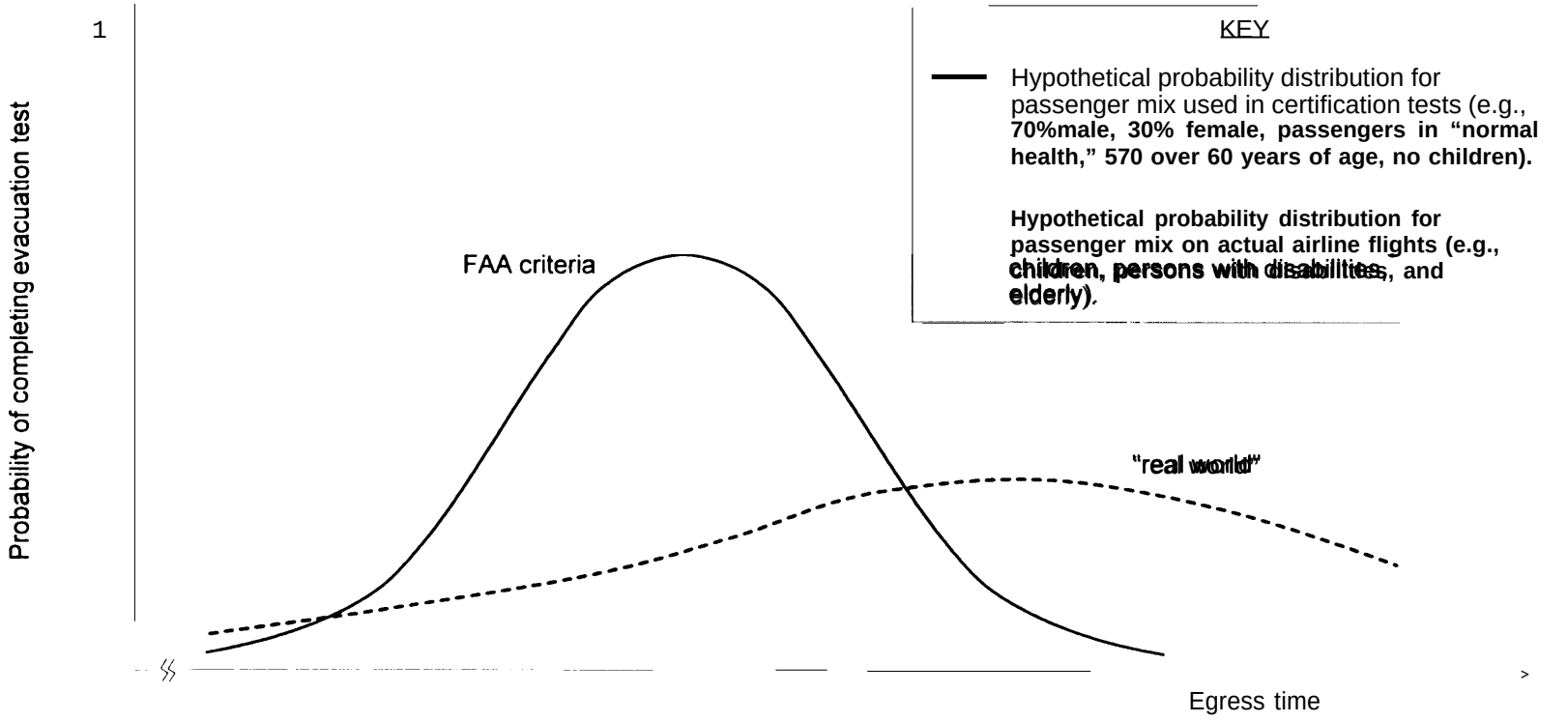
APPENDIX

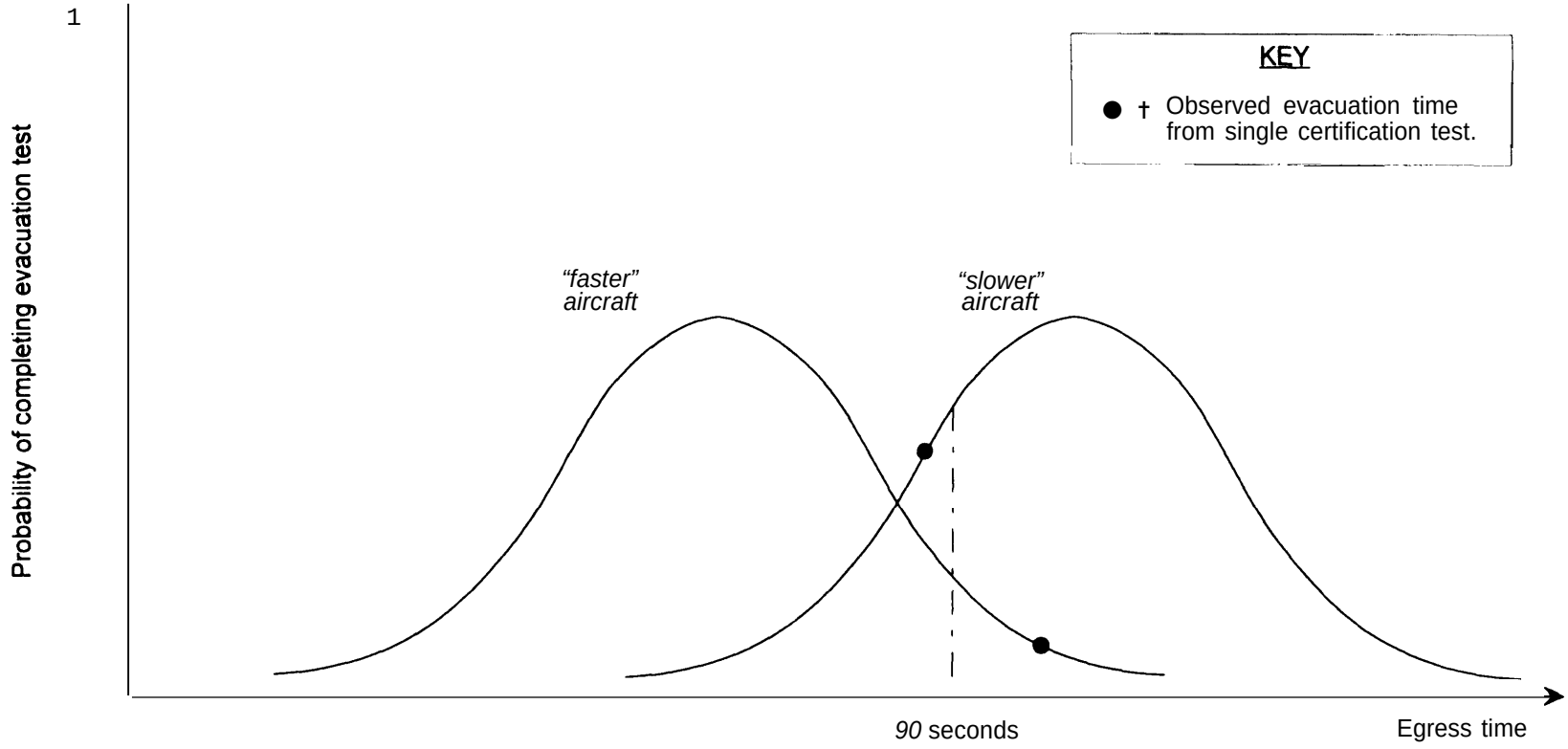
Figure A-1 -- Comparison of Hypothetical Test Results Using "Real World" vs. Certification Test Passenger Mixes



NOTE: This figure shows a rough estimate of sample distributions that might be produced if repeated evacuations were conducted: 1) under existing FAA criteria; and 2) with passenger loads representative of the real world. The estimated distribution of egress times under the real world conditions is much broader and its mean is greater.

SOURCE: Office of Technology Assessment, 1993.

Figure A-2 -- Comparison of Hypothetical Sample Distributions for Aircraft Evacuation Times



NOTE: This figure illustrates the problem of assuming a single test will indicate which is the better or more acceptable of two aircraft tested for compliance with evacuation certification requirements. It represents two theoretical sample distributions of egress times for a "slower" and a "faster" aircraft, as might be obtained from repeated evacuation tests of the two configurations. As shown in the figure, it is quite possible for the faster aircraft (having a shorter average egress time) to fail and the slower aircraft to pass, based on single tests.

SOURCE: Office of Technology Assessment, 1993.

Figure A-3 --- Boeing Evacuation Analysis Method and Mathematical Model

A. Analyze configuration and assign evacuation zones

B. Calculate tota evacuation time (T_{total}) for each exit of each exit pair

C. Verify $T_{total} \leq 90$ seconds

$$T_{total} = T_{exit\ prep} + T_{hesitation} + T_{traverse} + T_{exit\ flow}$$

$T_{exit\ prep}$ = [(Flight attendant reaction time) + (door opening time) + (assist means deployment/inflation time)]

$T_{hesitation}$ = Time from escape device ready for use to first evacuee on device

$T_{traverse}$ = Time for evacuee to descend to the ground after entering the device

$$T_{exit\ flow} = \frac{(\text{Evacuees} - 1) * 60\ (\text{seconds/minute})}{\text{exit flow rate (evacuees/minute)}}$$

SOURCE: Boeing Commercial Airplane Group, 1992.