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CHARACTERISTICS OF MEDICALLY DISQUALIFIED  
AIRMAN APPLICANTS IN  
CALENDAR YEARS 1977 AND 1978

Shirley J. Dark  
Civil Aeromedical Institute  
Federal Aviation Administration  
Oklahoma City, Oklahoma

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16. Abstract <p>This study provides comprehensive data reflecting pertinent denial rates with respect to the medical and general attributes of those airmen denied medical certification in calendar years 1977 and 1978. Also provided are such descriptive epidemiologic data as age, sex, occupation, class of medical certificate applied for, total flying time, and cause-specific annual denial rates for medically disqualified applicants.</p> <p>The annual denial rate based on airman applicants was 6.8 per 1,000 airmen. By class of certificate applied for, the annual denial rate per 1,000 applicants was 4.3 for first class, 4.9 for second class, and 8.9 for third class.</p> <p>As anticipated, general aviation and new applicants contributed greatly to total denials, reflecting that the latter are being screened for the first time. Eighty-three percent of all denied applicants indicated nonaeronautical occupations on their medical application and 49 percent indicated less than 40 hours of total flying time.</p> <p>The most significant causes for denial (regardless of class applied for) were cardiovascular, the miscellaneous pathology category (endocrinopathies, disqualifying medications, and administrative denials), neuropsychiatric, and, at a substantially lower level, eye pathology.</p>					
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CHARACTERISTICS OF MEDICALLY DISQUALIFIED  
AIRMAN APPLICANTS IN  
CALENDAR YEARS 1977 and 1978

INTRODUCTION

The Federal Aviation Administration (FAA) and its predecessors have been charged with the responsibility for medical certification of all United States and some international civil airmen since 1926. Except for certain categories of airmen such as glider and balloon pilots, each airman must hold a current corresponding class of medical certificate for performing the duties of any pilot certificate he may possess. Federal Aviation Regulations stipulate that a first-class physical examination must be performed at 6-month intervals for duties requiring an air transport pilot certificate; a second-class physical examination must be performed annually for duties requiring commercial pilot certificate, an air traffic control tower operator certificate, etc.; and a third-class physical examination must be performed at 2-year intervals for duties requiring a private pilot certificate. Different medical standards apply to the different categories of medical certification.

Medical certification criteria will continue to change as a result of the evolution of aviation medicine and increased efforts in the area of aeromedical research.

Previous studies (1-4) that provided descriptive data concerning airmen who were denied medical certification have proved to be of great value. Numerous questions have been answered for the FAA and the aviation community concerning these airmen. Comprehensive data reflecting pertinent denial rates with respect to the medical and general attributes of those airmen denied medical certification are needed for program monitoring with respect to workload information, aeromedical standards, appeal system appraisal, research direction, and risk determinations by the aviation community. Of course, the primary purpose of these efforts continues to be the promotion and enhancement of aviation safety through medical program data analysis.

This study provides comprehensive data reflecting pertinent denial rates with respect to the medical and general attributes of those airmen denied medical certification in calendar years 1977 and 1978. Comparisons to previous findings are also made.

Also provided are such descriptive epidemiologic data as age, sex, occupation, class of medical certificate applied for, total flying time, and cause-specific annual denial rates for medically disqualified applicants.

#### METHODS AND SOURCE

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

The Aeromedical Certification Branch's computerized medical records provide historical data both for daily screening of document input and for statistical/research purposes. The "active master file" contains the most recent record within the past 3 years of an airman's medical application for certification. This file includes applications issued, pending, or denied and abbreviated records of significant pathology cases retained indefinitely for further medical reference in the event an inactive airman decides to again exercise his or her flying privilege.

The denial data were obtained from computer files as of July 1, 1978, for calendar year (CY) 1977 applicants and July 1, 1979, for CY 1978 applicants. The 6-month time lapse was allowed to insure that final certification action had been taken in the majority of cases. The data were summed for the 2 calendar years to provide a larger group for comparison with the active airman population.

A medically certified airman is considered "active" for a maximum of 24 calendar months following the most recent FAA medical examination; i.e., regardless of the class of medical certificate issued, it is valid for third-class purposes for 24 months unless otherwise limited or recalled by the FAA.

The active airman population as of December 31, 1977, was used as the population base for rate computation. This population was used since it is the midpoint for the denied applicant group.

Data from the most recent medical record were selected and extracted from the active master file for construction of the various frequency tables presented in this study.

Data presented are descriptive in nature, and appropriate population comparisons are made via conventional statistical methodology where compatible data exist and statistical treatment would be meaningful.

Annual rates were computed to provide data more useful for answering the many questions received concerning airmen denied medical certification. In CY 1977 and 1978, 11,107 airmen were denied medical certification for various medical and/or administrative reasons; e.g., failure to provide additional medical information. The frequency tables that follow were compiled based on data extracted from these airmen's medical records and comparable data extracted from the active population as of December 31, 1977. The active population at that time totaled 811,588 airmen.

A copy of the application for medical certification is provided for reference to block numbers cited in the following discussion (Figures 1a and 1b).

Age of denied airmen was computed to last birthday as of the date of the physical examination. Age of the active population airmen was computed to last birthday as of December 31, 1977. Date of birth is provided by the airmen in block 3 of the medical application form, and computer edits insure a reasonable month, day, and year.

Class of certificate applied for is determined from information supplied by the applicant in blocks 9A and 9B (Class of Medical Certificate Applied For and Type of Airman Certificate(s) Held) of the application.

In many areas, accuracy of data is contingent upon the completeness and accuracy of information supplied by the airman applicant. Other data are coded by Aeromedical Certification Branch personnel. Some human error is recognized but is not considered significant enough to seriously bias the data provided in this study.

Some airmen who hold first-class certificates will have applied for medical certification four times during the 2-year period, some airmen who hold second-class certificates will have applied twice, and airmen with third-class certificates will have applied once. However, rate data are provided for the number of applicants versus the number of applications, except for a portion of Table I. The active master file provides applicant data because it contains only the most recent examination of an airman. Both the denial data and the population data are maintained on the active master file.

AA-1496467

MEDICAL CERTIFICATE CLASS AND STUDENT PILOT CERTIFICATE

THIS CERTIFIES THAT (Full name and address)

DATE OF BIRTH	HEIGHT	WEIGHT	HAIR	EYES	SEX
---------------	--------	--------	------	------	-----

has met the medical standards prescribed in Part 67 Federal Aviation Regulations for this class of Medical Certificate

LIMITATIONS

DATE OF EXAMINATION: EXAMINER'S SERIAL NO.

EXAMINER SIGNATURE  
TYPED NAME  
AIRMAN'S SIGNATURE

WHEN ISSUED AS A MEDICAL STUDENT PILOT CERTIFICATE, the holder has met standards prescribed in Part 61, FAR's for such certificate, and is prohibited from carrying passengers

APPLICATION FOR  AIRMAN MEDICAL CERTIFICATE  AIRMAN MEDICAL AND STUDENT PILOT CERTIFICATE

1 FULL NAME (Last, first, middle) PATH CONTROL

2A ADDRESS (No Street, City, State, ZIP No.) 2B SOCIAL SECURITY No.

2C PLACE OF BIRTH (Student pilot applicants only)

3 DATE OF BIRTH (to day year) 4 HEIGHT (feet/in) 5 WEIGHT (pounds) 6 COLOR OF HAIR 7 COLOR OF EYES 8 SEX

9A CLASS OF MEDICAL CERTIFICATE APPLIED FOR 9B TYPE OF AIRMAN CERTIFICATE(S) HELD

AIRLINE TRANSPORT	FLIGHT INSTRUCTOR
COMMERCIAL	PRIVATE
FIRST	ATC SPECIALIST
SECOND	FLIGHT ENGINEER
THIRD	FLIGHT NAVIGATOR
	STUDENT
	NONE
	OTHER

10 OCCUPATION (If ATC Specialist, specify position and facility)

11 EXTENDED ACTIVE DUTY MEMBER OF 12 EMPLOYER

a AIR FORCE	d COAST GUARD
b ARMY	e NATL. GUARD
c NAVY, MARINES	f NONE

13 LENGTH OF TIME IN PRESENT OCCUPATION

MILITARY SERVICE NO. 14 PRIMARY TYPE OF FLYING

BUSINESS	PLEASURE
----------	----------

15 CURRENTLY USE ANY MEDICATION (Including eye drops)

TYPE AND PURPOSE

YES NO

16 HAS AN FAA AIRMAN MEDICAL CERTIFICATE EVER BEEN DENIED, SUSPENDED, OR REVOKED

17 YES DATE NO

18 HAVE YOU, AS A PILOT, HAD AN AIRCRAFT ACCIDENT WITHIN THE PAST 2 YEARS

19 YES DATE NO

20 DATE OF LAST FAA PHYSICAL EXAM (If none, state so)

21 MEDICAL HISTORY - HAVE YOU EVER HAD OR HAVE YOU NOW ANY OF THE FOLLOWING: (For each "yes" checked, describe condition in REMARKS)

Yes/No	Condition	Yes/No	Condition	Yes/No	Condition	Yes/No	Condition
	a Dizziness or severe headaches		g Heart trouble		m Nervous trouble of any sort		s Medical examination or for license renewal
	b Distress or fainting spells		h High or low blood pressure		n Any drug or narcotic habit		t Rejection for life insurance
	c Unconsciousness for any reason		i Stomach trouble		o Excessive drinking habit		u Admission to hospital
	d Eye trouble except glasses		j Kidney stone or blood in urine		p Attempted suicide		v Record of traffic convictions
	e Hay fever		k Sugar or albumin in urine		q Mental disease requiring drugs		w Record of other convictions
	f Asthma		l Epilepsy or fits		r Military medical discharge		x Other illnesses

REMARKS (If no changes since last report, so state)

FOR FAA USE REVIEW ACTION CODES

22 HAVE YOU EVER BEEN ISSUED A STATEMENT OF DEMONSTRATED ABILITY (WAIVER)

NO YES (Give defect and waiver no.)

PHYSICAL DEFECTS NOTED ON STATEMENT OF DEMONSTRATED ABILITY (WAIVER)

WAIVER SERIAL NO.

23 MEDICAL TREATMENT WITHIN PAST 5 YEARS

DATE	NAME AND ADDRESS OF PHYSICIAN CONSULTED	REASON

24 APPLICANT'S DECLARATION

I hereby certify that all statements and answers provided by me in this examination form are complete and true to the best of my knowledge, and I agree that they are to be considered part of the basis for issuance of any FAA certificate to me.

SIGNATURE OF APPLICANT (In ink) DATE

Figure 1a. FAA Form 8500-8 (front) - Application for Medical Certification.



REPORT OF MEDICAL EXAMINATION																				
FOR MAIL	CHECK EACH ITEM IN APPROPRIATE COLUMN (Enter "N.E." if not evaluated)				AR NOR MAIL	NOTES Describe every abnormality in detail, enter applicable item number before each comment. Use additional sheets if necessary and attach to this form.														
	25	Head, face, neck and scalp																		
	26	Nose																		
	27	Sinuses																		
	28	Mouth and throat																		
	29	Ears, general (Internal and external noises, Auditory acuity under item 49)																		
	30	Drums (Permanence)																		
	31	Eyes, general (Visual acuity under items 50 & 51)																		
	32	Ophthalmoscopic																		
	33	Pupils (equality and reaction)																		
	34	Ocular mobility (Associated parietal movements, nystagmus)																		
	35	Lungs and chest (Including breath)																		
	36	Heart (Throat, rate, rhythm, sounds)																		
	37	Vascular system																		
	38	Abdomen and viscera (Including normal)																		
	39	Anus and rectum (Hemorrhoids, latent prostates)																		
	40	Endocrine system																		
	41	G-U system																		
	42	Upper and lower extremities (Strength, range of motion)																		
	43	Spine, other musculoskeletal																		
	44	Identifying body marks, scars, tattoos																		
	45	Skin and lymphatics																		
	46	Neurologic (Tandem gait, equilibrium, Romberg, cerebellum, etc.)																		
	47	Psychiatric (Specify any personality disorders)																		
	48	General systemic																		
FOR FAA USE - PATHOLOGY CODE NOS.																				
49 HEARING		RIGHT EAR		LEFT EAR		50 DISTANT VISION (Standard ref types only)						51 NEAR VISION (Use linear values)								
WHISPERED VOICE		L*		R†		RIGHT EYE						CORRECTED TO 20		20	CORRECTED TO 20					
STANDING SIDEWAYS		500		1000		2000						4000		500		1000	2000	4000		
DISTANT EAR CLOSED		500		1000		2000						4000		LEFT EYE		CORRECTED TO 20		20	CORRECTED TO 20	
AUDIOMETER (Decibel Loss)														BOTH EYES		CORRECTED TO 20		20	CORRECTED TO 20	
52 INTRAOCULAR TENSION (Tonometer required for Air Traffic Control Specialists)						53 COLOR VISION (Test used, number of plates missed)														
TACTILE		RIGHT EYE		LEFT EYE																
TONOMETRIC																				
54 FIELD OF VISION						55 HETEROPHORIA DIOPTERS (Not required for Class Three)														
RIGHT EYE		LEFT EYE		DISTANCE		ESOPHORIA						EXOPHORIA		RIGHT H.		LEFT H.				
56 BLOOD PRESSURE						57 PULSE (W/MIN)														
RESTING		SYSTEMIC		DIASTOLIC		RESTING						AFTER EXERCISE		2 MINUTES AFTER EXERCISE						
ALBUMIN		SUGAR		59 ECG (Date)		60 OTHER TESTS														
61 COMMENTS ON HISTORY AND FINDINGS, RECOMMENDATIONS (Attach all consultation reports, ECGs, X-rays, etc. to this report before mailing)												FOR FAA USE								
												CODED								
												PUNCHED								
												VERIFIED								
62 APPLICANT'S NAME						63 DISQUALIFYING DEFECTS (List by item no.)						EXAMINER CODES								
64 MEDICAL EXAMINER'S DECLARATION						I hereby certify that I personally examined the applicant named on this medical examination report, and that this report with any attachment embodies my findings completely and correctly.						CLERICAL REJECT								
DATE OF EXAMINATION		AVIATION MEDICAL EXAMINER'S NAME AND ADDRESS (Type or print)				AVIATION MEDICAL EXAMINER'S SIGNATURE														

Figure 1b. FAA Form 8500-8 (back) - Report of Medical Examination.

Occupation is coded from information furnished by the applicant in block 10 of the application form. Only aeronautical occupations are coded for input to the automated system. If the item is left blank by the applicant and cannot be determined from other information provided on the examination, the occupation is entered as "nonaeronautical."

The cause for denial was determined by the presence of an alpha prefix to a specific pathology code. The prefix and code are assigned by medical review clerks in the Aero-medical Certification Branch. Internal computer edits insure logical assignment of such prefixes and pathology codes. These edits are applied when initial file maintenance to an airman's record is made and again at the end of each quarter to eliminate discrepancies in pathology and denial data on the active master file. Data presented regarding pathology represent conditions cited as cause for denial, not applicants. Some airmen denied medical certification for legal or administrative reasons or for failure to provide additional medical information would not necessarily have a pathology code assigned. There are also airmen who are denied for more than one cause.

#### FINDINGS AND DISCUSSION

##### A. General Comments

As of December 31, 1977, there were 811,588 active airmen in our automated system; 85,593 held first-class medical certificates, 310,238 held second-class certificates, and 415,757 held third-class certificates. In CY 1977 and 1978, 11,107 airmen were denied medical certification. The annual denial rate based on airman applicants is, therefore, 6.8 per 1,000 airmen. During the same 2-year period, 1,094,873 FAA physical examinations were performed giving a denial rate per 1,000 applications of 10.1.

The annual rate per 1,000 applicants is 4.3 for first-class, 4.9 for second-class, and 8.9 for third-class certification.

In the previous study of CY 1975-1976 applicants (3) the denial rate per 1,000 applicants was 7.9 and the rate per 1,000 applications was 10.2. It would appear that the per-applicant denial rate is declining. However, this could, in part, be attributed to a change in processing "pending" applications on which no additional information is received. In November 1975,

an automated procedure was implemented which assigns a denial class code to these "pending" records after 25 months from date of examination. Additionally, air traffic controller (second-class) denials are down substantially from 18.1 in the 1978 report to 10.4 in this report.

#### B. Age Distribution of Denied Airmen

Tables I and II reflect the age distribution and age-specific denial rates by class-applied-for. Table I shows that airmen applying for third-class certificates account for 66 percent of all denials, with second-class applicants accounting for 27 percent and first-class applicants only 7 percent.

Denial rates by class-applied-for also indicate that the highest crude rates for denials are applicants for third-class medical certification (general aviation/private or student airmen) with an annual denial rate of 8.9 per 1,000 applicants. Occupationally connected airmen require first- and second-class medical certificates, and denial rates for these categories (4.3 and 4.9 per 1,000 applicants respectively) are substantially lower than the general aviation (third-class) category or the total population denial rate (6.8 per 1,000 applicants). In the 1978 study, denial rates by class-applied-for were 10.2 for third class, 6.0 for second class, 4.3 for first class, and 7.9 for the total denial population.

Airmen may apply for and obtain any class of medical certificate for which they qualify; however, most new applicants apply for third-class medical certification, consistent with their intended use of the certificate. First- and second-class medically certified airmen are more likely to be occupationally connected airmen, on either a full-time or part-time basis. As such, these airmen are, to some extent, medically purged and denial rates for these two classes are more likely to reflect incidence rather than prevalence of disqualifying pathology among a more stable numerical group. Many applications for third-class medical certificates are from new applicants whose medical status has not been previously appraised by the FAA (as many as 200,000 examinations performed during those years). Only 3 percent of all first-class examinations and 9 percent of all second-class examinations performed are for new applicants. Therefore, the substantially higher denial rate for the third-class group more likely results from a combination of prevalence and incidence of disqualifying pathology than from any recognizable epidemiologic factor. New applicants account for approximately 22 percent of the total applicants for medical certification.

TABLE I. CY 1977 and 1978 DENIED APPLICANTS BY AGE  
AND CLASS OF MEDICAL CERTIFICATE APPLIED FOR

Age	First Class	Second Class	Third Class	Total
Less than 20	15	55	231	301
20-24	34	332	536	902
25-29	37	463	613	1,113
30-34	54	281	644	979
35-39	63	253	610	926
40-44	66	295	710	1,071
45-49	86	355	1,012	1,453
50-54	155	368	1,190	1,713
55-59	180	368	879	1,427
60-64	28	152	557	737
65-69	7	67	259	333
70 and over	4	23	125	152
Total Denied	729	3,012	7,366	11,107
Percent of Total Denied	6.6	27.1	66.3	100.0
Total Issued - 1977 and 1978*	211,765	428,270	440,082	1,080,117
Percent of Total Applicants Issued	19.6	39.7	40.7	100.0
Total Applications 1977 and 1978*	212,860	432,306	449,707	1,094,873
Denial Rate per 1,000 Applications	3.4	7.0	16.4	10.1
Total Applicants**	85,593	310,238	415,757	811,588
Annual Denial Rate per 1,000 Applicants	4.3	4.9	8.9	6.8
Mean Age of Denied Airmen***	46.2	41.1	44.2	43.5
Mean Age of Active Population Airmen****	38.1	37.1	36.5	36.9

\*Examination Computer Submission Summary Reports, RIS: AC 8500-3,  
Calendar Years 1977 and 1978.

\*\*Examination Time Period Summary, RIS: AC 8065-4, December 31 1977.

\*\*\*Age as of the date of examination to last birthday.

\*\*\*\*Age at last birthday as of December 1, 1977.

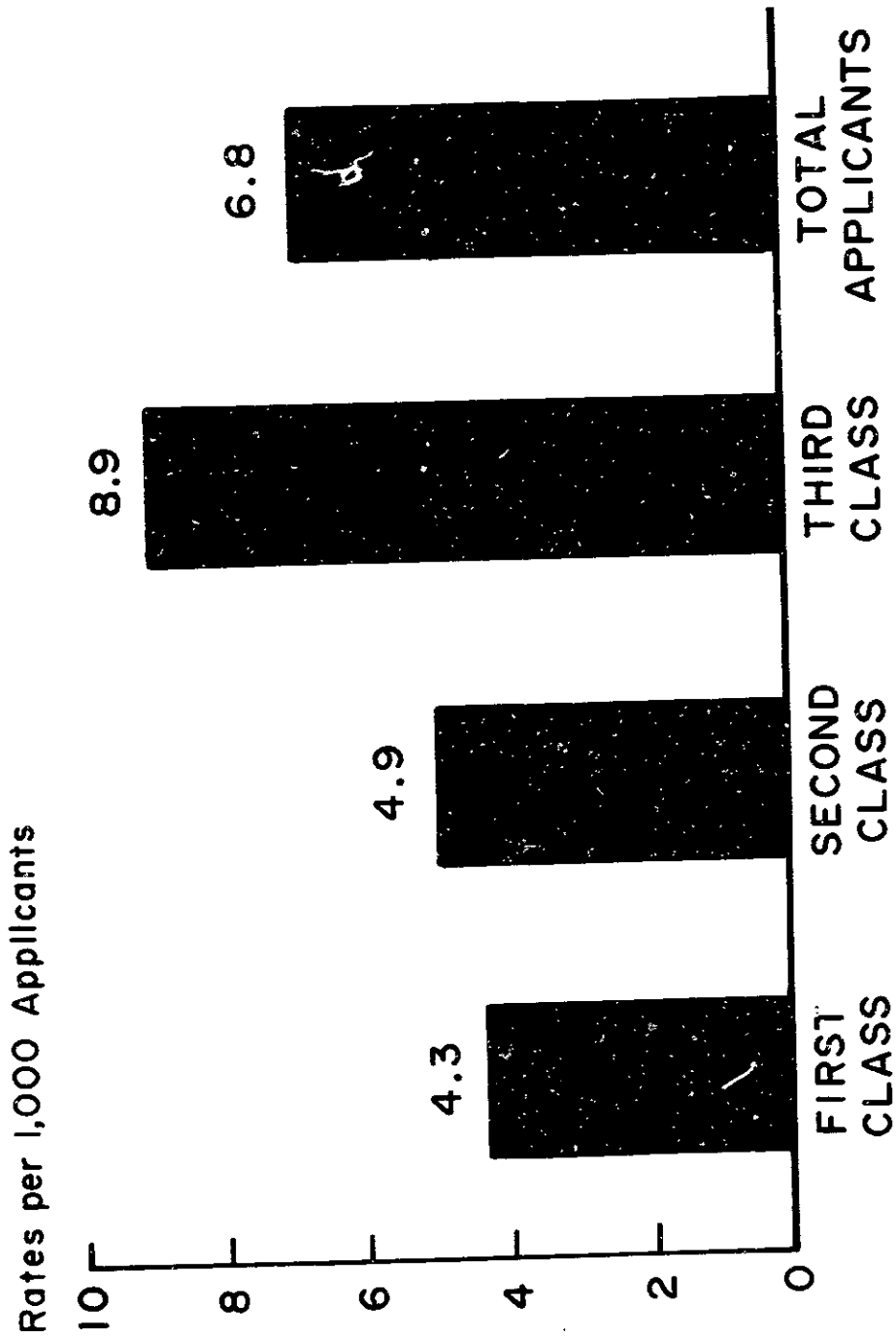


Figure 2. Annual denial rates by class of medical certificate applied for, 1977-1978.

Also shown in Table I and Figure 3 are the mean ages for the three class-applied-for denial groups and the three class-issued population groups. First-class airmen were oldest (denied airmen--46.2, active--38.1); third-class airmen were the next oldest (denied airmen--44.2, active airmen--36.5); and second-class airmen were the youngest (denied airmen--41.1, active airmen--37.1). The mean age for all denied applicants was 43.5, compared to a mean age of 36.9 for the active airman population. Denied airmen's average age was 6½ years older than the active population airmen's average age.

Table II reflects similar age trends by class of medical certificate; however, age-specific rates were higher for second class over first class and third class over both first and second classes. Overall, the age-specific denial rates for the younger age intervals were higher than the 30-34 and 35-39 age intervals (Figure 4). Again, this is attributed to new applicants who had not been previously screened by the FAA.

### C. Occupations of Denied Airmen

The majority of denied airmen are not occupationally connected with aviation (See Table III). Eighty-five percent of all denied airman applicants indicated nonaeronautical occupations on their applications. These applicants yield an annual denial rate of 7.0 per 1,000 applicants. The largest denial percentages of applicants occupationally connected to aviation was the 7 percent among air traffic controllers at centers/towers (ATCS). This category also experienced the highest overall annual denial rate (10.4 per 1,000 applicants). Of these occupationally connected airmen, air traffic controllers at flight service stations, flight navigator/radio operators, flight engineers, and self-employed commercial pilots had the next highest rates (6.8, 6.8, 6.2, 5.9 respectively). Airline pilots had the sixth highest rate of 4.6 per 1,000 applicants. (See Table III and Figure 5). Only 3 percent of the total denials were in the airline pilot occupation category. All of the other occupation categories combined represent less than 5 percent of total denials.

These findings are consistent with previous experience as to denial data by occupation (4), except that the denial rate for air traffic controllers decreased from an annual rate of 18.1 to 10.4 and the air traffic controller at flight service station rate decreased from 18.6 to 6.8. These decreases are due, at least in part, to the repeal of the second-career legislation. Some of the decrease could be attributed to a backlog in air traffic controller examination processing at the time of the July 1979 computer run.

TABLE II. AGE DISTRIBUTION COMPARISON--ACTIVE AIRMEN VS. CY 1977 and 1978 DENIED APPLICANTS

Age Group*	First Class			Second Class			Third Class			Total		
	Denied Airmen	Active Airmen	Annual Age Specific Denial Rate**	Denied Airmen	Active Airmen	Annual Age Specific Denial Rate**	Denied Airmen	Active Airmen	Annual Age Specific Denial Rate**	Denied Airmen	Active Airmen	Annual Age Specific Denial Rate**
Less than 20	15	1,502	5.0	55	5,850	4.7	231	25,978	4.4	301	33,330	4.5
20-24	34	6,107	2.8	332	30,729	5.4	536	61,049	4.4	902	97,885	4.6
25-29	37	10,382	1.8	463	50,603	4.6	613	62,146	4.9	1,113	123,131	4.5
30-34	54	17,250	1.6	281	59,855	2.3	644	56,439	5.7	979	133,544	3.7
35-39	63	15,845	2.0	253	45,762	2.8	610	47,561	6.4	926	109,168	4.2
40-44	66	12,163	2.7	295	40,408	3.7	710	39,731	8.9	1,071	92,302	5.8
45-49	86	8,179	5.3	355	29,670	6.0	1,012	43,881	11.5	1,453	81,730	8.9
50-54	155	5,976	13.0	368	20,853	8.8	1,190	38,699	15.4	1,713	65,528	13.1
55-59	180	6,378	14.1	368	17,266	10.7	879	23,270	18.9	1,427	46,911	15.2
60-64	28	1,537	9.1	152	6,442	11.8	557	11,105	25.1	737	19,084	19.3
65-69	7	225	15.6	67	2,003	16.7	259	4,135	31.3	333	6,363	26.2
70 and older	4	49	40.8	23	797	14.4	125	1,763	35.5	152	2,609	29.1
TOTAL	729	85,593	4.3	3,012	310,238	4.9	7,366	415,757	8.9	11,107	811,588	6.8

\* Age as of date of examination to last birthday for denied airmen; age at last birthday as of December 31, 1977, for active airmen.

\*\* Per 1,000 applicants

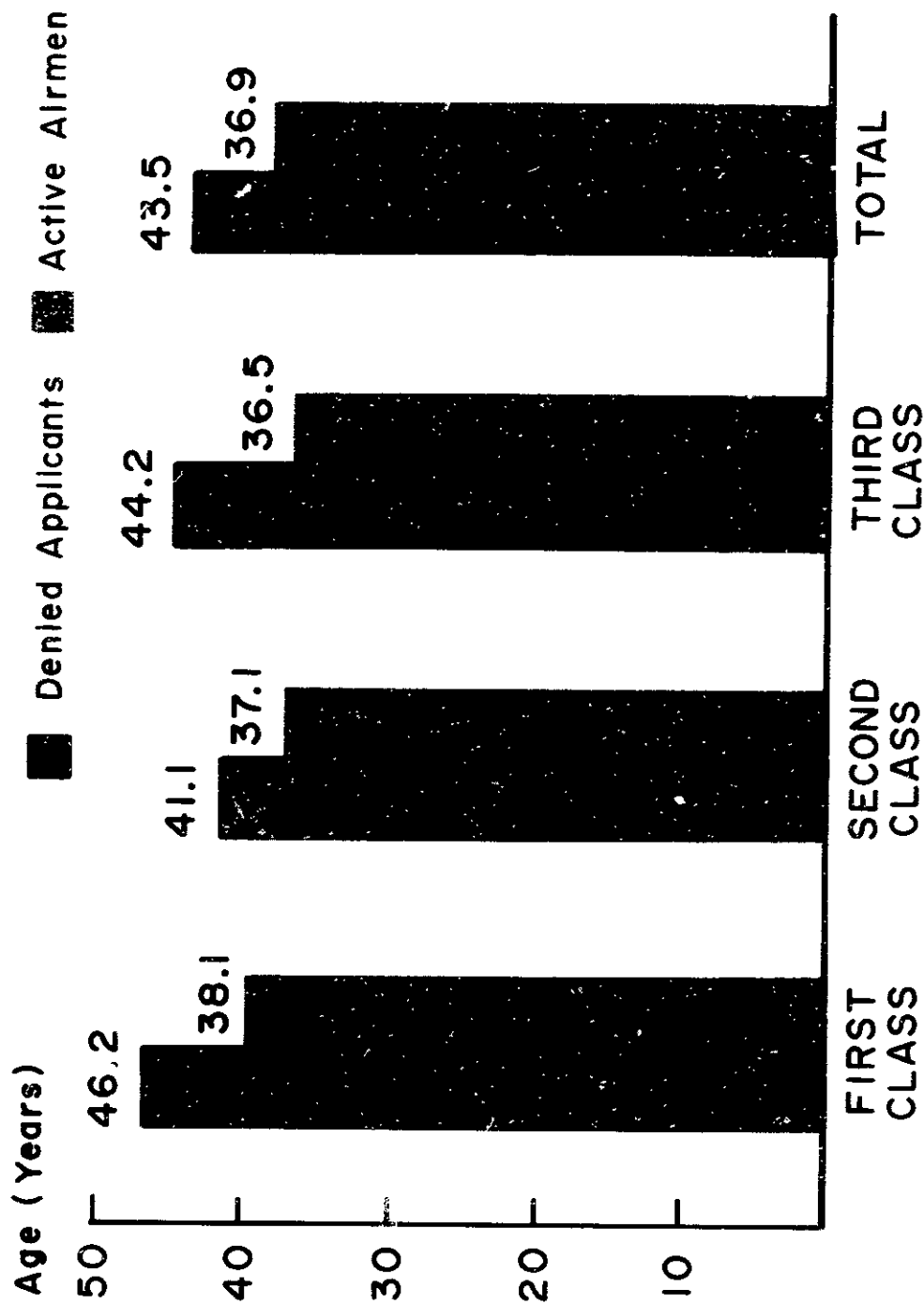


Figure 3. Average age of denied applicants compared with active airmen, 1977-1978.



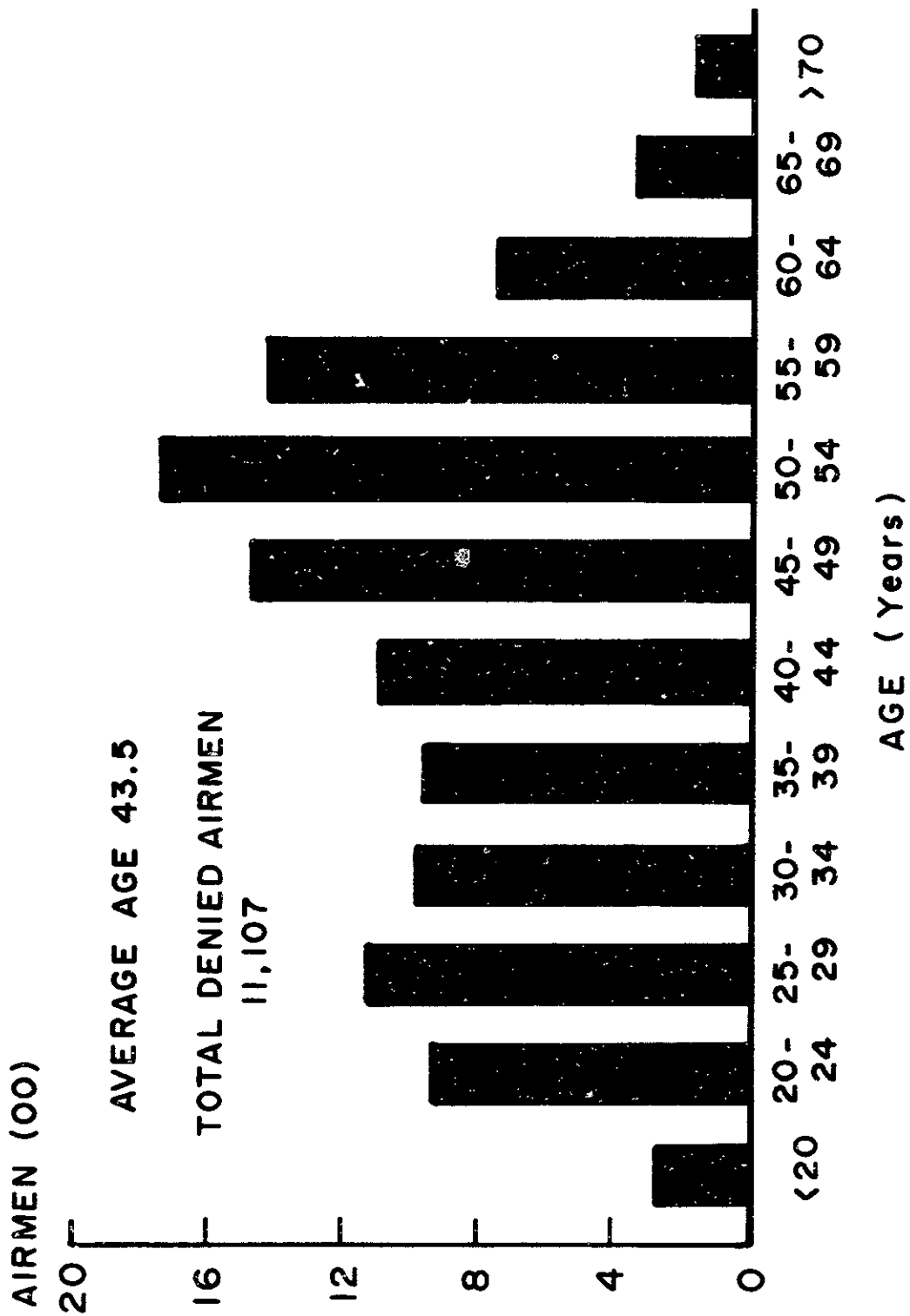


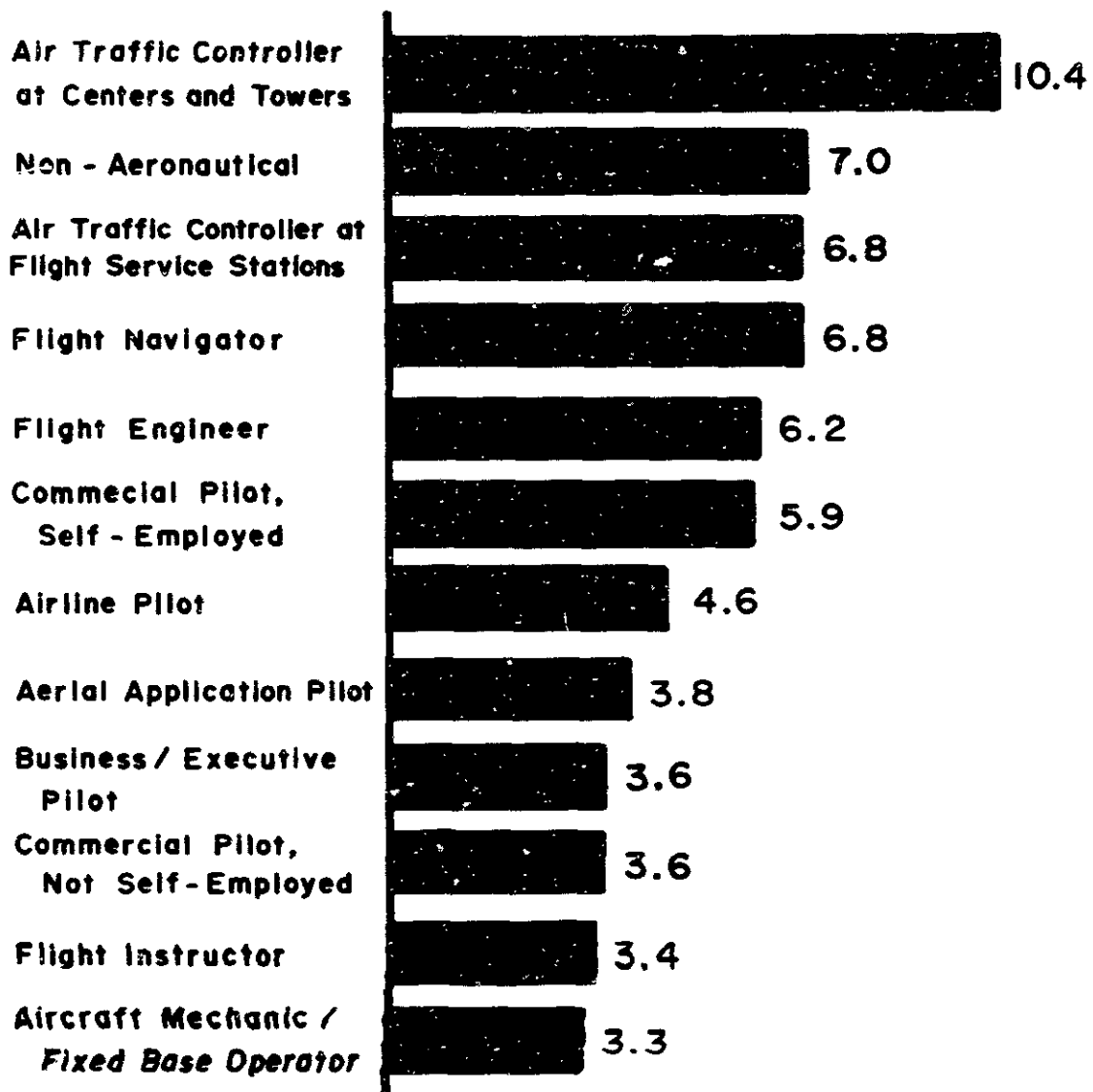
Figure 4. Age distribution of denied applicants, 1977-1978.

TABLE III. CY 1977 and 1978 DENIED APPLICANTS BY OCCUPATION AND CLASS OF MEDICAL CERTIFICATE APPLIED FOR\*

Occupation	First Class	Second Class	Second Class		Second Class Engineer/ Navigator	Second Class		Third Class Private	Third Class Student	Total Denied Airmen	Total Active Airmen**	Annual Rate per 1,000 Applicants
			ATC-CIV/FAA	ATC-Military		Commercial Pilot/ATC	Pvt. or Stu. Pilot/ATC					
Pilot, First-Class Airliner Only	345	1	-	-	-	1	-	-	-	346	37,610	4.6
Flight Engineer	5	3	-	-	48	-	-	-	-	56	4,522	6.2
Flight Navigator/ Radio Operator	1	-	-	-	-	-	-	-	-	1	74	6.8
Pilot, Business or Executive	131	3	-	-	-	-	-	-	-	134	18,586	3.6
Commercial Pilot, Self-Employed	-	37	-	-	-	-	-	-	-	37	3,127	5.9
Commercial Pilot, Not Self-Employed	-	94	-	-	-	-	-	-	-	94	13,096	3.6
Aero Application	1	26	-	-	-	-	-	-	-	27	3,500	3.8
Air Traffic Controller/ Centers, Towers	2	6	554	85	-	64	79	-	2	792	38,196	10.4
Air Traffic Controller/ Flight Service Station	-	1	47	-	-	6	9	-	-	63	4,607	6.8
Flight Instructor	12	37	2	1	-	1	-	-	-	53	7,925	3.4
Aircraft Mechanic/Fixed Base Operator	2	19	3	-	-	-	-	5	1	30	4,558	3.3
Noneronautical or Not Given	230	1,878	3	3	2	-	-	3,184	4,174	9,474	675,690	7.0
TOTAL	729	2,105	609	89	50	71	88	3,189	4,177	11,107	811,588	6.8

\* Blocks 9A, and 9, FAA Form 8500-8, determine class applied for.

\*\* As of December 31, 1977.



*Annual Rates per 1,000 Applicants*

Figure 5. Annual denial rates by occupation, 1977.

#### D. Total Flying Time of Denied Airmen

Flying time data further emphasize the contribution of new applicants to total denials. Table IV and Figure 6 show total civilian flying time as recorded by the applicant on his denied application for medical certification. Forty-nine percent of the denied airmen indicated less than 40 hours total flying time (the number of hours required for a private pilot's license). Thirty percent of these airmen indicated no flying time. Of course, of these airmen indicating no hours flown, as many as 698 are strictly air traffic controllers (see Table III). However, if the 698 controller denials are subtracted, the remainder still indicates that new pilot applicants are the major contributor to total denials. The "less than 40 hours flying time" category still equals 42.5 percent when the "air traffic controller only" figure is subtracted.

The next largest percentage of denials occurs at the "more than 1,000 hours" interval (19.0 percent), followed by the "100-299 hours" interval (12.4 percent).

#### E. Medical Characteristics of Denied Airmen

Tables V and VI and Figure 7 provide annual cause-specific denial data, per 10,000 applicants, by class of medical certificate applied for and sex. In Table V, one can observe an increasing overall denial rate for third class over second class and for second class over first class. This is also true for the cause-specific rates in the Eye, Abdominal, Muscles, and Miscellaneous categories. In the Ear, Nose, Throat, and Mouth category second-class rates are larger than the first- and third-class rates; and, in the Bones and Joints category the first-class rates are larger than the third- and second-class rates. In the Respiratory, Cardiovascular, and Neuropsychiatric categories, third-class rates are largest, with first-class rates next and the second-class rates lowest. The most significant causes for denial (regardless of class applied for) are cardiovascular (with an annual denial rate of 35.9 per 10,000 applicants); the miscellaneous category, which includes endocrinopathies, general systemic conditions, use of disqualifying medications, and administrative denials for failure to provide additional medical information (with an annual denial rate of 28.2 per 10,000 applicants); and neuropsychiatric (with an annual denial rate of 13.3 per 10,000 applicants). Eye pathology is next in importance at a substantially lower rate. These findings are essentially the same as the findings in the study of 1975/1976 applicants (4).

TABLE IV. CY 1977 and 1978 DENIED APPLICANTS  
BY TOTAL RECORDED FLYING TIME

Total Flying Time* (Hours)	Number Denied	Percent of Total
0	3,332	30.0
1 - 10	1,247	11.2
11 - 20	493	4.5
21 - 40	353	3.2
Subtotal	5,425	48.8
41 - 99	563	5.0
100 - 299	1,375	12.4
300 - 499	682	6.1
500 - 1,000	949	8.6
More than 1,000	2,113	19.0
Subtotal	5,682	51.2
TOTAL	11,107	100.0

\* The total civilian flying time recorded in Block 16, FAA Form 8500-8, determines total flying time.

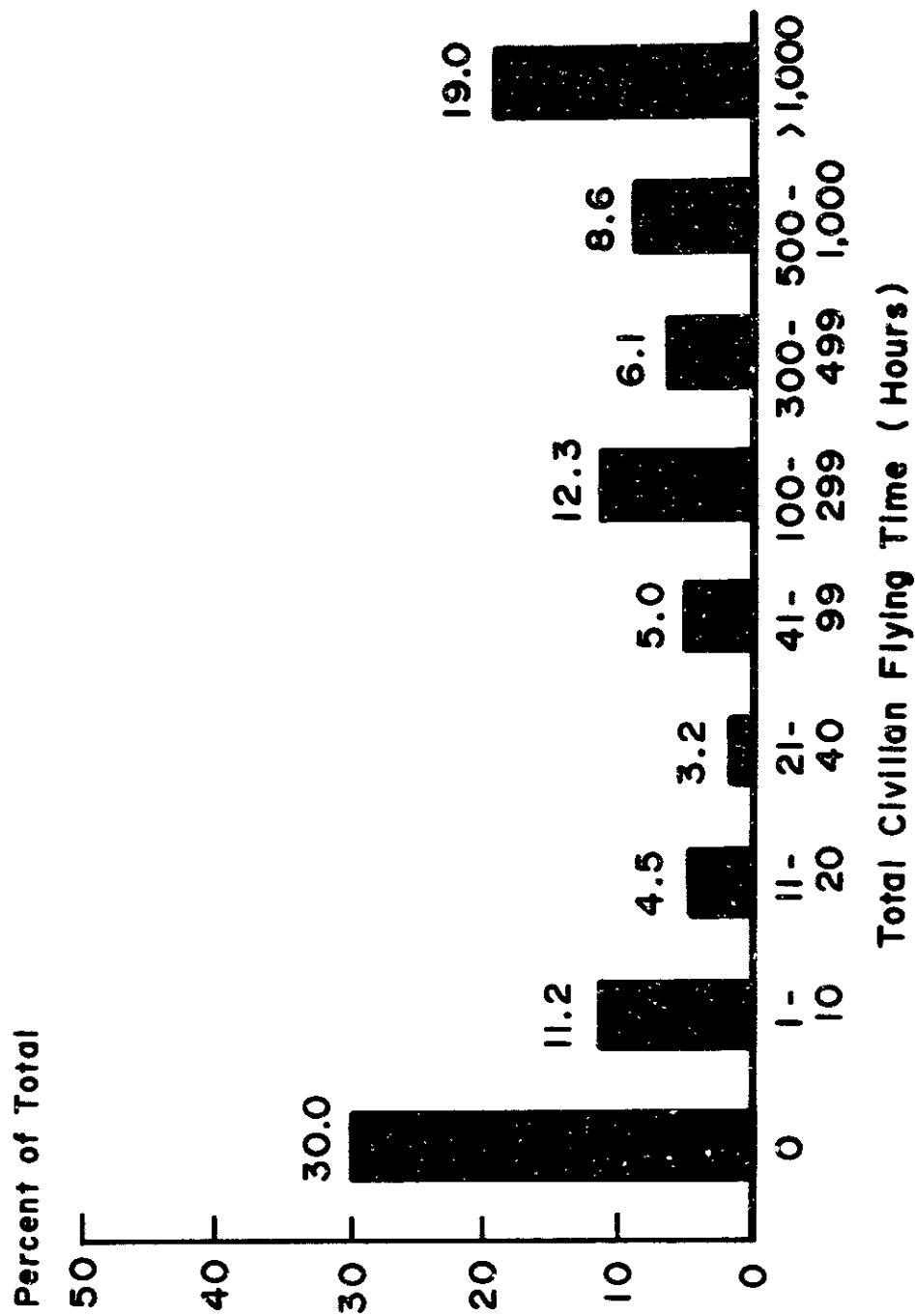


Figure 6. Recorded flying time of denied applicants, 1977-1978.

TABLE V. CAUSE FOR DENIAL OF CY 1977 and 1978 DENIED APPLICANTS BY PATHOLOGY SERIES AND CLASS OF MEDICAL CERTIFICATE APPLIED FOR

Pathology Series	First Class		Second Class		Third Class		Total	
	Cause For Denial*	Annual Rate per 10,000 Applicants	Cause For Denial*	Annual Rate per 10,000 Applicants	Cause For Denial*	Annual Rate per 10,000 Applicants	Cause For Denial*	Annual Rate per 10,000 Applicants
Eye	29	1.7	241	3.9	548	6.6	818	5.0
Ear, Nose, Throat, and Mouth	27	1.6	106	1.7	98	1.2	231	1.4
Respiratory	10	0.6	33	0.5	78	0.9	121	0.7
Cardiovascular	387	22.6	1,249	20.1	4,194	50.4	5,830	33.9
Abdominal	30	1.8	118	1.9	260	3.1	408	2.5
Neuropsychiatric	170	9.9	605	9.8	1,378	16.6	2,153	13.3
Bones and Joints	29	1.7	40	0.6	62	0.7	131	0.8
Muscles	2	0.1	16	0.2	32	0.4	50	0.3
Miscellaneous (Disqualifying Medication, Endocrinopathies, etc.)	233	13.6	1,050	16.9	3,287	39.5	4,570	28.2
TOTAL	917	53.6	3,458	55.7	9,937	119.5	14,312	88.2

\* Refers to distinct pathological conditions cited as cause for denial. Data do not represent airman applicants; however, most are denied for a single cause. Some applicants are denied for administrative reasons, e.g., failure to provide required ancillary or history data, may not have a specific pathology code assigned.

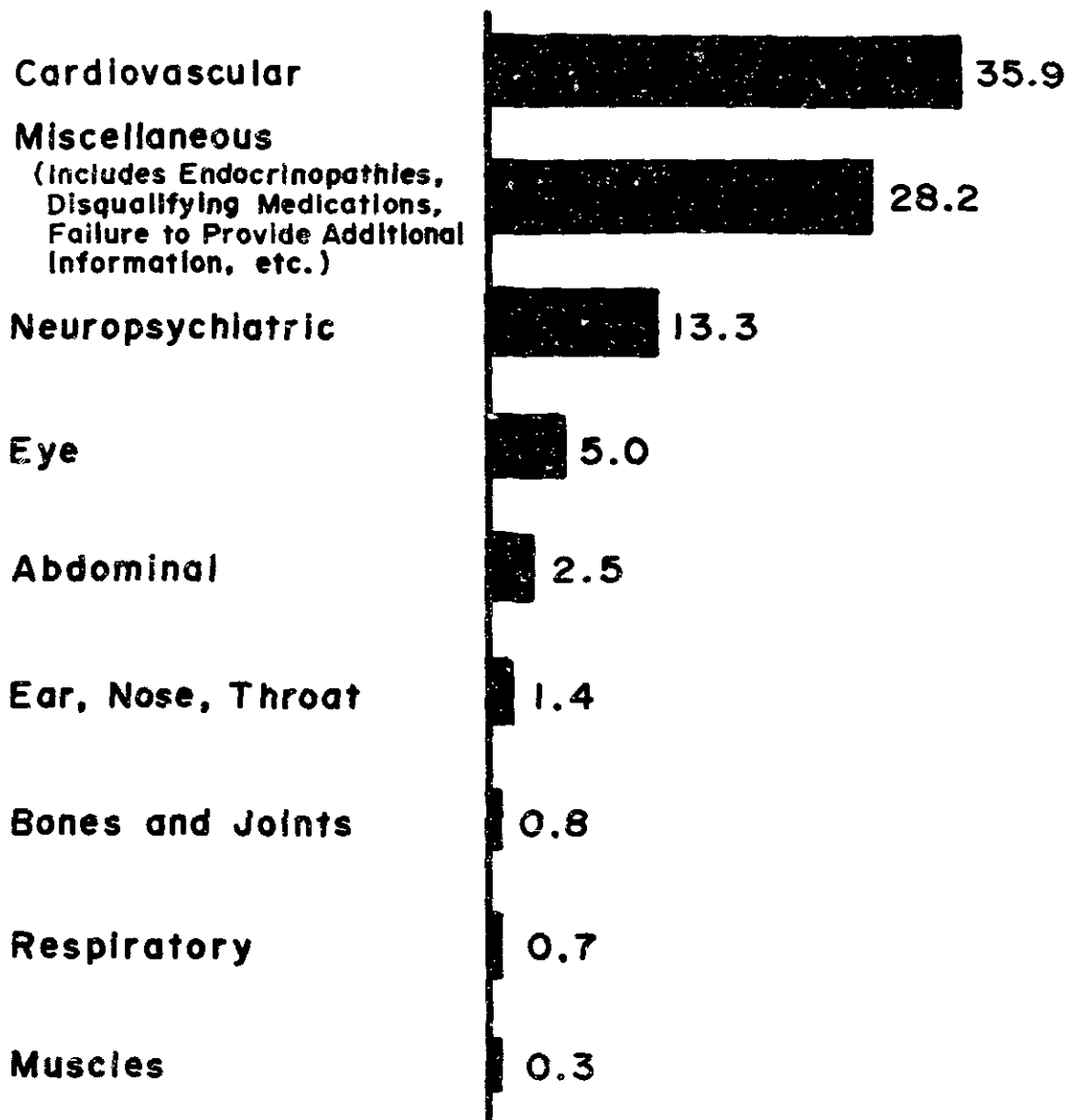
TABLE VI. CY 1977 and 1978 DENIED APPLICANTS BY PATHOLOGY SERIES AND SEX

Pathology Series	Male*		Female*	
	Cause For Denial**	Annual Rate per 10,000 Applicants	Cause For Denial**	Annual Rate per 10,000 Applicants
Eye	707	4.6	111	11.2
Ear, Nose, Throat, and Mouth	220	1.4	11	1.1
Respiratory	118	0.8	3	0.3
Cardiovascular	5,679	37.3	151	15.2
Abdominal	390	2.6	18	1.8
Neuropsychiatric	1,964	12.9	189	19.1
Bones and Joints	123	0.8	8	0.8
Muscles	44	0.3	6	0.6
Miscellaneous (Disqualifying Medication, Endocrinopathies, etc.)	4,280	28.1	290	29.3
<b>TOTAL</b>	<b>13,525</b>	<b>88.7</b>	<b>787</b>	<b>79.4</b>

\* Active airman population by sex (male--762,059, female--49,529) as of December 31, 1977.

\*\* Refers to distinct pathological conditions cited as cause for denial. Does not represent airman applicants; however, most are denied for a single cause.





Annual Rates per 10,000 Applicants

Figure 7. Cause for applicant denial by major body system (Pathology Series), 1977-1978.

Use of disqualifying medication and administrative denials for failure to provide additional medical information represent a large portion of the denials in the miscellaneous pathology category. Of the 4,570 denials in this category, 2,022 or 44 percent were for use of disqualifying medication and 1,464 or 32 percent were for failure to provide additional medical information.

Overall highest cause for denial was use of disqualifying medications (miscellaneous pathology category); second was hypertension with medication (cardiovascular); third was administrative denials for failure to provide additional information (miscellaneous); and fourth was myocardial infarction (cardiovascular). As shown in Table VI, cause for denial by sex indicates that males were most frequently denied for cardiovascular reasons, second for miscellaneous causes, and third for neuropsychiatric reasons. Females, however, were most often denied (37 percent) for miscellaneous causes (the majority of denials in this category were for use of disqualifying medication (48 percent) and for failure to provide additional information (30 percent)), followed by neuropsychiatric reasons, then cardiovascular reasons. These findings are the same as in the previous study of 1975/1976 applicants (4). For all denied applicants, four pathology categories (cardiovascular, miscellaneous, neuropsychiatric, eye) account for more than 90 percent of all denials.

#### SUMMARY

This study of CY 1977 and 1978 applicants has provided comprehensive data reflecting pertinent denial rates with respect to the medical and general attributes of those airmen denied FAA medical certification. A similar study is planned every 2 years to monitor any changes in the epidemiologic findings concerning denied airman applicants.

As of December 31, 1977 (the midpoint for the denied applicant group), there were 811,588 active certified airmen. In CY 1977 and 1978, 11,107 airman applicants were denied medical certification, resulting in an overall denial rate of 6.8 per 1,000 applicants. By class of certificate applied for, the denial rate was 4.3, 4.9, and 8.9 per 1,000 applicants for first, second, and third class respectively.

As expected, the mean age of the denied airman group was higher (by 6½ years) than the mean age of the active airman population group but was consistent with previous findings.

Age-specific denial rates for the younger age intervals were higher than for the 30-34 and 35-39 age intervals. This can be attributed to new applicants who had not been previously screened by the FAA.

As anticipated, general aviation (third-class) applicants contributed greatly to total denials, reflecting again that new applicants are being screened for the first time. Eighty-five percent of all denied applicants indicated nonaeronautical occupations on their applications. Of the professional categories, the air traffic controller at center/tower and the air traffic controller at flight service station groups had the highest denial rates, with 10.4 and 6.8 per 1,000 applicants. Airline pilots were sixth highest of the occupationally connected airmen with a rate of 4.6 per 1,000 applicants.

Total flying time data also substantiated the contribution of new applicants to total denials with 49 percent of the denied applicants indicating less than 40 hours of total flying time and 30 percent indicating no flying time.

For denials by pathology, an increasing overall denial rate for third class over second class and for second class over first class was observed. The most significant causes for denial (regardless of class applied for) were cardiovascular, miscellaneous pathology, neuropsychiatric, and, at a substantially lower level, eye pathology. These four categories are involved in 93 percent of all denials.

Cardiovascular causes resulted in the highest denial rate for males, while the miscellaneous pathology category provided the highest denial rate for females, mainly contributed to by use of disqualifying medication and failure to provide additional information.

Overall, the highest cause for denial was use of disqualifying medications (miscellaneous pathology category); second was hypertension with medication (cardiovascular); third was administrative denials for failure to provide additional information (miscellaneous); and fourth was myocardial infarction (cardiovascular).

Epidemiologic findings are consistent with expectations and previous findings on denied airmen.

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