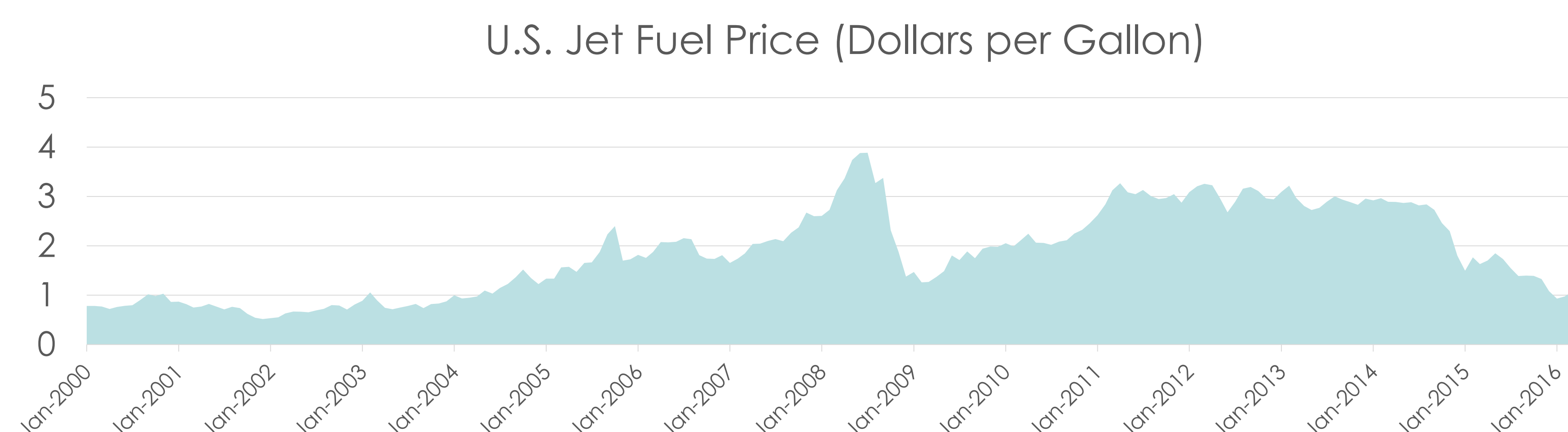


Background & Research Questions

At this moment when you are staring at this poster, there are roughly 5000 airplanes flying in the United States airspace, burning jet fuel/kerosene, and emitting tons of CO₂. More than often, you may ride in an airplane that seems to be 50 years old, and you probably keep wondering how such old (and surely inefficient) machines are still flying today.

In fact, airlines don't always have the incentive to operate more efficient aircraft. While it is true that fuel cost makes 1/3 to 1/2 of an airplane's operating cost, and saving fuel matters *a lot* to airlines' business, from an economic point of view, buying new airplane is a major investment, and recent low fuel prices drives up the payback time. In fact, the falling fuel price in recent years motivated some airlines to take old and already stored airplanes back into the active fleet. This poster explores this dynamic.

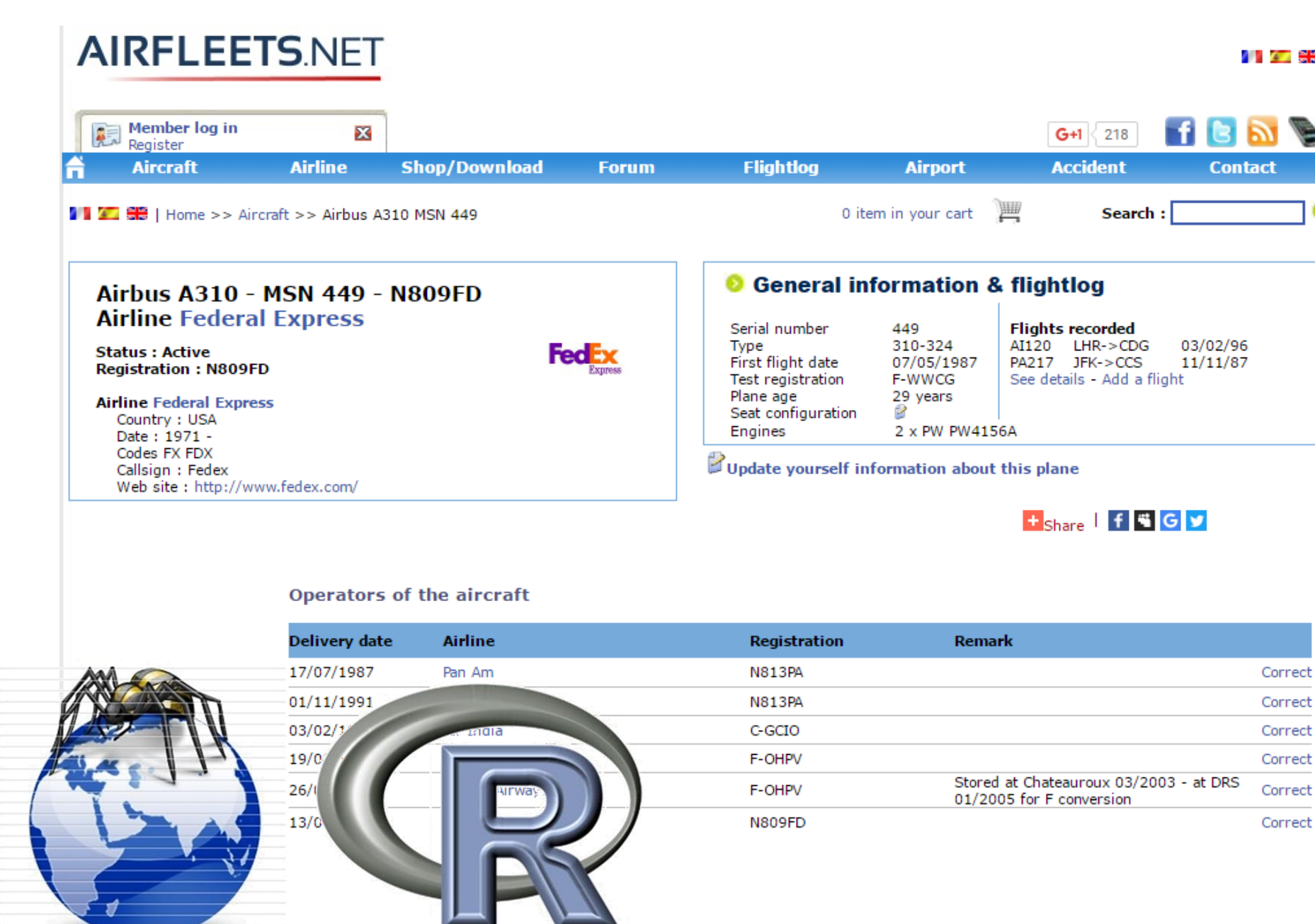


In this study we want to explore the commercial air fleet in the US, to find out:

- How many old airplanes are flying today?
- How many stored airplanes were taken out of storage (often sitting in US deserts) and sent back to flying?
- What are the environmental implications of returning the old aircraft to active fleet?

Harvesting Data from the Internet

AirFleets.net is an online archive of all the aircraft, both in service and retired, around the globe. For each and every aircraft, a history of its delivery, trading, storage, and re-activation is accessible through the website. We use an R program to automatically visit these webpages, and collect information we are interested in.



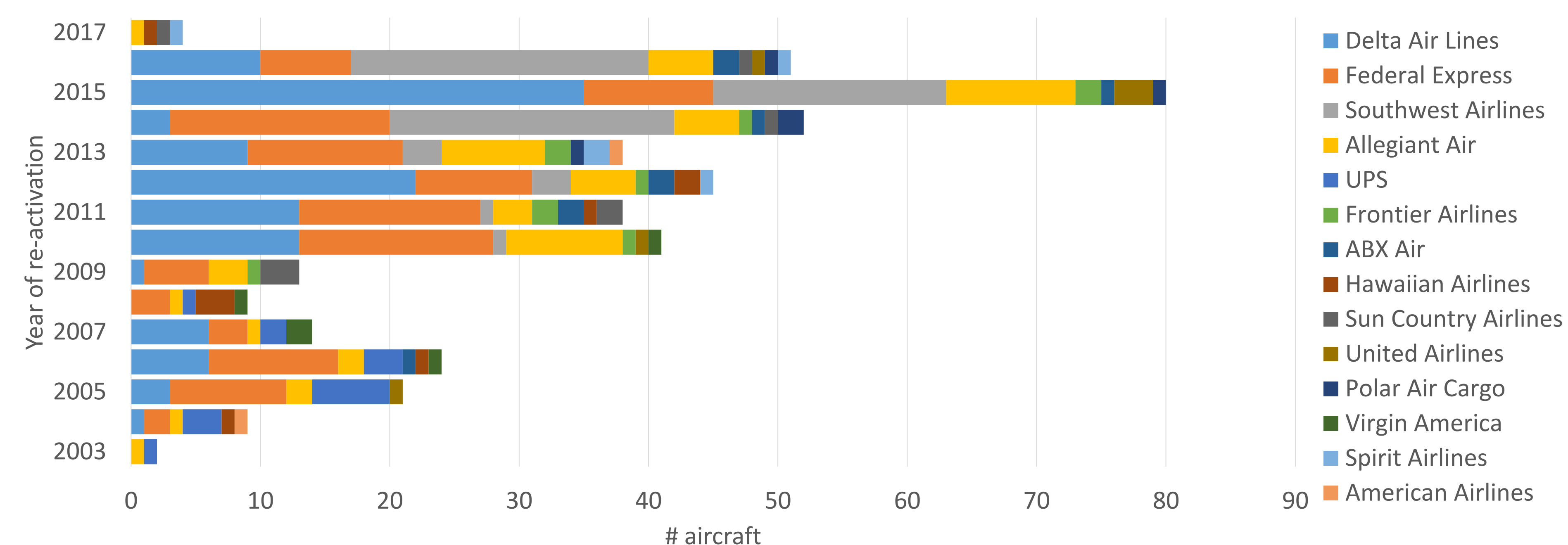
Findings

As of Feb. 23, 2017 (our last iteration of data collection), for the 12 mainline passenger carriers and the 4 largest cargo carriers in the US...

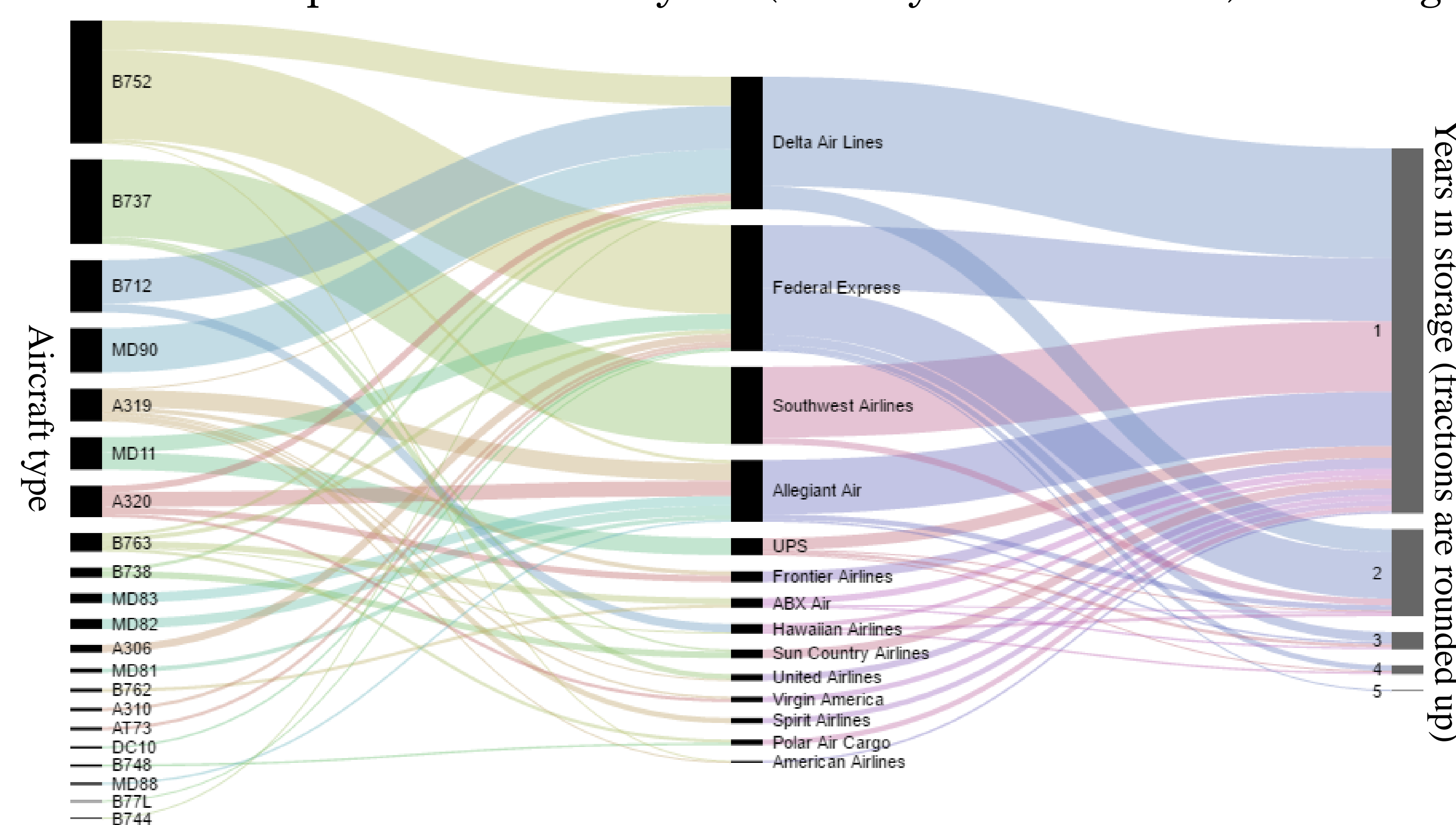
- There are 4663 aircraft in the active fleet
- The average fleet age is 13.7 years old, and the median being 15.1.
- 441 actively flying aircraft experienced storage time before returning to service

Among the 441 re-activated aircraft...

- Most aircraft were re-activated post-2010



- Delta, FedEx, Southwest, and Allegiant are the largest operators of re-activated aircraft
- The most popular aircraft models are: Boeing 757, 737, 717, MD-90, A319, MD-11, and A320
- Most aircraft spent less than 1 year (usually a few months) in storage



Next steps...

- Compare the fuel efficiency of the re-activated aircraft with their newer replacement models, as well as with other flying aircraft in a carrier's fleet
- Calculate potential fuel savings and costs from operating new vs. re-activated aircraft