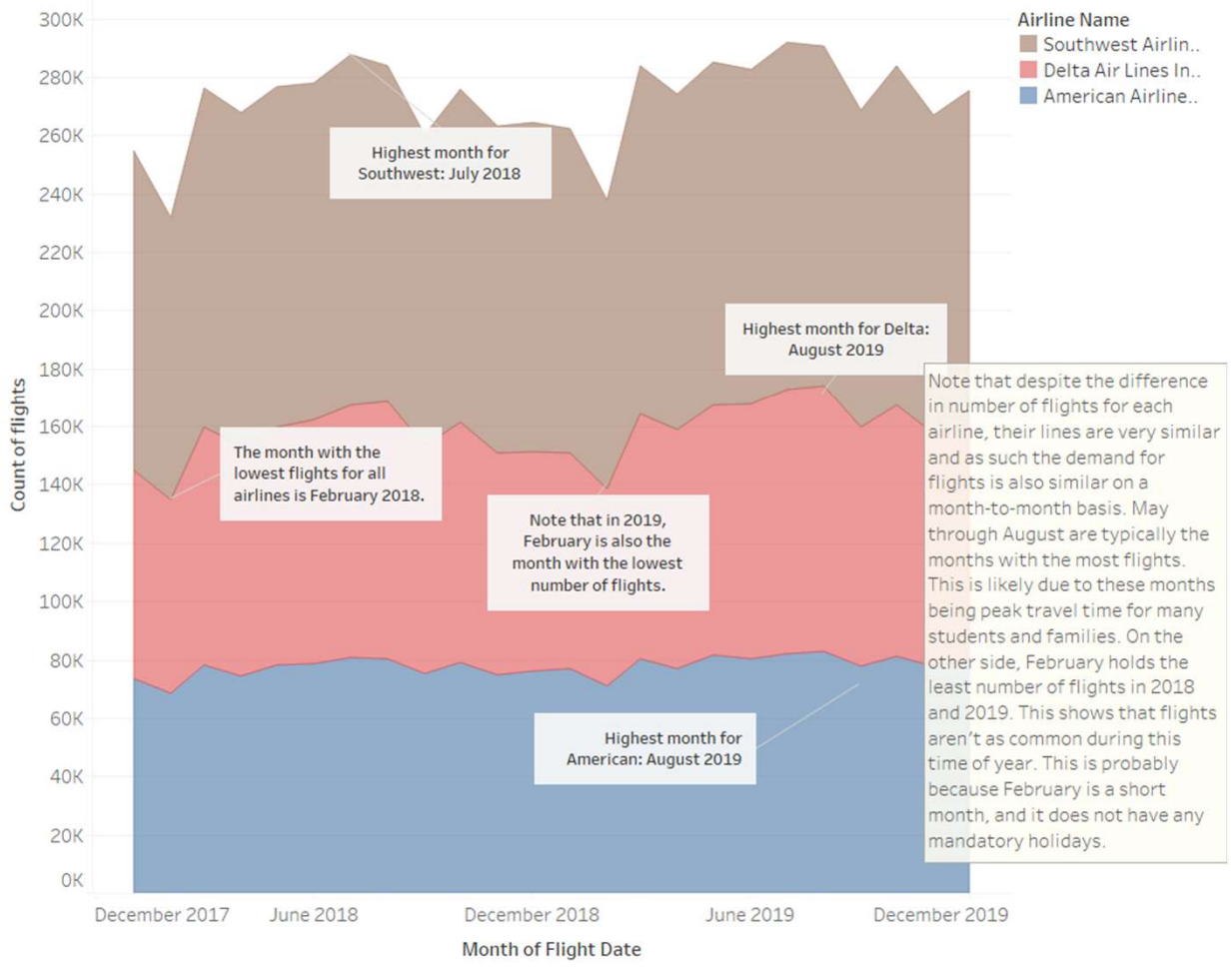


Tableau Story

1.1	1.2	1.3	2.1	2.2	2.3	2.4

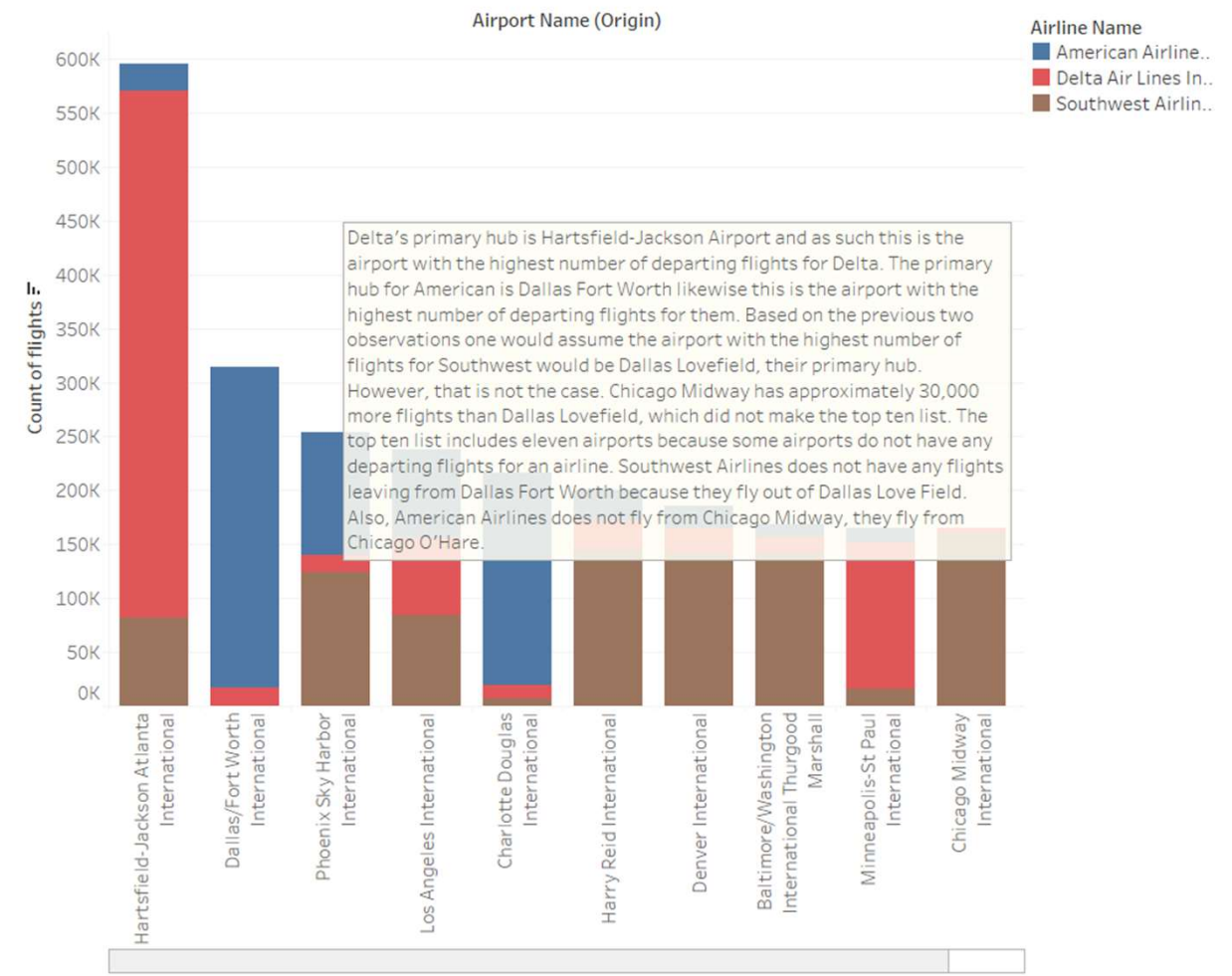


Tableau Story

1.1 | 1.2 | 1.3 | 2.1 | 2.2 | 2.3 | 2.4

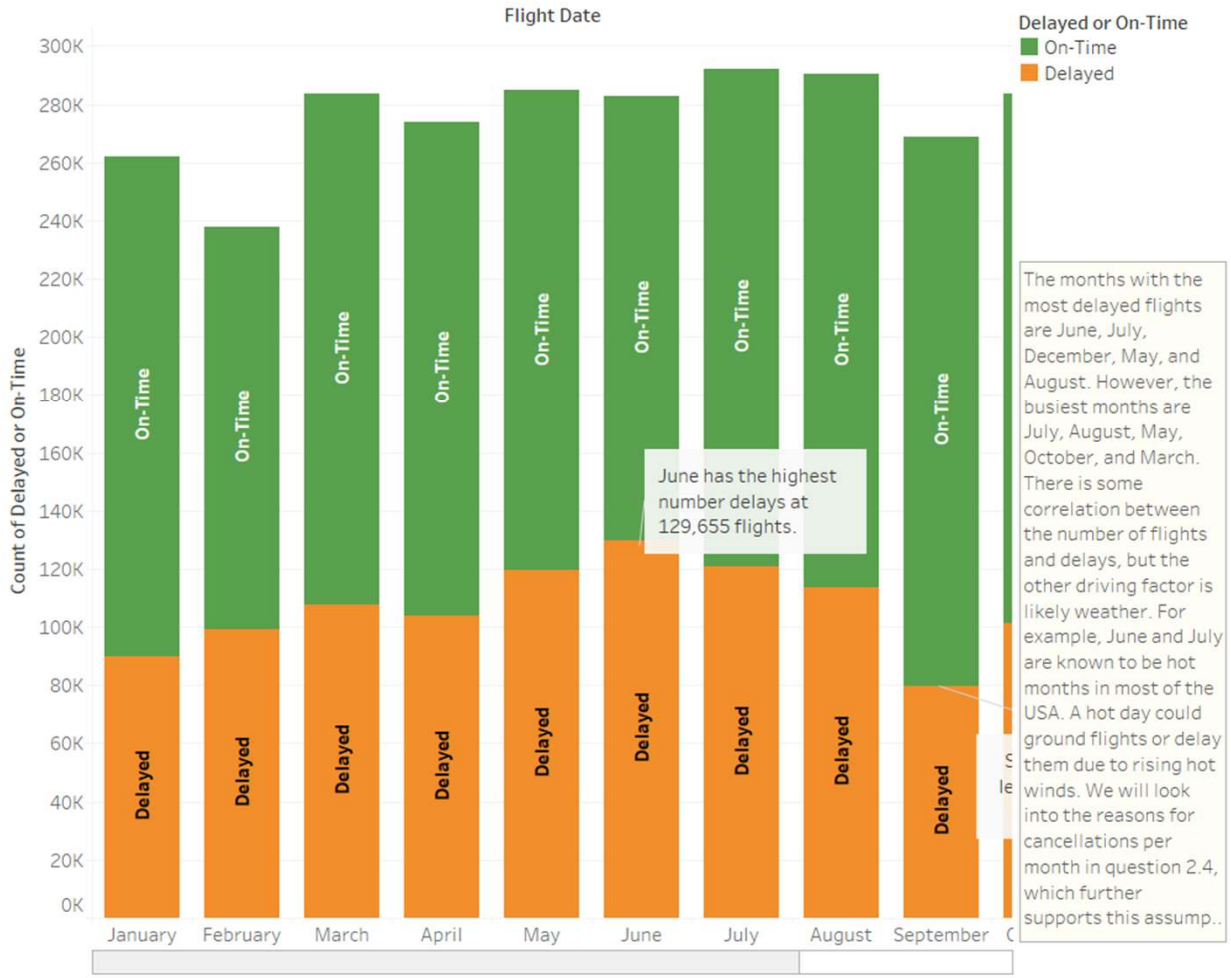


Tableau Story

1.2 | 1.3 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1

		State										
Year of F..	Quarter ..	Alaba..	Alaska	Arizona	Arkans..	Califor..	Colora..	Conne..	Florida	Georgia	Hawaii	Idaho
2018	Q1	26.80	48.26	24.62	28.23	27.82	25.78	25.87	29.25	25.89	52.03	26.96
	Q2	34.82	57.21	25.66	33.68	26.95	29.15	33.45	36.54	32.03	53.32	26.15
	Q3	35.89	52.55	32.49	33.84	27.41	29.41	33.98	42.23	32.28	59.89	27.15
	Q4	24.33	58.93	24.32	21.35	26.06	22.28	31.54	30.66	23.76	53.51	23.44
2019	Q1	29.03	41.58	26.12	27.54	28.65	29.24	29.98	31.46	25.96	52.62	24.04
	Q2	40.02	52.91	29.36	36.46	28.52	32.27	35.04	40.18	32.97	46.73	34.62
	Q3	35.13	35.58	28.82	43.43	26.55	28.78	39.74	41.91	32.74	53.29	25.60
	Q4	26.68	54.57	25.13	33.57	26.88	25.77	29.31	27.83	21.79	42.25	22.15

Quarter of Flight Da..
- [x] Q1
- [x] Q2
- [x] Q3
- [x] Q4

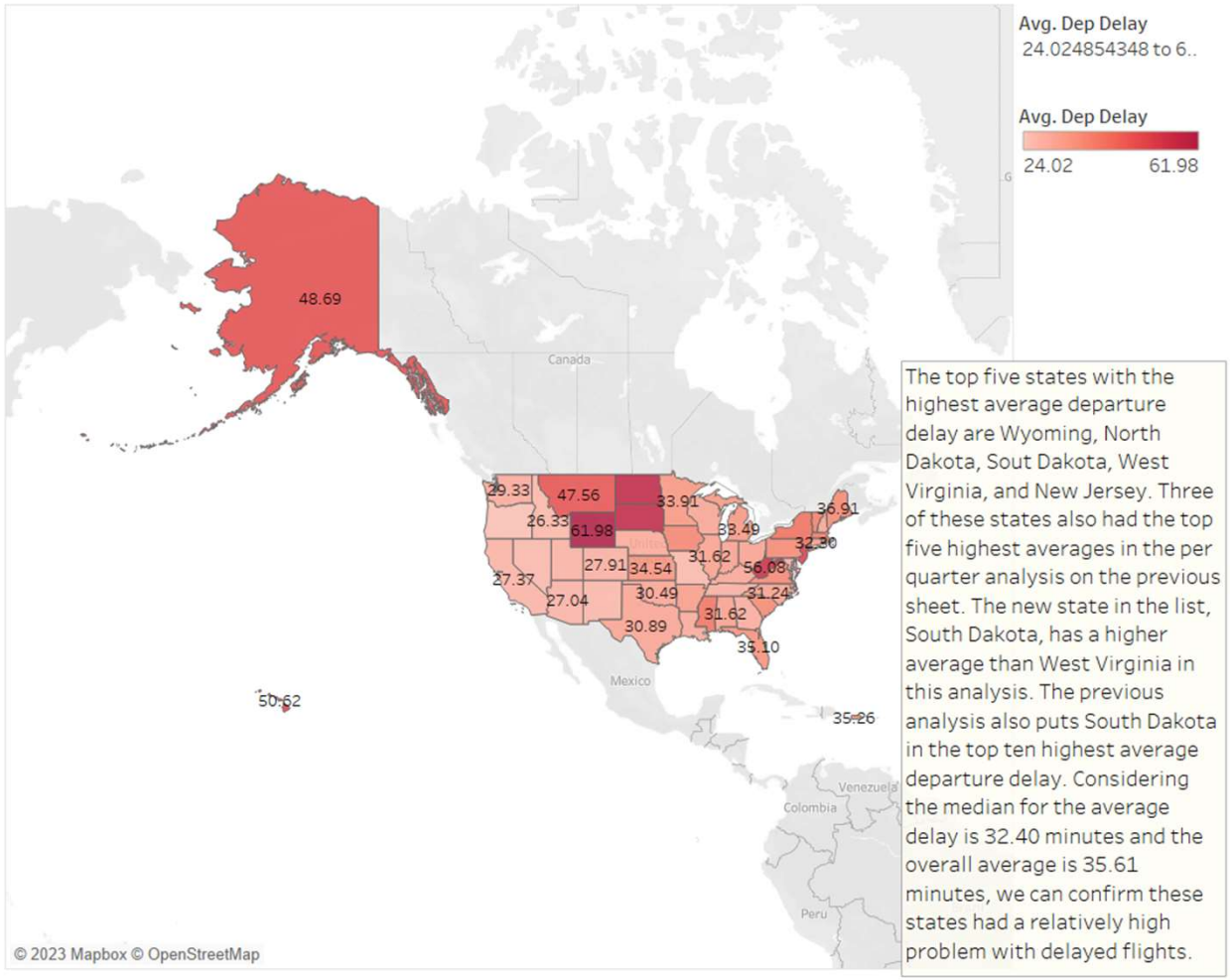
Avg. Dep Delay
0 to 103.92

Avg. Dep Delay
11.55 103.92

The results show the five highest delays occurred in North Dakota, West Virginia, and Wyoming. The delays also seem to be most common in late 2018 and early 2019. The winter of 2018-2019 was considered unusually cold for these three states and it is likely this is the cause for these delays. The dates of some of the major snowstorms and blizzards coincide with the quarters that have the highest average delays.

Tableau Story

1.3 | 2.1 | 2.2 | **2.3** | 2.4 | 3.1 | 3.2



The top five states with the highest average departure delay are Wyoming, North Dakota, Sout Dakota, West Virginia, and New Jersey. Three of these states also had the top five highest averages in the per quarter analysis on the previous sheet. The new state in the list, South Dakota, has a higher average than West Virginia in this analysis. The previous analysis also puts South Dakota in the top ten highest average departure delay. Considering the median for the average delay is 32.40 minutes and the overall average is 35.61 minutes, we can confirm these states had a relatively high problem with delayed flights.

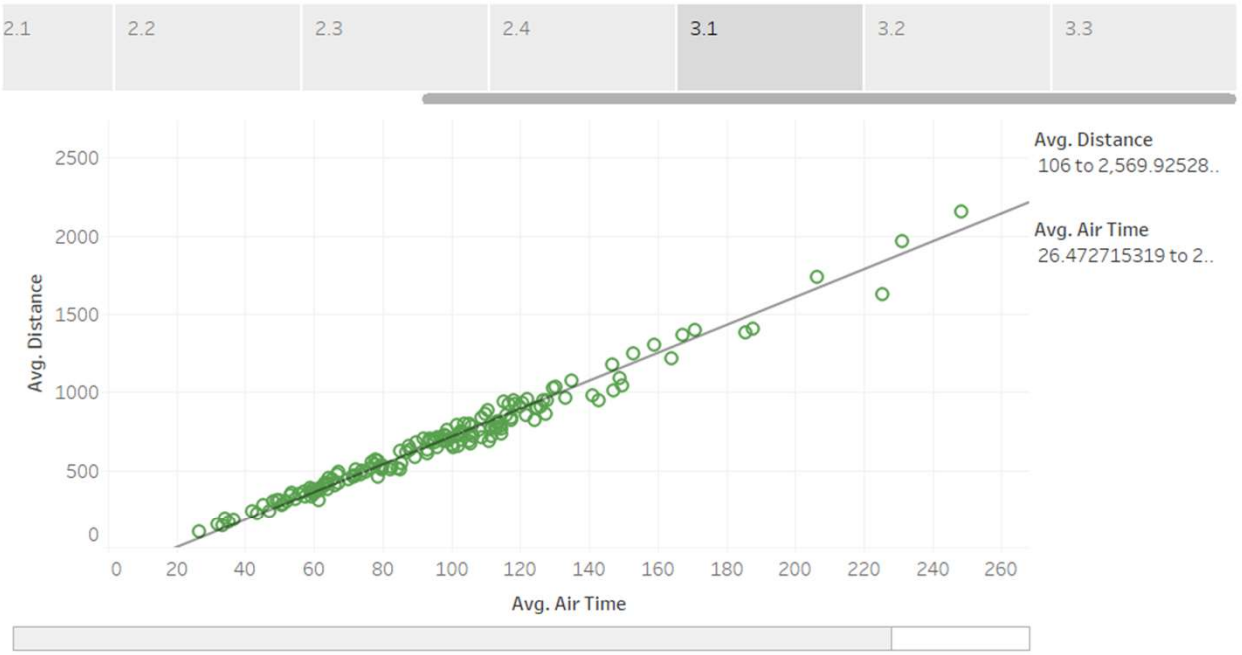
Tableau Story

2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3

The most common cancellation reason is due to Weather, followed closely by Carrier (airline) cancellations. The Weather cancellations are higher than Carrier cancellations from September through February. The only month when Carrier cancellations exceed Weather cancellations is in May. For the rest of the months the Carrier and Weather cancellations are approximately the same. The National Air System (NAS) cancellations stay relatively low throughout the year, but in June, July, and August they reach a higher count.

As stated before, May through August have a high number of flights and one of the reasons NAS cancellations occur is due to heavy traffic volume. This is likely the reason we see a spike in those types of cancellations during these months. The spike in Carrier cancellations in May can also be attributed to the high number of flights. For example, the increase in flights can cause staffing issues or maintenance problems. January through March have the highest number of Weather Cancellations. These months are when snowstorms usually happen across the US, and as we saw in question 2.2 snowstorms can delay flights, and sometimes even cause the flights to be cancelled.

Tableau Story



If we divide the average Distance over Air Time we get the approximate average speed a plane reaches. This speed ranges from ~240 mph for the shorter flight average in terms of time and distance to ~525 mph for the longer flights. Most flights tend to be between one and two hours on average, the speed for these flights range from ~345 mph to ~420 mph. The longer flights typically use bigger airplanes, which can reach high speeds but take longer to accelerate. These longer flights leave from Hawaii, Alaska, and New York. Hawaii and Alaska are considerably further away than any other state and New York has a lot of flights to Europe.

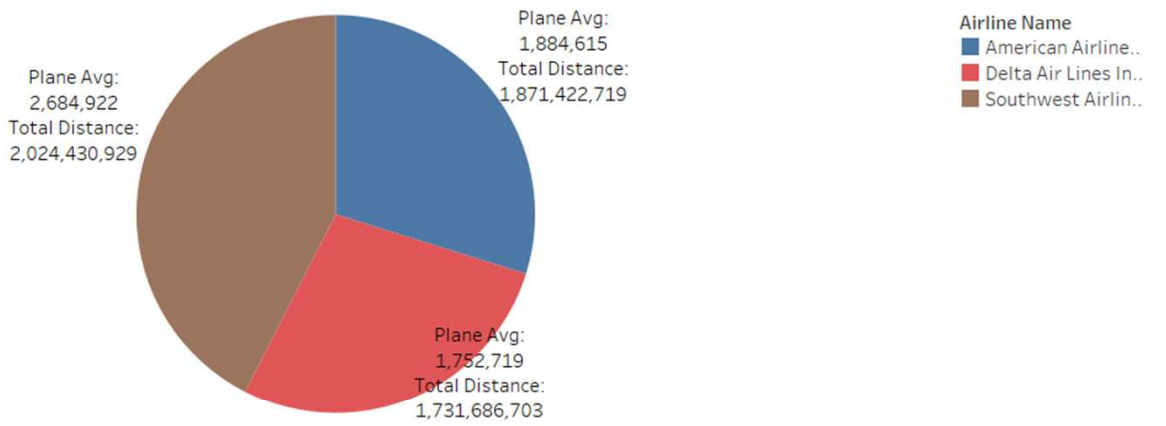
Tableau Story

2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3

American Airlines had a moderate investment to increase their fleet by 8 more planes, the result was a small increase in distance traveled in 2019. Even though Southwest has the most distance traveled when compared to American and Delta, their conservative decision to increase their fleet only by 3 planes cost them a slight drop in miles traveled. This indicates a lost opportunity to grow their market share which we also saw question 1.1 Delta was the airline that made the highest investment in their fleet, increasing it by 40, and therefore had the highest increase in distance traveled. Their investment in growing their fleet resulted in them obtaining a larger share of the growing market.

Tableau Story

2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3



Southwest holds the highest average distance flown per plane at approximately 2.6M miles. This could be an indicator that their maintenance standards are high to keep their planes flying as much as possible. Their fleet is also the smallest in size when compared to American or Delta. As such the efficiency of their fleet is also higher than American or Delta who have a lower average distance traveled per plane of approximately 1.8M miles. The number of planes is higher when both years are considered likely due to some planes being only active in one year or the other. As such, the average distance per plane being calculated here is lower. It is possible the average distance per plane would be closer to the same number if these planes could be excluded from the calculation.