

COPY

14 Creekwood Ct.
Danville, CA 94526
September 13, 1993

Dear Pam;

Just a couple of items on Ed Kay's reanalysis to produce your requested age recommendation. Ed states that he initially resisted your request, and complied only after your rather strong urgings. My comment was that he would have been better served had he continued to resist.

First: In Ed's search for a defensible "age," he states that he considered no process other than a search for a "reversal of trend," and used that, in turn, as the basis for your requested recommendation. I believe this process identifies the pilots of lowest possible risk, and would be a valid regulatory consideration only if those so identified were the only ones then permitted to operate.

In my view, no regulatory effort directed toward managing safety (risk) "*in the public interest*" (whether FAA, EPA, OSHA, FDA, etc.) can ignore either the relative levels of risk experienced by each population group, or the portions of the total risk assumed by the public that are contributed by each of these population groups, separately.

Assessing the real-life situation (i.e., total risk) as an accumulation of the fractional contributions of all groups is recognized by Robertson (1980, fractional contribution), Fromm (1980, decision analytic model), Benbasset (1989, decision analytic model), Bruckart (1990, statistical inference), Bruggink (1991, individual examinations of 10-year universe of Part 121 fatal accidents), Guide and Gibson (1991, cited by Hilton Systems), Struck (1992, probability and fractional contribution), etc. ¹

¹ Robertson, L.S., *Crash Involvement of Teenaged Drivers When Driver Education is Eliminated from High School*, American Journal of Public Health, June 1980, 70(6):599-603

Fromm, P. et al, *Air Accidents, Pilot Experience, and Disease-Related Inflight Sudden Incapacitation*, Aviat., Space & Environ. Med., March 1988, 59(3):278-281

Benbasset, J., et al, *Retirement of Fighter Pilots with Incidentally Undetected Illnesses, A Decision Analytic Model*; Journal of Occupational Medicine, Vol. 31, No. 6, June, 1989, 513-517

Bruckart, J.E., *Analysis of Changes in the Pilot Population and General Aviation Accidents*, Aviat., Space & Environ. Med., January 1992, 63(1):75-79

I provided Ed with copies of the papers identified in the footnote above, and send them on to you as well.

Second: Ed advises that he ignored everything else in his study (including all of Fig. 5-9, and ages 50-62 in Fig. 5-10), analyzing only ages 63 through 69 to produce his next-to-last paragraph, p. 6-3:

Finally, looking year-by-year at the accident rates of Class III pilots with more than 500 total flight hours and more than 50 recent flight hours (see Fig. 5-10), *there was an increase in accident rate for the years 63 through 69* (linear trend, $F(1)=5.93$, $p<.05$ if planned, not significant if post-hoc).

These seven data points, then (with two of them "outliers," well in excess of 2 *std. devs.*) become the sole basis for his (your requested) policy recommendation:

Taken together, these analyses give a hint, and a hint only, of an increase in accident rate for Class III pilots older than 63 years of age. *This suggests that one could cautiously increase the retirement age [for Class I, air carrier pilots] to age 63.*

For your convenience, I've prepared a graphic illustration of that process.

Regards;

SAMUEL D. WOOLSEY

Bruggink, G.M., *An American Tableau: The Changing Accident Experience*, Flight Safety Digest, The Flight Safety Foundation, January 1991

Guide, P.C., Gibson, R.S., *An Analytical Study of the Effects of Age and Experience on Flight Safety*, Proceedings of the Human Factors Society 35th Annual Meeting - 1991

Struck, A.E., van Gorp, W.G., Josephson, K.R., Morgenstern, H., Beck, J.C., *Multidimensional Risk Assessment versus Age as a Criterion for Retirement of Airline Pilots*, Journal of the American Gerontological Society, 40:526-532, 1992