

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_2 . 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, he falling fuel price motivated some airlines to take old and already stored airplanes back into the active fleet.

U.S. Jet Fuel Price (Dollars per Gallon)



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.







An Institute of Transportation Studies Program

Exploring the US Air Fleet – in Use and in the Desert Guozhen Li, Lew Fulton

Institute of Transportation Studies, University of California, Davis - May 2016

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.





Serial number Type 449 310-324 First flight date O7/05/1987 Flights recorded Al120 Hights recorded Al217 JFK->CCS 11/11/87 */www.fedex.com/ First flight date Tights registration Plane age Seat configuration Plane age Seat configuration P	X Airline	Shop/Download	Forum	Flightlog	Airport	G+1 Accide		ntact
Serial number Type 449 310-324 First flights date 07/05/1987 Test registration Plane age Seat configuration Engines Flights recorded All 20 LHR.>CDG 03/02/96 PA217 JFK->CCS 11/11/87 See details - Add a flight //www.fedex.com/ Plane age Seat configuration Plane age Seat configuratio	Aircraft >> Airbus A	310 MSN 449		0 i	tem in your cart	<u> </u>	Search :	
Definition Here <th< td=""><td colspan="3">- MSN 449 - N809FD</td><td colspan="5">Seneral information & flightlog</td></th<>	- MSN 449 - N809FD			Seneral information & flightlog				
Image: Weight of the structure Image: Share Image: S	9FD	Fe	Express	Type First flight date Test registration Plane age Seat configuration	310-324 07/05/1987 F-WWCG 29 years 🔗	AI120 LHR- PA217 JFK- See details - /	>CDG 03/02/9 >CCS 11/11/8	
Delivery date Airline Registration Remark 17/07/1987 Pan Am N813PA Correct 01/11/1991 Delta Air Lines N813PA Correct 03/02/1996 Air India C-GCIO Correct 19/08/1998 Aeropostal F-OHPV Stored at Chateauroux 03/2003 - at DRS 01/2005 for F conversion Correct	unuu faday com/							
01/11/1991 Delta Air Lines N813PA Correct 03/02/1996 Air India C-GCIO Correct 19/08/1998 Aeropostal F-OHPV Correct 26/05/2000 Khalifa Airways F-OHPV Stored at Chateauroux 03/2003 - at DRS 01/2005 for F conversion Correct				🛱 Update yourself i	mornation about		f 🕊 G У	
03/02/1996 Air India C-GCIO Correct 19/08/1998 Aeropostal F-OHPV Correct 26/05/2000 Khalifa Airways F-OHPV Stored at Chateauroux 03/2003 - at DRS 01/2005 for F conversion Correct	Operators					<mark>+</mark> Share ∣	f 🕊 G У	
19/08/1998 Aeropostal F-OHPV Correct 26/05/2000 Khalifa Airways F-OHPV Stored at Chateauroux 03/2003 - at DRS 01/2005 for F conversion Correct	Operators Delivery dat	e Airline		Registration		<mark>+</mark> Share ∣	f G 🖌	Correc
26/05/2000 Khalifa Airways F-OHPV Stored at Chateauroux 03/2003 - at DRS 01/2005 for F conversion Correct	Operators Delivery dat 17/07/1987	e Airline Pan Am		Registration N813PA		<mark>+</mark> Share ∣	f	
20/05/2000 Rhana Airways F-Onev 01/2005 for F conversion	Operators Delivery dat 17/07/1987 01/11/1991	e Airline Pan Am Delta Air Lines		Registration N813PA N813PA		<mark>+</mark> Share ∣	f	Correc
Federal Express N809FD Correct	Operators Delivery dat 17/07/1987 01/11/1991 03/02/1996	e Airline Pan Am Delta Air Lines Air India		Registration N813PA N813PA C-GCIO	Rema	+ _{Share} rk		Correc Correc Correc
	Operators Delivery dat 17/07/1987 01/11/1991 03/02/1996 19/08/1998 26/05/2000	e Airline Pan Am Delta Air Lines Air India Aeropostal Khalifa Airways		Registration N813PA N813PA C-GCIO F-OHPV F-OHPV	Rema	+ Share rk	x 03/2003 - at DRS	Correc Correc Correc Correc

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.



