

US Airline Pilot Supply Forecast 2016

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Prior Pilot Supply Forecasts

- 2009 NDTA - 85,000 pilot shortfall for all US commercial operations over 20 years
- 2010 – 60,000 pilot shortfall for all US commercial operations over 20 years
- 2012 – 38,000 pilot shortfall for all US commercial operations over 20 years
- 2013 - 35,000 pilot shortfall for US airline operations over 20 years
- 2016 – 14,439 pilot shortfall for the US airline operations over 10 years



Can the number of new pilots entering the workforce in the future be predicted based upon trends and other variables?

- Yes! UND's forecast model currently predicts future pilots at around a 78% accuracy.
- The two primary variables which determine the number of new pilots in the future are:
 1. Current pilot hiring activity at major airlines
 2. The cost of pilot training



Overall Supply Model Development Theory

- Many potential pilots make a consumer decision
- Decision is driven by risk (cost-of-initial-flight-training) versus reward (hiring at major airlines)
- A period of 1-3 years transpires before a Certified Flight Instructor is available for employment at an airline

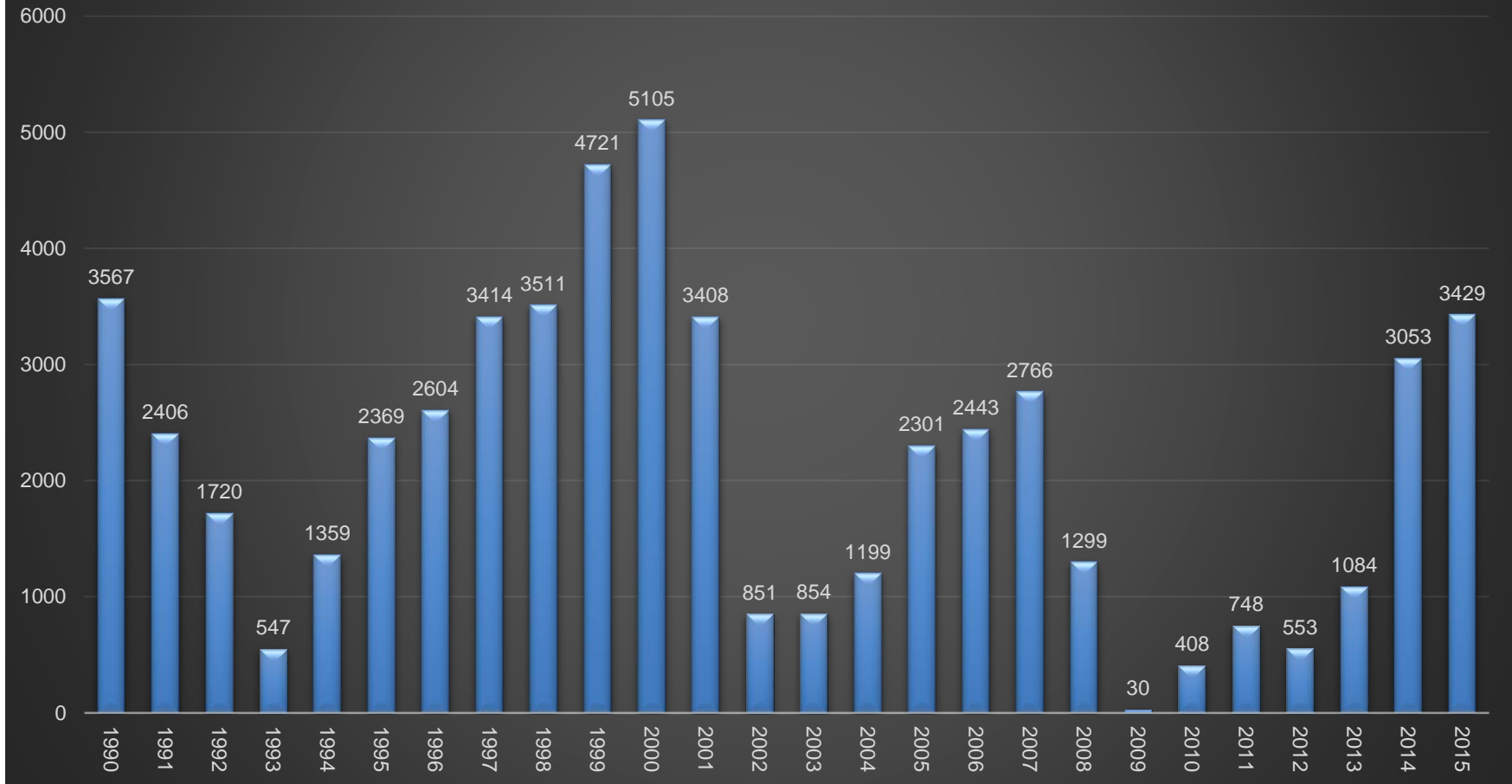
Why use CFIs as the predicted variable for supply?

- On the civilian-side, a Certified Flight Instructor certificate is almost *de facto* required
 - 84% of ATP pilots have or have had a CFI certificate
 - R-ATP and ATP Hour Requirements

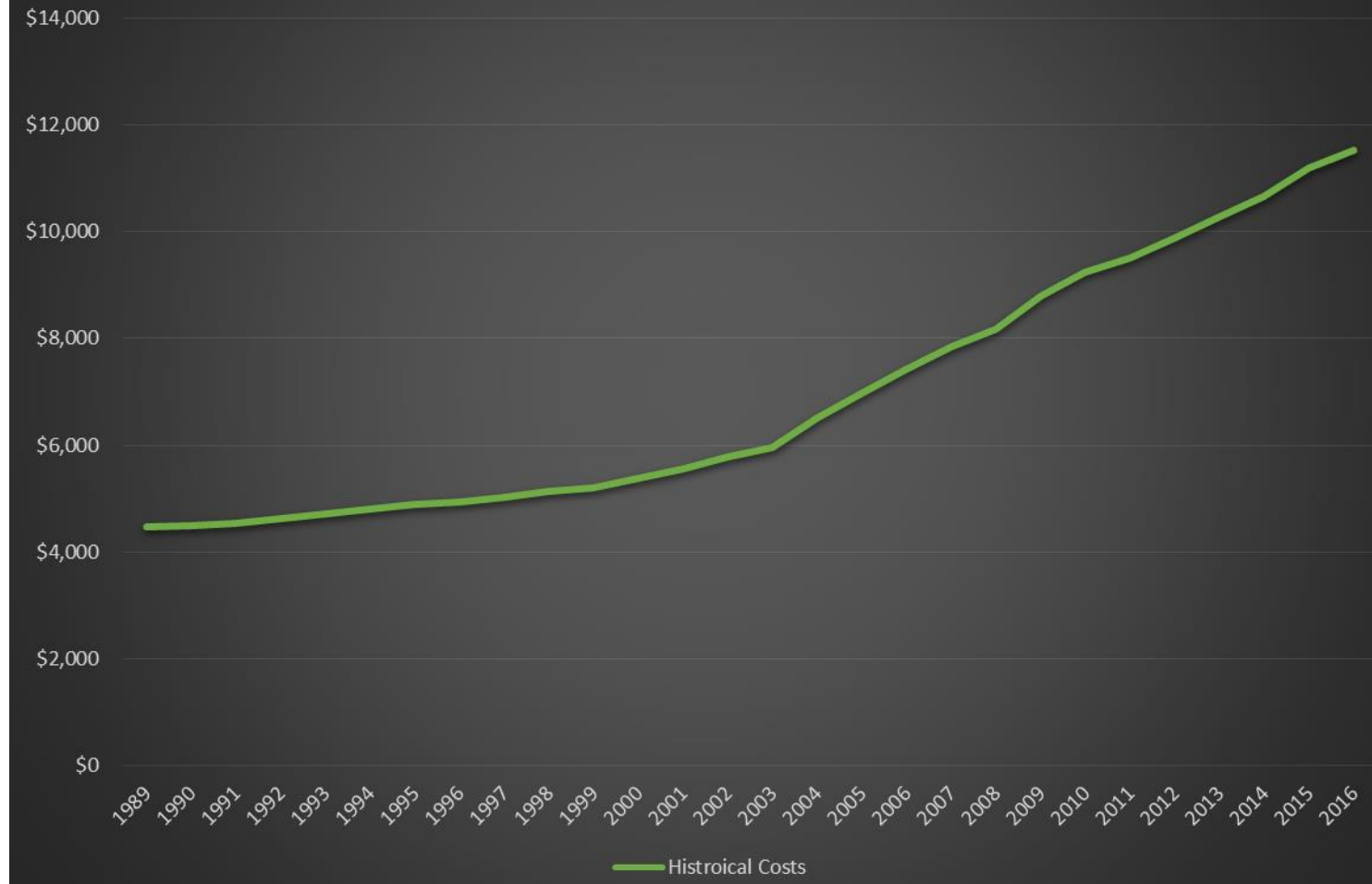


Historical Major Hiring

(Source: FAPA)



Historical Cost of Initial Flight Training Year-Over-Year (2016 Dollars)



A quick note about historical cost:

- When adjusted for inflation, initial pilot training is almost three times more expensive as it was in 1990
- Likely due to increased costs in equipment, fuel, insurance and complexity of content areas.



The Supply-Side Model:

$$y = .153x - .338z - .001xz + 4408$$

Where:

y = Future Certified Flight Instructors over the next 3 years;

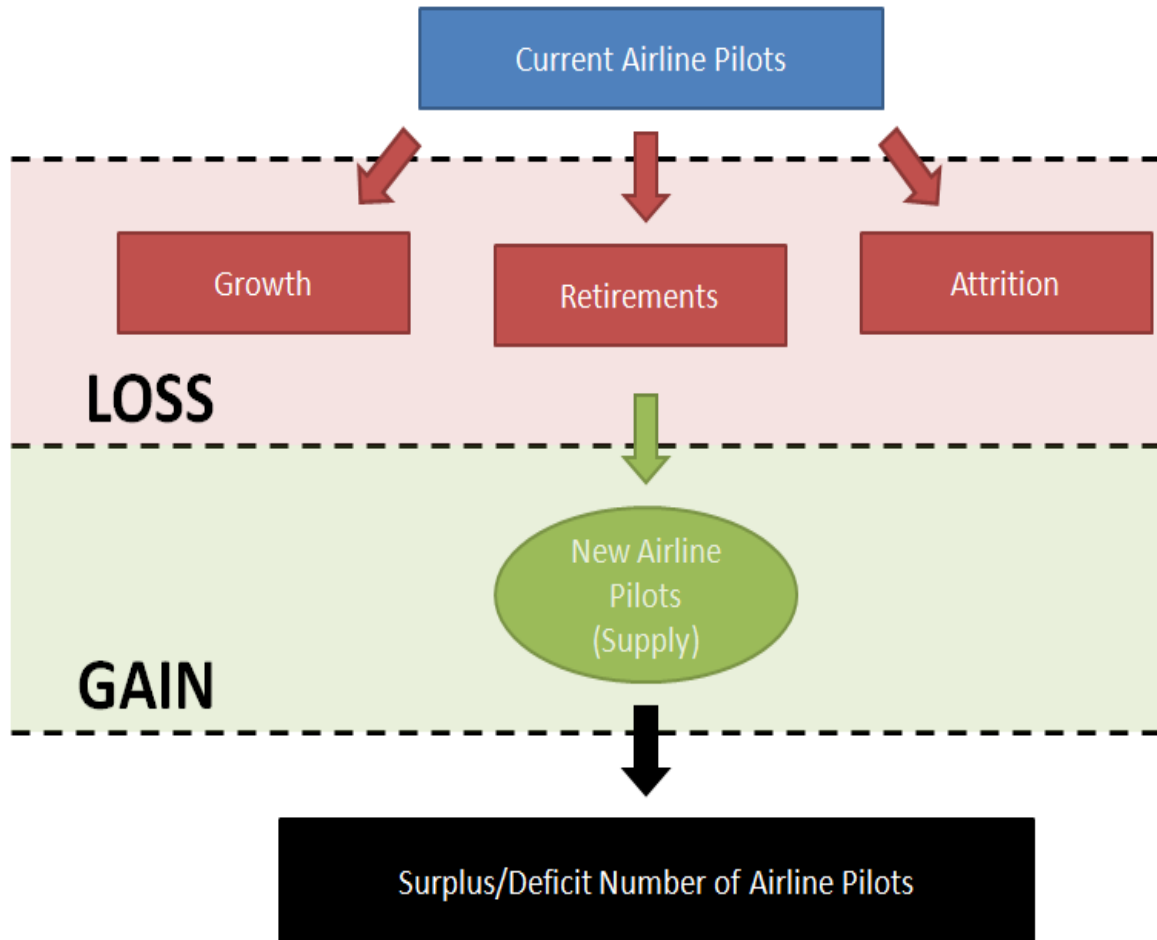
- 35% Year +2
- 35% Year +3
- 30% Year +4

x = Number of pilots hired at major airlines;

z = Dollar change in cost of obtaining Private Pilot certification (adjusted for inflation).

$$\text{Adj. } R^2 = .778; F(3,17) = 24.34, p < .001$$





Forecast Predictors

– Future Airline Hiring

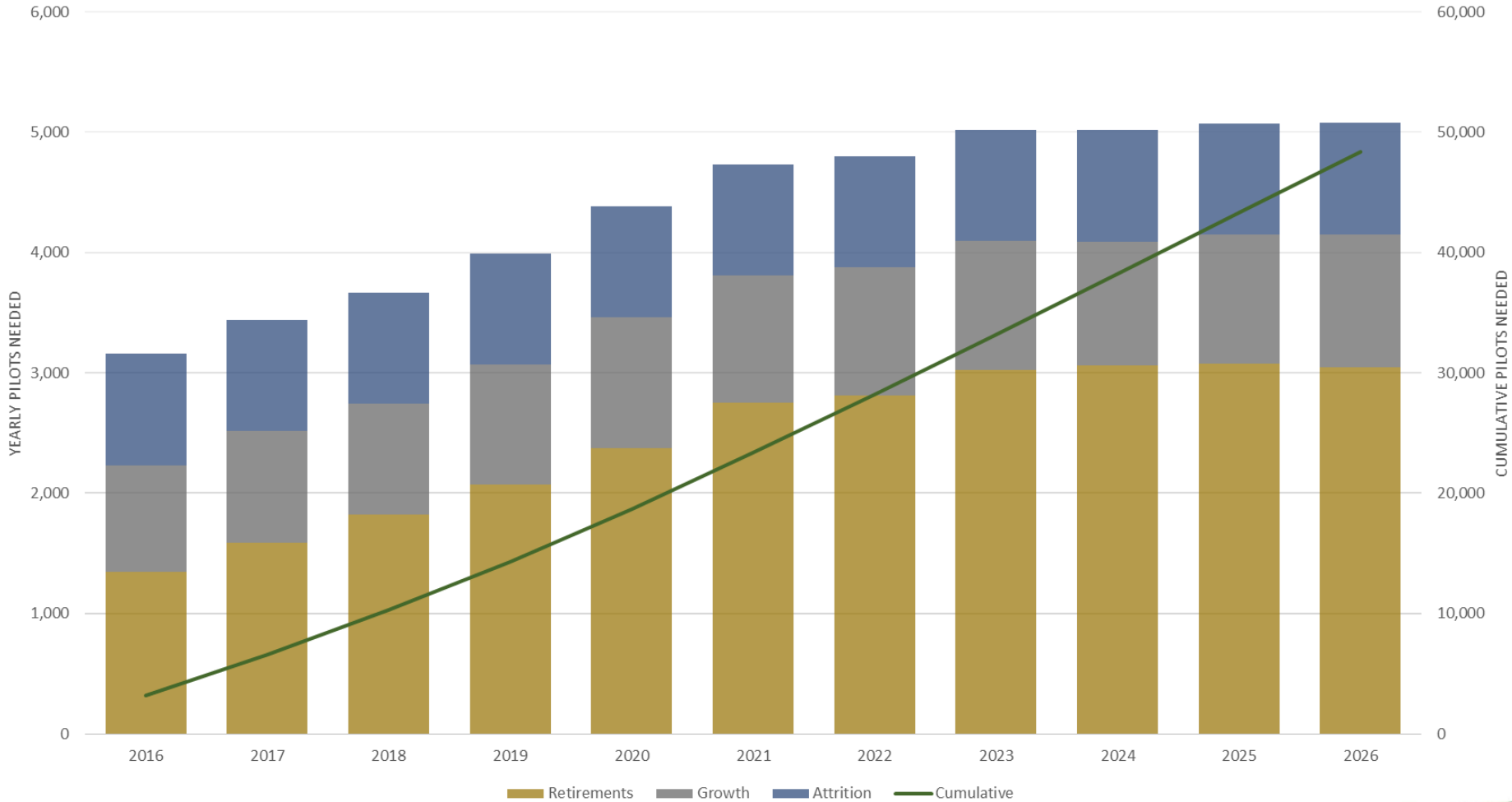
- Based upon growth (average of Oliver Wyman, Boeing, Airbus and FAA forecast), retirements and other attrition

– Future Initial Flight Cost Changes

- Brown Model
 - MAPE = 37.4

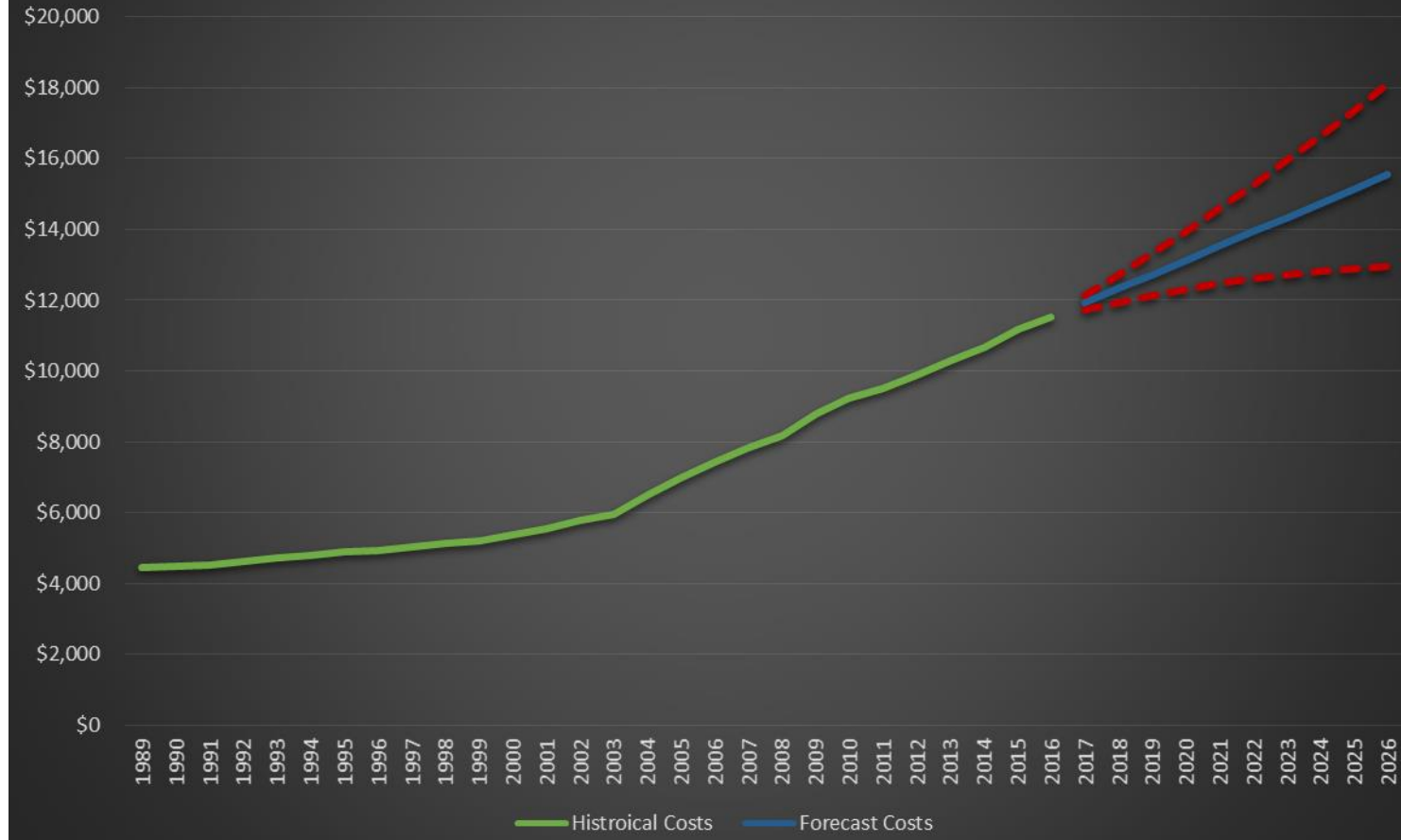


FORECAST HIRING AT MAJOR AIRLINES



Historical and Forecast Cost of Initial Flight Training

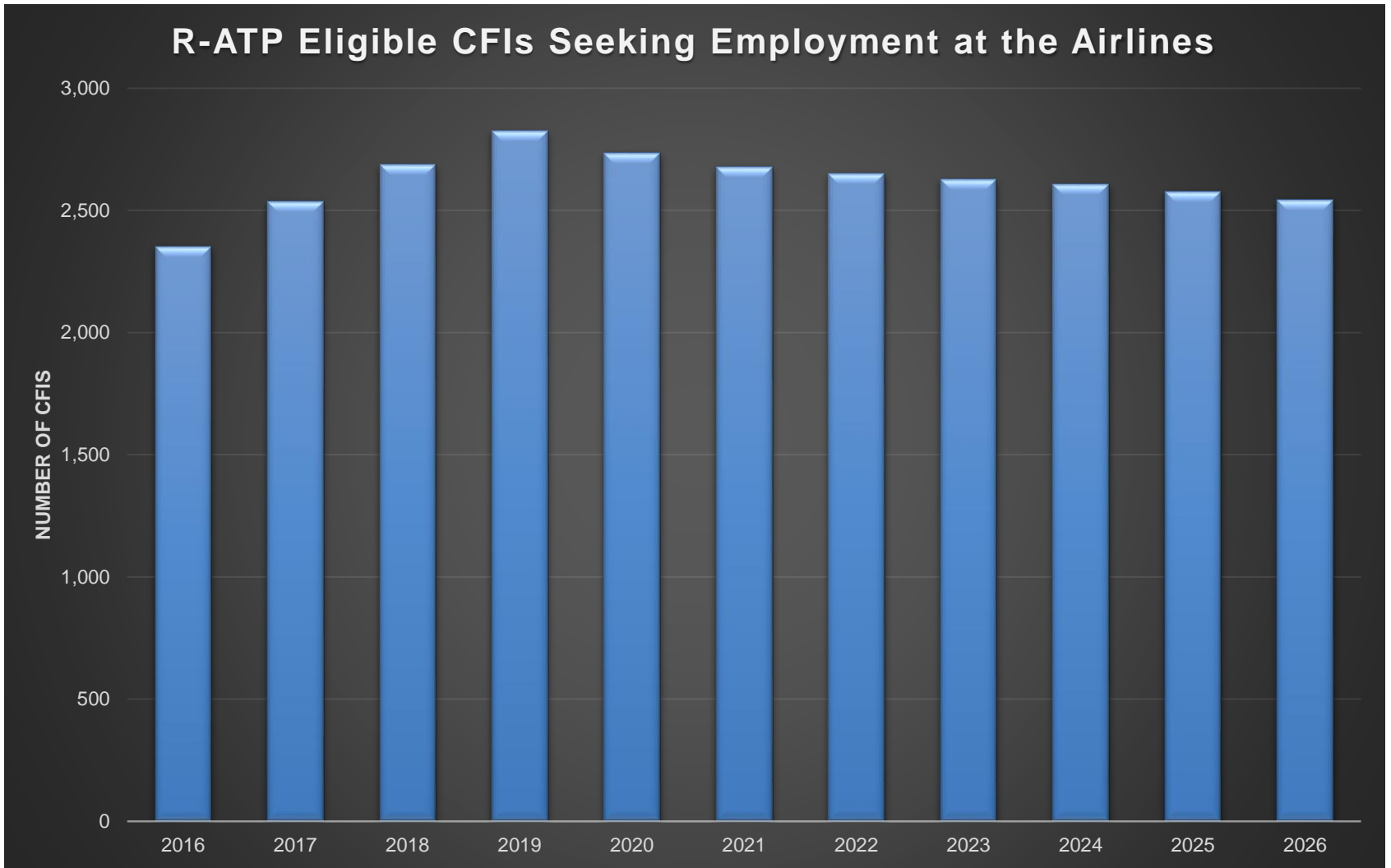
Year-Over-Year (2016 Dollars)



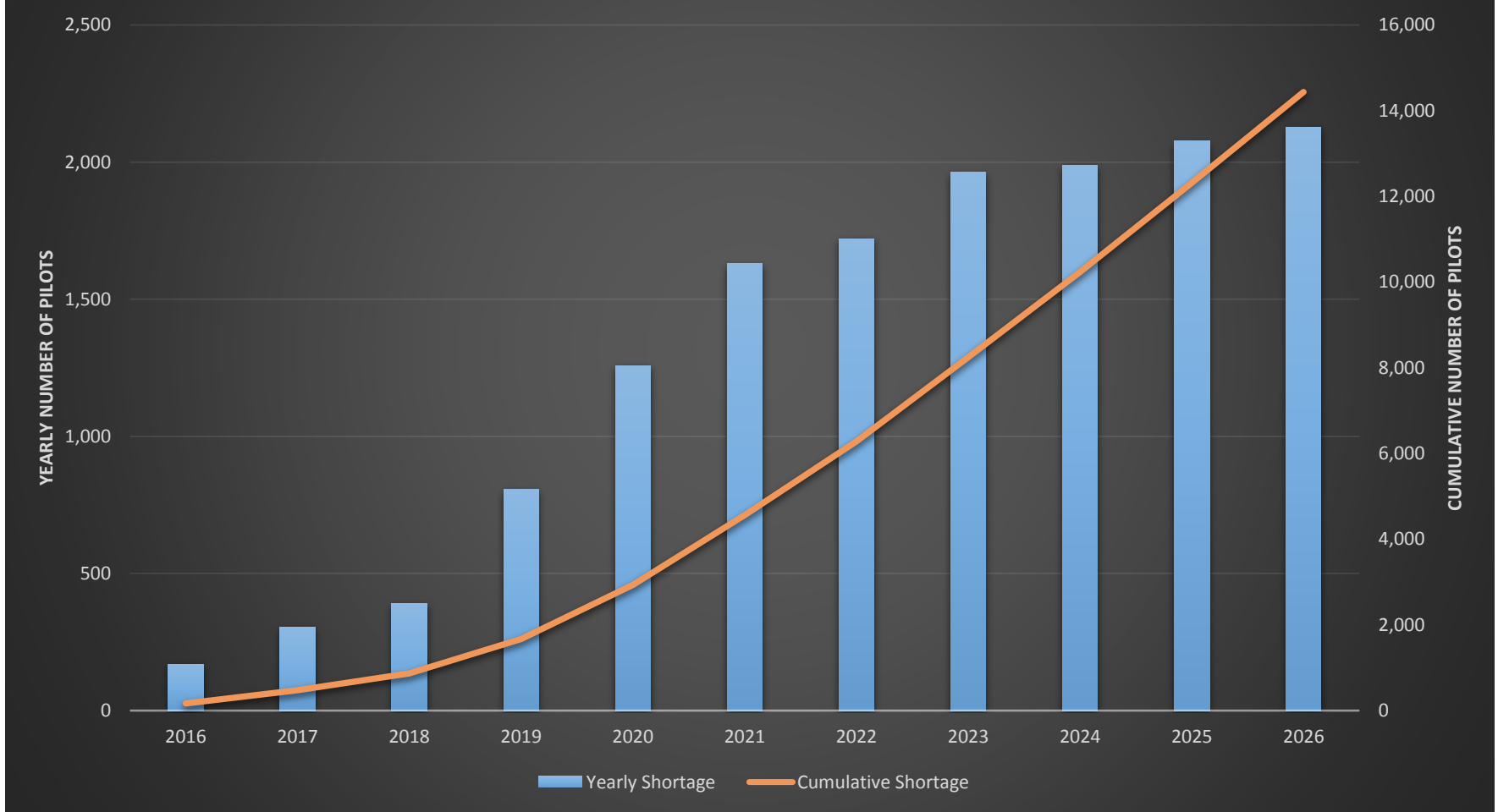
New CFIs

- Using the supply model, newly trained CFIs will become available to help mitigate supply losses
- Using the data from recent surveys, only 59.22% of CFIs intend to fly for the airlines as a long-term career goal
- After certification, it is assumed that an additional 2 years of flight instruction will be needed to achieve restricted ATP minimums





Forecast Yearly and Cumulative Shortages of Pilots to Staff the US Airline Fleet



Summary of Forecast 2016-2026

- Deficit of 14,439 pilots
 - This is down from the 2013 projection which forecast 20,659 deficit from 2016-2026
 - Could be due to new growth and cost forecasts
- Considers pilots leaving the industry and pilots joining the industry on a yearly basis
- Holds all other Commercial and ATP pilots constant

- Status Quo forecast – Assumes no changes (recession, boom, war, etc.)



Pilot Supply Trends

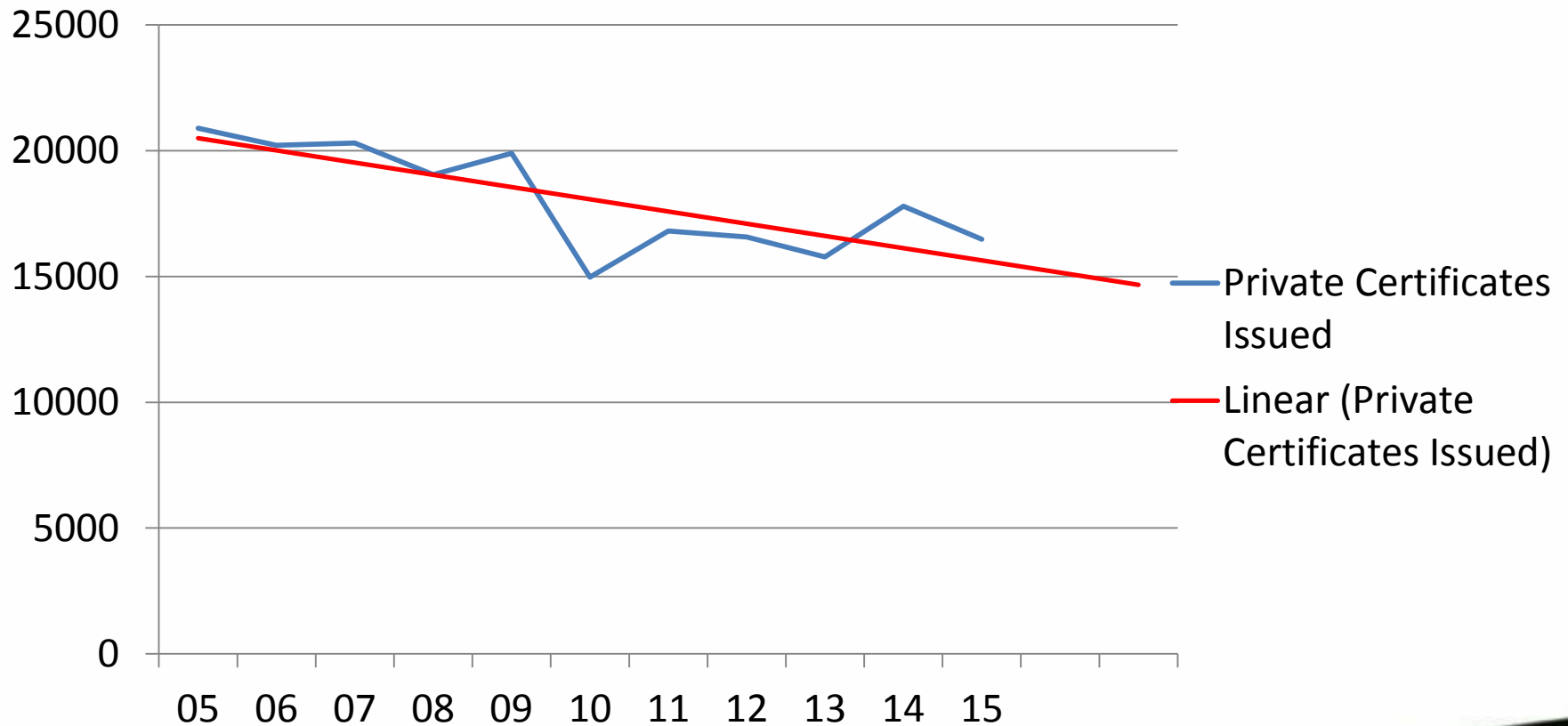


Pilot Supply Trend (AOPA)

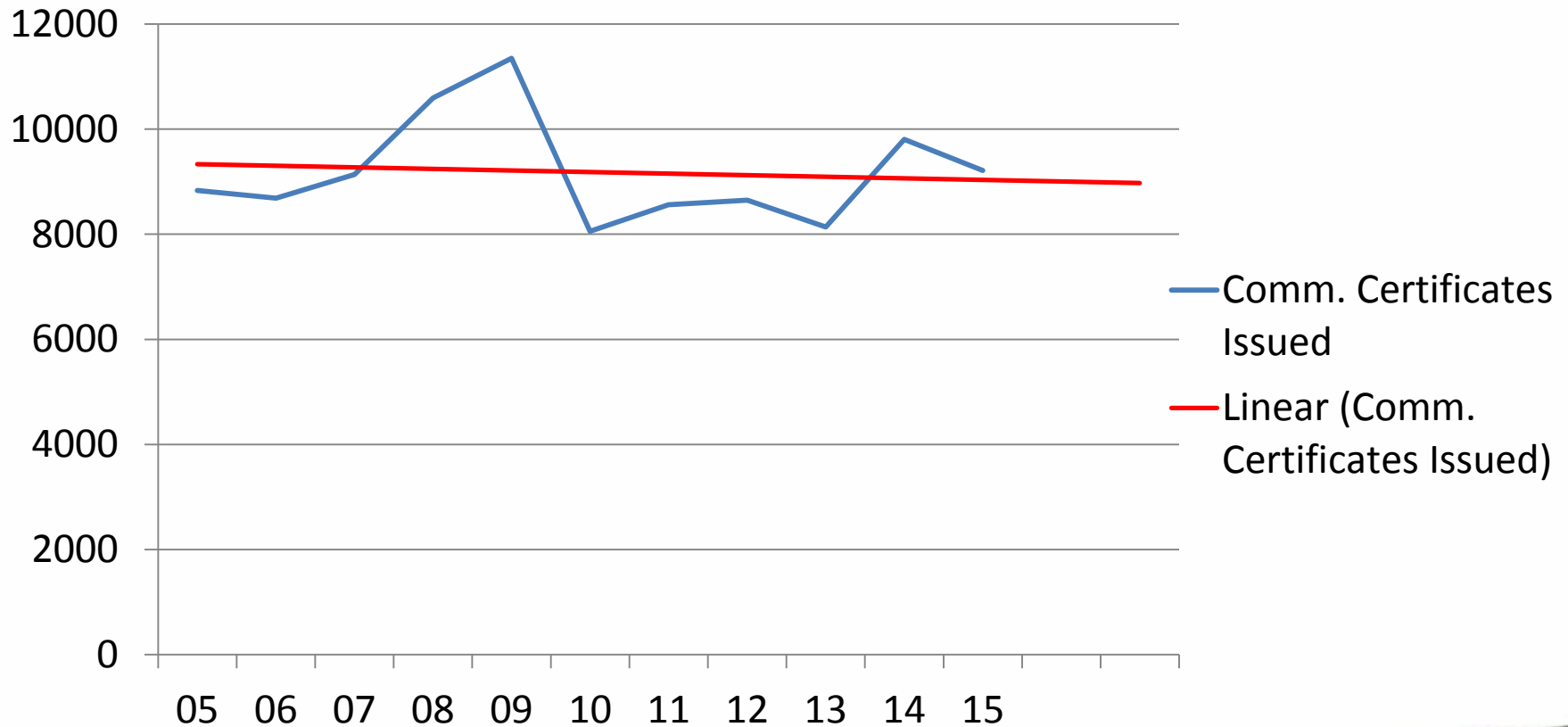
- 1980 – 827,071 pilots
- 2015 – 590,038 pilots
A loss of 237,033 pilots (28.66%)
- 1980 – 50,458 new Private Pilot Certificates were issued.
- 2015 – 16,437 new Private Pilot Certificates were issued.
A loss of 67.4%



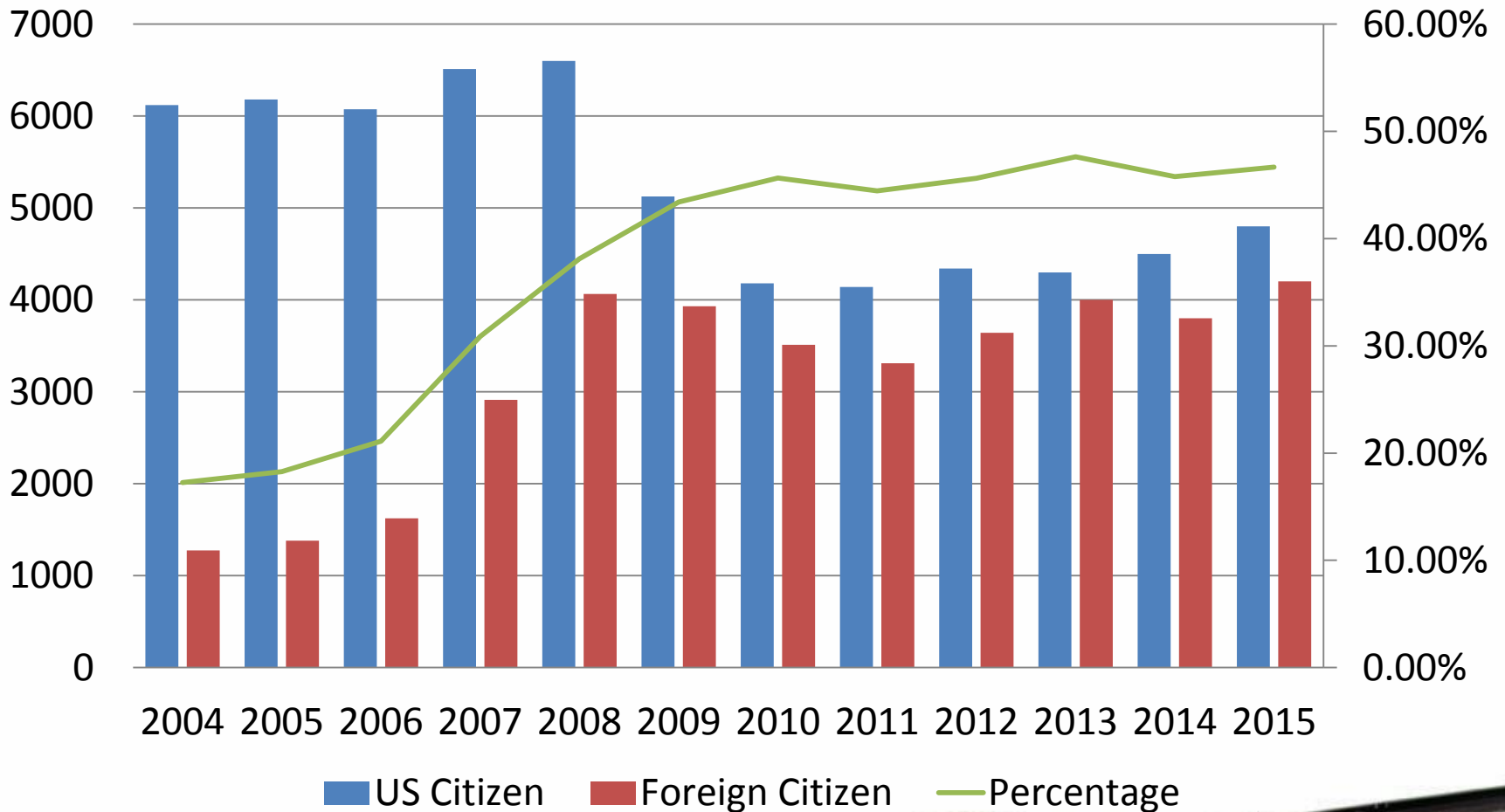
Annual Private Certificates Issued



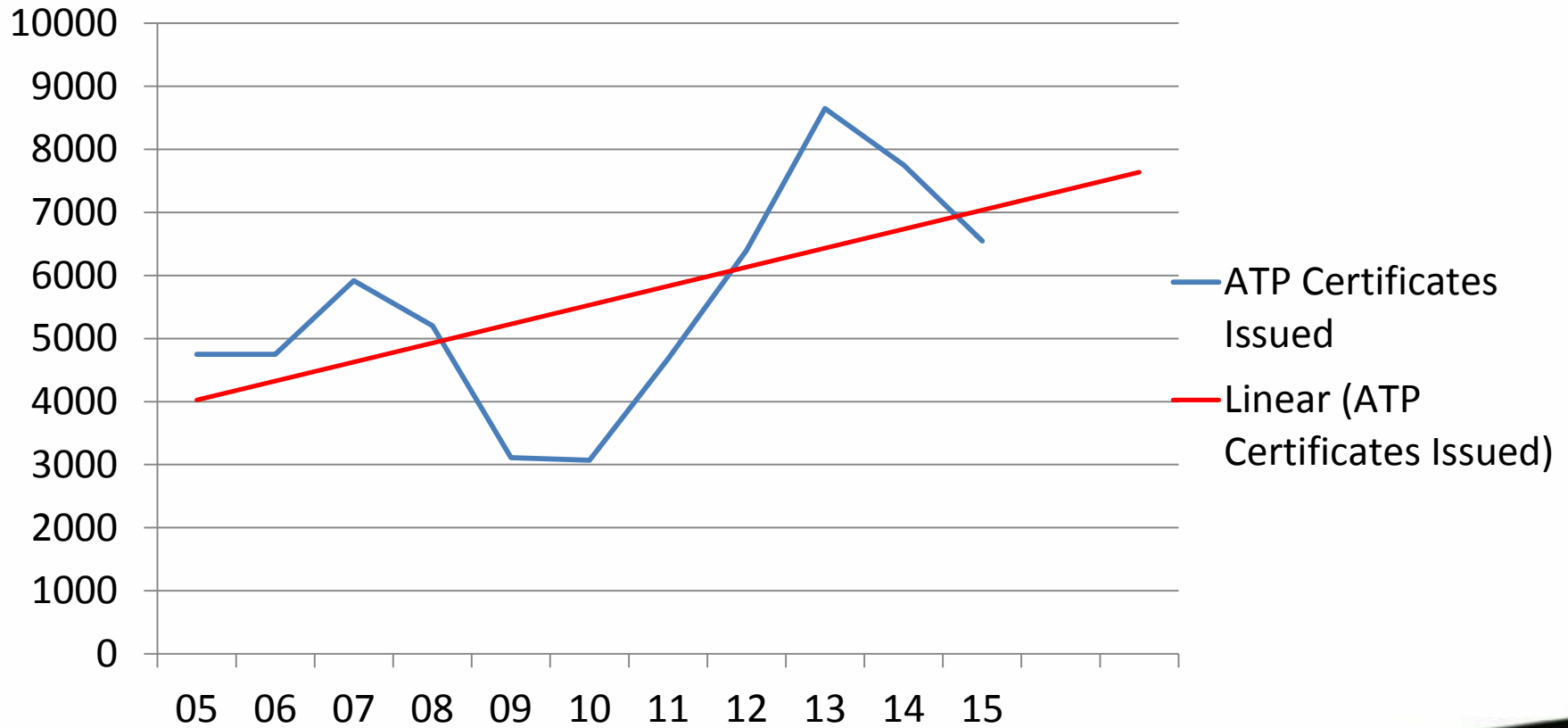
Annual Commercial Certificates Issued



US and Foreign Citizens Taking the Commercial Airplane FAA Knowledge Exam



Annual ATP Certificates Issued



Aging Pilot Population

Calendar Year	Type of Pilot Certificates						
	Total 1/	Student	Sport	Recreational	Private 2/	Commercial 2/	Airline Transport 2/
2015	44.8	31.4	56.2	44.6	48.5	45.6	49.9
2014	44.8	31.5	55.8	43.1	48.5	45.5	49.8
2013	44.8	31.5	55.2	44.8	48.5	45.4	49.7
2012	44.7	31.5	54.7	47.8	48.3	44.8	49.9
2011	44.4	31.4	54.4	48.8	47.9	44.4	49.7
2010	44.2	31.4	53.8	50.8	47.6	44.2	49.4
2009	45.3	33.5	53.5	50.4	47.1	44.2	48.9
2008	45.1	33.6	53.2	50.1	46.9	44.8	48.5
2007	45.7	34.0	52.9	52.4	48.0	46.1	48.3
2006	45.6	34.4	52.9	51.5	47.7	46.1	48.1
2005	45.5	34.6	53.2	50.9	47.4	46.0	47.8
2004	45.1	34.2	N/A	51.3	47.0	45.9	47.5
2003	44.7	34.0	N/A	51.5	46.5	45.6	47.0
2002	44.4	33.7	N/A	51.0	46.2	45.5	46.6

Additional Impacts

- Part 135 regional cargo carriers
 - Struggling to attract pilots
 - Need to recruit
 - At a disadvantage 1200 hours vs. 1000 hours
- Corporate aviation
 - Fewer applications
 - Lower quality

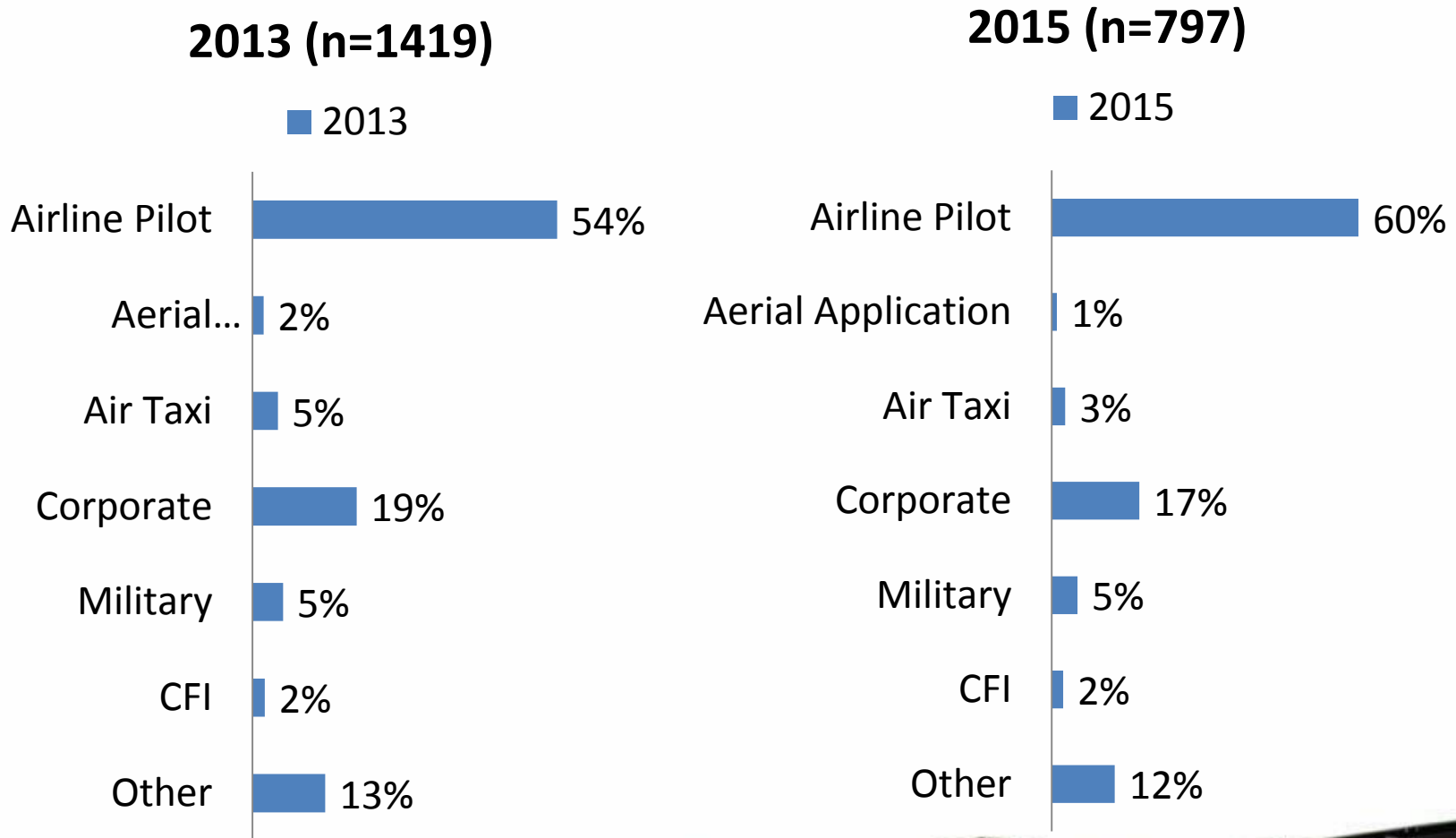


Recommendations

- Increase the number of pilots
 - Cost issues
 - Aging fleets
 - CFI shortages
- Increase the number of pilots to aspire to a professional flying career
 - 2010 study 29% of student pilots were aspiring to fly professionally



Career Aspiration Study Long Term Career Goal



Recommendations

- Realize the challenge of obtaining pilot staffing is going to continue and probably worsen
- Salary increases are needed and being noted by aspiring pilots
 - Levels to other college graduates
- Financial support of training/education debt
 - Loan repayments & scholarships
 - Provide ATP CTP
- Realize quality of life is a priority
 - Schedules that minimize time away
 - Multiple basing choices & liberal commuting policies
- Defined Career Paths
 - Most effective if includes a path to a major airline
 - Mentoring important
- Recruitment visits to schools
 - Well prepared representatives
 - Realistically sell the whole airline and career



Questions? Comments?

