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MEDICALLY DISQUALIFIED AIRLINE PILOTS

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16. Abstract

Observations on the airline pilot group probably come as close to a true reflection of incidence of disqualifying disease as is possible to observe. Prescreening by airline companies before employment and the FAA's requirements for issuance of a first-class medical certificate result in this group's being essentially purged of disease prevalence that contributes to higher rates for other groups. Also, because of occupational/economic reasons, these individuals are less likely to voluntarily (also) remove themselves from followup observations for known medical conditions that could preclude FAA medical certification. This study examined

~~The~~ medical records of airline pilots medically disqualified by the FAA over a 20-year period, ~~were examined.~~ Date of birth, employer, date of disqualification, and reason for disqualification were recorded for each pilot. The data represent the final action taken on each pilot for a particular examination. During this period, 842 ~~Eight hundred and forty-two~~ airline pilots were medically disqualified ~~during this period~~. Cardiovascular diseases represent the highest cause for denial, with age being a major factor in the incidence of cardiovascular disease in this airline pilot group. Denials for cardiovascular reasons account for 50% of all denials in this group.

FAA medical certificate denial is minimal before age 45 but increases rapidly thereafter, with cardiovascular diseases responsible for more than half of this dramatic rise in incidence of disease. Maintenance of high standards of safety requires close cardiovascular supervision as pilots grow older.

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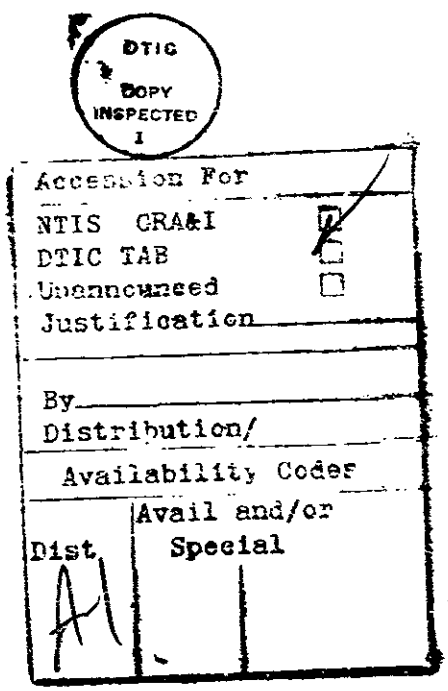

MEDICALLY DISQUALIFIED AIRLINE PILOTS

INTRODUCTION

Federal Aviation Regulations (FAR's) require that pilots for scheduled and nonscheduled airlines possess a first-class medical certificate in order to exercise the privileges of their air transport pilot certificate. Airline pilots are required to obtain a Federal Aviation Administration (FAA) medical examination at 6-month intervals and must meet specific requirements for a first-class medical certificate as set forth in FAR 67.13 (b) through (f). If the medical standards are not met, the application for first-class certification is denied. This denial can result from any of several levels of certification review, from the aviation medical examiner (AME) to the Federal Air Surgeon.

During the time period of this study, Federal Aviation Regulations, Part 67, specified that a medical certificate would be denied if any applicant had an established medical history or clinical diagnosis of any of the following conditions:

1. A personality disorder that is severe enough to have repeatedly manifested itself by overt acts.
2. A psychosis.
3. Alcoholism.
4. Drug dependence.
5. Epilepsy.
6. A disturbance of consciousness without satisfactory medical explanation of the cause.
7. Myocardial infarction.
8. Angina pectoris or other evidence of coronary disease that may be expected to lead to myocardial infarction.
9. Diabetes mellitus that requires insulin or any other hypoglycemic drug for control.

The above conditions represented the causes for a mandatory denial. A general denial was issued, under FAR Part 67, for any other organic, functional or structural disease, defect or limitation that the Federal Air Surgeon finds makes the applicant unable to safely perform the duties or exercise the privileges of the airman certificate that he/she holds or for which he/she is applying; or may reasonably be expected, within 2 years after the finding, to make him/her unable to perform those duties or exercise those privileges. These findings are based on the case history and the appropriate, qualified, medical judgment relating to the condition involved.

Descriptive studies of airline pilot populations have shown the rate of medical disqualification to be minimal before the age of 45 years but to increase rapidly thereafter, with cardiovascular diseases responsible for more than half of the dramatic rise in incidence of disease after age 45. The Orford and Carter study (7) and many others have already emphasized this problem of aging pilots and the increased risk of cardiovascular disease. Orford and Carter also concluded that between the ages of 45 and 60 years, detection of disease assumes far greater importance than in a pilot's younger

years. Lavernhe's opinion (6) was that the considerable increase in coronary risk with age warrants examination particularly intended to detect coronary disease among older pilots.

This is a descriptive study of medical disqualifications in the airline pilot population over a 10-year period (1972 through 1981).

METHODS AND SOURCE

The Aeromedical Certification Branch (AMCB) of the Civil Aeromedical Institute is the central screening facility and repository within the FAA for the collection, processing, adjudication, investigation, and analysis of medical data generated by the aeromedical certification and related programs.

The AMCB's computerized medical records provide historical data for both daily screening of document input and epidemiologic/research purposes. This computer file contains the most recently submitted medical applications for pilots, whether the certificate was issued or denied or the case is pending.

The airline pilot denial data were obtained from the computer file as of January 1, 1982, for a 10-year period preceding that date. The active airline pilot population as of December 31, 1976 (the mid-period date), was used for rate computation and comparison.

Airline pilots were identified by the applicant's response in the occupation block of the FAA medical application. The occupation of airline pilot, defined as pilot for scheduled and nonscheduled airlines only, includes captain, co-pilot/first officer, and second officer with a first-class medical certificate.

Five-year age groupings, beginning with age 25 and ending with age 59, were utilized since they are closest to the age limits set by FAR's 61.151 and 121.383 (c) for holding an air transport pilot rating and engaging in air carrier operations.

Prevalence data regarding pathology represent conditions cited as cause for denial, not number of airline pilots.

FINDINGS AND DISCUSSION

Observations on the airline pilot group probably come closest to a true reflection of incidence of disqualifying disease as is possible to observe. Prescreening by airline companies before employment and FAA requirements for issuance of a first-class medical certificate result in this group's being essentially purged of disease prevalence that contributes to higher rates for other groups. Also, because of occupational/economic reasons, these individuals are less likely to remove themselves voluntarily from followup observation for known medical conditions that would preclude FAA medical certification. Conversely, voluntary attrition is a more frequent occurrence among nonoccupationally connected pilots who recognize that they are not medically qualified and, therefore, are never heard from again by the FAA.

Denials may be made at several levels within the FAA and/or by the AME. The final level of denial is, however, the one recorded on a pilot's medical records. Of the 842 airline pilot denials, 27.3 percent were general denials issued by the AMCB; 19.4 percent were AME denials (some of these denials could have been for the "mandatory" conditions that were never appealed by the applicant); 18.4 percent were administrative or legal denials by the AMCB; 11.6 percent were exemption denials; 8.6 percent were Federal Air Surgeon denials; 5.1 percent were mandatory denials by the AMCB which were not appealed to a higher level; and 4.7 percent were denials under FAR 67.31 for failure to provide additional information (see Figure 1).

As of December 31, 1976, there were 32,080 airmen between the ages of 25 and 59 who listed their occupation as airline pilot. As of January 1, 1982, there were 842 airline pilots who had been denied first-class medical certification during the past 10 years. These denials represent final denials; i.e., certificates were not issued at a later date.

The annual denial rate for airline pilots is, therefore, 2.6 per 1,000 active airline pilots, increasing from a rate of 0.4 in the 25-29 age interval to 10.9 in the 55-59 age interval (see Table I and Figure 2). The mean age of active (issued) airline pilots is 41.6 years, compared with a mean age of 51.6 for denied airline pilots.

Data on denials by airline employers provide some interesting insights, even though fraught with limitations that make comparison difficult; i.e., small numbers substantially affect comparison (see Table II). Of interest, however, is that the larger employers, many of which have/had their own medical facilities, have lower denial rates than the smaller employers. Preston (8) and others (1,3,4) found the same lower rates for larger airlines. Part of this difference is undoubtedly due to the preventive medical programs of the larger employers and their assumed association with other organizations' prevention and rehabilitation programs. Another part of the difference is likewise due to early recognition and removal from flight status of those pilots manifesting disease states (pathology) likely to result in denial and the fact that the major airlines have a larger, more select group of pilots from whom to choose when initially employed. The relative risk of medical certification denial for those pilots flying for airlines with no medical facility or cooperative agreement with a medical facility was twice the rate as for those pilots flying for airlines with some kind of in-house medical supervision.

Table III shows annual age-cause-specific denial rates increasing to the highest rate at age interval 55-59 (14.2 per 1,000 active airline pilots). The rate of medical disqualification is minimal before the age of 45 years but increases rapidly thereafter (from a rate of 1.4 at the 40-44 age interval to 4.1 at the 45-49 age interval).

Observed in the age-cause-specific annual denial rates is a rapid increase of cardiovascular denials after age 45. Nothing significant is found in the 25-29, 30-34, and 35-39 age intervals; however, in the 40-44 age interval, alcoholism and cardiovascular diseases (myocardial infarction, coronary artery disease, and bypass surgery) begin to be reflected. Cardiovascular causes for denial begin to increase rapidly in the 45-49 age interval, with myocardial

infarction highest; coronary artery disease second; use of disqualifying medications third (about two-thirds of these are directly related to cardiovascular disease); hypertension with medication fourth; and coronary artery bypass surgery ranking fifth. Cardiovascular diseases continue to increase and to represent the highest cause for denial in age intervals 50-54 and 55-59 (see Tables III and IV).

The overall highest causes for denial by pathology series are: (1) cardiovascular; (ii) neuropsychiatric; and (iii) the miscellaneous category which includes endocrinopathies, general systemic conditions, use of disqualifying medications, and denials for failure to provide additional medical information, with annual rates per 1,000 active airline pilots of 1.7, 0.6, and 0.6 respectively. Cardiovascular causes account for almost one-half (49.3 percent) of all causes for denial (see Figures 3 and 4 and Tables III and IV).

The highest causes for denial by specific pathology are: (i) coronary artery disease; (ii) myocardial infarction; (iii) use of disqualifying medications; (iv) hypertension with medication, and (v) coronary artery bypass surgery. These five specific causes account for 46 percent of all causes for denial (see Figure 5 and Table V).

Of the 112 denials for use of disqualifying medication, 69 (62 percent) were also denied because of cardiovascular problems. Of the 80 denials for hypertension with medication, 35 (44 percent) were also denied for disqualifying medication. Of the 125 denied for coronary artery disease, 53 (42 percent) were also denied due to coronary artery bypass surgery. Of the 119 denied for myocardial infarction, 26 were also denied for coronary artery disease and 9 for coronary artery bypass surgery.

Six hundred and twenty-seven pilots were denied for a single cause, 185 for two causes, and 30 for three causes.

The Air Line Pilots Association (ALPA) states that it is part of an airline pilot's professional responsibility to recognize that any departure from good health status represents a threat to flight safety (4). Therefore, as suggested in the Orford and Carter report, pilots should be encouraged to report symptoms of disease, particularly cardiovascular and neuropsychiatric. This requires education to the effect that failure to report symptoms to avoid losing their jobs may actually result in an unnecessary termination of their careers.

This and other studies support the need for airline medical departments, their contract doctors, and/or AME's to be informed that the maintenance of high standards of safety requires close cardiovascular supervision after pilots reach 45 years of age.

SUMMARY

FAA medical certificate denial is minimal before age 45 but increases rapidly thereafter, with cardiovascular diseases responsible for more than half of this dramatic rise in incidence of disease.

The overall highest causes for denial by pathology series are: (i) cardiovascular; (ii) neuropsychiatric; and (iii) the miscellaneous category, which includes endocrinopathies, general systemic conditions, use of disqualifying medication, and denials for failure to provide additional medical information, with annual rates per 1,000 active pilots of 1.7, 0.6, and 0.6 respectively. Cardiovascular causes account for almost one-half (49.3 percent) of all causes for denial.

The highest causes for denial by specific pathology are: (i) coronary artery disease; (ii) myocardial infarction; (iii) use of disqualifying medications (62 percent of these were also denied due to cardiovascular pathology); (iv) hypertension with medication; and (v) coronary artery bypass surgery. These five specific causes account for 46 percent of all causes for denial.

Lower denial rates were found for the larger employers, many of which have/had their own medical facilities. Pilots flying for airlines with no medical facility or cooperative agreement with a medical facility are denied twice as often as those pilots who fly for airlines with some kind of in-house medical supervision.

On the basis of these and previous findings regarding airline pilots, it is evident that maintenance of high standards of safety requires close cardiovascular supervision as these pilots grow older.

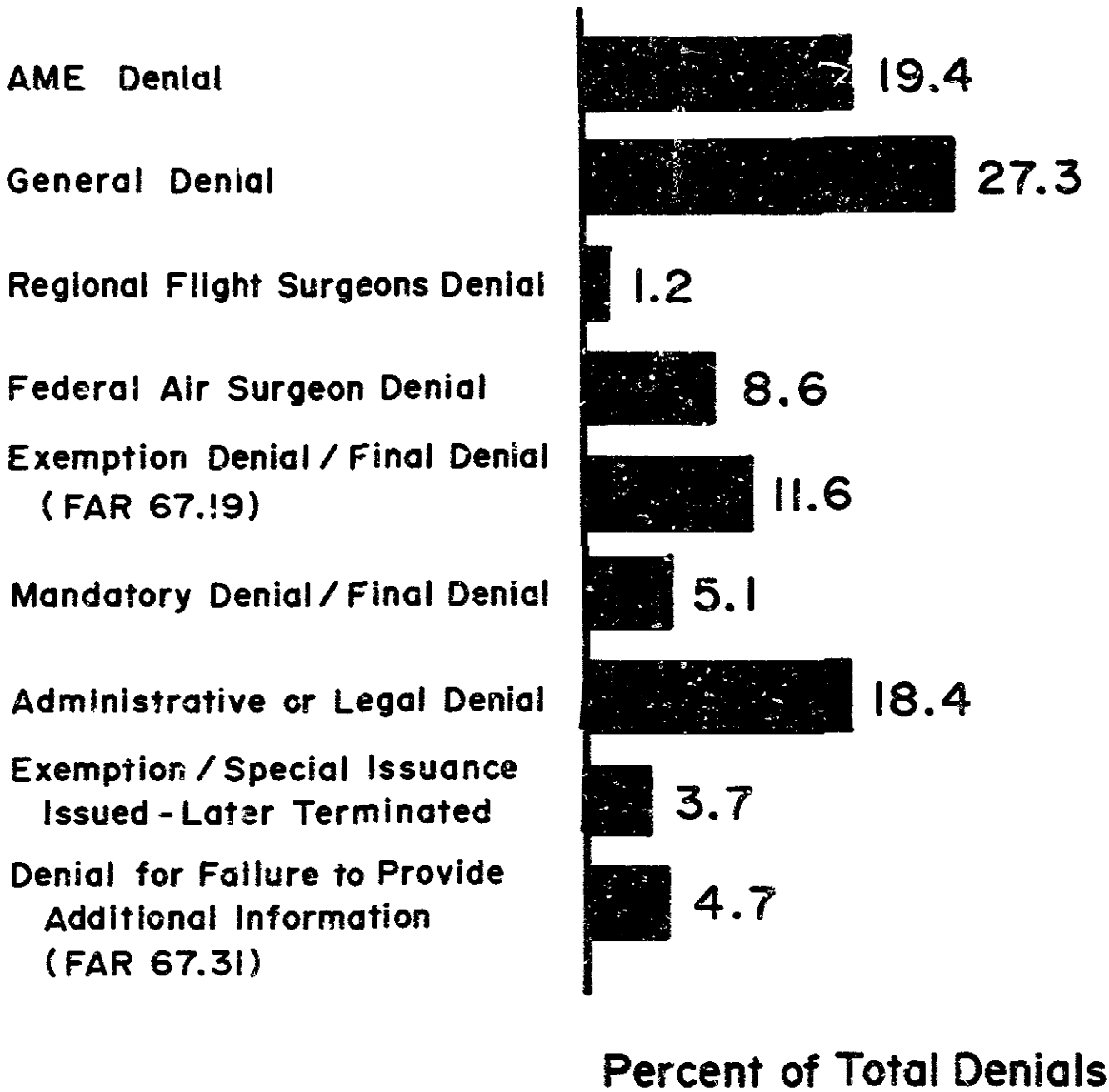

Figure 1. Final (highest) level of denial.

Table I. AGE DISTRIBUTION OF AIRLINE PILOTS

Age Groups	Active Airline Pilots (12-31-76)	Denied Airline Pilots	Annual Age-Specific Denial Rate*
25-29	1,551	6	0.4
30-34	4,973	9	0.2
35-39	7,730	37	0.5
40-44	6,681	80	1.2
45-49	4,070	121	3.0
50-54	3,604	209	5.8
55-59	3,471	380	10.9
TOTAL	32,080	842	2.6

*Rate per 1,000.

Note: The annual final denial rate for all first-class medical certificate holders is 2.8; 3.1 for second-class medical certificate holders; 7.1 for third-class medical certificate holders; and 6.1 for all classes of medical certificates.

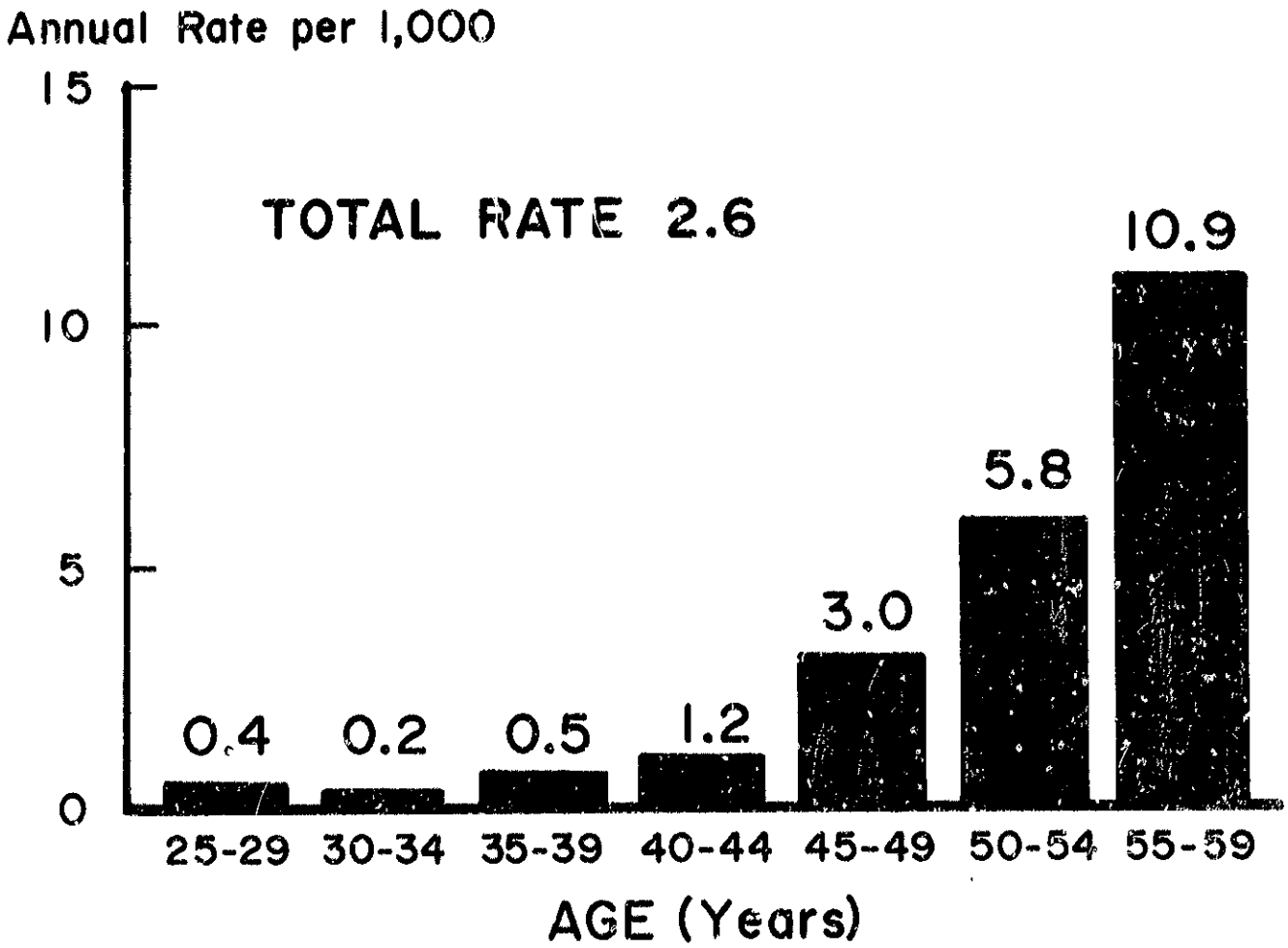

Figure 2. Airline pilots age-specific denial rates.

Table II. AIRLINE PILOT DENIALS BY EMPLOYER

Employer	Annual Rate Per 1,000	Percent of Total Denials
Airlift International	17.7	2.0
Airwest/Hughes	2.4	1.4
Allegheny Airlines	2.3	2.5
American Airlines*	1.2	4.7
Braniff International Airways	3.5	5.5
Continental Airlines*	1.4	1.7
Delta Air Lines	2.6	9.4
Eastern Air Lines*	2.2	9.6
Flying Tiger Lines	4.7	2.3
Frontier Airlines	3.3	1.9
National Airlines	5.4	3.7
Northwest Airlines*	0.8	1.3
Ozark Air Lines	1.4	0.6
Pacific Southwest Airlines	2.8	0.7
Pan American World Airways*	3.6	10.1
Republic Airlines*,**	-	1.9
Seaboard World Airlines	11.0	1.9
Texas International Airlines	8.3	2.3
Trans World Airlines*	1.8	7.2
United Airlines*	1.3	7.7
Western Airlines	2.3	3.1
Other Airlines		18.5
TOTAL		100.0

* Asterisks indicate those airlines that have/had their own medical facilities or cooperative agreement with a medical facility.

** No population data available.

Table III. DENIAL RATES OF AIRLINE PILOTS BY CAUSE/MAJOR BODY SYSTEM AND AGE*

Cause	Age (Years) 25-29 Rate**	30-34 Rate**	35-39 Rate**	40-44 Rate**	45-49 Rate**	50-54 Rate**	55-59 Rate**	Annual Denial Rate** Total
Eye	-	-	0.0+	0.0+	0.1	0.1	0.5	0.1
Ear, Nose, Throat	0.0+	0.0+	-	0.0+	0.1	0.2	0.5	0.1
Respiratory	-	-	-	0.0+	0.0+	0.0+	0.3	0.0+
Cardiovascular	-	-	0.2	0.6	2.2	4.0	7.1	1.7
Abdominal (mostly GI, GU)	0.0+	-	0.0+	0.0+	0.0+	0.1	0.5	0.1
Neuropsychiatric	-	0.1	0.2	0.5	0.7	1.7	1.7	0.6
Bones & Joints	-	-	0.0+	0.0+	0.2	0.1	0.5	0.1
Muscles	-	-	-	0.0+	0.0+	0.0+	0.1	0.0+
Miscellaneous	0.3	0.1	0.2	0.2	0.7	1.1	3.1	0.6
TOTAL	0.4	0.2	0.6	1.4	4.1	7.5	14.2	3.4

*Refers to distinct pathological conditions cited as cause/causes for denial. These figures do not represent applicants. Six hundred twenty-seven pilots were denied for a single cause; 185 for two causes; 30 for three causes.

**Annual rates per 1,000 active airline pilots.

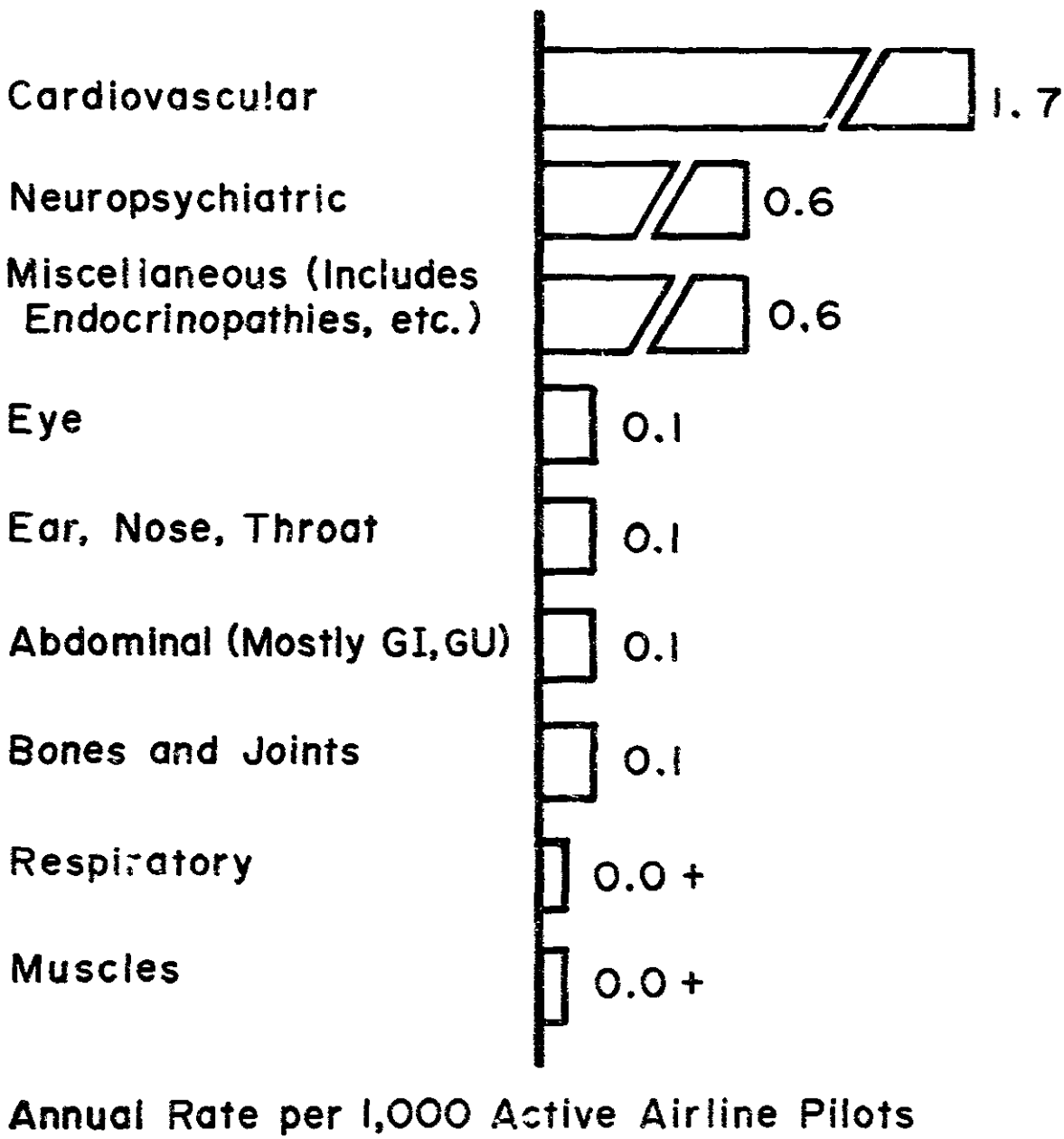

Figure 3. Denial rates by major body system (cause).

Table IV. CAUSE FOR DENIAL OF AIRLINE PILOTS BY MAJOR BODY SYSTEM AND AGE*

Cause	Age (Years) 25-29 Percent	30-34 Percent	35-39 Percent	40-44 Percent	45-49 Percent	50-54 Percent	55-59 Percent	Total Percent
Eye	-	-	0.2	0.3	0.3	0.4	1.5	2.7
Ear, Nose, Throat	0.1	0.1	-	0.3	0.4	0.5	1.5	2.9
Respiratory	-	-	-	0.1	0.2	0.1	0.9	1.3
Cardiovascular	-	-	1.7	3.6	8.1	13.3	22.6	49.3
Abdominal (mostly GI, GU)	0.1	-	0.2	0.1	0.2	0.4	1.7	2.7
Neuropsychiatric	-	0.4	1.1	3.0	2.7	5.8	5.6	18.6
Bones & Joints	-	-	0.2	0.2	0.8	0.4	1.5	3.1
Muscles	-	-	-	0.1	0.1	0.1	0.2	0.4
Miscellaneous	0.4	0.4	1.2	1.1	2.6	3.5	9.8	19.0
TOTAL	0.6	0.9	4.6	8.8	15.3	24.5	45.3	100.0

*Refers to distinct pathological conditions cited as cause/causes for denial. These figures do not represent applicants. Six hundred twenty-seven pilots were denied for a single cause; 135 for two causes; 30 for three causes.

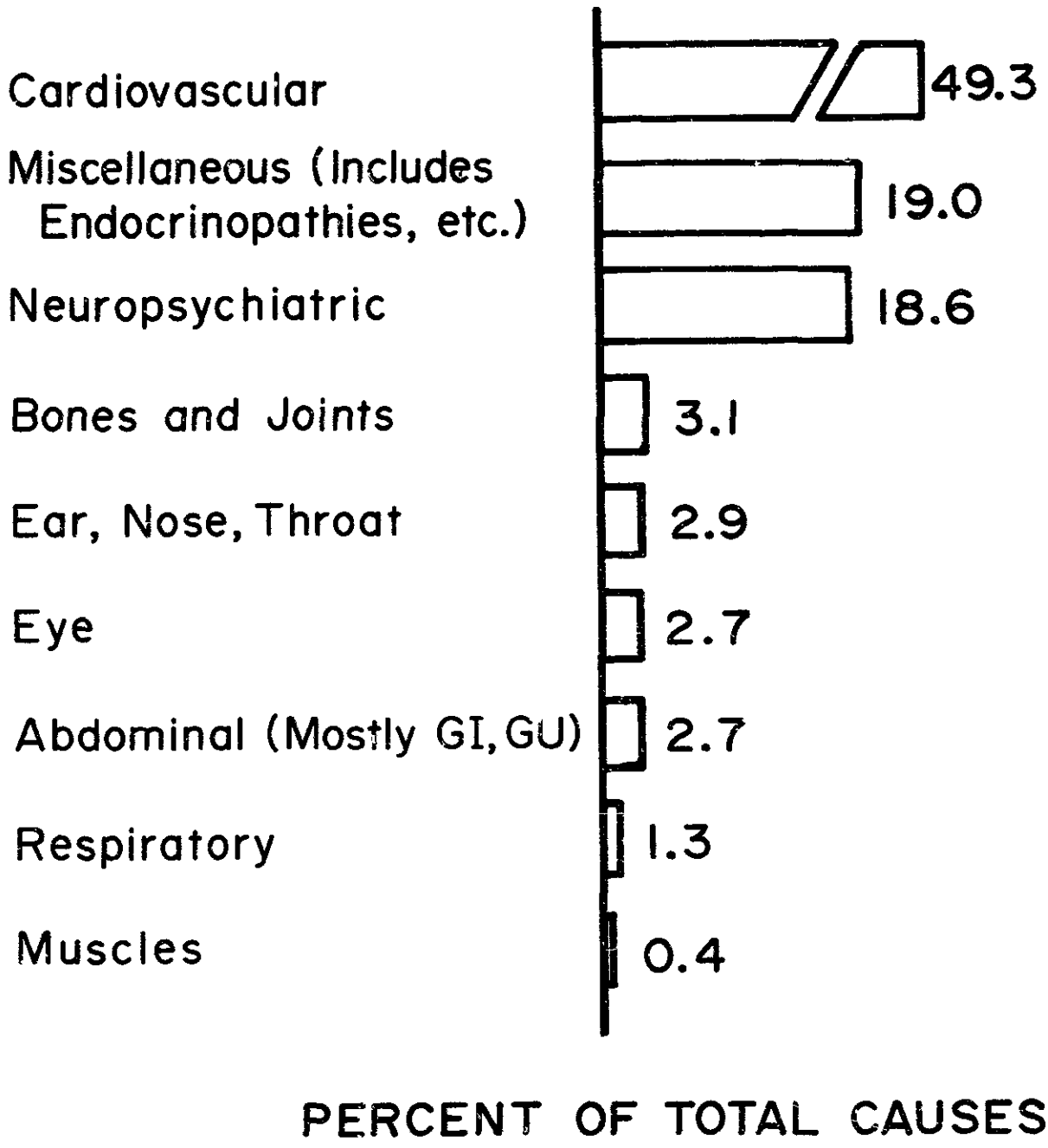

Figure 4. Cause for denial by major body system.

Table V. THE MOST FREQUENTLY OCCURRING SPECIFIC CAUSES FOR DENIAL BY AGE*

Cause	Age (Years) 25-29 Percent	30-34 Percent	35-39 Percent	40-44 Percent	45-49 Percent	50-54 Percent	55-59 Percent	Total Percent
Coronary Artery Disease	-	-	0.5	0.7	2.0	3.6	4.7	11.5
Myocardial Infarction	-	-	0.9	1.2	2.2	3.3	3.3	10.9
Use of Disqualifying Medication	-	0.1	0.5	0.7	1.5	2.0	5.5	10.3
Hypertension with Medication	-	-	-	0.3	0.6	2.7	4.5	8.1
Coronary Artery Bypass Surgery	-	-	-	0.7	1.0	1.0	2.2	4.9
Other Heart Pathology	-	-	-	0.4	0.4	0.7	2.5	4.0
Failure to Provide Additional Information	0.3	0.1	-	0.2	0.4	0.6	2.1	3.7
Alcoholism	-	-	0.2	1.2	0.5	1.0	0.8	3.7
Psychoneurotic Disorders	-	0.1	0.2	0.3	0.8	0.8	0.6	2.8
Disturbance of Consciousness	-	0.1	0.2	0.4	0.1	0.6	1.0	2.4
Vascular-Brain (Includes Aneurysm, CVA, etc.)	-	0.1	0.1	0.2	0.2	0.7	1.1	2.4

*These eleven causes account for 65% of the total causes for denial.

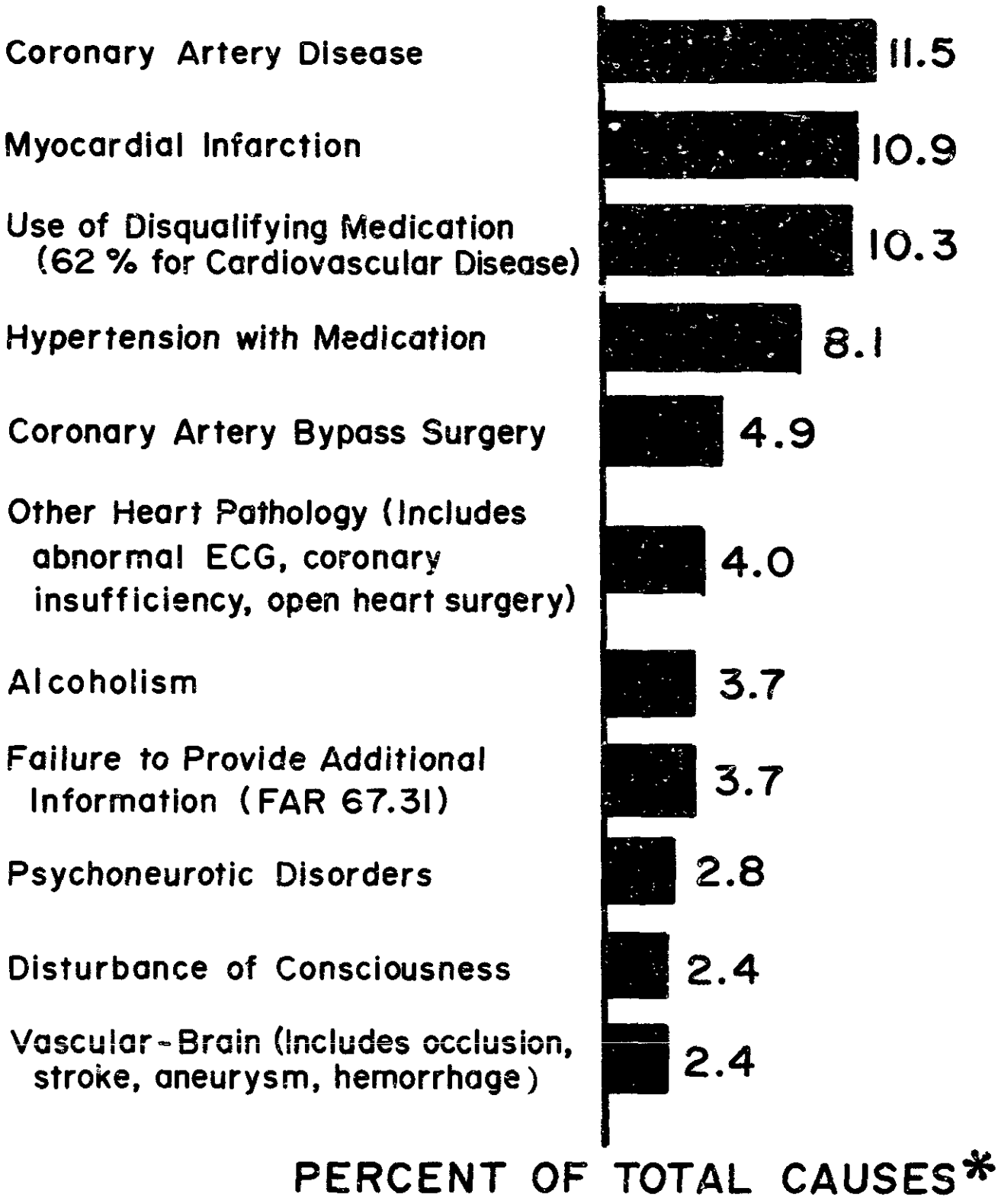

Figure 5. The most frequently occurring causes for denial.

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