

The Pilot's Bill of Rights II and 3CRM: Congress Retakes the Controls

What Does it Mean for GA Aircraft Market Values?

Introduction:

With the attachment of the 3rd Class Medical Reform (3CRM) to the FAA authorization bill in July 2016, a new era in pilot medicals has been initiated. The details of the new medical issuance will be discussed by others in this panel. What can surely be said is that this will not be as simple as the requirement for a driver's license, which supports the medical requirements of a sport or recreational pilot. The question to be addressed in this paper is, what impact, if any, does 3CRM have on aircraft values?

Approach:

3CRM has been touted as providing a substantial reduction of cost and compliance efforts for many pilots. Those organizations advocating for its adoption, primarily EAA and AOPA, have argued that the result of enacting this legislation will be an increase in retained and returning pilots. More pilots correlate, it is assumed, to more demand for aircraft. In this paper, I examine the projections for additional retained and returning pilots and make some projections as to the influence that 3CRM will have on the light GA market going forward.

Data:

We are going to examine data from four sources; the FAA, GAMA, AOPA, EAA, AvWeb and NAAA Graphs. That data varies substantially in how it was developed. Some of the data is generated by using historical data and projecting that information forward. Some appears to be totally without substantiation and simply generated by edict or educated guess.

FAA

The table below is a combination of Tables 28 and 30 from the FAA Aerospace Forecasts:

https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/Tables_28-31.xlsx.

I have combined the two tables from the original spreadsheet into a single table. Table 28 quantifies the number of pilots sorted by type of license from 2011 to 2036 [I have eliminated commercial pilots] and Table 30 quantifies the number of piston aircraft over the same period of time. Below is the aligned year-by-year combined table. For those of us who love to fly, any way you look at the data, it is disheartening.

In 21 years (starting in 2015), single-engine aircraft are forecast to decrease by 14%, going from 125,050 to 107,160 aircraft remaining. The number of twin-engine aircraft has already decreased by 10% since 2001, doubtless due to a great extent to fuel costs and hence the rapid abandonment of these aircraft. My experience as an appraiser certainly supports this view.

Private Pilot medicals (and presumably active licenses) decrease from 170,718 to 150,200 from 2016 to 2036, which is a 12% decrease. However, if you look closely, you will see a forecast for increased Sport Pilot medicals from 5,482 to 14,600, which is a 166% increase in pilots. However in absolute numbers it's not a very significant amount.

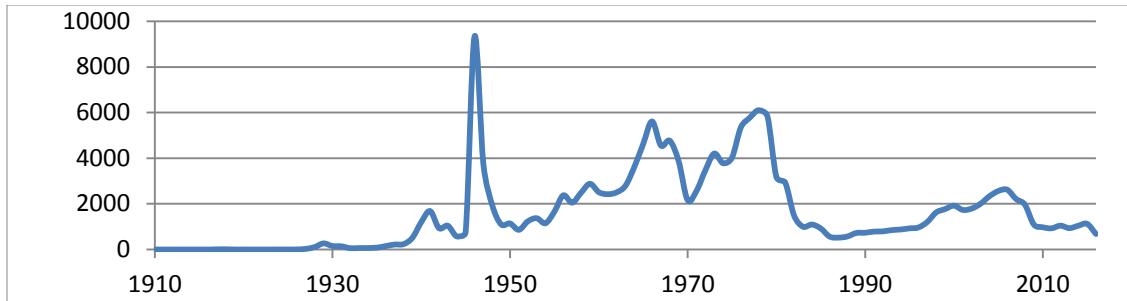
I am assuming (safely, I think) that these tables pre-date any consideration of 3CMR.

The table shows clearly that the Recreational Pilots License was not a success and as such I will not be considering it further. Interestingly, however, while the table shows a significant *decrease* in private pilots over the 21 years, it shows a significant *increase* in students. In fact, the ratio of pilots to aircraft remains fairly constant at 2.16 in 2015 and 2.5 in 2016 due to the large increase in student pilots. Even though student pilots are going up over the table forecast years, the number of private pilots is coming *down*. What happened to all those student pilots?

| AS OF DEC. 31 | TYPE OF LICENSE | | | PRIVATE | PISTON AIRCRAFT | | |
|--------------------|----------------------|-------------------|----------------|---------|------------------|------------------|---------|
| | STUDENTS | RECREA- TIONAL | SPORT PILOT | | SINGLE ENGINE | MULTI- ENGINE | TOTAL |
| <u>Historical*</u> | | | | | | | |
| 2001 | 94,420 | 316 | N/A | 243,823 | 145,034 | 18,192 | 163,226 |
| 2007 | 84,339 | 239 | 2,031 | 211,096 | 147,569 | 19,337 | 166,906 |
| 2008 | 80,989 | 252 | 2,623 | 222,596 | 145,497 | 17,515 | 163,012 |
| 2009 | 72,280 | 234 | 3,248 | 211,619 | 140,649 | 16,474 | 157,123 |
| 2010 | 119,119 ² | 212 | 3,682 | 202,020 | 139,519 | 15,900 | 155,419 |
| 2011 | 118,657 | 227 | 4,066 | 194,441 | 136,895 | 15,702 | 152,597 |
| 2012 | 119,946 | 218 | 4,493 | 188,001 | 128,847 | 14,313 | 143,160 |
| 2013 | 120,285 | 238 | 4,824 | 180,214 | 124,398 | 13,257 | 137,655 |
| 2014 | 120,546 | 220 | 5,157 | 174,883 | 126,036 | 13,146 | 139,182 |
| 2015 | 122,729 | 190 | 5,482 | 170,718 | 125,050 | 13,085 | 138,135 |
| <u>Forecast</u> | | | | | | | |
| 2016 | 123,900 | 190 | 5,900 | 170,450 | 124,055 | 13,025 | 137,080 |
| 2017 | 124,650 | 190 | 6,350 | 168,250 | 123,140 | 12,955 | 136,095 |
| 2018 | 125,200 | 190 | 6,850 | 165,950 | 122,245 | 12,905 | 135,150 |
| 2019 | 125,700 | 190 | 7,200 | 164,050 | 121,365 | 12,855 | 134,220 |
| 2020 | 126,150 | 190 | 7,600 | 164,350 | 120,485 | 12,810 | 133,295 |

| | | | | | | | |
|-------------------|---------|-------|--------|---------|---------|--------|---------|
| 2021 | 126,600 | 185 | 8,000 | 163,600 | 119,585 | 12,760 | 132,345 |
| 2022 | 127,000 | 185 | 8,400 | 161,650 | 118,690 | 12,715 | 131,405 |
| 2023 | 127,400 | 185 | 8,850 | 159,300 | 117,785 | 12,655 | 130,440 |
| 2024 | 127,750 | 185 | 9,300 | 157,350 | 116,875 | 12,595 | 129,470 |
| 2025 | 128,150 | 185 | 9,750 | 156,000 | 115,960 | 12,545 | 128,505 |
| 2026 | 128,500 | 180 | 10,200 | 155,100 | 115,045 | 12,480 | 127,525 |
| 2027 | 128,900 | 180 | 10,650 | 154,350 | 114,130 | 12,420 | 126,550 |
| 2028 | 129,300 | 180 | 11,100 | 153,750 | 113,225 | 12,340 | 125,565 |
| 2029 | 129,650 | 180 | 11,550 | 153,300 | 112,345 | 12,260 | 124,605 |
| 2030 | 130,000 | 180 | 12,000 | 152,850 | 111,495 | 12,175 | 123,670 |
| 2031 | 130,350 | 180 | 12,450 | 152,500 | 110,685 | 12,095 | 122,780 |
| 2032 | 130,650 | 180 | 12,900 | 152,150 | 109,905 | 12,015 | 121,920 |
| 2033 | 131,000 | 180 | 13,300 | 151,600 | 109,155 | 11,930 | 121,085 |
| 2034 | 131,250 | 180 | 13,700 | 151,150 | 108,445 | 11,850 | 120,295 |
| 2035 | 131,550 | 180 | 14,150 | 150,600 | 107,780 | 11,765 | 119,545 |
| 2036 | 131,800 | 180 | 14,600 | 150,200 | 107,160 | 11,695 | 118,855 |
| Avg Annual Growth | | | | | | | |
| 2001-15 | 1.9% | -3.6% | N/A | -2.5% | -1.1% | -2.3% | -1.2% |
| 2015-16 | 1.0% | 0.0% | 7.6% | -0.2% | -0.8% | -0.5% | -0.8% |
| 2015-25 | 0.4% | -0.3% | 5.9% | -0.9% | -0.8% | -0.4% | -0.7% |
| 2015-36 | 0.3% | -0.3% | 4.8% | -0.6% | -0.7% | -0.5% | -0.7% |

Another slice at the FAA data pie is shown in the table below. This data is extracted from the October 2016 FAA database of currently-registered aircraft that have piston engines. The database, in its entirety, lists over 300,000 aircraft. However, this table only includes those piston aircraft that have a current and valid registration – which is 172,701 aircraft. This table shows the number of aircraft by year of manufacture. For example, in 2016 there were only 680 aircraft made. From 1960 to almost 1980, one can see the ‘golden age’ of General Aviation aircraft with peak production in 1978 of 6,103 aircraft.



GAMA

The General Aviation Manufacturers Association (GAMA) keeps track of aircraft production. Here is their piston production data for the past 5 years:

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|--|------------|------------|------------|------------|------------|------------|
| <u>American Champion</u> | | | | | | |
| 7EC Champ | 0 | 3 | 0 | 3 | 1 | 1 |
| 7ECA Aurora | 2 | 1 | 0 | 0 | 2 | 1 |
| 8GCBC Scout | 15 | 13 | 7 | 6 | 7 | 6 |
| 8KCAB Super Decathlon | 14 | 6 | 8 | 16 | 17 | 11 |
| Total for American Champion | 37 | 29 | 18 | 26 | 30 | 19 |
| <u>Beechcraft</u> | | | | | | |
| Beechcraft Baron G58 | 29 | 30 | 24 | 35 | 40 | 18 |
| Beechcraft Bonanza A/G36 | 22 | 24 | 12 | 35 | 32 | 23 |
| Total for Beechcraft | 51 | 54 | 36 | 70 | 72 | 41 |
| <u>Cessna Aircraft Company</u> | | | | | | |
| 172S Skyhawk SP | 77 | 77 | 113 | 106 | 155 | 143 |
| 182T Skylane | 64 | 40 | 48 | 13 | 0 | 33 |
| 206H Stationair | 4 | 11 | 16 | 3 | 0 | 0 |
| 240 TTx | 7 | 1 | 0 | 21 | 22 | 44 |
| T206H Turbo Stationair | 42 | 53 | 40 | 37 | 43 | 51 |
| Total for Cessna Aircraft Company | 239 | 413 | 283 | 206 | 220 | 271 |
| <u>Cirrus Aircraft</u> | | | | | | |
| Cirrus SR20 | 42 | 48 | 84 | 32 | 31 | 31 |
| Cirrus SR22 | 165 | 105 | 81 | 112 | 117 | 128 |
| Cirrus SR22T | 57 | 102 | 88 | 132 | 160 | 142 |
| Total for Cirrus Aircraft | 264 | 255 | 253 | 276 | 308 | 301 |
| <u>CubCrafters, Inc.</u> | | | | | | |
| CC11-160 Carbon Cub SS | 0 | 38 | 57 | 52 | 53 | 47 |
| CC18-180 Top Cub | 0 | 7 | 1 | 9 | 7 | 5 |
| Total for CubCrafters, Inc. | 0 | 47 | 58 | 63 | 60 | 52 |

Diamond Aircraft Industries

| | | | | | | |
|--|------------|------------|------------|------------|------------|------------|
| DA-20 | 31 | 34 | 32 | 14 | 16 | 22 |
| DA-40 | 57 | 72 | 93 | 102 | 136 | 75 |
| DA-42 | 41 | 70 | 28 | 22 | 50 | 44 |
| DA-62 | 0 | 0 | 0 | 0 | 0 | 2 |
| HK-36 | 0 | 3 | 3 | 1 | 0 | 1 |
| Total for Diamond Aircraft Industries | 129 | 185 | 156 | 139 | 202 | 144 |

Extra Aircraft

| | | | | | | |
|---------------------------------|----------|----------|-----------|-----------|-----------|-----------|
| EA300 | 0 | 0 | 27 | 29 | 31 | 27 |
| Total for Extra Aircraft | 0 | 0 | 27 | 29 | 31 | 27 |

Flight Design GmbH

| | | | | | | |
|-------------------------------------|----------|-----------|-----------|-----------|-----------|-----------|
| ASTM CT Series | 0 | 89 | 76 | 89 | 88 | 59 |
| Total for Flight Design GmbH | 0 | 89 | 76 | 89 | 88 | 59 |

Mahindra Aerospace

| | | | | | | |
|-------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Airvan 8 | 14 | 10 | 14 | 12 | 17 | 14 |
| Total for Mahindra Aerospace | 14 | 10 | 14 | 12 | 17 | 14 |

Maule Air Incorporated

| | | | | | | |
|---|----------|----------|----------|----------|----------|-----------|
| MX-7-180 A, B, C, AC | 1 | 1 | 1 | 1 | 1 | 12 |
| MXT-7-180 A, AC | 0 | 2 | 3 | 0 | 0 | 0 |
| Total for Maule Air Incorporated | 4 | 4 | 9 | 6 | 2 | 13 |

Mooney International Corp.

| | | | | | | |
|---|----------|----------|----------|----------|----------|-----------|
| M20R Ovation2 | 0 | 0 | 0 | 0 | 0 | 3 |
| M20TN Acclaim | 2 | 0 | 0 | 0 | 1 | 8 |
| Total for Mooney International Corp. | 2 | 0 | 0 | 0 | 1 | 11 |

Piper Aircraft, Inc.

| | | | | | | |
|---------------------------------------|------------|------------|------------|------------|------------|------------|
| PA-28-161 Warrior III | 23 | 15 | 20 | 2 | 3 | 20 |
| PA-28-181 Archer III | 21 | 2 | 4 | 48 | 45 | 25 |
| PA-28R-201 Arrow IV | 4 | 0 | 2 | 1 | 8 | 5 |
| PA-34-220T Seneca V | 22 | 21 | 17 | 22 | 10 | 8 |
| PA-44-180 Seminole | 16 | 16 | 22 | 23 | 22 | 17 |
| PA-46-350P Malibu Mirage / M350 | 26 | 33 | 49 | 42 | 37 | 34 |
| PA-46R-350T Matrix | 23 | 17 | 12 | 16 | 11 | 2 |
| Total for Piper Aircraft, Inc. | 135 | 104 | 126 | 154 | 136 | 111 |

TECNAM Aircraft

| | | | | | | |
|----------------------------------|----------|----------|----------|-----------|------------|------------|
| ASTM - LSA | 0 | 0 | 0 | 24 | 108 | 102 |
| P2002JF | 0 | 0 | 0 | 8 | 18 | 20 |
| P2006T | 0 | 0 | 0 | 5 | 21 | 21 |
| P2008JC | 0 | 0 | 0 | 7 | 36 | 24 |
| P2010P TwentyTen | 0 | 0 | 0 | 0 | 0 | 20 |
| P92JS | 0 | 0 | 0 | 5 | 7 | 4 |
| Total for TECNAM Aircraft | 0 | 0 | 0 | 49 | 190 | 191 |

Waco Classic Aircraft

| | | | | | | |
|--|----------|----------|----------|----------|-----------|-----------|
| 2T-1A-2 | 0 | 0 | 0 | 1 | 6 | 6 |
| YMF-5D | 0 | 0 | 6 | 6 | 5 | 4 |
| Total for Waco Classic Aircraft | 0 | 0 | 6 | 7 | 11 | 10 |

| | | | | | | |
|------------------------------|------|------|------|------|------|------|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
| TOTAL PRODUCT BY YEAR | 932 | 1262 | 1155 | 1228 | 1504 | 1339 |

Of producers in 2015, Cirrus was the largest with 301 aircraft, followed by Cessna with 271 aircraft and Tecnam with 191 aircraft (of which 102 were LSAs). Diamond produced 144 aircraft, Piper 111, Flight Design 59 in 2015. The only aircraft companies with increased production from 2014 to 2015 were Tecnam, by one aircraft, and Cessna by 51 aircraft. For Tecnam from 2014 to 2015, the LSAs decreased by six units and the P2010P TwentyTen had first year production of 20 aircraft. For Cessna, the increases in production were the T206H Turbo Stationair and the 240 TTx. The C-172 decreased production by 12 units.

AOPA

AOPA was one of the two significant advocates for 3CMR. The argument made to Congress was that it was going to increase the number of pilots significantly. The increase would occur through new pilots saving the cost of a medical and hence their numbers would increase, while older pilots would be able to continue flying, hence not decreasing as greatly as they aged. In addition, there was an expectation that former pilots would return to flying with 3CRM.

Getting specific data from AOPA and any basis for that data has been quite difficult. The following has been what I have been able to obtain:

“In broad numbers we think that we’ll see several hundred thousand pilots take advantage of the 3CMR. Getting a bit more specific that will probably be ~ 200,000 existing pilots and perhaps another 100 – 200,000 lapsed pilots coming back into active status. Those numbers make an assumption that the 180,000 or so active Private Pilots in the FAA database would use 3CMR and not keep a third class medical.”

This statement is a bit hard to interpret as first, several hundred thousand pilots will take advantage of 3CMR - but that seems to include the 180,000 active private pilots taking advantage of 3CRM. Meanwhile there seems to be “perhaps” another 100-200,000 lapsed pilots coming back to active status.

Mark Baker, President and CEO of AOPA testified to Congress on April 28, 2015 to the following (I am cherry picking some statements):

“... the number of new single-engine piston-powered aircraft being produced has fallen dramatically, from 14,398 in 1978 to just 716 in 2014 [GAMA’s data is double that number]. As the number of new aircraft being produced has declined, the purchase price has risen steeply while the value of the aging fleet has fallen [the price of a 1971 C-172L in 1971 was \$13,425 which inflates to \$79,782 in 2016, while a new C-172 actually costs over \$300,000 today]. Today, more than 81,000 of the 188,000 [the FAA says 138,135] certified piston-powered aircraft on the FAA registry are worth \$40,000 or less, and those aircraft have a weighted average value of \$25,800, yet a new, single-engine airplane will cost a pilot in excess of \$500,000 – well outside the reach of most American families.”

“Of the utmost importance to AOPA, our members and GA’s future is third-class medical reform. In 2013, the FAA issued 99,268 third class medical certificates, down from 135,969 in 2004, which cost pilots more than \$23.5 million with little direct benefit to either aviation safety or general health.”

From the above, one can conclude that the average price of a medical was \$238, which would buy every 3rd class medical pilot about 47 gallons of avgas which at eight gallons/hour would be about another six flying hours/year/pilot.

EAA

Repeated contacts with EAA only yielded the following [and I quote]:

“Expect 150K will be brought into fold. Several hundred thousand pilots will take advantage.”

AVWeb

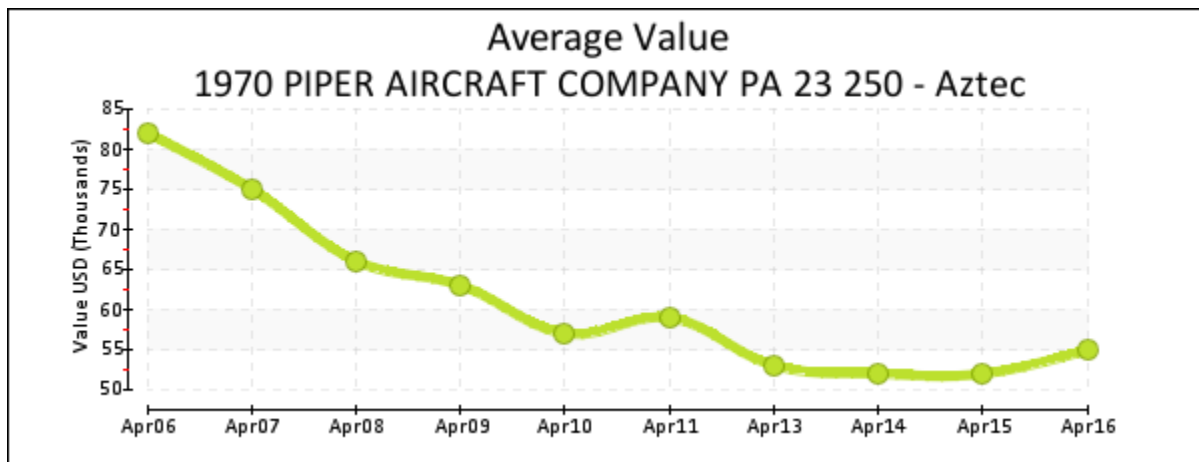
Paul Bertorelli penned an article in Volume 23, Number 46a of AVwebflash on November 14, 2016, “Why Aircraft Sales Are So Grim” (<http://www.avweb.com/eletter/archives/101/3518-full.html?ET=avweb:e3518:264087a:&st=email#228025>). It is based upon a conversation with Richard Aboulaflia of the Teal Group whose basic premise is that more expensive Jets, over \$26 million, are still selling while those of lessor value are not. Bertorelli goes on to extract this to general aviation with the following statement:

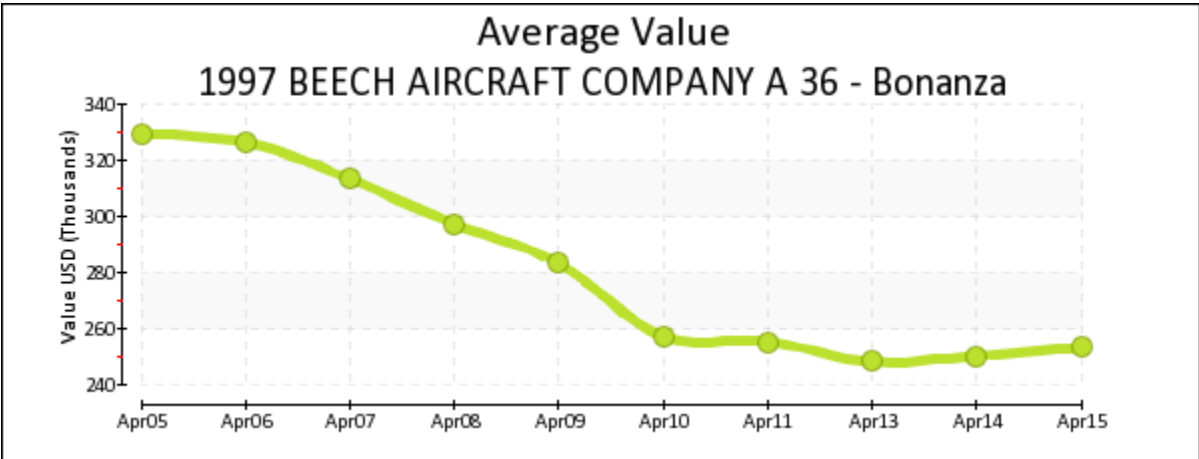
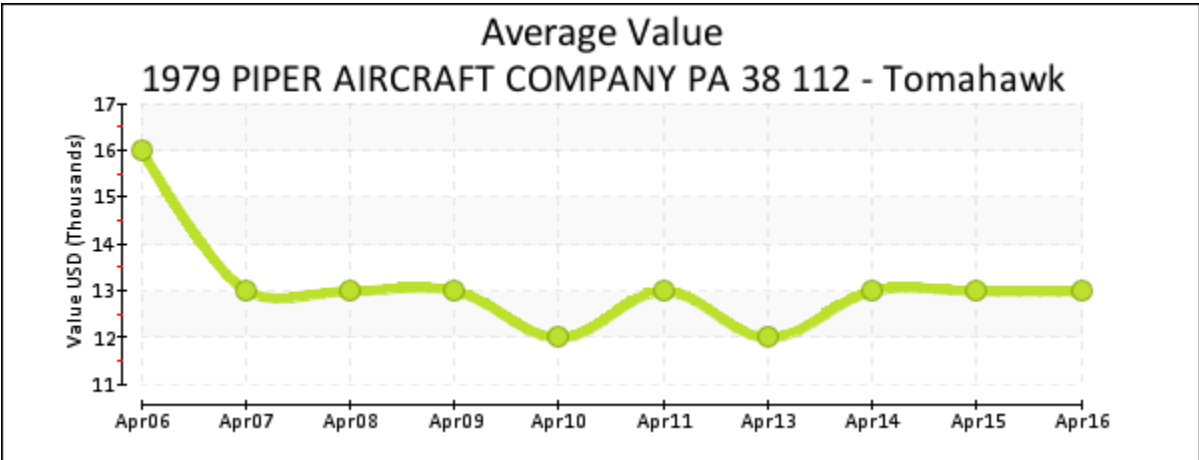
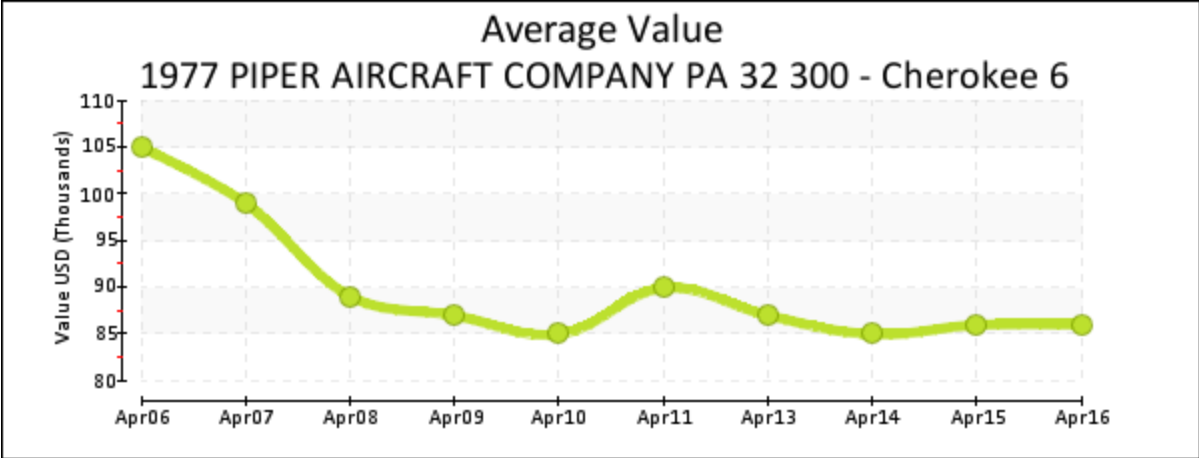
“This trend is clearly visible in light piston sales, too, albeit probably for different reasons. Repeatedly, we see that cheap airplanes don’t sell. It’s true of certified pistons and LSAs alike. There’s a value consideration related to features and cost and less expensive airplanes don’t qualify. So we should drop the futile insistence that cheaper airplanes will expand the market. If it was ever true, it’s not true now.”

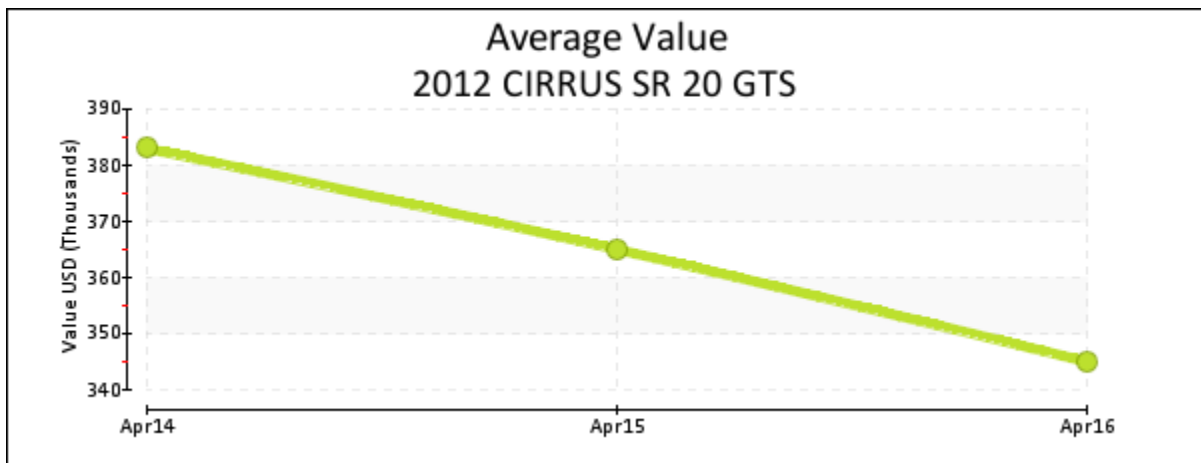
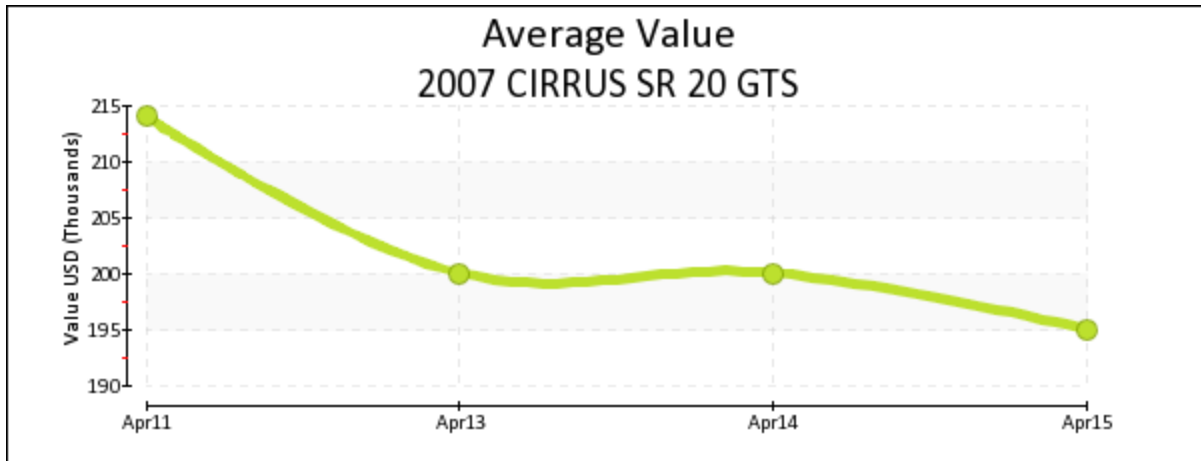
NAAA Graphs

The National Aircraft Appraisers Association (NAAA) maintains historical data for various aircraft. I have selected a few that seem typical. The first four airplanes are from earlier times and all show the somewhat standard decrease in value and then the leveling off with only a slight uptick in the past year or so. When comparing the Aztec and the Cherokee 6, it is interesting to note that the Cherokee 6 has maintained significantly better value. I would attribute that to the price of gas and the added cost of two engines and other systems.

The last two are graphs of Cirrus airplanes, which are the majority of the current production of aircraft. While too early in their lifecycles to see the full-formed lifecycle graph, the Cirrus graphs are definitely starting down the same path.







FEARLESS FORECASTS:

As should be obvious from the foregoing, the data to date are not clearly supportive of any particular hypothesis; candidly, the most honest answer to the question of how 3CMR will affect both the pilot population and aircraft values is, "It's not clear yet."

However, based on my experience and a good helping of intuition, here are my thoughts or, if you prefer, best guesses:

I don't see any resurgence in older pilots who have lost their medicals coming *back* to the fold. It's simply too steep an investment to make.

I do see older pilots who have might otherwise lose their medicals *remaining* in the fold.

I do see some younger pilots opting for a 3CMR-based pilot's license. However, these are only pilots who never want to fly commercially (or possibly instruct) as there is some cost savings. However, the real cost is in the airplane (rental or ownership) and fuel. So I don't think 3CMR will be a significant decision-maker for new pilots.

Light single-engine aircraft sales and values:

The present trend is down. Every used aircraft from Cirrus to Cessna to LSA is headed down in value. [There was a slight uptick in certified aircraft 5-10 years ago that could fit the LSA mantra, such as Cubs and Champs, but that has passed.] I don't see that changing as I don't see any increased demand.

New aircraft continue to get more expensive. While LSAs can be used for training, experience from various flight schools and shops has indicated that they don't have the durability of the Cessna 150/152/172 and Cherokee 140/180s that came before them. That being said, Tecnam has reportedly improved the Eaglet's sturdiness and that may help. Vans aircraft is producing the RV-12s as an S-LSA and that is starting to see use in flight schools. AOPA reports that there 'may be' as many as ten "re-imagined" 150/152/172s, so this hasn't made a significant impact on trainers and they are as expensive as new Vans RV-12s. In addition, due to our eating habits Americans have become super-sized and the Cessna 150/152 was designed for occupants of a different physical dimension.

Light twin-engine sales and values:

Third Class Medical Reform will have no impact on the twin market. While there are a few pilots who will take advantage of 3CRM and continue flying, the overall driving cost of operating a twin is fuel and unless that plummets, twins are going to continue to be the luxury of a few, with limited demand and downward-trending prices.

Light Sport aircraft sales and values:

Clearly the benefits of 3CMR are not required to fly an LSA. However, 3CRM does have the benefit of potentially increasing new pilots. A new pilot would still have to get a 'regular' medical at least once prior to taking advantage of 3CRM. That

being said, I suspect that given the cost of a certified aircraft, initial training will be accomplished more and more in LSAs and no medical will be required. That demand will probably allow LSA manufacturers to raise the price of new aircraft slightly. However once an LSA is done with its role as a trainer, will it be in any condition to be a marketable used aircraft? History says no. However, the future, which includes beefed up Tecnam Eclipses and Vans RV-12s, may prove somewhat brighter.