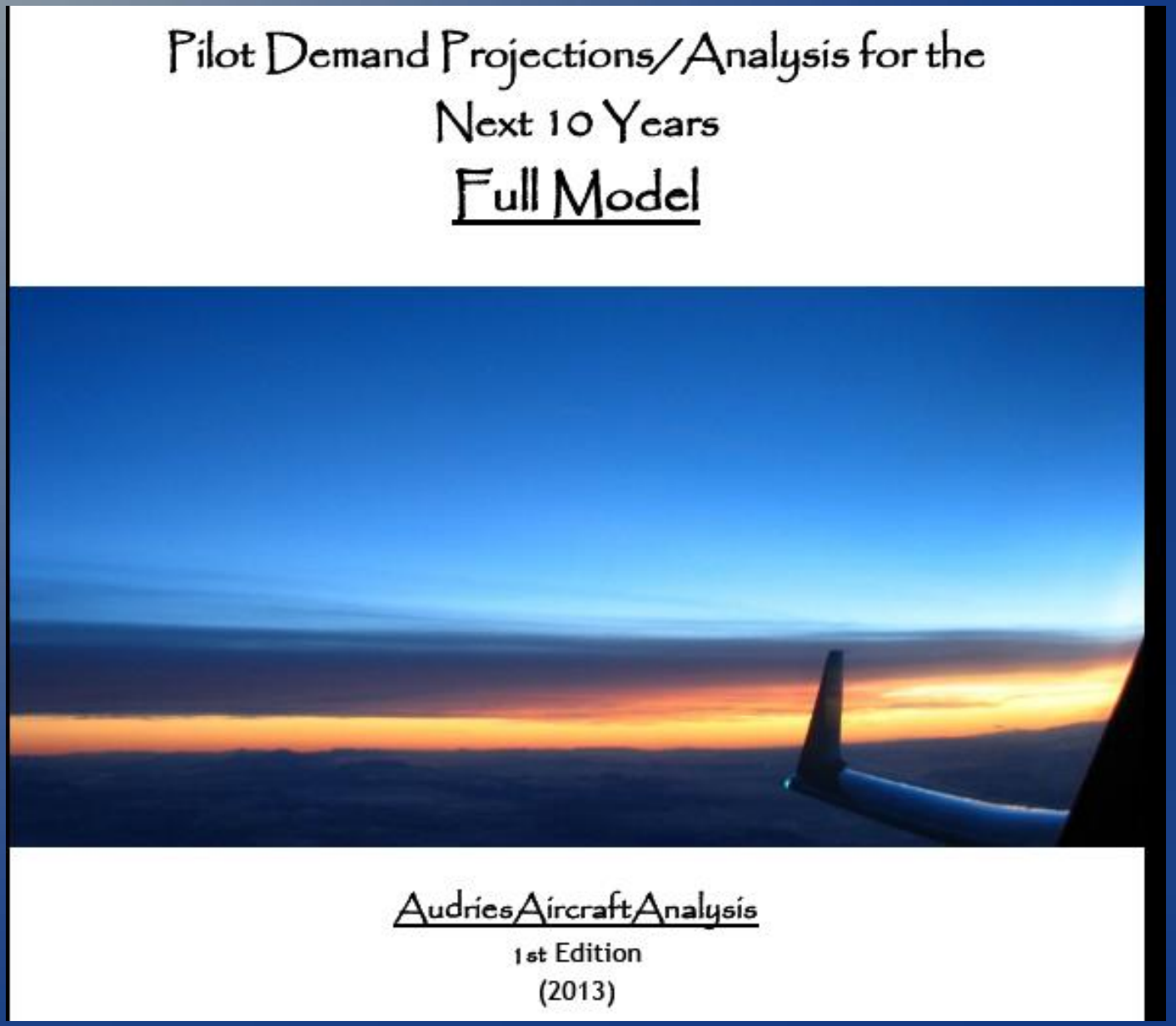
Airline Pilot Demand Projections



What this is-

- A Model of Pilot Demand for United States Airlines.
- Common Sense Ballpark Figures
- Based on Data Feb. 2013.

What this is not

- A perfect model.

- Assumptions were made to keep it simple and to eliminate unknown errors that could have crept into the model.

- Does not include Pilot Supply Projections. (Others have attempted to address this)

Simplicity is its Strength

- Unknown Elements minimized or removed
- (But not forgotten) these unknown elements become useful in interpreting the results.

- Built upon “known” values

- Fleet Growth Plans

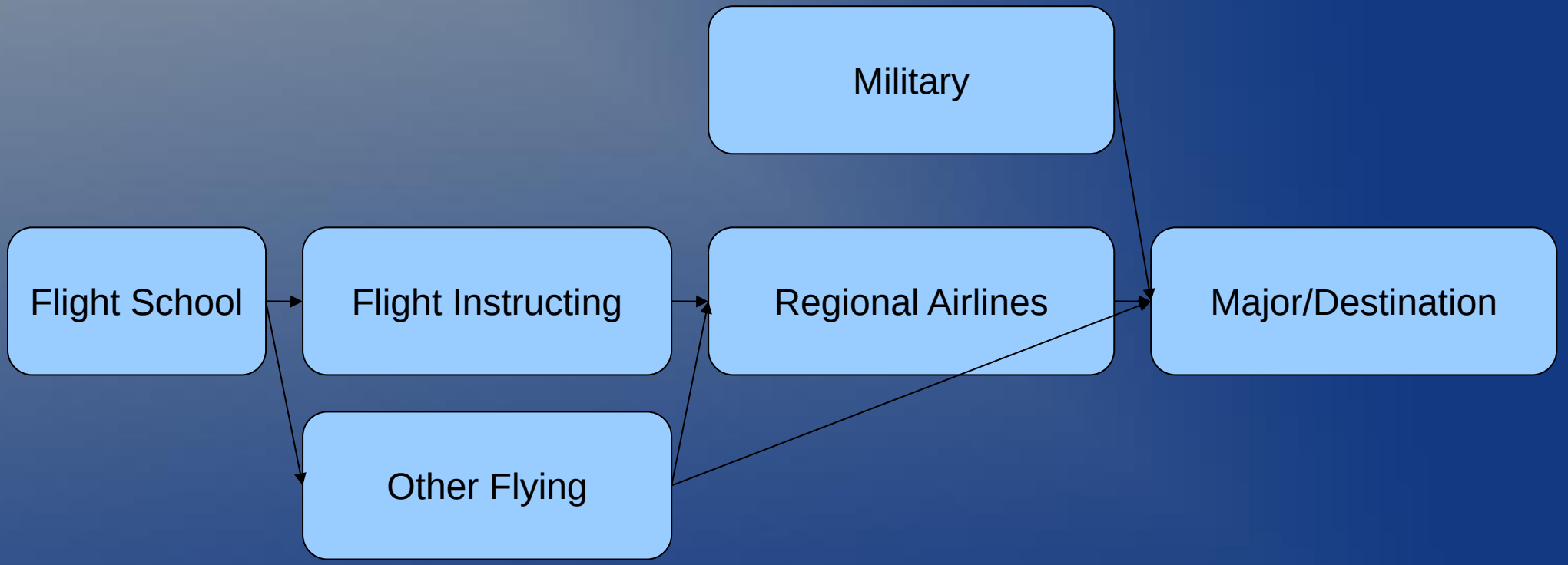
- Mandatory Pilot Retirements

Methodology

- Pilot Needs through Growth
- Pilot Needs through Attrition

- Things not considered
  - Medical Out.
  - Natural Attrition-Career Change Etc.
  - Number of Pilots being drawn to International Carriers.

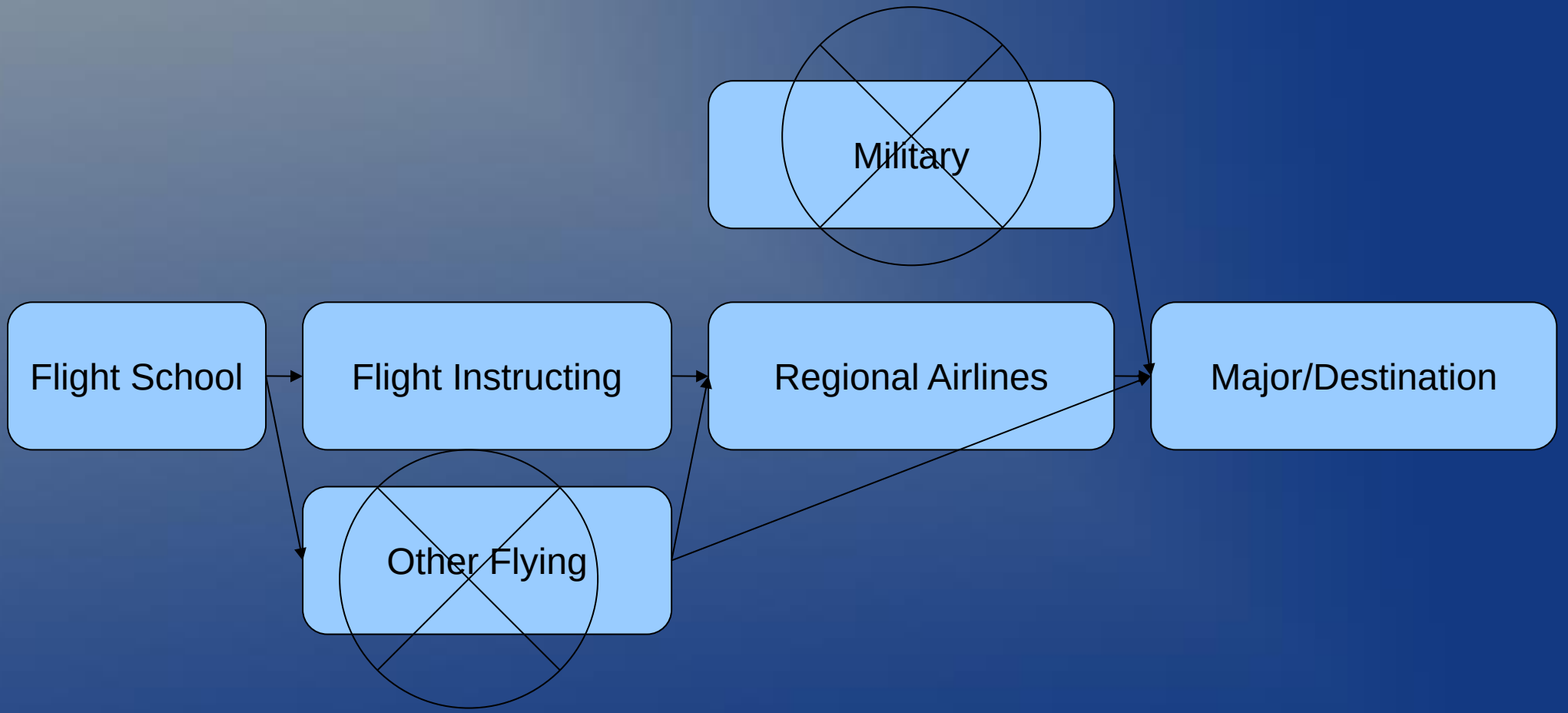
Pilot Progression



Regional Progression

Regional/Major Differences?

Pilot Progression Adjustment



Mainline/Destination Airline Pilot Demand

SouthWest, United, AA, JetBlue, Etc

Airlines with their own branded marketing are good candidates.

Pay/Benefits Substantially Better than Regional Airlines.

Places Pilot are likely to stay for duration of career

Aircraft Orders/Replacements

- Best attempt at compilation of public sources of fleet projections
- Utilized Boeing Fleet assumptions to try and fill in Gaps (1.4% annual fleet growth)

Aircraft Orders	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Boeing 737 Max 8/9	0	0	0	0	1	7	7	7	7	7
Boeing 737 700	0	0	0	0	0	0	0	0	0	0
Boeing 737 800	0	0	0	0	0	0	0	0	0	0
Boeing 737 900	9	6	6	6	5	0	0	0	0	0
Aircraft Retiring	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Boeing 737 400	3	3	3	3	3	5	4	0	0	0
Boeing 737 700	3	1	1	1	1	1	1	3	3	3
Boeing 737 800	0	0	0	0	0	0	0	0	0	0
Total	3	2	2	2	2	1	2	4	4	4

Pilot to Aircraft Ratio

- The number of Pilots needed to staff an aircraft

- Ranges from 10-28 pilots per aircraft depending on
-Aircraft Use (How many hours does it fly)
-Type of Flying (Long Range, Short Range)
-How much can you fly your pilots(Work rules)

Fleet/Pilot Ratio

Aircraft/Pilots = Average Number of Pilots needed per aircraft at an airline

Built by taking total Seniority list divided by total active aircraft list.

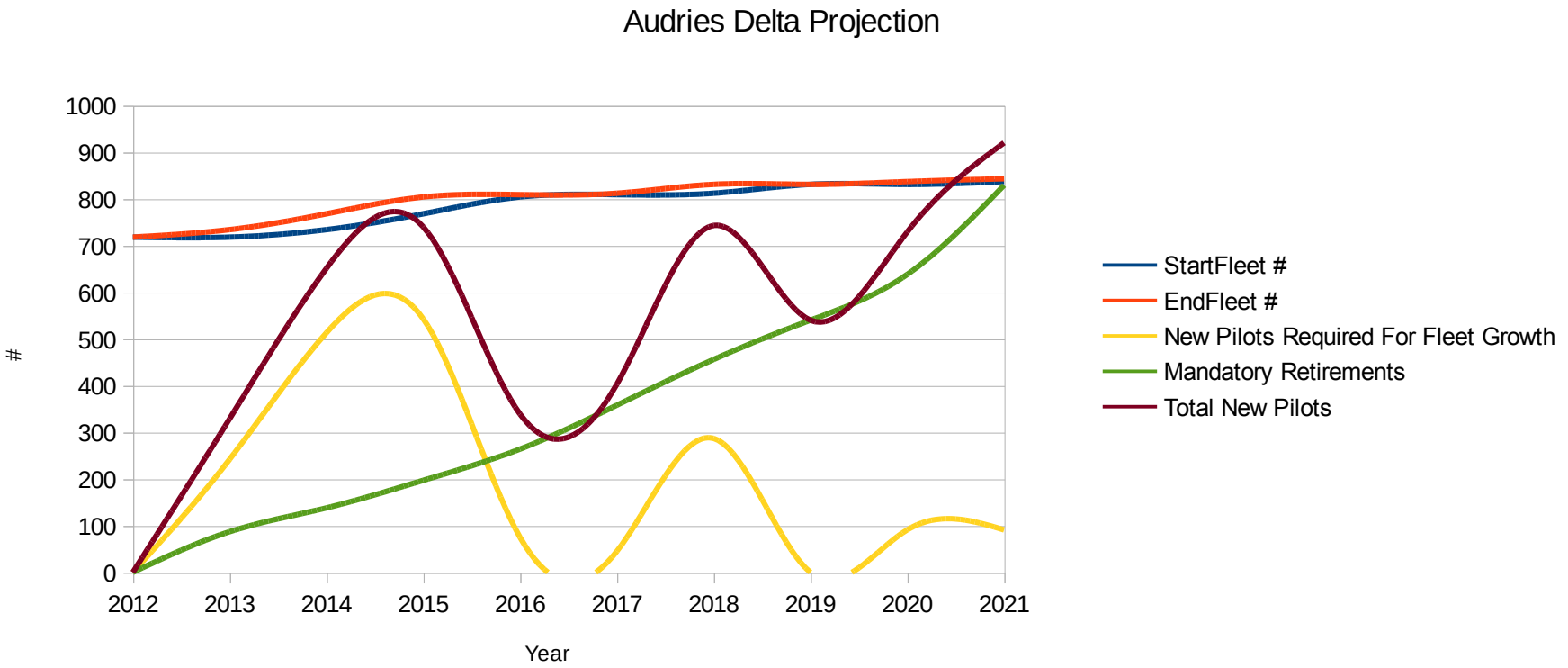
Pilot Retirements

Obtained from online public sources

Assumed Age 65 Retirements (note- if they retire early it just moves up the need for their replacement and adds little demand in the large scheme of things- unless they are retiring decades in advance of 65.)

	Alaska
2013	18
2014	31
2015	36
2016	47
2017	46
2018	43
2019	49
2020	55
2021	57
2022	56

Delta Example



Year	StartFleet #	EndFleet #	New Pilots Required For Fleet Growth	Mandatory Retirements	Total New Pilots
2012	718	718	0	0	0
2013	718	734	242	87	329
2014	734	768	513	138	651
2015	768	804	543	197	740

Fall Staffing Snapshot

Previous Staffing Ratio's could hide Pilot thickness or thinness in pilots which could be projected throughout the model.

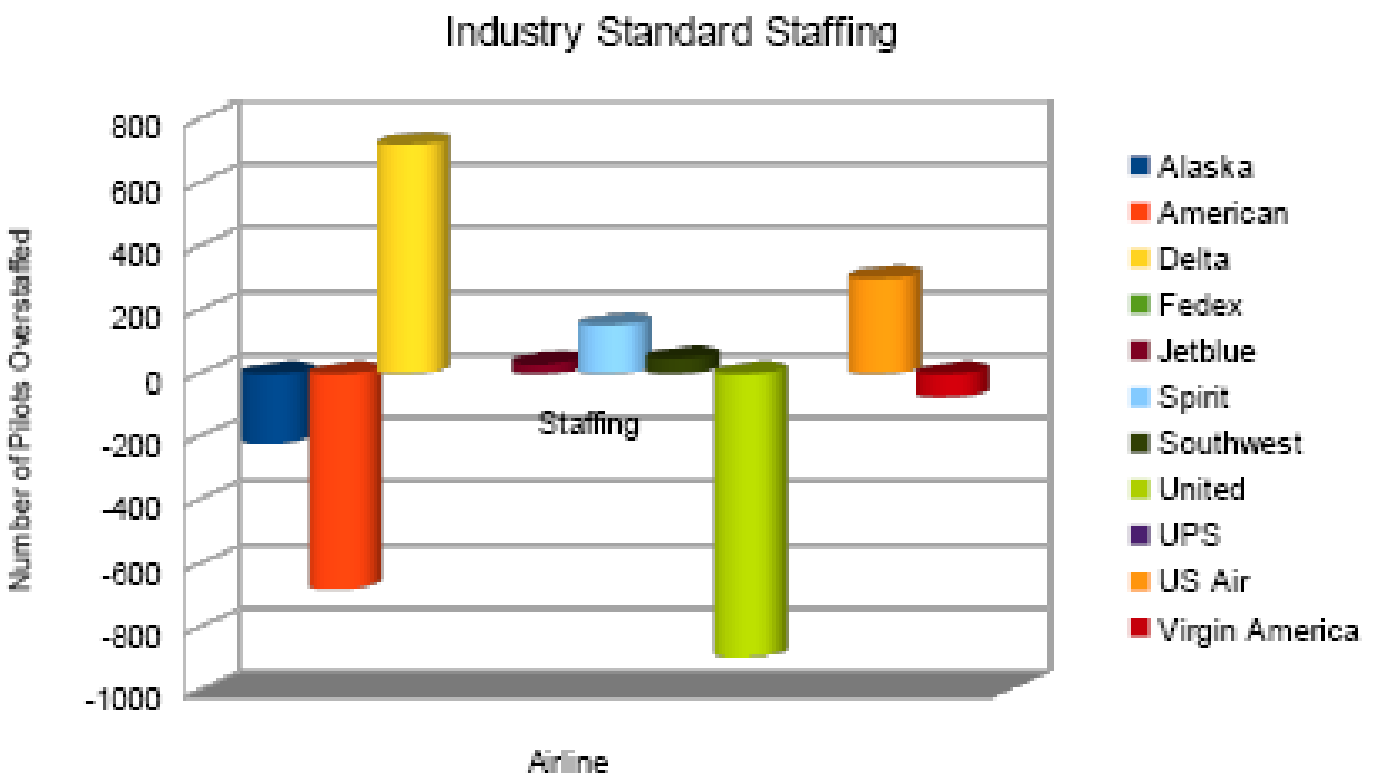
Industry Average Snapshot

Snapshot of what fleet type staffing looks like among many airlines.

- Which ever is more conservative

Staffing Comparison

Industry Average Staffing



	Alaska	American	Delta	Fedex	Jetblue	Spirit	Southwest	United	UPS	US Air	Virgin America
Staffing	-219	-677	722		32	152	49	-894		301	-75

Computed upon average staffing ratio

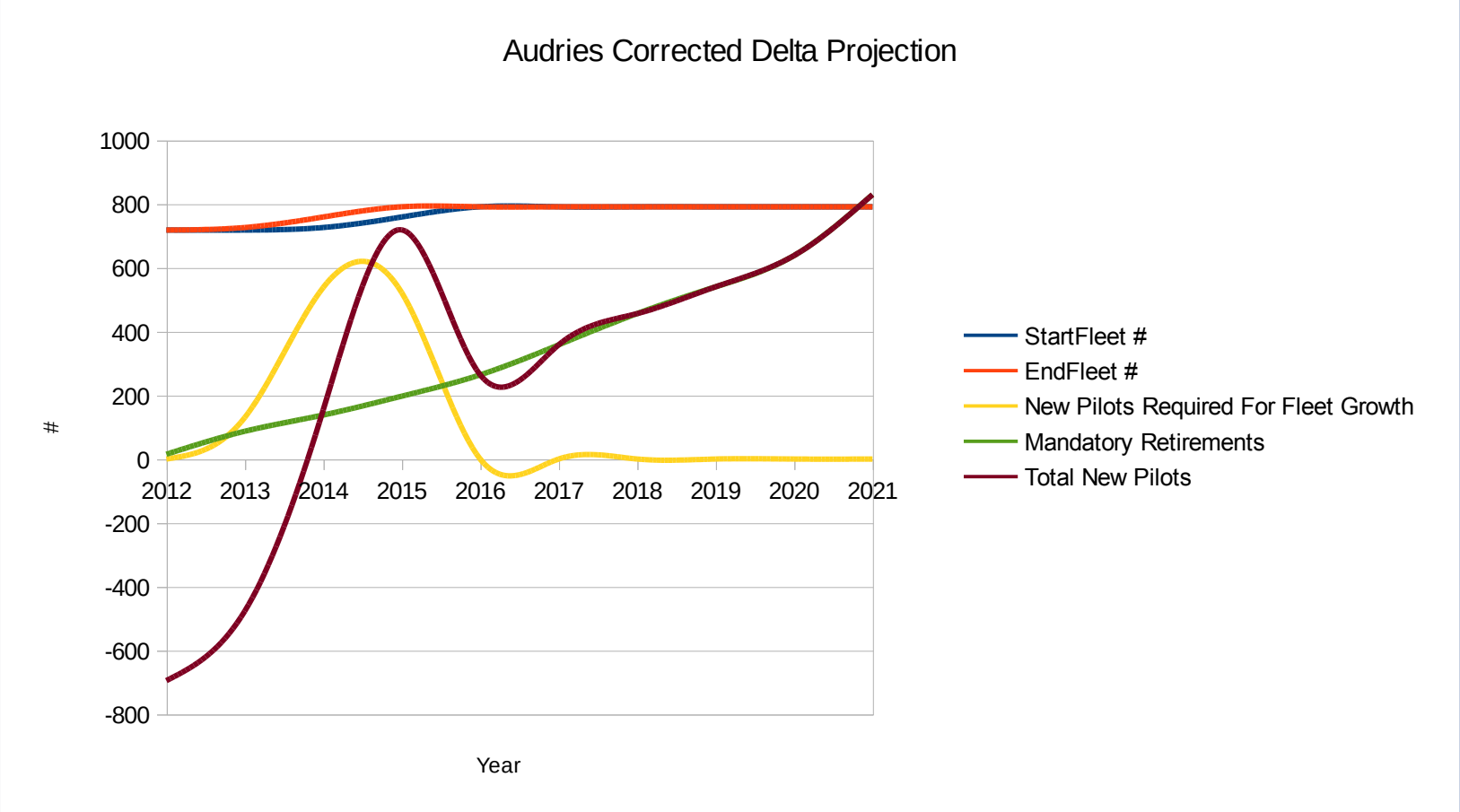
- Apply an over staff penalty compared to competitors.
- Note- Other Possible Explanations

-High Aircraft Utilization

-Unusually High number of Active Pilots on Leave (Military, Medical, Etc)

-Nonstandard Aircraft Utilization

Estimated Delta Staffing Correction



Note- On Furloughs

- Significant Numbers of Furloughed Pilots at Majors.
- Recall Rates- (Those who come back) 20-40%
- Some may come from Regional Pools others may not (Military, etc)
- Model Applies hiring penalty to the model to reflect some of this.

Composite of most Destination carriers

Total Destination Demand

	AK	AA	DL	FE	JB	SP	SW	UA	UPS	UA	VA	Total
2013	53	-303	-651	-136	92	143	23	-278	40	61	11	**-944**
2014	54	-101	45	130	119	111	45	235	45	230	0	**912**
2015	59	128	787	-35	132	159	100	475	34	393	56	**2287**
2016	70	254	346	-23	132	238	149	308	47	206	56	**1783**
2017	69	322	407	84	106	206	156	400	55	249	0	**2054**
2018	55	424	767	274	132	190	177	429	61	130	0	**2639**
2019	72	536	540	398	172	190	133	471	74	215	0	**2801**
2020	101	674	736	509	172	206	379	536	95	261	111	**3781**
2021	103	773	927	553	172	206	365	742	95	250	111	**4298**
2022	102	817	973	597	172	0	306	470	96	223	111	**3868**

Negative numbers are cumulative and represent number of pilots remaining that are expected to return from furlough. (Running Furlough Penalty)

Note- To simplify the model these numbers assume all furloughs return before any new hires. (This is obviously not the case as furloughs differ their return)

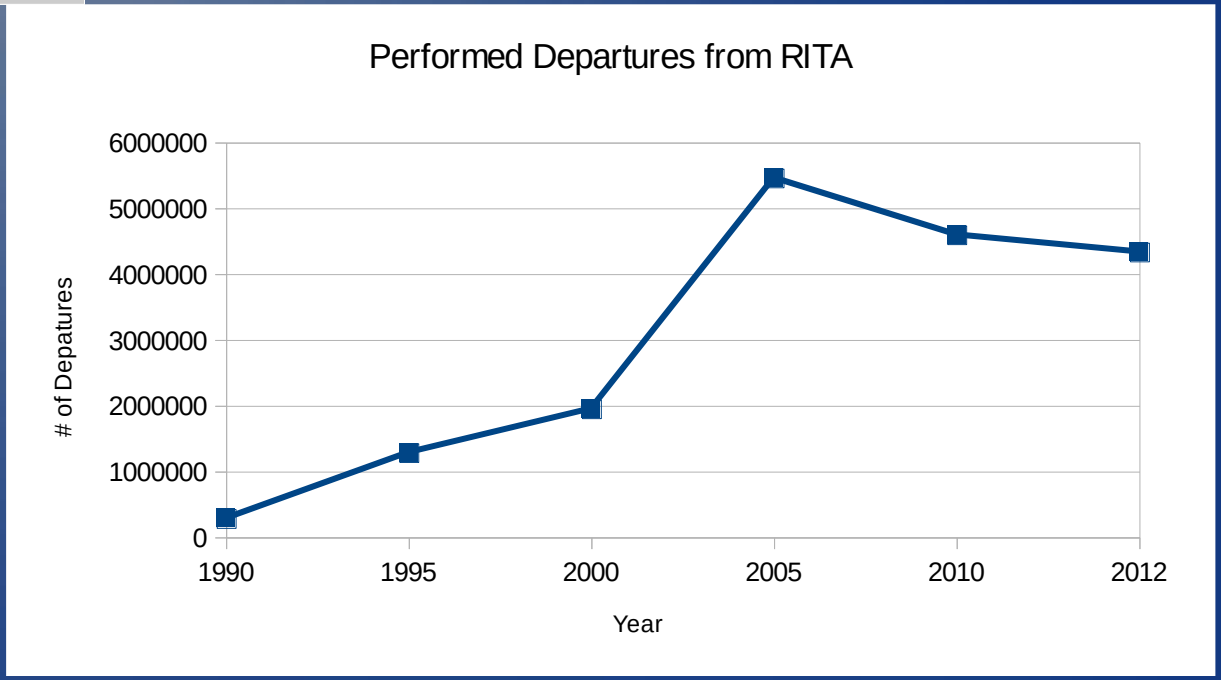
Regional Airline Pilot Demand

- Fleet/Growth Shrinkage
- Attrition to Mainline- Most Regional Airline pilots where hired in the last 10-15 years and still have significant time left in their careers. (Model Disregards Age 65 Retirements at Regional Airlines)
- Size of Regional Pool determines % of attrition to Mainline.

Calculating Attrition based on Regional Industry Size

	Major Airline Pilot Demand	Regional Airline Pilot Pool	Percent Draw
Single Year	2000	20000	10.00%
Single Year	2000	10000	20.00%

	Performed Departures
1990	287141
1995	1288589
2000	1954496
2005	5462131
2010	4598138
2012	4336759



Regional Growth for Each Airline Profile

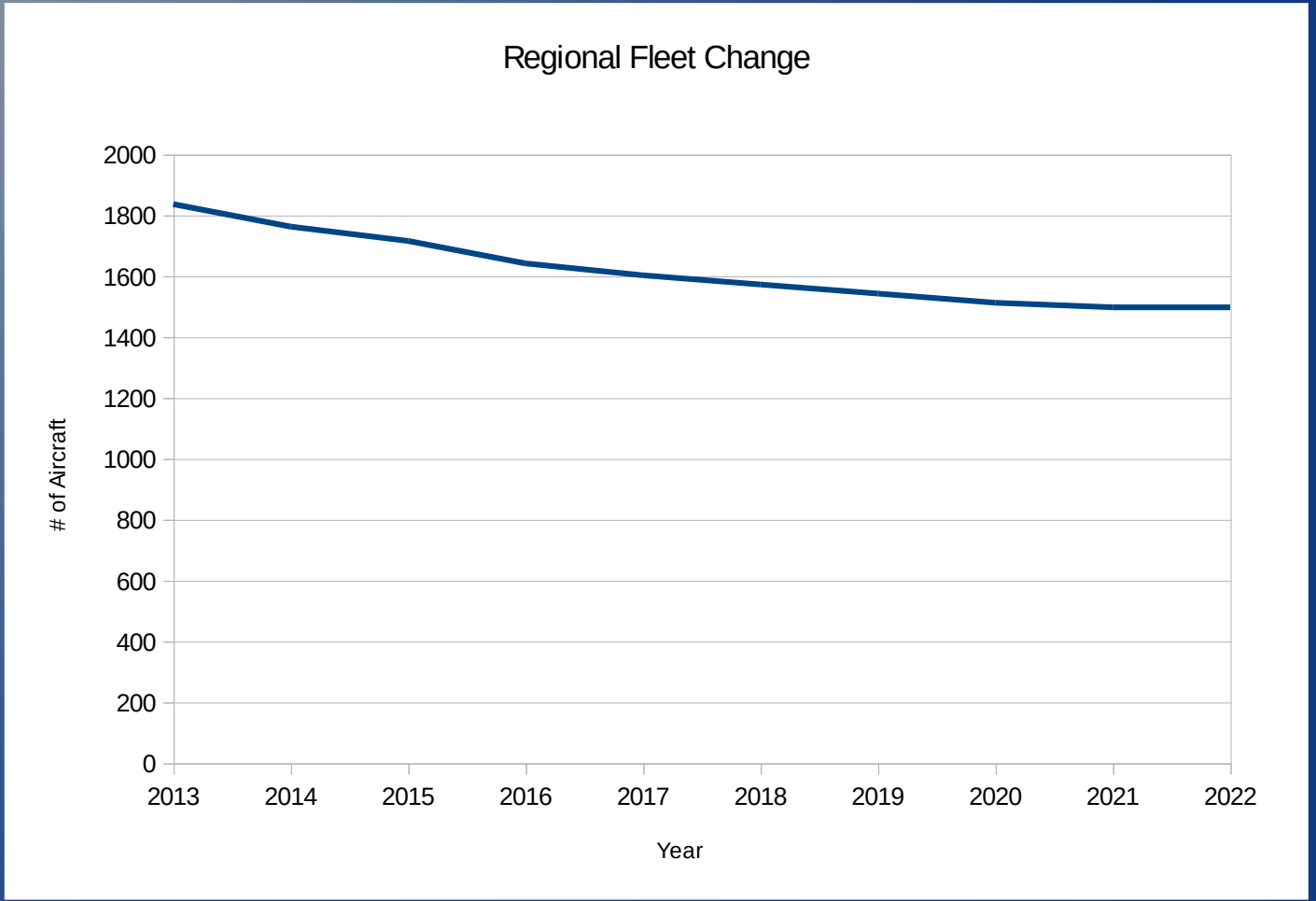
- Publicly available information, and some assumptions based on industry trends.
- Scope- What is it?

Allows us to predict where opportunities might be in the Regional Industry

- Conservative Assumption Stagnant Growth

Regional Industry Fleet Trends

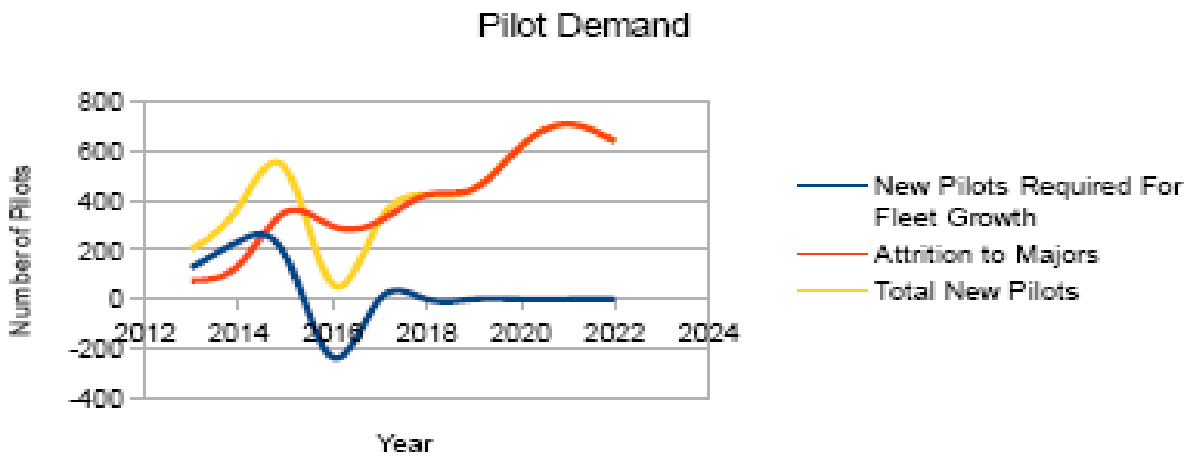
Year	Fleet Total
2013	1836
2014	1762
2015	1715
2016	1641
2017	1602
2018	1572
2019	1542
2020	1512
2021	1497
2022	1497



Attrition to Mainline

- Assume pilots come from Regional Airlines
- Not entirely true, some will come from Corporate, Part 135/Part 91 and Military.

(Republic) Profile Example

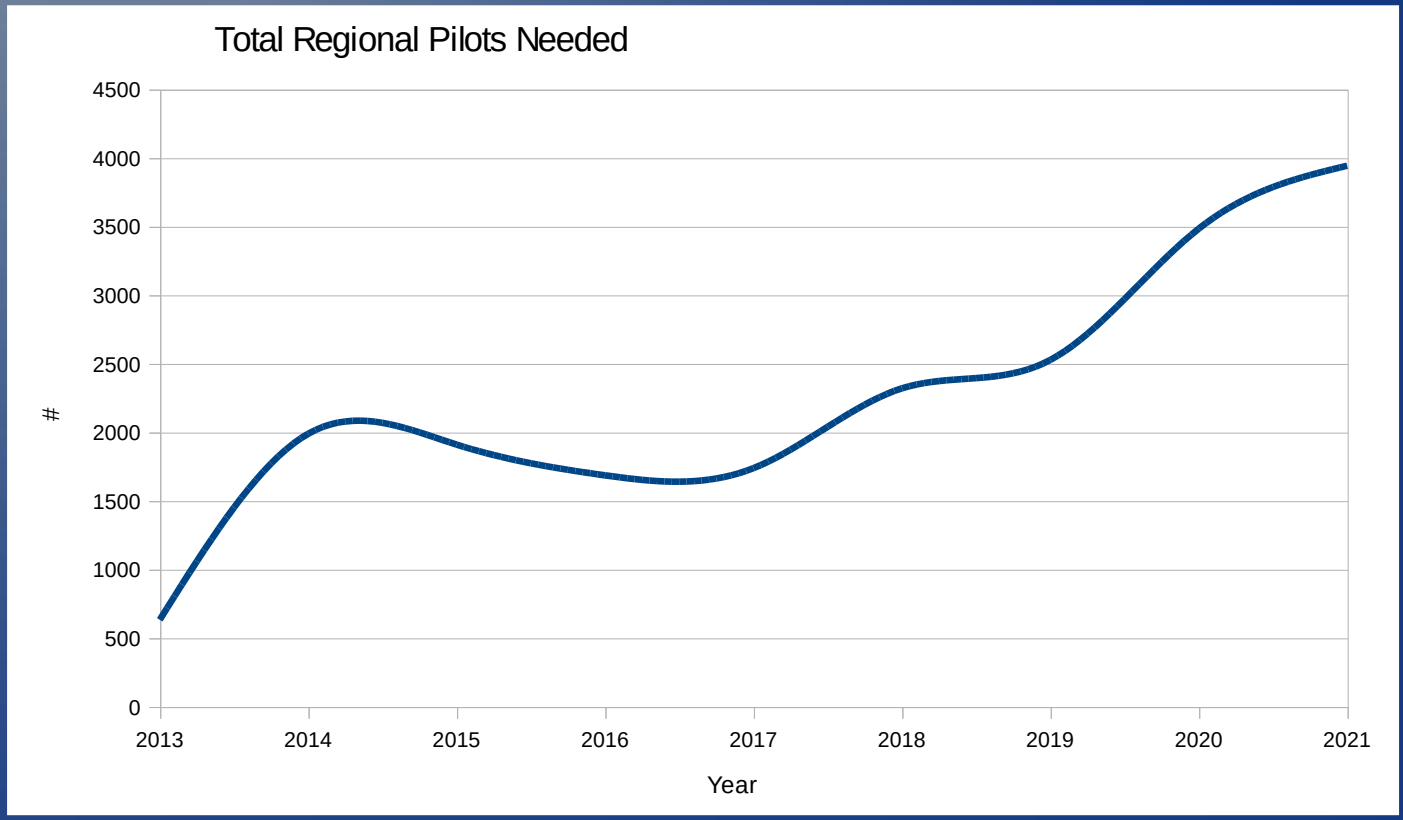


Year	Start Fleet #	End Fleet #	New Pilots Required For Fleet Growth	Attrition to Majors	Total New Pilots
2013	219	232	127	76	203
2014	232	256	234	138	372
2015	256	274	175	351	526
2016	274	250	-234	294	60
2017	250	250	0	315	315
2018	250	250	0	420	420
2019	250	250	0	445	445
2020	250	250	0	615	615
2021	250	250	0	706	706
2022	250	250	0	636	636

Sum up the Regional Airline Profiles

- Equals Models US Airline Pilot Demand as this is the Pilot entry for this simplified system.

Year	Total Pilots Needed
2013	632
2014	1988
2015	1909
2016	1685
2017	1737
2018	2319
2019	2526
2020	3483
2021	3942

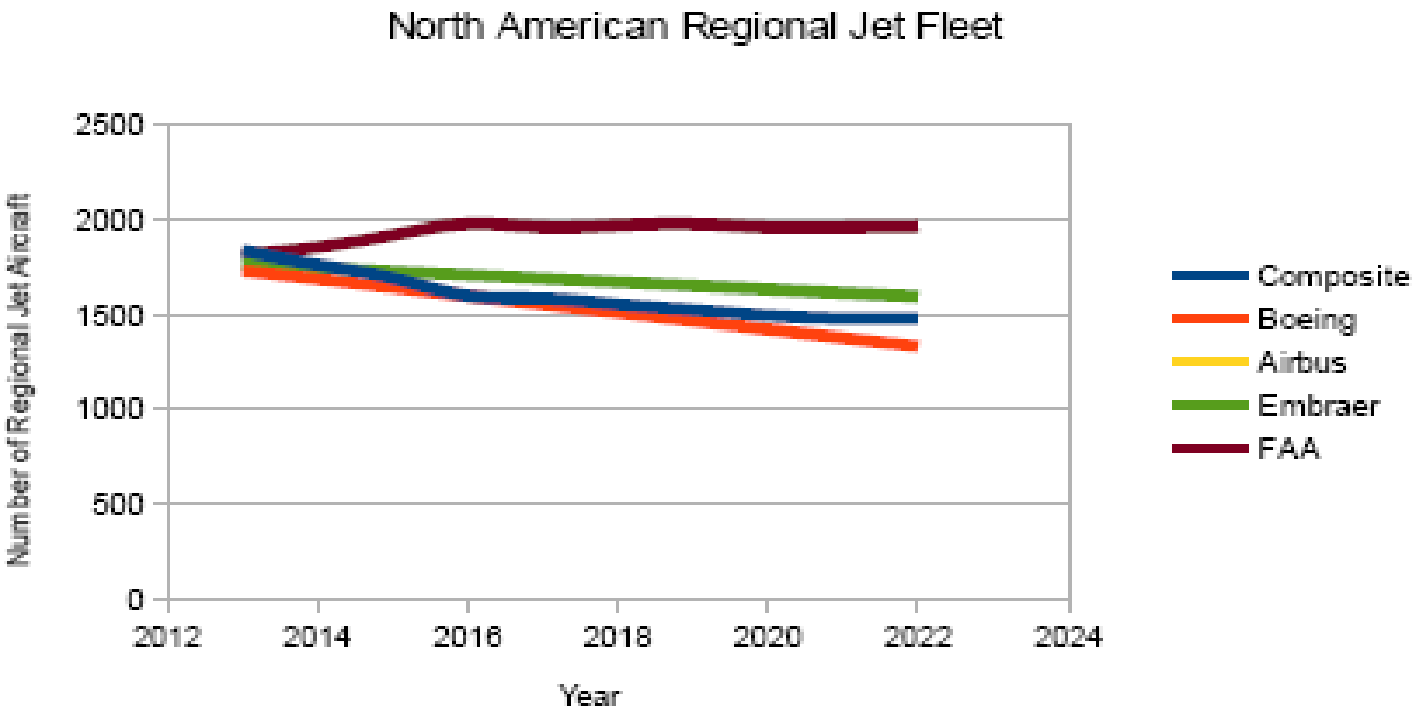


Industry Conclusions

- Aircraft Orders/Retirements at Majors Point towards slow and steady controlled growth, at about 1.4% per year.
- Regional Industry poised for reduction. Possibly by up to 25% in the next ten years.
- Much of the increase in capacity is being driven by increases in Aircraft Size and not fleet numbers.

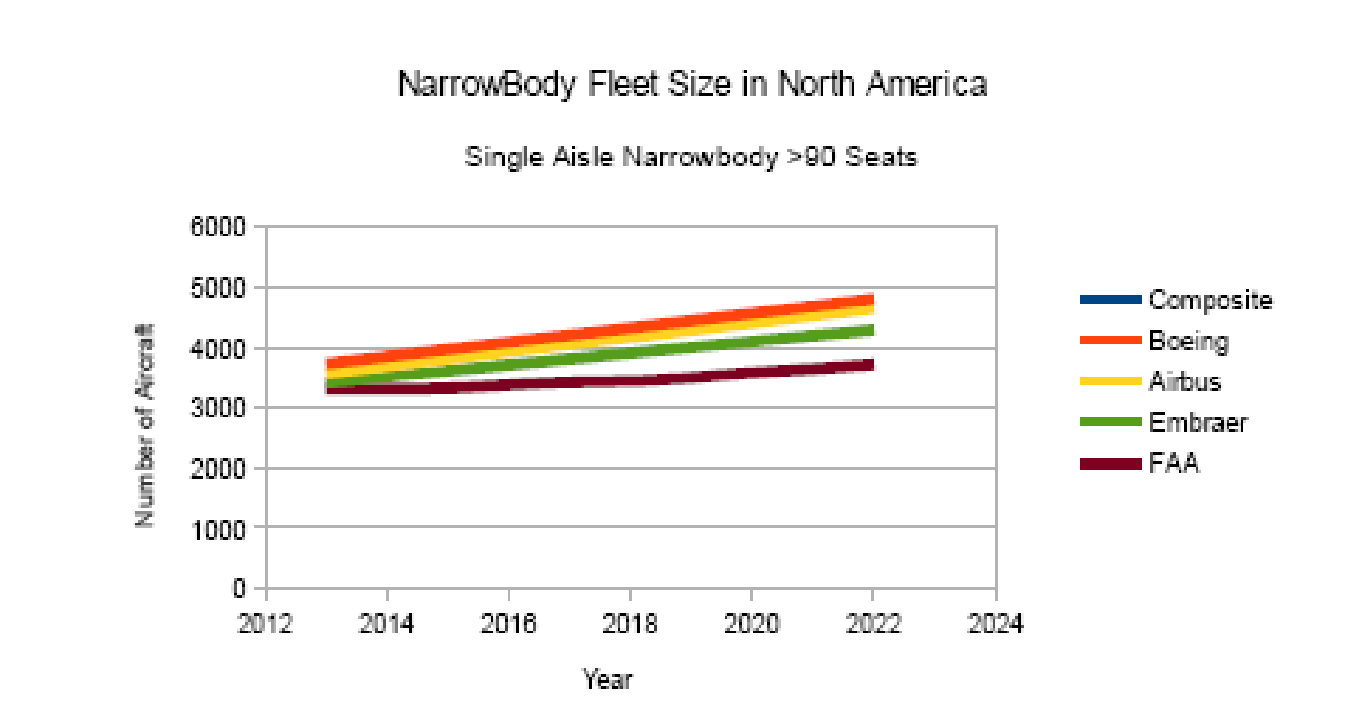
Extrapolation from other Fleet Data

- Boeing, Airbus, Embraer, FAA put out extensive yearly fleet forecasts.

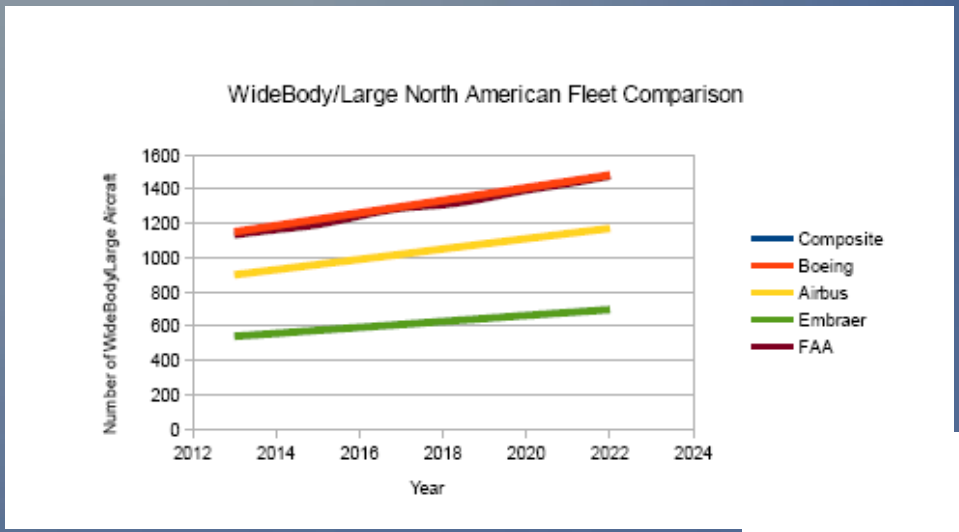


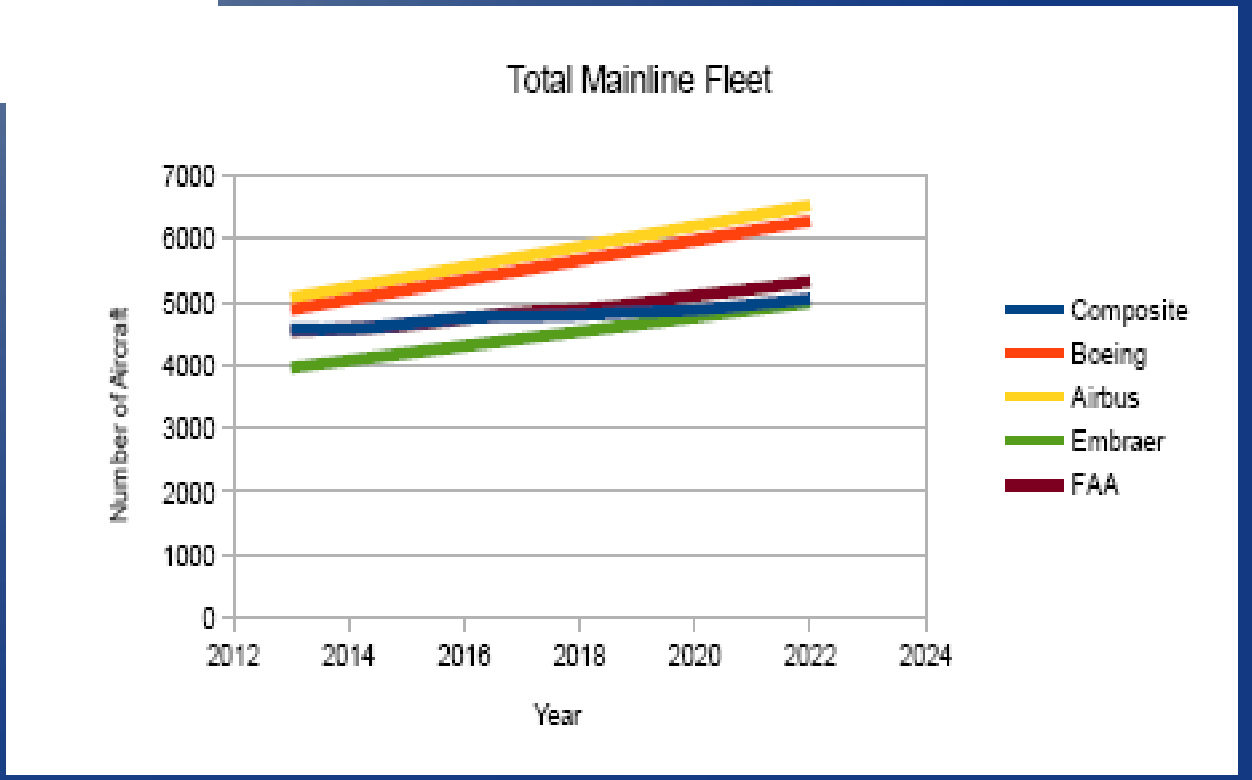
Extrapolation (Cont)

- Narrow Body Industry Fleet Growth

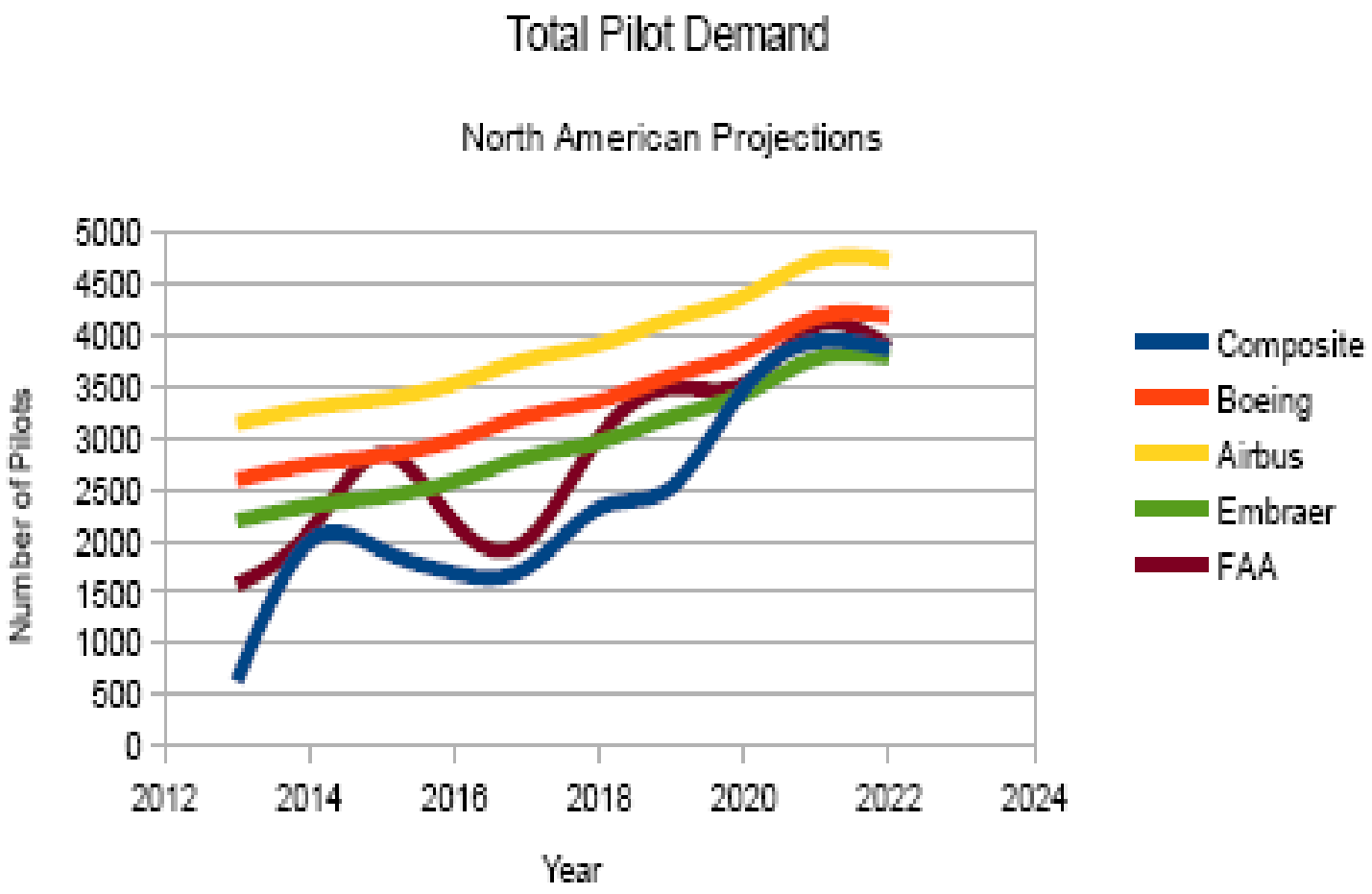


Extrapolation (Cont)





Extrapolation (Cont)



Define a Shortage

- Economic shortage is a term describing a disparity between the amount demanded for a product or service and the amount supplied in a market.

Reason we can't buy 1$ gasoline.

- From Google (A state or situation in which something needed cannot be obtained in sufficient amounts: "a shortage of hard cash"; "food shortages".)

The Biggest Question that needs to be yet be answered well is what does the Pilot Supply look like.

Some study's have attempted this but have been skewed

- Wrong assumptions regarding hiring pool behavior
- Some included that starting pay, and job satisfaction have no bearing on number of potential candidates that enter the market.
- Why is there downward pressure on wages at Regional Airlines if there is a looming Shortage?

Training Supply

- Number of applicants becoming rated as flight instructors has remained at just above 4,000 new CFI's per year over the last decade.

- Number of applicants who received commerical pilot licenses has held at below 10,000 pilots per year.

Military Pilot Supply

- Study's have estimated roughly 1,400 per year entering workforce.
- This may lessen as UAV use increases.
- These numbers are not taken into account in the model and could slow this models movement of regional pilots to the majors.

Demand Conclusions

- Should see very competitive hiring resume at Majors. Should be no shortage of applicants there.
- Shrinking Regional Airlines may offset some need for additional pilots.

Demand Conclusions

- Career progression will be steady at Regional Airlines but will be nothing like what was seen from 2003-2008 that drove very high numbers of pilot hiring and 2 year upgrades.
- First Officer->Captain looks to be between 3-6 years.

Demand Conclusions

- New ATP rule that requires all airline pilots to have an Airline Pilots License.
- Some Difficulty in finding applicants for right seat of regional airlines where starting pay is between 19-25,000$ per year.

Demand Conclusions

- Market will likely find a solution as is the case in a free market.
- Last Vestiges of Deregulation going away. Subsidized pilot development by government phasing out.
- Airlines will likely need to become more involved in selection process's and pilot pipeline development. (Reduces high level of investment risk with one of the highest educational costs of any profession and one of the most uncertain returns)