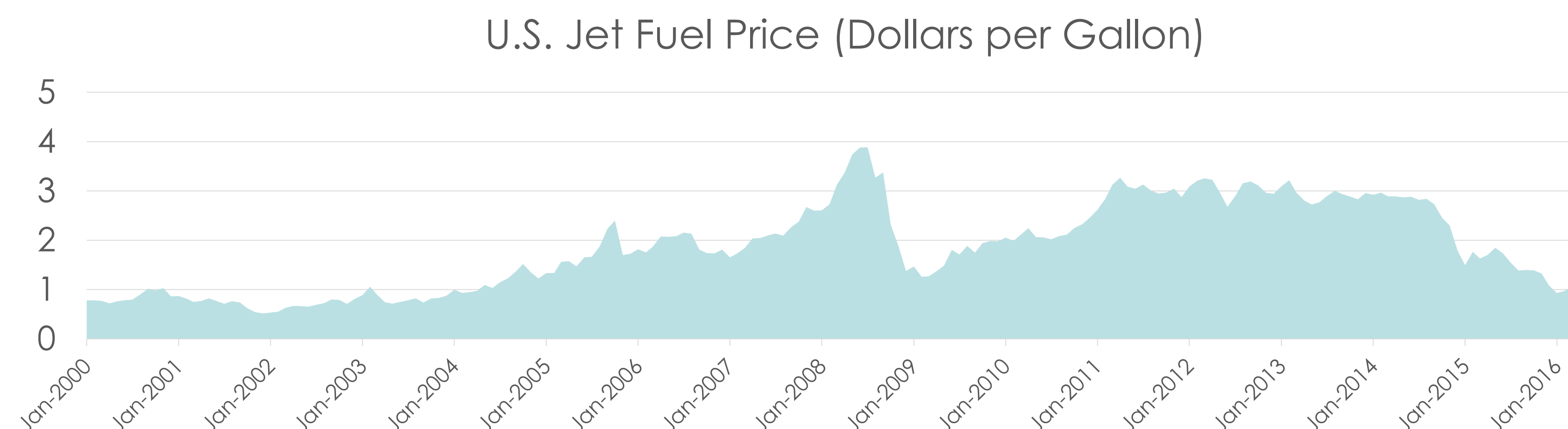


## Background & Research Questions

At this moment when you are staring at this poster, there are roughly 5000 airplanes flying in the United States airspace, burning jet fuel/gasoline, and emitting tons of CO<sub>2</sub>. 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 almost 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 motivated some airlines to take old and already stored airplanes back into the active fleet.

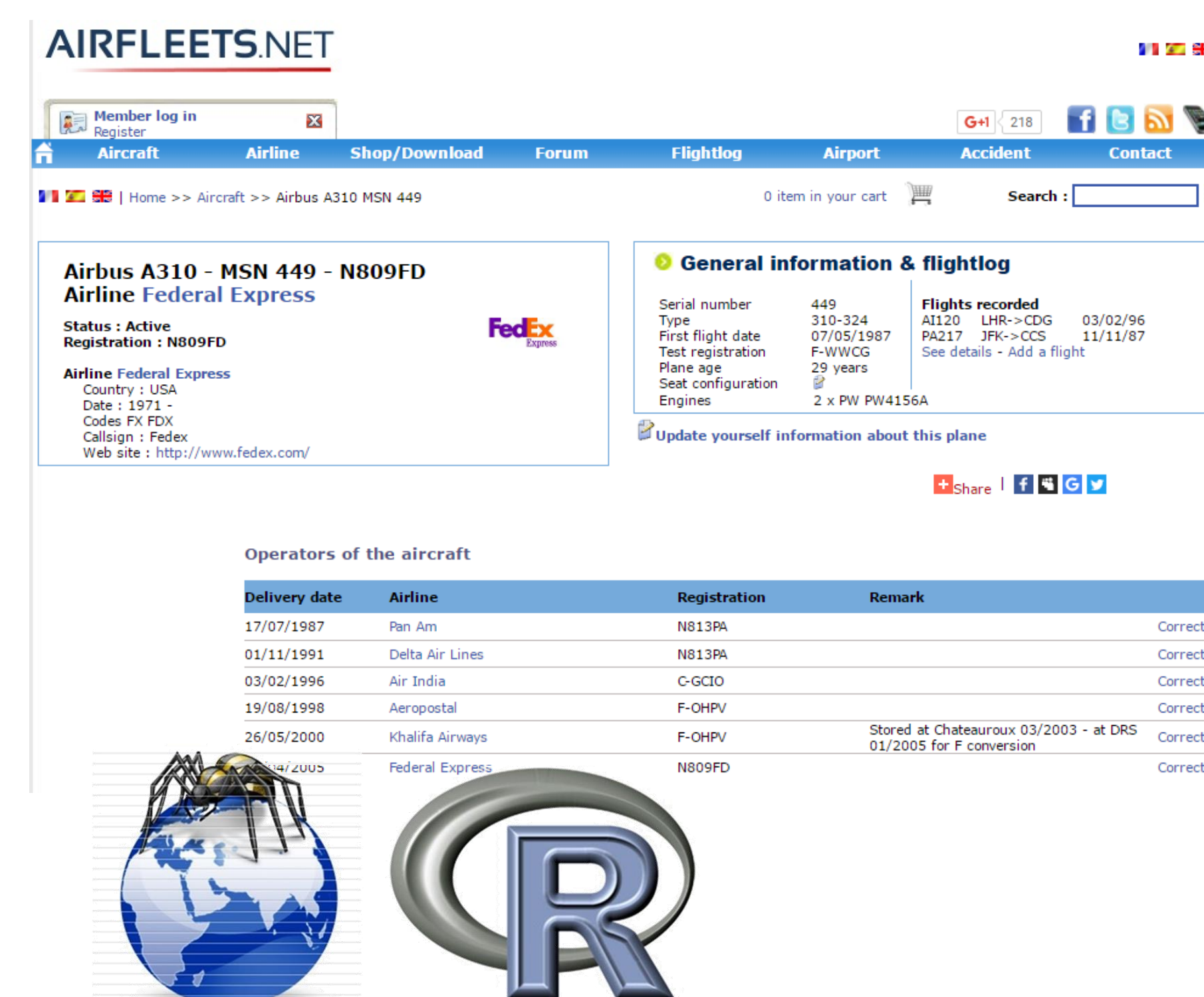


In this study we want to explore the commercial air fleet in the US, to find out:

- 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?

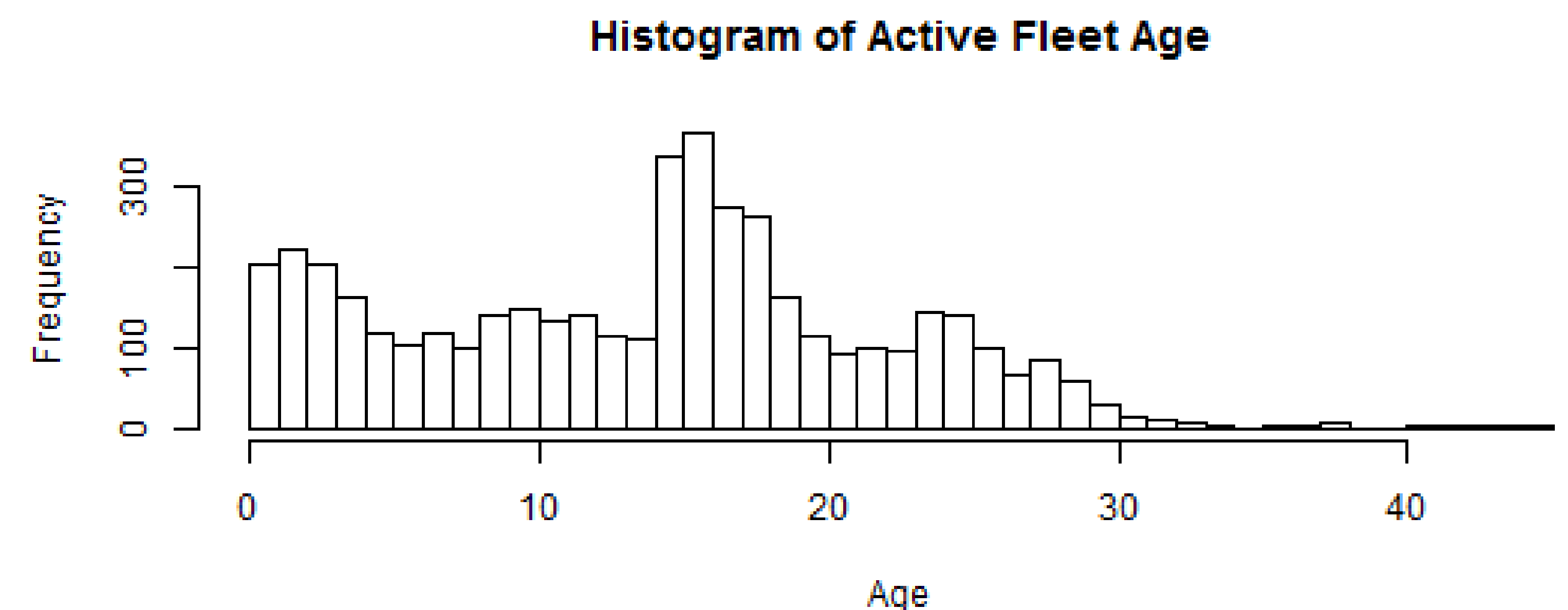
## Harvesting Data from the Internet

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 “unstorage” is accessible through the website. We use an R script to automatically visit these webpages, and collect information we are interested in.



## Preliminary Findings

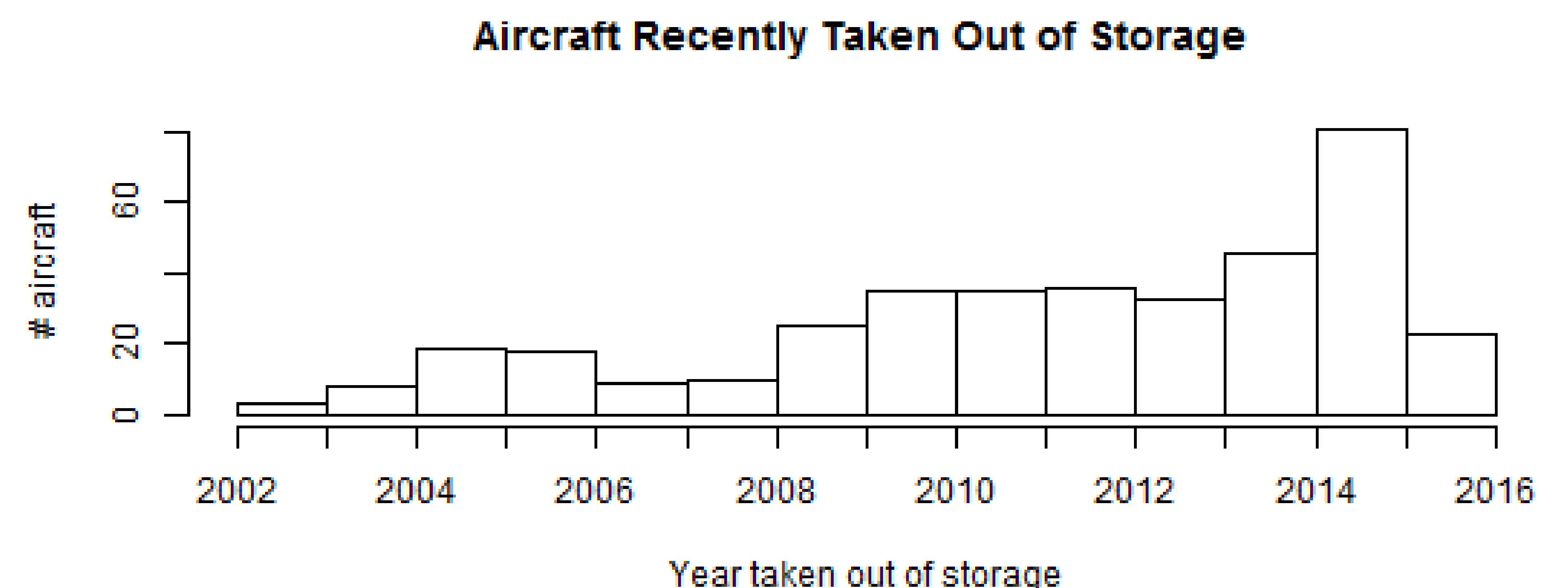
With some preliminary data harvesting, we are able to show an age profile of the commercial aircraft (both passenger and cargo included) that are actively flying today.



The average fleet age is 13.8 years old, and the median being 14.7.

There do exist a large number of old aircraft in the active fleet: out of the 4563 aircraft actively flying, 415 (9%) are 25 years or older, and 74 (1.6%) are 30 years or older. The oldest one is nearly 45 years old.

150 aircraft were returned to service during 2014-2016, compared to 510 that were bought new during the same period.



The spike of “unstored” aircraft (seen in 2014 and 2015) interestingly coincides with the fuel price drop that started in late 2014. Meanwhile, in the recent years air traffic demand has been increasing stably. We think the growing demand and dropping fuel price may be big contributors to the growing aircraft purchase as well as returning of old stored aircraft.

More findings are to be discovered as we progress.