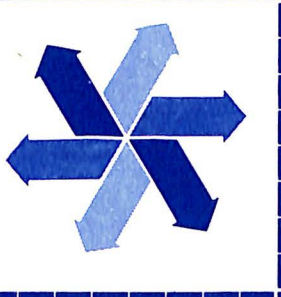
AEROSPACE FACTS AND FIGURES

1973/74



OSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.

1973/74 AEROSPACE FACTS AND FIGURES

COMPILED BY THE OFFICE OF PUBLIC AFFAIRS

Vice President for Public Affairs • Carlyle H. Jones

Editor • Gerald J. McAllister

Statistician • Sally H. Bath

Consultant • Rudolf Modley

Art Director • James J. Fisher

PUBLISHED BY

Aviation Week & Space Technology

A MCGRAW-HILL PUBLICATION

1221 Avenue of the Americas

New York, N.Y. 10020

Library of Congress Card 46-25007

$3.95 Per Copy

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.

FOREWORD

1972 saw the completion of the Apollo program—a program which put a dozen Americans on the moon and brought them back to earth successfully—providing *inter alia* data and material that will be invaluable to scientists—and to all mankind—for many decades to come.

Apollo also provided the technological basis for the Space Shuttle program which, with its reusable link to Earth, will be the workhorse of our space exploration efforts in the late 1970s and the 1980s.

Although the aerospace industry has seen declining sales, employment and profits in recent years, several encouraging economic trends appeared during 1972:

- Sales increased by $100 million.
- The backlog of orders at the end of the year was up $2.3 billion.
- The production of transports, helicopters and general aviation aircraft more than offset a decline in military aircraft production.
- Profits, as a percentage of sales after taxes, increased from 1.8 to 2.4 percent but still stood well below the 4.3 percent profit figure for *all manufacturing*.
- U. S. airlines continue to be predominant in carrying passengers, cargo and air mail worldwide, and some 78 percent of the commercial aircraft operated by free world airlines in 1972 were manufactured in the United States.

Despite such favorable trends, several areas still give cause for justifiable concern:

- Aerospace exports dropped by $400 million in 1972. With a net positive aerospace trade balance of $3.3 billion, the industry remains one of the principal supporters of the U. S. international trade position. However, the increasingly aggressive and effective aerospace

competition from abroad threatens further to erode our export market.

- Both Government and privately sponsored research and development in high technology fields have declined, causing concern for our economy and our technological base in future years.
- Average annual aerospace employment dropped 47,000 to 922,000 in 1972. (It should be noted, however, that this was the smallest annual reduction in aerospace employment since the downward trend that followed the peak employment year of 1968 when 1.5 million persons were directly employed by the industry.)

In summary, during 1972 there were more encouraging than discouraging indicators for the aerospace industry, leading to the tentative conclusion that the economic decline in the aerospace industry since 1968 has not only been slowed but perhaps reversed.

This 21st edition of *Aerospace Facts and Figures* is designed to serve as a source of detailed information, both historical and current, for Government and industry officials, news writers and editors, legislators, analysts and students. Those who study the book in detail may find what appears to be discrepancies from one table to another. Such discrepancies occur because our sources use a variety of data collection and reporting systems, as well as varying reporting periods.

We express great appreciation to those individuals, agencies and organizations whose significant and essential contributions have made this book possible. Among these sources are: the Executive Office of the President (including the Office of Management and Budget); the Departments of Commerce (Bureau of the Census), Defense (Comptroller, Public Affairs, Army, Navy, Air Force), Labor (Bureau of Labor Statistics), Transportation (Federal Aviation Administration); Civil Aeronautics Board; Federal Trade Commission; National Aeronautics and Space Administration; the Atomic Energy Commission; Air Transport Association; General Aviation Manufacturers Association; National Science Foundation; Export-Import Bank of the United States; International Civil Aviation Organization, and all AIA member companies that have supported our survey programs so faithfully.

Karl G. Harr, Jr.
President
Aerospace Industries Association

CONTENTS

Aerospace Summary

In 1968 aerospace industry sales stood at $29 billion—3.4 per cent of a Gross National Product (GNP) of $864 billion.

Since that time the GNP has climbed, while aerospace sales have declined steadily until at the end of 1972 the aerospace industry's sales of $22.3 billion accounted for only 1.9 per cent of a GNP of $1,152 billion.

Although aerospace industry sales in 1972 were up some $100 million over the 1971 total, this reported increase represented decreases in sales to the Department of Defense (DOD) and the National Aeronautics and Space Administration (NASA), offset by increases in sales to non-Government customers and sales of non-aerospace products. Actually, the increase in aerospace sales was more than nullified by inflation.

In other words, during a period (1968-1972) when the GNP grew by 33 per cent, aerospace sales declined by some 23 per cent.

In summarizing the performance and the trends in the aerospace industry, generally three figures are compared. For the long term trends, the comparisons usually are between 1968 (the peak procurement year for the war in Southeast Asia) and 1972, or the latest year for which actual figures or estimates are available. In the case of short-term performance,

1972 generally is compared with 1971. The change from one year to the next cannot be construed as a trend that will hold up, because there are a number of varying influences (e.g., the economy and the federal budget) that affect any high-technology industry.

Compared with other segments of the manufacturing industry during the same period (1968-1972), aerospace has gone from 4.8 per cent of the sales of *all* manufacturing industries to 3.0 per cent, and from 8.7 per cent of all *durable* goods manufactured to 5.4 per cent.

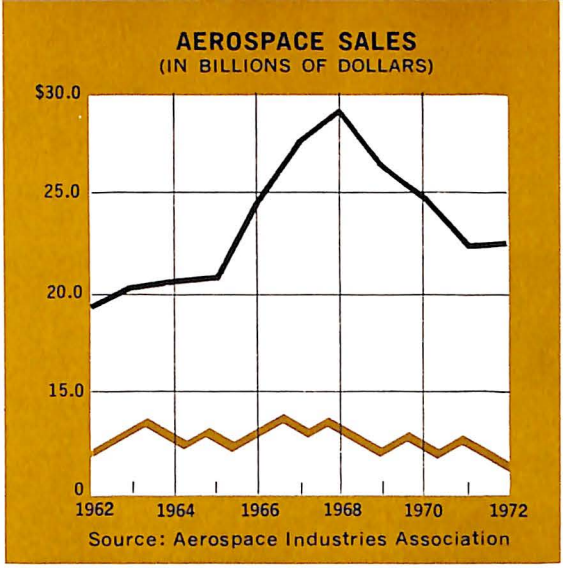
A table in this chapter shows "Net Profits After Taxes As a Percent of Sales for Manufacturing Corporations." In the long term all categories have declined since the high year of 1968. In 1972 all categories increased over 1971 except "Non-Durable Goods." Aerospace industry net profits after taxes (as a per cent of sales) always have been lower than those for other segments of the manufacturing industry. Even though the aerospace industry's profit percentage increased from 1.8 per cent in 1971 to 2.4 per cent in 1972, that profit percentage is far below the figure of 4.3 per cent profits reported for all manufacturing corporations (except newspapers) in 1972.

The backlog of orders reported by major aerospace companies at the end of 1972 was up nearly $2.3 billion (to $26.9 billion) from the end of 1971. The increase is about evenly divided between sales to the Government and to other customers. This increase regains more than half of the reduction in annual backlog of orders which peaked $30.7 billion in 1968. Thus it is an encouraging sign for 1973.

Aerospace annual average employment, which reached 1.5 million in 1968, was down to 922,000 in 1972. This reduction in employment is the direct result of the following trends for the period 1968-1972 (reported in $ billions):

	1968	*1972*
Total Aerospace Sales	$29.0	$22.3
Aerospace Backlog	30.7	26.9
Commercial Transport Sales	3.8	2.6

In 1971, the last year reported by the International Air Transport Association (IATA), U. S. manufacturers still were supplying most of the commercial air transports operated by free world airlines (78.2 per cent, up slightly from 1971). For the past several years, the majority of aerospace exports, from a dollar value standpoint, were civilian in nature. In



AEROSPACE SALES AND THE NATIONAL ECONOMY
Calendar Years 1960 to Date
(Dollar Figures in Billions)

Year Ending December 31	Total Gross National Product	Sales of			Aerospace Sales as Percent of		
		Manufacturing Industries	Durable Goods Industry	Aerospace Industry	GNP	Manufacturing Industries	Durable Goods
1960	$503.7	$368.7	$189.5	$17.3	3.4	4.7	9.1
1961	520.1	370.7	186.5	18.0	3.5	4.9	9.7
1962	560.3	397.4	205.2	19.2	3.4	4.8	9.4
1963	590.5	420.4	219.0	20.1	3.4	4.8	9.2
1964	632.4	448.0	235.6	20.6	3.3	4.6	8.7
1965	684.9	492.0	266.6	20.7	3.0	4.2	7.8
1966	747.6	538.4r	295.6r	24.6	3.3	4.6	8.3
1967	793.5	557.4r	302.5r	27.3	3.4	4.9	9.0
1968	864.2	603.4r	332.3r	29.0	3.4	4.8	8.7
1969	930.3r	642.7r	353.5r	26.1	2.8	4.1	7.4
1970	976.4r	630.7r	336.7r	24.9	2.6	3.9	7.4
1971	1,050.4r	667.0r	358.6r	22.2	2.1	3.3	6.2
1972	1,152.1	748.2	409.3	22.3	1.9	3.0	5.4

r Revised.

NOTE: The AIA estimate of Aerospace Industry Sales is arrived at by adding 1. DoD expenditures for "procurement" of aircraft and missiles, 2. DoD expenditures for research, development, test and evaluation for aircraft, missiles, and astronautics, 3. NASA expenditures for research and development, 4. AEC expenditures for space propulsion systems and space electric power development, 5. Net sales to customers other than U.S. Government by approximately 55 aerospace companies (adjusted to eliminate duplication by subcontracting) and 6. Non-aerospace sales reported by the approximately 55 aerospace companies reporting to the Bureau of the Census.

Source: Gross National Product, Manufacturing and Durable Goods Industries: Department of Commerce, "Survey of Current Business," (Monthly). Aerospace: Aerospace Industries Association estimates, based on latest available information.

1972 the U. S. registered a negative balance of trade for the second consecutive year since 1888. While the U. S. overall balance of trade was a minus $6.4 billion, the aerospace balance was a positive $3.3 billion.

Foreign competition in the short-haul, airbus and supersonic transport fields is increasing, and the U. S. share of the market may be in for a period of decline.

The aerospace share of DOD and NASA dollar outlays in 1972, as a per cent of the total, continued the decline begun in 1965. On the basis of national budget figures it is anticipated that the decline will continue through 1973 and 1974. If the trend holds, national defense and NASA outlays for aerospace products and services in 1974 will be 19.5 per cent, compared to a high in 1964 of 31.0 per cent of the two budgets.

As far as DOD outlays for aerospace are concerned, 1972 registered a net drop of $370 million, with procurement down $835 million and Research, Development, Test and Evaluation (RDT&E) up $465 million. New Obligational Authority figures for DOD and NASA indicate basically level programs (not considering inflation) for FY 1973 and FY 1974.

Finally, a new Fiscal Year table in this book shows an interesting comparison of Department of Defense outlays with respect to the (1) GNP, (2) Federal Budget Outlays and (3) Other Government Outlays. Both the GNP and the federal budget have grown since 1950, but defense and NASA outlays have been declining since 1968, while federal outlays on other programs have continued to increase steadily. Department of Defense outlays, as a per cent of the GNP, were at 13.3 per cent in 1953 (Korean War) and then declined to the point where in the 1974 budget estimate they are expected to be 6.0 per cent. The Defense share of the federal budget in 1953 was 60.3 per cent. For 1974 it is estimated to be 28.4 per cent, continuing its steady decline.

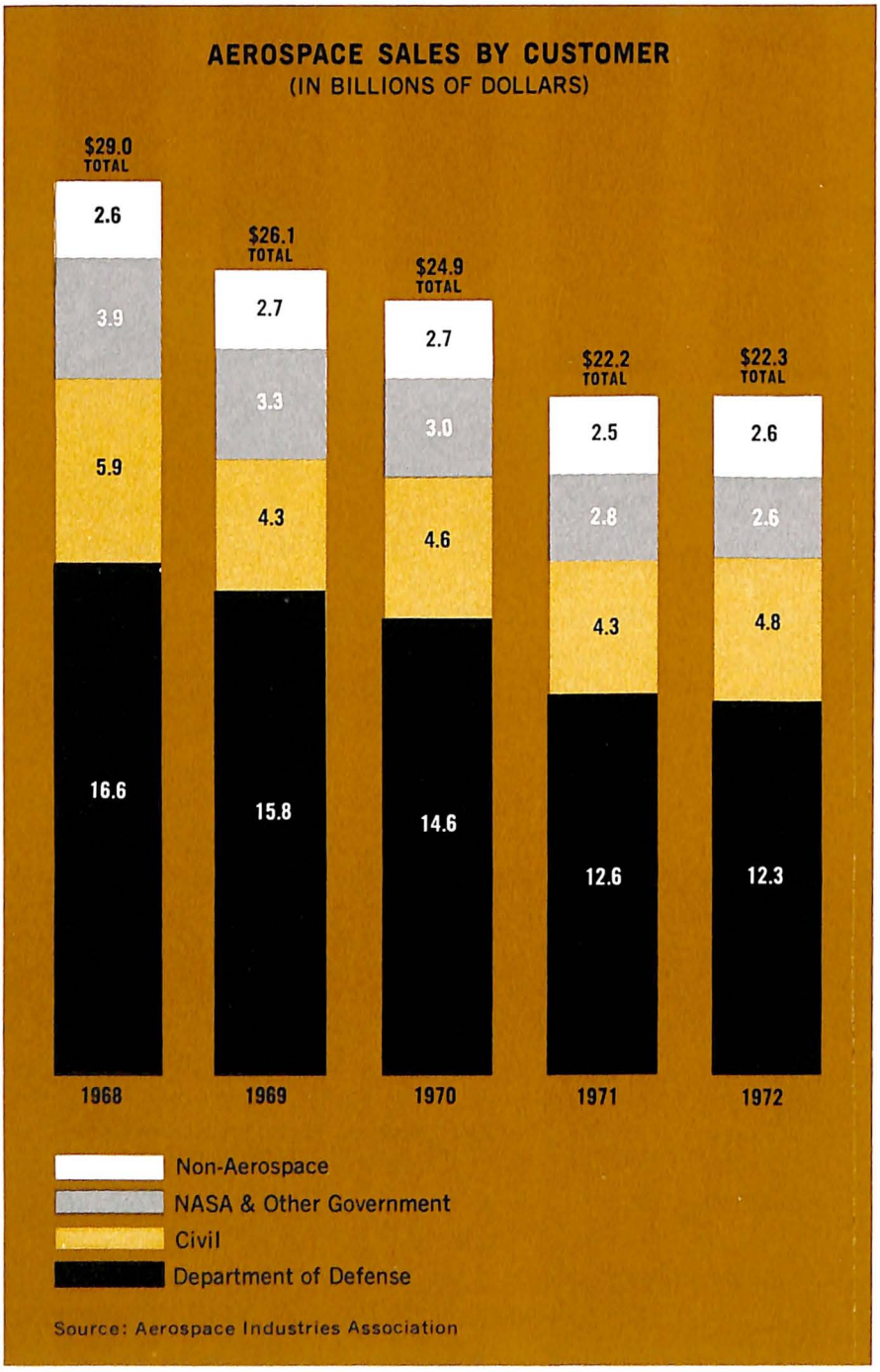
In summary, considering all aspects of the aerospace industry, the recent decline in aerospace activities:

- May be levelling off, as evidenced by a steadying of employment levels and an improvement in the backlog and "net profit" of aerospace companies.
- Probably will continue in the case of sales to DOD and NASA.
- Has halted and is turning back upward in the areas of sales to non-U. S. Government customers and sales of non-aerospace products and services, reflecting the move toward diversification.

ESTIMATED SALES OF THE AEROSPACE INDUSTRY, BY PRODUCT GROUP
Calendar Years 1948 to Date
(Millions of Dollars)

Year Ending December 31	TOTAL SALES	Product Group			
		Aircraft	Missiles	Space Vehicles	Non-aerospace
1948	$ 1,493	$ 1,359	—	—	$ 134
1949	2,232	2,032	—	—	200
1950	3,116	2,731	$ 105	—	280
1951	6,264	5,067	633	—	564
1952	10,130	8,442	776	—	912
1953	12,459	10,420	918	—	1,121
1954	12,807	10,460	1,194	—	1,153
1955	12,411	9,781	1,513	—	1,117
1956	13,946	10,485	2,206	—	1,255
1957	15,858	11,398	3,033	—	1,427
1958	16,065	10,582	4,036	$ 1	1,446
1959	16,640	9,714	5,042	386	1,498
1960	17,326	9,126	5,762	878	1,559
1961	17,997	8,847	6,266	1,264	1,620
1962	19,162	8,944	6,311	2,182	1,725
1963	20,134	8,527	6,003	3,774	1,830
1964	20,594	8,911	5,242	4,720	1,721
1965	20,670	9,747	3,626	5,329	1,968
1966	24,610	11,951	4,053	5,969	2,637
1967	27,267	14,981	4,417	5,290	2,579
1968	28,959	16,578	4,719	5,113	2,549
1969	26,126	14,097	5,058	4,272	2,699
1970	24,930	13,293	5,379	3,614	2,644
1971[r]	22,182	11,442	5,018	3,203	2,519
1972	22,313	11,883	4,764	3,045	2,621

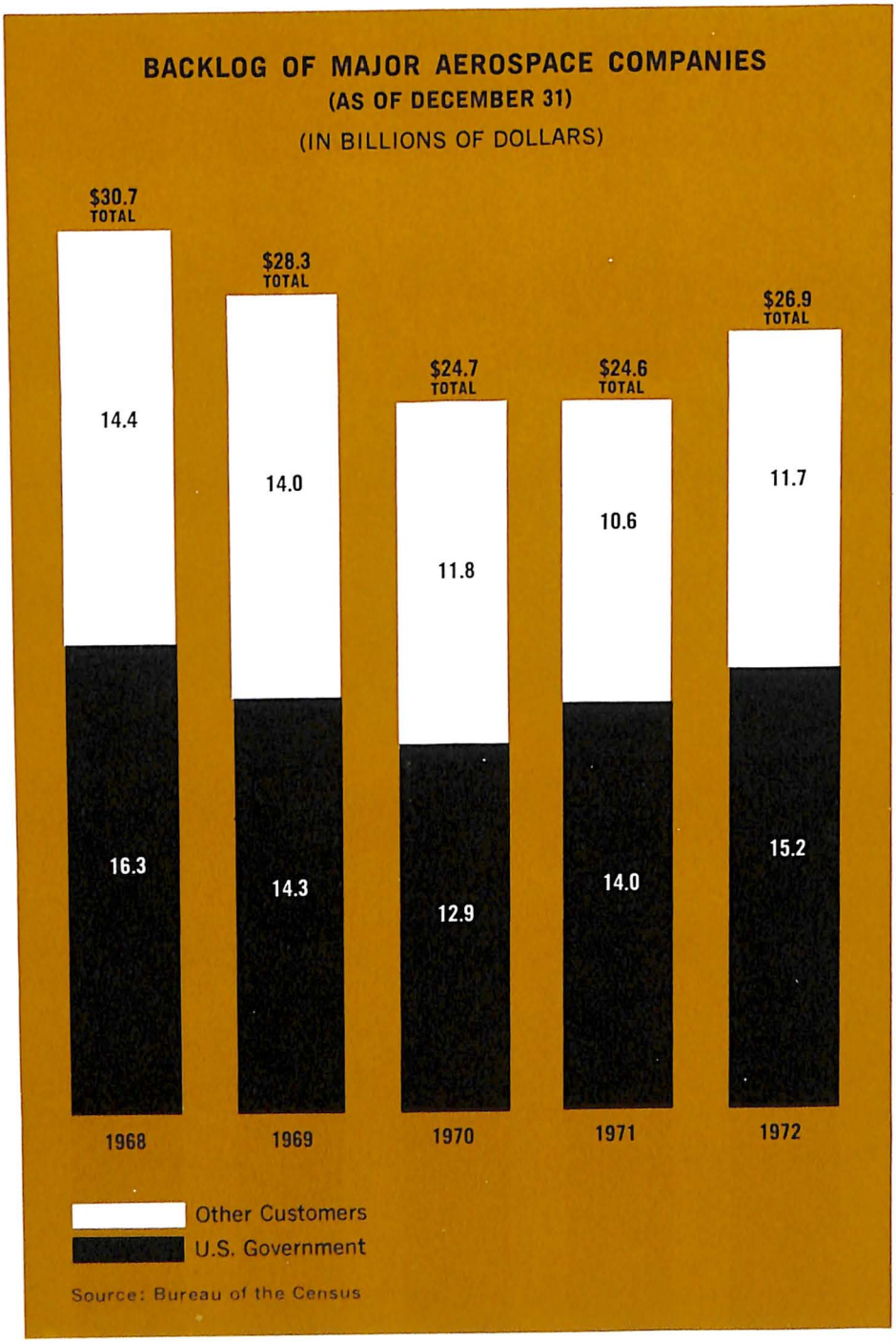
[r] Revised.
NOTE: For explanation of "Aerospace Sales" see "Note" on page 7.
Source: Aerospace Industries Association estimates, based on latest available information.


AEROSPACE SALES BY CUSTOMER
(IN BILLIONS OF DOLLARS)
$29.0 TOTAL
2.6
3.9
5.9
16.6
1968
$26.1 TOTAL
2.7
3.3
4.3
15.8
1969
$24.9 TOTAL
2.7
3.0
4.6
14.6
1970
$22.2 TOTAL
2.5
2.8
4.3
12.6
1971
$22.3 TOTAL
2.6
2.6
4.8
12.3
1972
Non-Aerospace
NASA & Other Government
Civil
Department of Defense
Source: Aerospace Industries Association

ESTIMATED SALES OF THE AEROSPACE INDUSTRY, BY CUSTOMER
(Millions of Dollars)
Calendar Years 1948 to Date

Year Ending December 31	TOTAL SALES	Aerospace Products and Services			Non-aerospace Products and Services
		Government		Non-government	
		Department of Defense	NASA and Other		
1948	$ 1,493	$ 1,182	—	$ 177	$ 134
1949	2,232	1,802	—	230	200
1950	3,116	2,598	—	238	280
1951	6,264	5,353	—	347	564
1952	10,130	8,568	—	650	912
1953	12,459	10,604	—	734	1,121
1954	12,807	10,832	—	822	1,153
1955	12,411	10,508	—	786	1,117
1956	13,946	11,525	—	1,166	1,255
1957	15,858	12,833	—	1,598	1,427
1958	16,065	13,246	$ 1	1,372	1,446
1959	16,640	13,171	130	1,841	1,498
1960	17,326	13,196	363	2,208	1,559
1961	17,997	13,871	630	1,876	1,620
1962	19,162	14,331	1,334	1,772	1,725
1963	20,134	14,191	2,628	1,485	1,830
1964	20,594	13,218	3,635	2,020	1,721
1965	20,670	11,396	4,490	2,816	1,968
1966	24,610	13,284	5,026	3,663	2,637
1967	27,267	15,855	4,201	4,632	2,579
1968	28,959	16,573	3,920	5,917	2,549
1969	26,126	15,771	3,314	4,342	2,699
1970	24,930	14,643	3,000	4,643	2,644
1971[r]	22,182	12,584	2,777	4,302	2,519
1972	22,313	12,251	2,606	4,835	2,621

[r] Revised.
NOTE: For explanation of "Aerospace Sales" see "Note" on page 7.
Source: Aerospace Industries Association estimates, based on latest available information.


BACKLOG OF MAJOR AEROSPACE COMPANIES
(AS OF DECEMBER 31)
(IN BILLIONS OF DOLLARS)
$30.7 TOTAL
14.4
16.3
1968
$28.3 TOTAL
14.0
14.3
1969
$24.7 TOTAL
11.8
12.9
1970
$24.6 TOTAL
10.6
14.0
1971
$26.9 TOTAL
11.7
15.2
1972
Other Customers
U.S. Government
Source: Bureau of the Census

AEROSPACE SUMMARY

Backlog of Major Aerospace Companies, By Product Group 1960 to Date (Millions of Dollars)

As of December 31	Grand Total	Total		Aircraft and Engines		Missiles & Space Incl. Propulsion	Other Aerospace		Non-aerospace
		U.S. Govt.	Other	U.S. Govt.	Other		U.S. Govt.	Other	
1960	$12,496	N.A.	N.A.	$5,357	$2,379	N.A.	N.A.	N.A.	$4,760
1961	13,922	$11,018	$2,904	5,056	2,136	$3,836	$1,391	$ 390	1,113
1962	13,138	10,572	2,566	4,900	1,672	4,056	992	488	1,030
1963	13,904	10,950	2,954	4,924	1,887	4,646	837	458	1,152
1964	15,188	11,651	3,537	5,282	2,515	4,556	913	492	1,430
1965	20,385	13,731	6,654	6,107	5,281	5,480	1,294	562	1,661
1966	27,547	15,711	11,836	8,761	9,718	4,510	1,588	904	2,066
1967	29,339	16,397[r]	12,972	20,628[a]		5,704	1,712	917	1,761
1968	30,749	16,343	14,406	8,150	12,409	5,083	1,851	983	2,273
1969	28,297	14,298	13,999	7,089	12,099	4,338	2,001	880	1,890
1970	24,705	12,882	11,823	5,913	9,800	4,522	1,986	805	1,679
1971[r]	24,579	13,997	10,582	6,221	8,059	4,780	2,232	1,042	2,245
1972	26,860	15,165	11,695	6,874	8,680	5,277	1,989	962	3,078

[a] Of this amount orders of aircraft by the U. S. Government are $7,071 million; to other customers are $9,306 million. Total engine sales are $4,251 million.

[r] Revised.

Note: Based on reports from about 55 aerospace companies.

N.A.—Not available.

Source: Bureau of the Census, 'Current Industrial Reports," Series MQ37D (Quarterly).

Sales of Major Aerospace Companies, By Product Group 1960 to Date (Millions of Dollars)

Year ending December 31	Grand Total	Total		Aircraft and Engines		Missiles & Space Incl. Propulsion	Other Aerospace		Non-aerospace
		U.S. Govt.	Other	U.S. Govt.	Other		U.S. Govt.	Other	
1960	$10,977	N.A.	N.A.	$4,246	$2,183	N.A.	N.A.	N.A.	$4,568
1961	14,948	$11,766	$3,182	3,967	1,888	$5,187	$1,824	$ 852	1,230
1962	15,972	12,552	3,420	4,128	1,772	6,078	1,791	762	1,441
1963	16,407	13,203	3,204	4,158	1,459	6,904	1,611	682	1,593
1964	16,686	12,815	3,871	4,568	1,863	6,381	1,418	735	1,721
1965	17,016	12,535	4,481	4,525	2,532	5,819	1,413	759	1,968
1966	20,227	14,530	5,697	5,458	3,267	6,241	1,755	869	2,637
1967	23,444	16,334	7,110	7,141	4,753	6,054	1,914	1,002	2,580
1968	25,592	16,635	8,957	7,411	6,439	6,076	2,077	1,040	2,549
1969	24,648	16,560	8,088	7,161	5,603	5,660	2,539	986	2,699
1970	24,752	16,407	8,345	7,586	5,880	5,422	2,324	896	2,644
1971[r]	21,679	14,114	7,565	6,313	5,079	4,971	1,909	884	2,523
1972	21,289	13,371	7,918	4,792	5,133	5,631	2,083	1,029	2,621

[r] Revised.

N.A.—Not available.

Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).

Note: Based on information from about 55 aerospace companies. Includes some duplication because of subcontracting between aerospace companies.

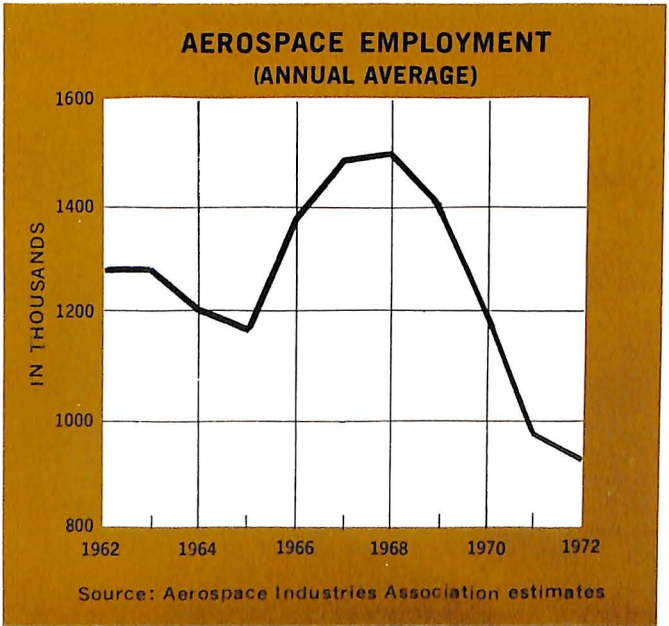
ANNUAL AVERAGE EMPLOYMENT IN ALL MANUFACTURING, DURABLE GOODS AND AEROSPACE INDUSTRIES
Calendar Years 1961 to Date
(Thousands of Employees)

YEAR	ALL MANUFACTURING INDUSTRIES	DURABLE GOODS INDUSTRIES	AEROSPACE INDUSTRY		
			TOTAL	As Percent of	
				Manufacturing	Durable Goods
1961	16,326	9,070	1,178	7.2	13.0
1962	16,853	9,480	1,270	7.5	13.4
1963	16,995	9,616	1,267	7.5	13.2
1964	17,274	9,816	1,209	7.0	12.3
1965	18,062[r]	10,406[r]	1,175	6.5	11.3
1966	19,214[r]	11,284[r]	1,375	7.2	12.2
1967	19,447[r]	11,439[r]	1,484	7.6	13.0
1968	19,781[r]	11,626[r]	1,502	7.6	12.9
1969	20,169	11,893	1,411	7.0	11.9
1970	19,393	11,203	1,199	6.2	10.7
1971	18,529	10,565	969	5.2	9.2
1972	18,933	10,884	922	4.9	8.5

[r] Revised.

NOTE: Aerospace employment as shown is the sum of the estimated monthly average employment in the aircraft and missile and space industries (SIC 372 and 1925) plus estimated aerospace employment in the communications equipment (SIC 3662) and instruments (SIC 3811 and 3821) industries and in certain other industries (SIC 28, 35, 73, 89, etc.).

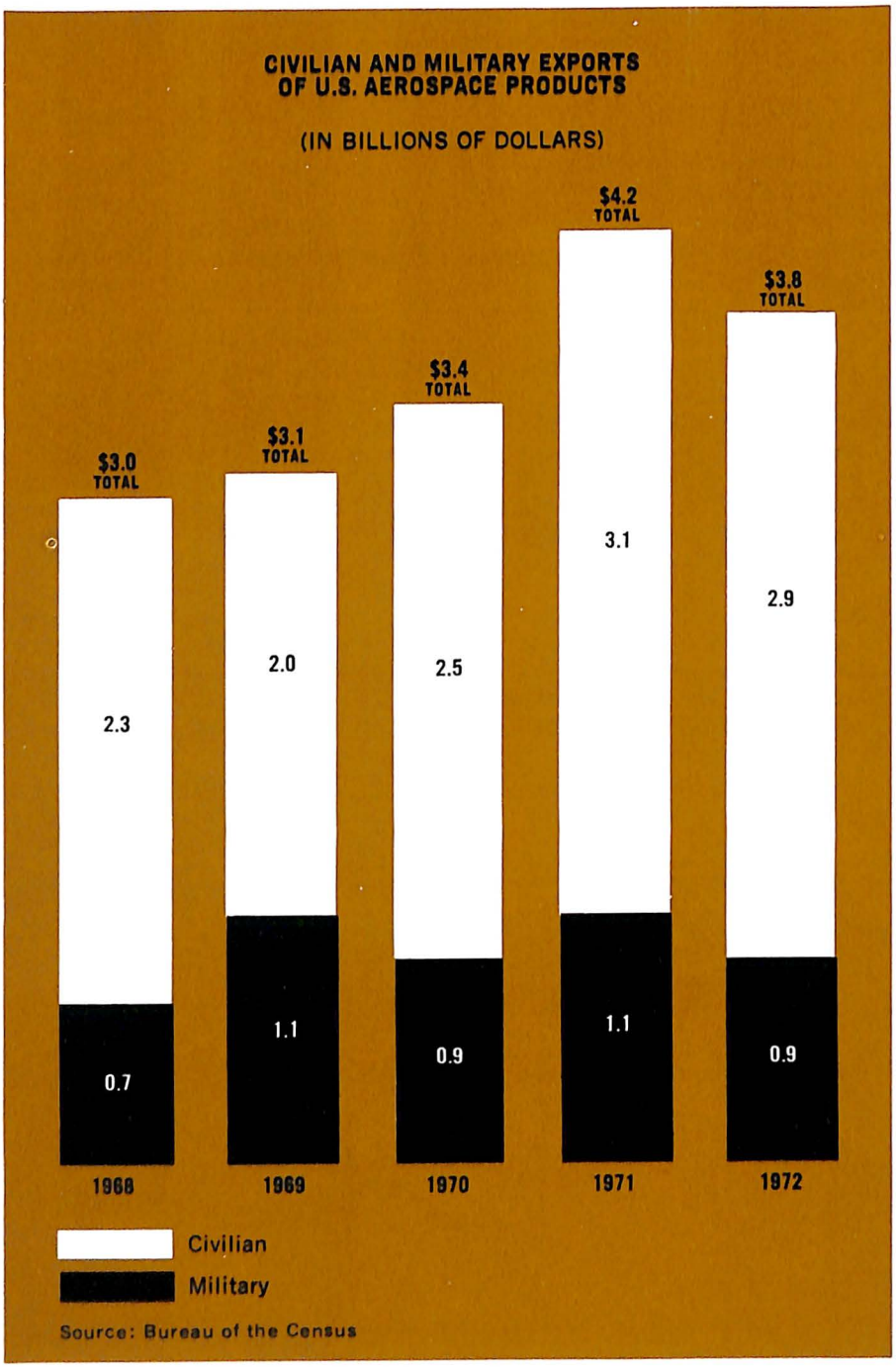
Sources: Manufacturing and Durable Goods: Bureau of Labor Statistics, "Employment and Earnings" (Monthly); Aerospace: Aerospace Industries Association estimates based on latest available information.



ESTIMATED EMPLOYMENT AND PAYROLL IN THE AEROSPACE INDUSTRY
Calendar Years 1961 to Date

YEAR	AEROSPACE EMPLOYMENT[a] (Thousands of Employees)			AEROSPACE PAYROLL (Millions of Dollars)			AEROSPACE as Percent of Total Manufacturing	
	Total	Production Workers	Other[b]	Total	Production Workers	Other[b]	Employment	Payroll
1961	1,178	577	601	$ 9,140	$4,342	$4,798	7.2	10.1
1962	1,270	596	674	10,232	4,871	5,361	7.5	10.5
1963	1,267	592	675	10,173	4,588	5,585	7.5	10.1
1964	1,209	572	637	10,067	4,563	5,504	7.0	9.4
1965	1,175	574	601	10,188	4,504	5,684	6.5	8.8
1966	1,375	706	669	12,139	5,641	6,498	7.2	9.4
1967	1,484	778	706	13,727	6,382	7,345	7.6	10.2
1968	1,502	779	723	14,397	6,582	7,815	7.6	9.9
1969	1,411	715	696	14,649	6,401	8,248	7.0	9.3
1970	1,199	603	596	12,687[r]	5,314[r]	7,373[r]	6.2	8.0
1971	969	471	498	10,746	4,326	6,420	5.2	6.7
1972	922	453	469	11,249	4,580	6,669	4.9	6.4

[a] See "NOTE" page 14 for a description of Aerospace Employment.
[b] "Other" employment includes salaried, clerical and maintenance employees, among others.
[r] Revised.
Sources: Aerospace Employment and Payroll: Aerospace Industries Association estimates, based on latest available information; Manufacturing Employment: Bureau of Labor Statistics, "Employment and Earnings" (Monthly); Manufacturing Payroll: Office of Business Economics.


CIVILIAN AND MILITARY EXPORTS
OF U.S. AEROSPACE PRODUCTS
(IN BILLIONS OF DOLLARS)
$3.0
TOTAL
2.3
0.7
1968
$3.1
TOTAL
2.0
1.1
1969
$3.4
TOTAL
2.5
0.9
1970
$4.2
TOTAL
3.1
1.1
1971
$3.8
TOTAL
2.9
0.9
1972
Civilian
Military
Source: Bureau of the Census

U. S. Exports and Exports of Aerospace Products
Calendar Years 1912 to Date
(Millions of Dollars)

Year	Total Exports of U.S. Merchandise	Exports of Aerospace Products			
		Total	Percent of Total U.S. Exports	Civil		Military
				Transports	Other	
1912	$ 2,170	$ 0.1	[a]	N.A.	N.A.	N.A.
1915–18	22,177	31.5	0.14	N.A.	N.A.	N.A.
1922	3,765	0.5	0.01	N.A.	N.A.	N.A.
1929	5,157	9.1	0.18	N.A.	N.A.	N.A.
1931	2,378	4.9	0.2	N.A.	N.A.	N.A.
1939	3,123	118	3.8	N.A.	N.A.	N.A.
1944	14,162	2,818	19.9	N.A.	N.A.	N.A.
1948	12,523	154	1.2	$ 37	$117	
1950	10,142	242	2.4	40	202	
1951	14,879	301	2.0	13	288	
1952	15,049	603	4.0	18	585	
1954	14,981	619	4.1	93	526	
1957	20,671	1,028	5.0	179	849	
1958	17,745	1,316	7.4	147	$ 456	$ 713
1959	17,451	1,059	6.1	108	394	557
1960	20,375	1,726	8.5	480	609	637
1961	20,754	1,653	8.0	263	615	773
1962	20,431	1,923	9.4	259	651	1,013
1963	23,062	1,627	7.1	191	541	895
1964	26,156	1,608	6.1	211	553	844
1965[r]	27,127	1,618	6.0	353	501	764
1966	29,884	1,673	5.6	421	614	638
1967	31,142	2,248	7.2	611	769	868
1968	34,199	2,994	8.8	1,200	1,089	705
1969[r]	37,462	3,138	8.4	947	1,080	1,111
1970[r]	45,590	3,397	8.0	1,283	1,227	887
1971[r]	43,492	4,196	9.6	1,567	1,508	1,121
1972	48,876	3,823	7.8	1,135	1,821	867

[a] Less than 0.005 percent.
[r] Revised.
N.A.—Not available.
Note: Several changes have been made in this series over the years so that data for years after 1957 are not strictly comparable with earlier years.
Sources: Bureau of the Census "U. S. Exports, Schedule B, Commodity and Country," Report FT 410 (Monthly); Bureau of the Census "Highlights of U. S. Export and Import Trade," Report FT 990 (Monthly).

AIRCRAFT IN OPERATION ON WORLD CIVIL AIRLINES, NUMBER AND PERCENTAGE MANUFACTURED IN THE UNITED STATES
1958 to Date

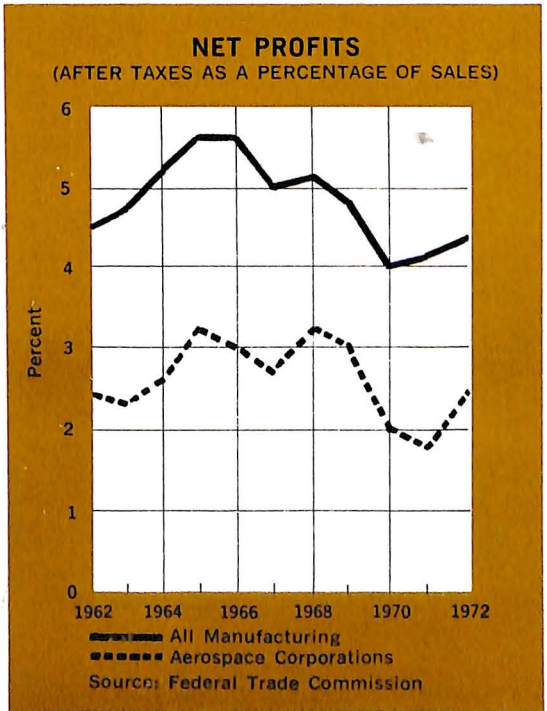
Year Ending December 31	TOTAL AIRCRAFT IN OPERATION	Number Manufactured in the United States	Percent Manufactured in the United States
1958	3,402	2,819	82.9%
1959	3,479	2,868	82.4
1960	3,376	2,766	81.9
1961	3,319	2,542	76.6
1962	3,162	2,345	74.2
1963	3,086	2,266	73.4
1964	3,137	2,317	73.9
1965	3,461	2,548	73.6
1966	3,541	2,556	72.2
1967	3,725	2,735	73.4
1968	3,903	2,890	74.0
1969	3,999	3,030	75.8
1970	3,983	3,042	76.4
1971	3,967	3,101	78.2

NOTE: Based on reports by members of the International Air Transport Association. Excludes U.S.S.R. and People's Republic of China.
Source: International Air Transport Association.

NET PROFIT AFTER TAXES AS A PERCENT OF SALES FOR MANUFACTURING CORPORATIONS
Calendar Years 1957 to Date

Year	All Manufacturing Corporations (except Newspapers)	Non-Durable Goods	Durable Goods	Aerospace
1957	4.8%	4.9%	4.8%	2.9%
1958	4.2	4.4	3.9	2.4
1959	4.8	4.9	4.8	1.6
1960	4.4	4.8	4.0	1.4
1961	4.3	4.7	3.9	1.8
1962	4.5	4.7	4.4	2.4
1963	4.7	4.9	4.5	2.3
1964	5.2	5.4	5.1	2.6
1965	5.6	5.5	5.7	3.2
1966	5.6	5.5	5.6	3.0
1967	5.0	5.3	4.9	2.7
1968	5.1	5.3	4.9	3.2
1969	4.8	5.0	4.6	3.0
1970	4.0	4.5	3.6	2.0
1971	4.1	4.5	3.8	1.8
1972	4.3	4.3	4.2	2.4

Source: Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations."



DEFENSE BUDGET, FEDERAL BUDGET, AND GNP FOR SELECTED FISCAL YEARS
(Billions of Dollars)

Year Ending June 30		GNP	Federal Budget outlays			DoD outlays as Per Cent of	
			Net Total[a]	Dept. of Defense	Other	GNP	Federal Budget
1950	Lowest year since World War II	$ 263.3	$ 43.1	$12.0	$ 32.8	4.5%	26.8%
1953	Korea peak	358.9	76.8	47.5	31.3	13.3	60.3
1964	Last prewar year	612.2	118.6	50.8	70.7	8.3	41.8
1968	South East Asia peak	826.1	178.8	78.0	105.3	9.4	42.5
1972	Last actual year	1,096.0	231.9	76.0	163.8	6.9	31.7
1973	Current estimate	1,208.0	249.8	74.8	183.4	6.2	29.0
1974	Budget estimate	1,313.0	268.7	79.0	198.8	6.0	28.4

[a] "Net Total" is government-wide total less intragovernmental transactions.
Source: Department of Defense, OASD (Comptroller), January 27, 1973.

NEW OBLIGATIONAL AUTHORITY
FOR AEROSPACE PRODUCTS AND SERVICES
Fiscal Years 1962 to Date
(Millions of Dollars)

Year Ending June 30	TOTAL	DEPARTMENT OF DEFENSE				NASA
		Total	Aircraft	Missiles	Astro-nautics	
1962	$14,874	$13,077	$ 6,591	$ 5,604	$ 882	$ 1,797
1963	17,738	14,112	6,499	6,415	1,198	3,626
1964	19,059	14,013	6,649	6,107	1,257	5,046
1965	17,632	12,464	7,025	4,550	889	5,168
1966	20,178	15,083	10,463	3,541	1,079	5,095
1967	21,191	16,329	10,737	4,650	942	4,862
1968	21,034	16,581	10,641	4,897	1,043	4,453
1969	18,350	14,528	7,593	5,863	1,072	3,822
1970	17,945	14,082	8,005	5,439	638	3,863
1971	17,138	13,826	7,998	5,366	462	3,312
1972	17,309	14,006	8,414	5,203	389	3,303
1973[E]	16,495	13,193	7,586	5,199	408	3,302
1974[E]	16,681	13,574	7,832	5,139	603	3,107

[E] Estimate.
NOTE: Excludes transfers from stock funds beginning with 1969.
Source: Department of Defense, Press Package, January 27, 1973; NASA, "The Budget of the United States Government" (Annually).

FEDERAL OUTLAYS FOR SELECTED FUNCTIONS AND FOR AEROSPACE PRODUCTS AND SERVICES
Fiscal Years, 1948 to Date
(Millions of Dollars)

Year Ending June 30	Total National Defense	Total NASA	Federal Outlays for AEROSPACE Products and Services	AEROSPACE as Percent of Total National Defense and NASA
1948	$11,983	N.A.	$ 891	7.4%
1949	13,988	N.A.	1,474	10.5
1950	13,009	N.A.	2,130	16.4
1951	22,444	N.A.	2,878	12.8
1952	45,963	N.A.	6,075	13.2
1953	50,442	$ 79	9,204	18.2
1954	46,986	90	11,194	23.8
1955	40,695	74	10,470	25.7
1956	40,723	71	10,544	25.8
1957	43,368	76	12,506	28.8
1958	44,234	89	13,160	29.7
1959	46,483	145	13,330	28.6
1960	45,691	401	13,269	28.8
1961	47,494	744	13,866	28.7
1962	51,103	1,257	15,295	29.2
1963	52,755	2,552	16,214	29.3
1964	53,591[r]	4,171	17,940	31.0[r]
1965	49,578[r]	5,093	15,697	28.7[r]
1966	56,785[r]	5,933	17,771	28.3[r]
1967	70,081[r]	5,426	20,193	26.7[r]
1968	80,517[r]	4,724	21,353	25.1[r]
1969	81,232[r]	4,251	20,472	23.9[r]
1970	80,295	3,753	18,747	22.3
1971	77,661	3,382	17,335	21.4
1972	78,336	3,421	17,061	20.9
1973[E]	76,435	3,061	16,156	20.3
1974[E]	81,074	3,135	16,410	19.5

NOTE: "National Defense" includes the military budget of the Department of Defense and Atomic Energy Commission. "Total NASA" includes research and development activities, administrative operations and construction of facilities of NASA. NASA construction is not included in "Total Aerospace Products and Services."
N.A.—Not available.
[E] Estimate.
[r] Revised.
Source: "The Budget of the United States Government" (Annually).

DEPARTMENT OF DEFENSE
TOTAL OUTLAYS BY APPROPRIATION GROUP
Fiscal Years, 1966 to Date
(Millions of Dollars)

	1966	1967
TOTAL	$55,181	$68,315
PROCUREMENT—TOTAL	14,339	19,012
AIRCRAFT	6,635	8,411
MISSILES	2,069	1,930
Ships	1,479	1,398
Combat Vehicles, Weapons & Torpedoes	[a]	[a]
Ordnance, Vehicles & Related Equipment	1,642	3,881
Electronics & Communications	983	1,284
Other Procurement	1,531	2,108
RESEARCH, DEVELOPMENT, TEST & EVALUATION—TOTAL	6,259	7,160
AIRCRAFT	76	1,048
MISSILES	1,801	2,502
ASTRONAUTICS	930	983
Other	2,552	2,627
Military Assistance	968	873
Military Construction	1,334	1,536
Family Housing	647	482
Civil Defense	86	100
Military Personnel—Total	16,753	19,787
Active Forces	14,407	17,055
Reserve Forces	755	902
Retired Pay	1,591	1,830
Operations and Maintenance	14,710	19,000
Other	85	365

E Estimate.
[a] Amount included in entry for "Ordnance, Vehicles & Related Equipment".
NOTE: Data in parentheses are credit figures. The categories printed in capital letters are primarily aerospace, but others contain substantial parts attributable to aerospace activities.
Source: Department of Defense; AIA estimates where Department of Defense data were not available.

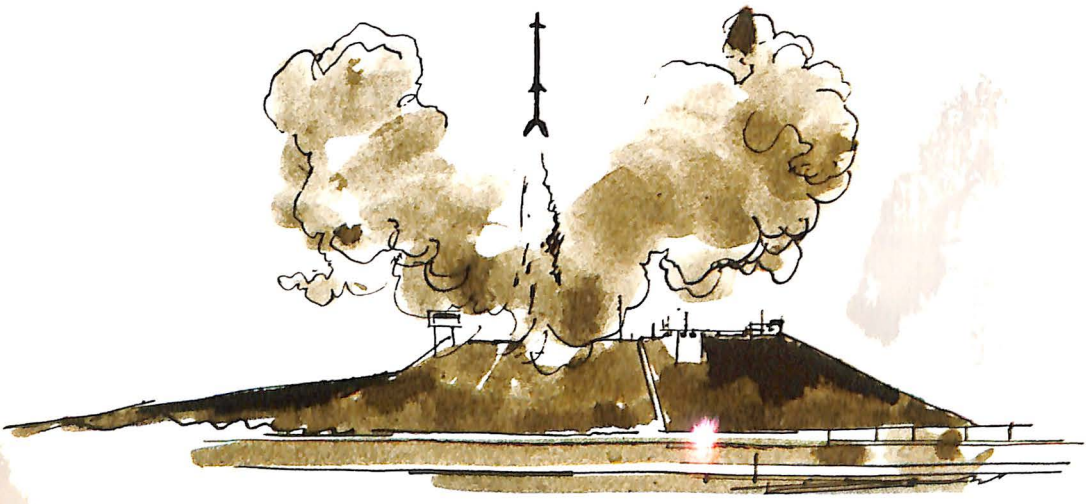
DEPARTMENT OF DEFENSE—Continued
TOTAL OUTLAYS BY APPROPRIATION GROUP
Fiscal Years, 1966 to Date
(Millions of Dollars)

1968	1969	1970	1971	1972	1973[E]	1974[E]
$78,027	$78,666	$77,880	$75,545	$75,957	$74,800	$79,000
23,283	23,988	21,585	18,858	17,131	15,600	16,490
9,462	9,177	7,948	6,631	5,927	5,044	5,098
2,219	2,509	2,912	3,140	3,009	3,512	3,409
1,356	1,949	2,066	2,114	1,978	2,022	2,418
738	[a]	647	545	491		
5,709	6,590	4,973	3,586	3,040	5,022	5,565
1,595	1,409	1,182	1,163	946		
2,204	2,354	1,857	1,679	1,740		
7,747	7,459	7,166	7,303	7,881	7,622	8,069
1,367	1,031	1,239	1,699	2,066	1,997	2,114
2,488	2,410	2,196	2,008	2,157	2,088	2,211
1,221	1,159	753	519	468	450	476
2,671	2,859	2,978	3,077	3,190	3,087	3,268
601	686	609	999	806	600	800
1,281	1,389	1,168	1,095	1,108	1,068	1,220
495	572	614	598	688	847	964
108	87	80	75	75	87	90
21,954	23,828	25,880	26,018	26,921	27,527	27,206
18,988	20,478	21,977	21,428	21,629	21,508	20,815
871	907	1,054	1,204	1,407	1,577	1,685
2,095	2,443	2,849	3,386	3,885	4,442	4,706
20,578	22,285	21,609	20,941	21,675	21,540	21,662
1,980	(1,628)	(831)	(342)	(510)	(91)	2,499

DEPARTMENT OF DEFENSE
AEROSPACE OUTLAYS
Fiscal Years 1960 to 1972
(Millions of Dollars)

Year	DOD Aerospace Outlays[a]		
	TOTAL	Procurement	Research, Development, Test, and Evaluation
1960	$12,502	$ 9,299	$ 3,203
1961	12,960	8,870	4,090
1962	13,992	9,842	4,150
1963	13,857	10,126	3,731
1964	14,205	9,630	4,575
1965	11,135	7,296	3,839
1966	12,411	8,704	3,707
1967	14,871	10,341	4,533
1968	16,757	11,681	5,076
1969	16,286	11,686	4,600
1970	15,048	10,860	4,188
1971	13,997	9,771	4,226
1972	13,627	8,936	4,691

[a] Excludes Military Assistance.
Sources: Department of Defense, FAD 695 and earlier reports.



ACTIVE MILITARY FORCES OF THE UNITED STATES
Fiscal Years 1968 and 1972 to Date

Description	Actual		Estimated	
	1968	1972	1973	1974
Military Personnel (in thousands):				
Army	1,570	811	825	804
Navy	765	588	574	566
Marine Corps	307	198	197	196
Air Force	905	726	692	666
TOTAL, Department of Defense	3,547	2,322	2,288	2,233
Selected Military Forces:				
Strategic Forces:				
Intercontinental Ballistic Missiles:				
Minuteman	20	1,000	1,000	1,000
Titan II	6	54	54	54
Polaris-Poseidon Missiles	656	656	656	656
Strategic Bomber Squadrons	40	30	30	28
Manned Fighter Interceptor Squadrons	24	10	8	8
Army Air Defense Firing Batteries	20½	21	21	21
General Purpose Forces.				
Army Divisions	18	12⅔	13	13
Marine Corps Divisions	4	3	3	3
Air Force Wings	22	21	21	21
Navy Attack Wings	23	14	14	14
Marine Corps Wings	3	3	3	3
Attack & Antisubmarine Carriers	23	17	16	15
Nuclear Attack Submarines	33	56	60	64
Escort Ships	328	279	244	191
Amphibious Assault Ships	157	77	65	65
Airlift and Sealift Forces:				
Aircraft Squadrons:				
C-5A	—	4	4	4
C-133, C-141, C-118, C-124, C-130, C 135	61	—	—	—
C-141	—	13	13	13
Troopships, Cargo Ships, and Tankers	130	87	63	57

Source: Department of Defense, OASD (Comptroller), January 27, 1973 .

Aircraft Production

Aircraft production in the United States, influenced somewhat by the peak of the war in Southeast Asia, reached a high of 19,414 units in 1968 (4,440 military and 14,974 civil).

During the next three years there was a steady decline in the production of both military and civil aircraft from 19,414 to an estimated 9,544 in 1971. This decrease in overall production amounted to 51 per cent.

A modest turnaround in this downward trend was posted in 1972, due to sales in the civil (commercial and general aviation) field which more than offset the drop in military aircraft production. Between 1971 and the end of 1972 overall production increased by 21 per cent, from an estimated 9,544 units to an estimated 11,547.

General aviation shipments followed the overall pattern of the industry, generally declining from a high of about 16,000 units in 1966 to less than 7,500 in 1970 and 1971 and climbing back to nearly 10,000 in 1972.

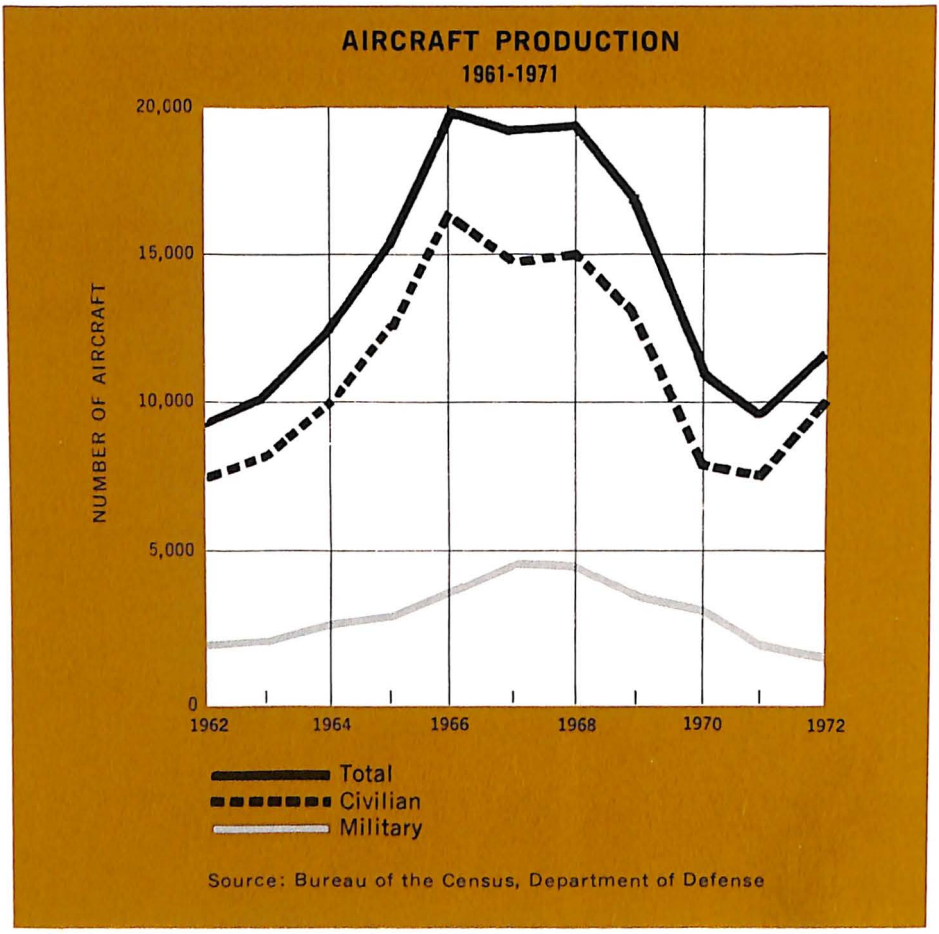
In considering *unit* sales or shipments it should be borne in mind that units do not necessarily equate with dollars. For example, overall aircraft sales decreased from $11,392 million in 1971 to $9,925 million in 1972. Jet transport sales declined in number and total dollar value while

general aviation deliveries were increasing in number and dollar value. For 1972 jet transport sales still were $2,591 million and general aviation sales were $558 million.

Net sales of aircraft, engines, propellers and parts reported by major manufacturers for 1972 dropped by about $1,467 million, but at the end of the year the reported backlog of orders was up about $1,274 million over the end of 1971.

The production of commercial transport aircraft which had fallen by 68 per cent from 702 units in 1968 to 223 in 1971 began to show a slight increase to 227 in 1972. These figures reflect the introduction of the high-capacity, wide-body transports (747, DC-10, L-1011) during 1970 and 1971. Among orders on hand at the end of 1972 the largest in number were for the tri-jet Boeing 727, the Lockheed L-1011 and the McDonnell Douglas DC-10. These aircraft were leaders with both domestic and foreign customers. In addition, the L-100-30 version of Lockheed's U.S. military workhorse C-130, was popular with foreign customers, with 40 on order at the end of 1972.

Within the Department of Defense the procurement plans of the military services indicate that, by estimate, procurement in 1974 as compared to 1972, will be up in aircraft, missiles, torpedoes, and the same in ships and tracked combat vehicles.


AIRCRAFT PRODUCTION
1961-1971
NUMBER OF AIRCRAFT
20,000
15,000
10,000
5,000
0
1962
1964
1966
1968
1970
1972
Total
Civilian
Military
Source: Bureau of the Census, Department of Defense

U. S. Aircraft Production
Calendar Years 1909 to Date
(Number of Aircraft)

Year Ending December 31	Total	Military	Civil
1909	N.A.	1	N.A.
1910	N.A.	—	N.A.
1911	N.A.	11	N.A.
1912	45	16	29
1913	43	14	29
1914	49	15	34
1915	178	26	152
1916	411	142	269
1917	2,148	2,013	135
1918	14,020	13,991	29
1919	780	682	98
1920	328	256	72
1921	437	389	48
1922	263	226	37
1923	743	687	56
1924	377	317	60
1925	789	447	342
1926	1,186	532	654
1927	1,995	621	1,374
1928	4,346	1,219	3,127
1929	6,193	677	5,516
1930	3,437	747	2,690
1931	2,800	812	1,988
1932	1,396	593	803
1933	1,324	466	858
1934	1,615	437	1,178
1935	1,710	459	1,251
1936	3,010	1,141	1,869
1937	3,773	949	2,824
1938	3,623	1,800	1,823
1939	5,856	2,195	3,661
1940	12,813	6,028	6,785
1941	26,289	19,445	6,844
1942	47,675	47,675	—
1943	85,433	85,433	—

(Continued on next page)

U.S. Aircraft Production
Calendar Years 1909 to Date (cont'd)
(Number of Aircraft)

Year Ending December 31	Total	Military	Civil
1944	95,272	95,272	—
1945	48,912	46,865	2,047
1946	36,418	1,417	35,001
1947	17,739	2,122	15,617
1948	9,838	2,536	7,302
1949	6,137	2,592	3,545
1950	6,200	2,680	3,520
1951	7,532	5,055	2,477
1952	10,640	7,131	3,509
1953	13,112	8,978	4,134
1954	11,478	8,089	3,389
1955	11,484	6,664	4,820
1956	12,408	5,203	7,205
1957	11,943	5,198	6,745
1958	10,938	4,078	6,860
1959	11,076	2,834	8,242
1960	10,237	2,056	8,181
1961	9,054	1,582	7,472
1962	9,308	1,975	7,333
1963	10,125	1,970	8,155
1964	12,492	2,439	10,053
1965	15,349	2,806	12,543
1966	19,886	3,609	16,277
1967	19,141	4,481	14,660
1968[r]	19,414	4,440	14,974[r]
1969	16,841	3,644	13,197
1970	10,943	3,085	7,858
1971[E]	9,544[E]	1,900[E]	7,644[r]
1972[E]	11,547[E]	1,400[E]	10,147

Note: 1950 to date excludes aircraft produced for the Military Assistance Program.
[E] Estimate.
N.A.—Not available.
[r] Revised.
Sources: Department of Commerce, Bureau of the Census, "Current Industrial Reports, Series M37G" (Monthly). Department of Defense.

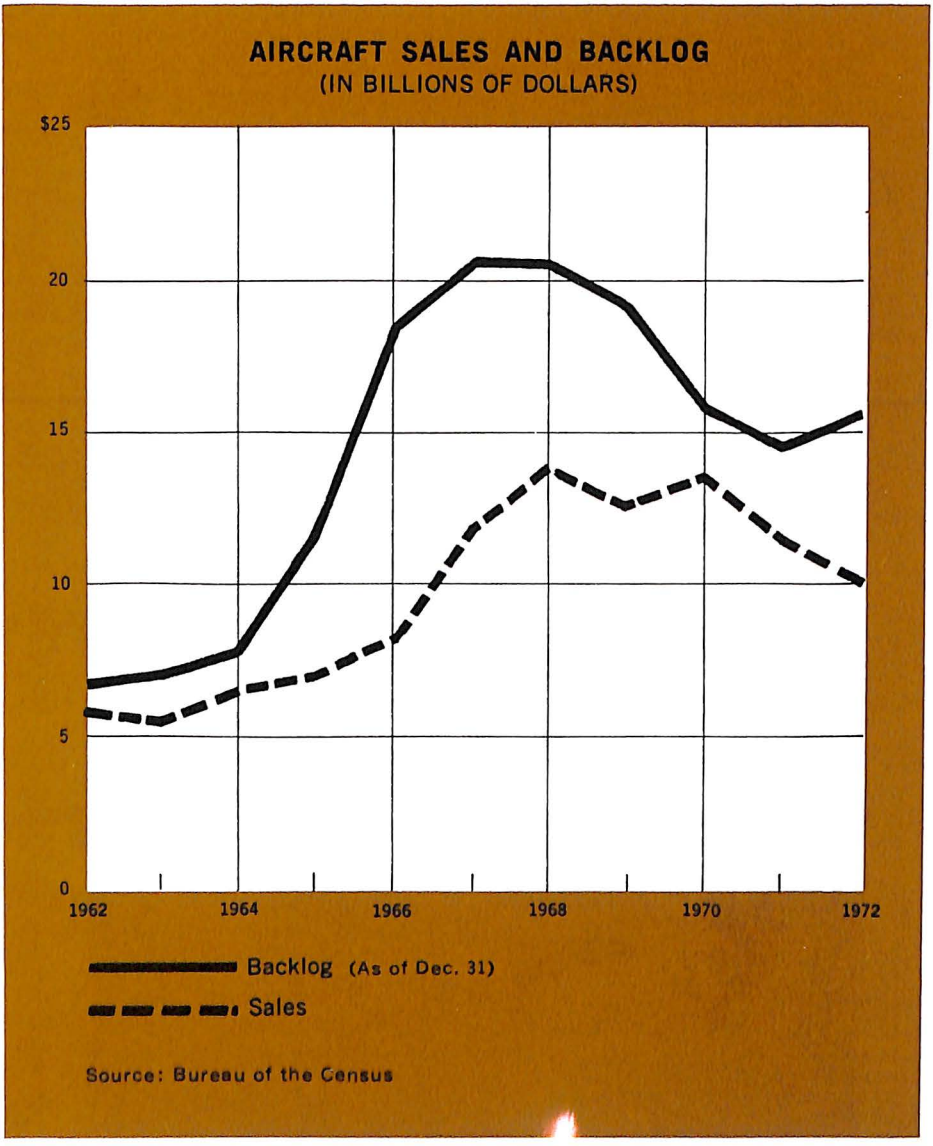
AIRCRAFT SALES BY MAJOR MANUFACTURERS OF COMPLETE AIRCRAFT, AIRCRAFT ENGINES, AND PARTS
Calendar Years 1948 to Date
(Millions of Dollars)

Year Ending Dec. 31	Total			Aircraft & Parts[a]		Aircraft Engines & Parts	
	TOTAL	U.S. Gov't	Other	U.S. Gov't	Other	U.S. Gov't	Other
1948[b]	$ 1,061	$ 884	$ 177	$ 662	$ 134	$ 222	$ 43
1949	1,668	1,438	230	977	183	461	47
1950	2,116	1,878	238	1,317	174	561	64
1951	2,872	2,525	347	1,746	247	779	100
1952	5,654	5,004	650	3,564	481	1,440	169
1953	7,760	7,026	734	4,837	545	2,189	189
1954	7,471	6,649	822	4,777	632	1,872	190
1955	7,231	6,445	786	4,717	581	1,728	205
1956	7,689	6,523	1,166	4,805	849	1,718	317
1957	9,482	7,884	1,598	5,747	1,208	2,137	390
1958	8,661	7,289	1,372	5,431	1,051	1,858	321
1959	7,236	5,395	1,841	4,127	1,433	1,268	408
1960	6,429	4,246	2,183	3,333	1,766	913	417
1961	5,855	3,967	1,888	2,946	1,455	1,021	433
1962	5,900	4,128	1,772	2,998	1,389	1,130	383
1963	5,617	4,158	1,459	2,986	1,055	1,172	404
1964	6,431	4,568	1,863	3,502	1,409	1,066	454
1965	7,057	4,525	2,532	3,393	1,950	1,132	582
1966	8,725	5,458	3,267	4,086	2,544	1,372	723
1967	11,894	7,141	4,753	5,345	3,737	1,796	1,016
1968	13,850	7,411	6,439	5,697	5,188	1,714	1,251
1969	12,764	7,161	5,603	5,382	4,517	1,779	1,086
1970	13,466	7,586	5,880	5,674	4,683	1,912	1,197
1971[r]	11,392	6,313	5,079	4,953	4,093	1,360	986
1972	9,925	4,792	5,133	3,608	4,083	1,184	1,050

[a] Includes Aircraft Propellers and Parts.
[b] Total for the last 3 quarters of 1948 only.
[r] Revised.

NOTE: 1948 to 1960 based on reports from about 48 companies—all companies known to be engaged in the manufacture of complete aircraft, aircraft engines, and aircraft propellers. After 1960, based on reports from about 55 aerospace companies. Includes some duplication because of subcontracting between aerospace companies.

Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).


AIRCRAFT SALES AND BACKLOG
(IN BILLIONS OF DOLLARS)
$25
20
15
10
5
0
1962
1964
1966
1968
1970
1972
Backlog (As of Dec. 31)
Sales
Source: Bureau of the Census

AIRCRAFT SALES AND BACKLOG, REPORTED BY MAJOR MANUFACTURERS OF COMPLETE AIRCRAFT, AIRCRAFT ENGINES, PROPELLERS, AND PARTS
Calendar Years 1948 to Date
(Millions of Dollars)

Year Ending December 31	Aircraft, Aircraft Engines, Propellers, and Parts	
	Net Sales During Year	Backlog December 31
1948	$ 1,061[a]	$ 2,983
1949	1,668	2,853
1950	2,116	4,717
1951	2,872	11,898
1952	5,654	16,692
1953	7,760	15,928
1954	7,471	13,755
1955	7,231	13,864
1956	7,689	16,000
1957	9,482	12,363
1958	8,661	10,182
1959	7,236	8,121
1960	6,429	7,736
1961	5,855	7,192
1962	5,900	6,572
1963	5,617	6,811
1964	6,431	7,797
1965	7,057	11,388
1966	8,725	18,479
1967	11,894	20,628
1968	13,850	20,559
1969	12,764	19,188
1970	13,466	15,713
1971[r]	11,392	14,280
1972	9,925	15,554

[r] Revised.
[a] Three quarters only.
NOTE: 1948 to 1960 based on reports from about 48 companies—all companies known to be engaged in the manufacture of complete aircraft, aircraft engines, and aircraft propellers. After 1960, based on reports from about 55 aerospace companies.
Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).

AIRCRAFT BACKLOG OF ORDERS REPORTED BY MAJOR MANUFACTURERS OF COMPLETE AIRCRAFT, AIRCRAFT ENGINES AND PARTS
1948 to Date
(Millions of Dollars)

Year Ending Dec. 31	Total			Aircraft & Parts[a]		Aircraft Engines & Parts	
	TOTAL	U.S. Government	Other	U.S. Government	Other	U.S. Government	Other
1948	$ 2,983	$ 2,817	$ 166	$ 2,058	$ 139	$ 759	$ 27
1949	2,853	2,708	145	1,998	106	710	39
1950	4,717	4,287	430	2,888	359	1,399	71
1951	11,898	10,899	999	7,549	818	3,350	181
1952	16,692	15,626	1,066	10,634	886	4,992	180
1953	15,928	14,984	944	11,031	791	3,953	153
1954	13,755	12,835	920	10,029	797	2,806	123
1955	13,864	11,553	2,311	8,823	1,980	2,730	331
1956	16,000	12,299	3,701	8,983	2,952	3,316	749
1957	12,363	8,942	3,421	6,563	2,831	2,379	590
1958	10,182	6,933	3,249	5,454	2,710	1,479	539
1959	8,121	5,476	2,645	4,479	2,225	997	420
1960	7,736	5,357	2,379	4,101	2,031	1,256	348
1961	7,192	5,056	2,136	3,968	1,678	1,088	458
1962	6,572	4,900	1,672	3,736	1,309	1,164	363
1963	6,811	4,924	1,887	3,844	1,457	1,080	430
1964	7,797	5,282	2,515	4,290	1,987	992	528
1965	11,388	6,072	5,316	4,425	4,460	1,647	856
1966	18,479	8,761	9,718	6,515	8,140	2,246	1,578
1967	20,628	20,628		7,071	9,306	4,251	
1968	20,559	8,150	12,409	5,999	10,609	2,151	1,800
1969	19,188	7,089	12,099	5,270	10,340	1,819	1,759
1970	15,713	5,913	9,800	4,663	8,601	1,250	1,199
1971[r]	14,280	6,221	8,059	4,876	7,123	1,345	936
1972	15,554	6,874	8,680	5,612	7,362	1,262	1,318

NOTE: 1948 to 1960 based on reports from about 48 companies—all companies known to be engaged in the manufacture of complete aircraft, aircraft engines, and aircraft propellers. After 1960, based on reports from about 55 aerospace companies.

[a] Including "Aircraft Propellers and Parts."

[r] Revised.

Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).

DEPARTMENT OF DEFENSE
OUTLAYS FOR AIRCRAFT PROCUREMENT, BY AGENCY
Fiscal Years 1951 to Date
(Millions of Dollars)

Year Ending June 30	Total Defense Department	Air Force	Navy	Army
1951	$2,412	$1,812	$ 594	$ 7
1952	4,888	3,633	1,205	51
1953	8,189	N.A.	N.A.	N.A.
1954	9,080	N.A.	N.A.	N.A.
1955	8,804	N.A.	N.A.	N.A.
1956	7,835	N.A.	N.A.	N.A.
1957	8,647	N.A.	N.A.	N.A.
1958	8,793	N.A.	N.A.	N.A.
1959	7,730	N.A.	N.A.	N.A.
1960	6,272	4,414	1,765	93
1961	5,898	3,926	1,832	141
1962	6,659	4,387	2,102	170
1963	6,309	3,746	2,328	234
1964	6,053	3,894	1,859	300
1965	5,200	3,115	1,739	346
1966	6,635	4,074	2,021	540
1967	8,411	4,842	2,607	962
1968	9,462	5,079	3,244	1,139
1969	9,177	5,230	2,821	1,126
1970	7,948	4,623	2,488	837
1971	6,631	3,960	2,125	546
1972	5,927	3,191	2,347	389

N.A.—Not available.
Source: Department of Defense, OASD (Comptroller), Budget Briefing, January 27, 1973.

Military Aircraft Produced
Number, Flyaway Value and Airframe Weight
Calendar Years 1955 to 1970

Year	Type of Aircraft						
	Total	Bomber	Fighter/ Attack	Transport	Trainer	Heli-copter	Other
NUMBER							
1955	6,664	1,353	3,128	513	1,111	410	149
1956	5,203	1,164	1,916	362	778	644	339
1957	5,198	873	2,073	224	819	659	550
1958	4,078	676	1,482	271	560	641	448
1959	2,834	511	922	215	564	451	171
1960	2,056	471	595	142	268	488	92
1961	1,582	397	376	148	203	366	92
1962	1,975	398	437	256	211	554	119
1963	1,970	310	423	282	204	672	79
1964	2,439	362	586	254	191	1,007	39
1965	2,806	283	496	136	396	1,470	25
1966	3,609	214	627	142	442	2,164	20
1967	4,481	404	811	135	331	2,448	352
1968[a]	4,440	34	1,007	18	292	2,800	289
1969[a]	3,644	31	792	44	295	2,165	317
1970[a]	3,085	66	734	37	173	1,944	131
FLYAWAY VALUE[b] *(Millions of Dollars)*							
1955	$4,928	$2,014	$1,908	$653	$166	$169	$ 18
1956	5,075	2,203	1,987	537	115	185	48
1957	5,285	2,163	2,087	676	169	157	33
1958	5,365	2,157	2,107	782	139	156	24
1959	5,101	2,066	1,830	759	216	163	67
1960	3,384	1,561	1,109	415	130	173	50
1961	4,497	2,570	1,055	385	120	228	55
1962	3,816	1,629	1,005	674	194	250	64
1963	2,876	798	931	587	182	337	41
1964	3,080	802	1,155	624	122	356	21
1965	2,875	639	960	655	108	490	23
1966	3,554	612	1,289	701	190	749	13
1967	4,476	822	1,721	759	144	962	68
1968[a]	3,871	117	2,451	81	167	905	150
1969[a]	3,693	248	2,204	101	164	845	131
1970[a]	3,920	545	1,940	555	111	694	75

(Continued on next page)

MILITARY AIRCRAFT PRODUCED—*Continued*
NUMBER, FLYAWAY VALUE AND AIRFRAME WEIGHT

Calendar Years 1955 to 1970

Year	TYPE OF AIRCRAFT						
	TOTAL	Bomber	Fighter/ Attack	Transport	Trainer	Heli- copter	Other
AIRFRAME WEIGHT (Millions of pounds)							
1955	114.3	39.9	43.2	20.9	7.4	[c]	2.9
1956	90.0	38.6	30.6	13.1	3.3	[c]	4.4
1957	79.4	32.7	28.7	9.3	4.2	[c]	4.5
1958	66.1	25.2	18.0	15.9	3.1	[c]	3.9
1959	51.8	18.6	12.9	14.6	3.5	[c]	2.2
1960	35.8	13.6	9.1	9.7	1.1	[c]	2.3
1961	29.6	11.9	6.1	8.3	0.9	[c]	2.4
1962	35.6	10.3	7.4	13.2	1.3	[c]	3.4
1963	32.1	4.1	8.2	14.5	1.3	[c]	4.0
1964	38.7	5.6	12.4	15.1	1.1	[c]	4.5
1965	33.9	4.7	10.7	10.8	1.4	[c]	6.3
1966	44.1	4.4	12.6	14.0	1.8	[c]	11.3
1967	41.3	4.2	11.7	13.0	1.9	[c]	10.5
1968[a]	39.4	1.8	20.9	3.0	1.6	[c]	12.1
1969[a]	29.2	1.3	12.7	3.5	1.5	[c]	10.2
1970[a]	31.3	3.0	12.4	6.8	1.0	[c]	8.1

NOTE: Data exclude gliders and targets.

[a] 1955-1967, Navy attack planes included with Bombers. 1968-1970, Navy attack planes included under Fighter/Attack.

[b] Values up to 1961 are based on unit prices in latest production contracts and do not include values of spares, spare parts, and other support equipment. Since 1961, data include spares, spare parts, and support equipment that are procured with the basic aircraft.

[c] Airframe weight of helicopters is included in the "Other" category.

Source: Department of Defense, OASD (Comptroller). Data released with a two-year lag for security reasons.

FLYAWAY AND WEAPON SYSTEM COST OF MILITARY AIRCRAFT PRODUCED
(By Department, Type and Model)
Calendar Year 1970
(Millions of Dollars)

Department, Type and Model	Number	Flyaway Cost[a]	Weapon System Cost[b]
DEPARTMENT OF DEFENSE,[c]—TOTAL	3,085	$3,920	$4,457
AIR FORCE—TOTAL	772	2,133	2,387
Bombers (FB-111)	42	370	461
Fighter/Attack	407	1,069	1,169
A-7	57	174	201
A-37	113	60	60
F-4	138	340	366
RF-4	36	94	97
F-5	5	4	4
F-111	54	394	437
RF-5	4	3	4
Transports	37	555	600
C-5	20	501	545
C-130	2	5	5
HC-130	15	49	50
Trainers	63	18	25
T-37	11	2	4
T-38	22	16	20
T-41	30	[d]	1
Helicopters	122	112	122
UH-1	76	26	27
HH-3	15	19	20
HH-53	19	43	50
CH-53	12	24	25
Utility and Observation (O-2)	101	9	10
ARMY—TOTAL	1,645	425	434
Helicopters	1,615	360	368
AH-1	9	4	4
UH-1	861	214	216
OH-6	114	13	15
OH-58	595	61	62
CH-47	24	43	45
CH-54	12	25	26
Observation (OV-1)	30	65	66

(*Continued on next page*)

FLYAWAY AND WEAPON SYSTEM COST OF MILITARY AIRCRAFT PRODUCED—Con't.
(By Department, Type and Model)
Calendar Year 1970
(Millions of Dollars)

Department, Type and Model	Number	Flyaway Cost[a]	Weapon System Cost[b]
NAVY—TOTAL	668	$1,362	$1,636
Patrol (P-3)	24	176	256
Attack	275	721	864
A-4	5	8	9
A-6	34	134	159
EA-6	1	10	17
A-7	214	453	558
RA-5	21	116	121
Fighter	52	149	172
F-4	42	121	174
RF-4	10	28	28
Trainers	110	93	98
T-2	40	25	25
TA-4	63	62	66
T-38	3	2	3
CT-39	4	4	4
Helicopters	207	223	246
AH-1	43	30	33
TH-1	36	14	16
CH-46	45	64	70
CH-53	56	106	116
HH 1	27	9	11

[a] Flyaway Cost includes airframe, engines, electronics, communications, armament and other installed equipment.
[b] Weapon System Cost includes flyaway items, initial spares, ground equipment and training equipment.
[c] Data exclude aircraft produced for Military Assistance and U.S. Coast Guard.
[d] Less than $500,000.
Source: Department of Defense, OASD (Comptroller). Data released with a two-year lag for security reasons.

NUMBER OF MILITARY AIRCRAFT, MISSILES, AND OTHER ITEMS PROGRAMMED
Fiscal Years 1972, 1973, and 1974 By Service

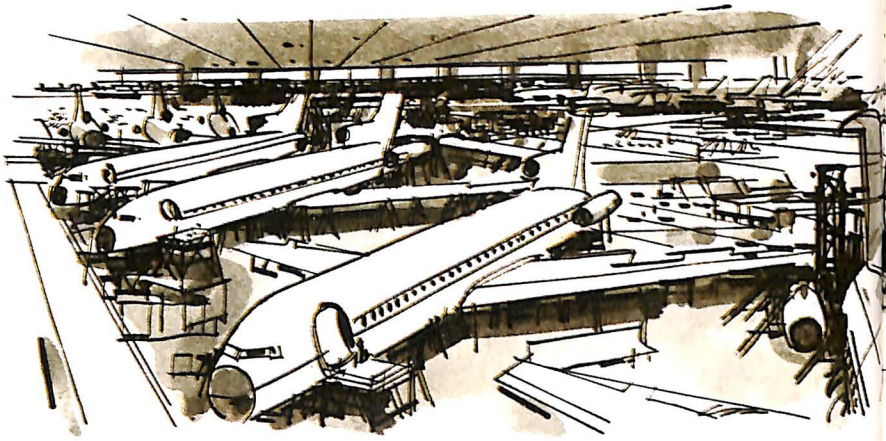
Major Item	Year Ending June 30		
	1972	1973[E]	1974[E]
AIRCRAFT—Total	872	791	1,001
Air Force	201	473	676
Navy and Marine Corps	271	292	305
Army	400	26	20
Helicopters	442	242	376
Fixed Wing Aircraft	430	549	625
MISSILES—Total	18,841	24,830	30,198
Air Force	2,885	4,240	7,290
Navy and Marine Corps	2,433	3,528	2,802
Army	13,523	17,062	20,106
SHIPS—Navy—Total	23	17	22
New Construction	15	9	14
Conversions	8	8	8
TRACKED COMBAT VEHICLES—TOTAL	600	447	604
Army	150	166	484
Marine Corps	450	281	120
TORPEDOES—Navy	370	500	500
OTHER WEAPONS—TOTAL	27,980	72,138	41,475
Army	27,980	72,009	41,375
Navy and Marine Corps	—	129	100

[E] Estimated.
Source: Department of Defense, OASD (Comptroller), January 27, 1973

AIRCRAFT PROGRAM ACQUISITION COSTS
PROCUREMENT, INCLUDING INITIAL SPARES
(BY DEPARTMENT, TYPE AND MODEL)
Fiscal Years 1972 to 1974

Department, Type and Model	Year ending June 30					
	1972		1973		1974	
	Number	Millions of Dollars	Number	Millions of Dollars	Number	Millions of Dollars
AIR FORCE						
AX Close Air Support	—	—	—	—	—	$ 30.0
F-4E Fighter	36	$131.4	48	$170.1	24	99.6
F-5A Fighter	—	—	—	—	116	71.9
F-5E Fighter	21	81.1	57	98.7	71	124.2
F-15 Fighter	—	—	30	453.6	77	918.5
C-5A Cargo/Transport	—	299.1	—	107.6	—	43.1
C-130EH Tactical Transport	12	40.2	20	93.2	36	192.2
T-41D Trainer	3	0.1	1	[a]	3	0.1
AABNCP Adv. Airborne Command Post	—	—	2	69.0	1	32.3
CH-47C Chinook Helicopter	—	—	—	—	—	51.5
UH-1H Utility Helicopter	—	—	180	53.4	308	97.0
CX-X Executive Transport	—	—	14	8.4	16	9.6
NAVY						
A-4M Skyhawk Attack A/C	—	1.7	—	2.3	24	68.6
A-6E Intruder Attack A/C	12	93.5	21	148.5	15	130.3
EA-6B Prowler Attack A/C	12	203.3	7	159.9	6	134.9
A-7E Corsair II Attack A/C	24	87.0	48	177.0	42	185.0
AV-8A Harrier Attack V/Stol	30	120.4	30	131.2	12	58.2
F-4J Phantom Fighter	—	—	—	—	10	130.7
F-14A Tomcat Fighter	48	801.6	48	570.1	48	572.0
UH-1N Iroquois Helicopter	24	19.2	24	22.2	24	24.8
AH-1J Sea Cobra Helicopter	—	1.8	20	32.9	20	26.4
P-3C Orion Patrol A/C	24	273.0	12	131.8	12	155.6
S-3A Viking Anti-Submarine	13	372.6	35	578.6	45	541.1
E-2C Hawkeye	11	275.1	8	170.5	9	163.2
T-2C Buckeye	36	36.8	24	31.7	24	32.5
TAV-8A Harrier Trainer	—	—	—	1.9	8	53.6
VC Light Transport	—	—	—	—	1	4.9
EC-130Q Hercules	—	14.2	1	14.2	1	11.8
KC-130H Hercules	—	—	—	—	4	25.2
ARMY						
UX Utility A/C	—	—	20	12.0	20	12.0

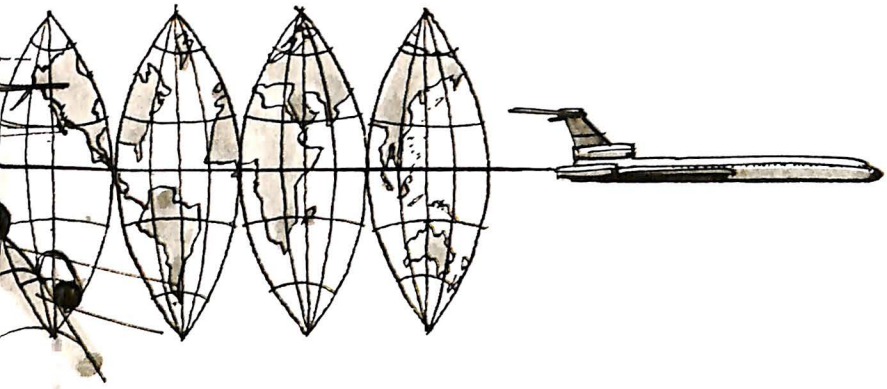
[a] Less than $50,000.
Source: Department of Defense Budget, "Program Acquisition Costs by Weapon System, Fiscal Year 1974."



PRODUCTION OF COMMERCIAL TRANSPORT AIRCRAFT
1968 to Date
(Fixed Wing, Multiple Engine)

Company and Aircraft	1968	1969	1970	1971	1972
TOTAL[a]	702	514	311	223	227
Boeing:					
707	111	59	19	10	3
727	160	115	54	33	41
737	105	114	37	29	22
747	—	4	92	69	30
Fairchild:					
F-27	—	2	—	—	—
FH-227	6	—	—	—	—
Lockheed:					
C-130	25	13	25	13	34
L-1011	—	—	—	—	17
McDonnell Douglas:					
DC-8	102	85	33	13	4
DC-9	193	12[illegible]	51	43	24
DC-10	—	—	—	13	52

[a] Commercial transport totals differ from FAA totals for "Transports" because the FAA totals include some executive aircraft and transports for other than commercial use.
Source: Aerospace Industries Association, company reports.



TOTAL ORDERS FOR JET TRANSPORTS
(Domestic and Foreign)
As of December 31, 1972

	TOTAL Aircraft for Delivery in 1973 or Later	Domestic Orders	Foreign Orders
Transports			
Number of aircraft	534	267	267
Value—million dollars[a]	$7,090	$3,638	$3,452
Number of Transport Aircraft			
Boeing			
B-707	16	0	16
B-727	108	68	40
B-737	13	0	13
B-747	25	9	16
Lockheed			
L-1011	159	117	42
L-100-30[b]	40	0	40
McDonnell Douglas			
DC-9	19	9	10
DC-10	154	64	90

[a] Dollar value excludes the cost of spare parts.
[b] Includes some C-130's for shipment to foreign governments.
Source: Aerospace Industries Association, company reports.

Number of General Aviation Aircraft Shipped By Selected Manufacturers

Calendar Years 1947 to Date

Year	Total	Beech	Cessna	Gates Learjet	Grumman	North American Rockwell	Piper	Other
1947	15,594	1,288	2,390	—	—	—	3,464	8,452
1948	7,037	746	1,631	—	—	—	1,479	3,181
1949	3,405	341	857	—	—	—	1,278	929
1950	3,386	489	1,134	—	—	—	1,108	655
1951	2,302	429	551	—	—	—	1,080	242
1952	3,058	414	1,373	—	—	39	1,161	71
1953	3,788	375	1,434	—	—	69	1,839	71
1954	3,071	579	1,200	—	—	67	1,191	34
1955	4,434	680	1,746	—	—	72	1,870	66
1956	6,738	724	3,235	—	—	154	2,329	296
1957	6,118	788	2,489	—	—	139	2,300	402
1958	6,414	694	2,926	—	—	97	2,162	535
1959	7,689	893	3,588	—	—	148	2,530	530
1960	7,588	962	3,720	—	—	155	2,313	438
1961	6,778	818	2,746	—	—	139	2,646	429
1962	6,697	830	3,124	—	—	121	2,139	483
1963	7,569	1,061	3,456	—	—	114	2,321	617
1964	9,336	1,103	4,188	3	—	109	3,196	737
1965	11,852	1,192	5,629	80	—	110	3,776	1,065
1966	15,747	1,535	7,888	51	70	265	4,437	1,501
1967	13,577	1,260	6,233	34	52	386	4,490	1,122
1968	13,698	1,347	6,578	41	N.A.	471	4,228	1,033
1969	12,457	1,061	5,887	61	36	344	3,951	1,117
1970	7,283	793	3,730	35	15	211	1,675	824
1971	7,466	519	3,859	23	116	202	2,055	692
1972	9,774	802	4,964	39	157	242	2,461	1,109

N.A.—Not available.

Note: "Other" includes American Aviation, Bellanca, Lake, Lockheed (Jetstars), Maule, and Swearingen.

Source: 1947-1969: Aerospace Industries Association, company reports. 1970-1972: General Aviation Manufacturers Association, company reports.

VALUE[a] OF SHIPMENTS OF GENERAL AVIATION AIRCRAFT BY SELECTED MANUFACTURERS

Calendar Years 1947 to Date
(Millions of Dollars)

Year	TOTAL	Beech	Cessna	Gates Learjet	Grumman	North American Rockwell	Piper	Other
1947	$ 57.9	$ 13.4	$ 6.0	—	—	—	$ 7.7	$30.8
1948	32.4	10.1	6.7	—	—	—	3.1	12.5
1949	17.7	6.2	4.5	—	—	—	3.2	3.8
1950	19.2	6.5	5.5	—	—	—	3.1	4.1
1951	16.9	7.7	3.6	—	—	—	3.9	1.7
1952	26.2	9.8	9.2	—	—	$ 2.0	4.9	0.3
1953	34.5	9.5	12.1	—	—	4.3	8.3	0.3
1954	43.5	20.1	10.7	—	—	4.5	8.1	0.1
1955	68.3	24.9	21.9	—	—	5.1	16.0	0.4
1956	103.8	28.8	38.6	—	—	11.2	23.5	1.7
1957	99.7	32.1	31.0	—	—	9.9	23.3	3.4
1958	101.9	27.1	36.9	—	—	6.9	26.5	4.5
1959	129.9	35.7	45.7	—	—	10.6	33.1	4.8
1960	151.2	43.1	56.7	—	—	11.9	35.1	4.4
1961	124.3	37.1	42.3	—	—	11.0	28.9	5.0
1962	136.8	37.4	50.2	—	—	10.8	32.1	6.3
1963	153.4	38.6	55.7	—	—	11.8	38.5	8.8
1964	198.9	54.9	66.8	N.A.	—	12.0	54.5	10.7
1965	318.3	72.2	97.2	$45.1	—	27.7	61.7	14.4
1966	444.2	97.3	128.2	28.6	N.A.	51.5	80.1	58.5
1967	359.6	92.0	116.6	20.2	N.A.	31.8	79.4	19.6
1968	421.5	115.7	138.8	28.7	N.A.	22.3	85.5	30.5
1969	584.5	113.1	145.6	46.5	$126.0	25.4	98.2	29.7
1970	339.4	80.7	97.2	26.9	40.6	20.1	48.5	25.4
1971	321.5	52.1	102.4	18.1	42.7	24.7	56.7	24.8
1972	557.6	113.3	183.2	35.1	52.9	60.9	72.3	39.9

[a] Manufacturers' Net Billing Price.
N.A.—Not available.
NOTE: "Other" includes American Aviation, Bellanca, Lake, Lockheed (Jetstars), Maule, and Swearingen.
Source: 1947-1969: Aerospace Industries Association, company reports. 1970-1972: General Aviation Manufacturers Association, company reports.

PRODUCTION OF COMMERCIAL HELICOPTERS
(Number of Helicopters Shipped)
Calendar Years 1968 to Date

Company and Model	1968	1969	1970	1971	1972
TOTAL	522	534	482	469	575
Bell—Total	364	339	288	274	329
47 series	151	134	124	110	97
204 series	—	—	—	1	—
205 series	29	49	23	13	17
206 series	184	156	138	129	193
212 series	—	—	3	21	22
Boeing-Vertol—Total	—	—	—	5	6
CH-47C	—	—	—	5	6
Enstrom—Total	13	25	—	17	38
F-28A	13	25	—	17	38
Fairchild—Total	64	42	37	21	28
FH-1100	60	40	37	21	28
12 series	4	2	—	—	—
Hughes—Total	72	108	149	137	155
300's	57	43	74	54	71
500's	15	65	75	83	84
Sikorsky—Total	9	20	8	15	19
S-61	6	13	6	9	13
S-62	3	7	—	—	—
S-65	—	—	2	6	6

NOTE: All figures exclude foreign licensees.
Source: Aerospace Industries Association, company reports.

PRODUCTION OF HELICOPTERS
TOTAL, COMMERCIAL AND MILITARY
Calendar Years 1954 to Date

Year	Total	Commercial	Military[a]			
			Total	Air Force	Navy	Army
1954	562	131	431	172	46	155
1955	590	146	444	82	128	200
1956	915	268	647	62	152	430
1957	1,003	314	689	16	193	450
1958	908	240	668	2	204	435
1959	704	253	451	28	101	322
1960	760	266	494	57	147	284
1961	744	378	366	42	187	137
1962	1,031	407	624	33	208	313
1963	1,266	504	762	45	165	462
1964	1,678	579	1,099	34	145	828
1965	2,086	598	1,488	60	195	1,215
1966	2,825	583	2,242	80	253	1,831
1967	2,903	455	2,448	73	279	2,096
1968	3,322	522	2,800	37	198	2,565
1969	2,699	534	2,165	47	200	1,918
1970	2,426	482	1,944	122	207	1,615
1971	N.A.	469	N.A.	N.A.	N.A.	N.A.
1972	N.A.	575	N.A.	N.A.	N.A.	N.A.

[a] Prior to 1959 the total includes helicopters bought by the Department of Defense under the Military Assistance Program and for other federal agencies.
N.A.—Not available.
Sources: Aerospace Industries Association, company reports; Department of Defense OASD (Comptroller).

AIRCRAFT ENGINE PRODUCTION
Calendar Years 1946 to Date
(Number of Engines)

Year	TOTAL	Military			Civil		
		Total Military	Recipr.	Jet[a]	Total Civil	Recipr.	Jet[a]
1946	43,407	2,585	1,680	905	40,822	40,822	—
1947	20,912	4,561	2,683	1,878	16,351	16,351	—
1948	14,027	4,988	2,495	2,493	9,039	9,039	—
1949	11,972	7,990	2,981	5,009	3,982	3,982	—
1950	13,675	9,361	3,122	6,239	4,314	4,314	—
1951	20,867	16,287	6,471	9,816	4,580	4,580	—
1952	31,041	25,659	8,731	16,928	5,382	5,382	—
1953	40,263	33,616	13,365	20,251	6,647	6,647	—
1954	26,959	21,440	7,868	13,572	5,519	5,519	—
1955	21,108	13,469	3,875	9,594	7,639	7,639	—
1956	21,348	9,849	2,663	7,186	11,499	11,499	—
1957	21,984	11,087	2,429	8,658	10,897	10,859	38
1958	18,869	8,121	1,452	6,669	10,748	10,233	515
1959	17,162	4,626	661	3,965	12,536	11,152	1,384
1960	16,189	3,673	756	2,917	12,516	10,891	1,625
1961	15,832	5,172	417	4,755	10,660	9,669	991
1962	15,919	5,441	241	5,200	10,478	9,921	557
1963	17,185	5,390	155	5,235	11,795	11,322	473
1964	19,585	5,380	175	5,205	14,205	13,346	859
1965	23,378	5,191	92	5,099	18,187	17,018	1,169
1966	30,810	7,548	45	7,503	23,262	21,324	1,938
1967	28,858	8,046	—	8,046	20,812	18,324	2,488
1968	29,761	8,542	—	8,542	21,219	17,806	3,413
1969	N.A.	N.A.	N.A.	N.A.	21,828[r]	18,758	3,070[r]
1970	N.A.	N.A.	N.A.	N.A.	14,512	12,279	2,233
1971	N.A.	N.A.	N.A.	N.A.	11,687[r]	9,928	1,759[r]
1972	N.A.	N.A.	N.A.	N.A.	11,651[E]	10,056	1,595

[a] Jet includes turboprop and turbojet.
N.A.—Not available.
[r] Revised.
[E] Estimate.
Sources: Military: Department of Defense. Civil: 1946-1966: Bureau of the Census, "Current Industrial Reports, Series M37G" (Monthly); 1967-1972: Federal Aviation Administration, Office of Aviation Economics.

CIVIL AIRCRAFT ENGINE PRODUCTION
By Selected Manufacturers
(Calendar Years 1968 to Date)
(Number of Engines)

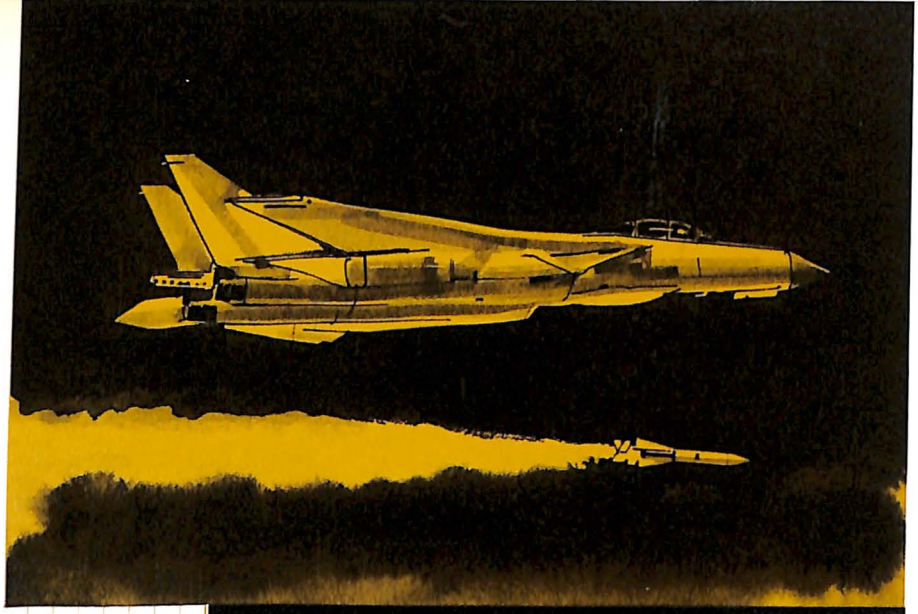
Manufacturer and Engine Designation	1968	1969	1970	1971	1972
TOTAL	21,219	21,828[r]	14,512	11,687	11,651[E]
Reciprocating	17,806	18,758	12,279	9,928	10,056
Jet	3,413	3,070	2,233	1,759	1,595
General Electric—TOTAL	207	192	148	116	139
CT-58	27	16	21	2	13
CF-700	130	54	34	27	26
CJ-610	50	122	93	87	100
Lycoming—TOTAL	11,109	9,870	5,199	6,480	8,198
O-720/IO-720	17	6	36	10	49
O-541/TIO-541/TIGO-541	210	142	160	113	157
O-540/IO-540/TIO-540/LTIO-540/IGO-540/IGSO-540/IVO-540/VO-540/TIVO-540	2,885	3,580	1,355	1,876	1,824
O-480/GO-480/IGSO-480/GSO-480	181	151	100	79	101
O-435/GO-435/VO-435/TVO-435	307	164	114	133	76
O-360/IO-360/TIO-360/LIO-360/HIO-360/AIO-360/VO-360	3,077	1,925	1,442	1,828	2,840
O-320/IO-320/LIO-320/AIO-320	4,055	3,437	1,684	2,007	2,731
O-290	8	9	6	3	—
O-235	369	456	302	430	420
Other	—	—	—	1	—
Pratt & Whitney—TOTAL	2,528	1,655	1,120	594	443
JT-3D	969	542	127	49	13
JT-12	156	129	79	—	—
JT-8D	1,401	821	448	176	282
JT-9D	—	163	466	369	148
Other	2	—	—	—	—
Other	7,375	10,111	8,045	4,497	2,871

NOTE: Engine production by company does not add to the total of civil aircraft engine production because data for some companies are not available.

[E] Estimated.

[r] Revised.

Sources: TOTAL: Federal Aviation Administration, Office of Aviation Economics. Production by Manufacturer: Aerospace Industries Association, company reports.



Missile Programs

Overall, the missile picture for 1972 could be described as "status quo." As for the future, improved backlog positions indicate the possibility of improvement in 1973.

The dollar outlays recorded for the procurement of guided missiles, although down from the early 1960s, increased gradually from 1967 through 1971. The figures for Fiscal Year 1972 show a slight downturn for the Army, the Air Force and the Department of Defense overall, with only the Navy registering a modest increase in dollar outlays. The decline between FY 1971 ($3,140 million) and FY 1972 ($3,009 million) was $131 million.

In addition to the drop of $131 million in procurement outlays the Department of Defense reported an increase of $149 million in outlays for Research, Development, Test and Evaluation. This makes the total missile procurement and RDT&E outlay $5,166 million, a slight increase of $18 million.

In the category of Intercontinental Ballistic Missiles (ICBM) produced for the U. S. Air Force, 148 were delivered during CY 1972, an increase of 32 over 1971. As in the case of the preceding eight years, one ICBM system was under acquisition at the end of 1972.

SALES AND BACKLOG REPORTED BY MAJOR MANUFACTURERS OF MISSILE SYSTEMS AND PARTS
Calendar Years 1961 to Date
(Millions of Dollars)

Year Ending December 31	Missile Systems and Parts	
	Net Sales During Year	Backlog December 31
1961	$3,628	$2,873
1962	3,699	2,143
1963	3,318	2,146
1964	2,580	1,921
1965	2,082	2,394
1966	2,260	2,157
1967	2,877	3,121
1968	2,812	3,218
1969	2,676	2,511
1970	2,826	2,721
1971[r]	2,641	3,344
1972	3,335	3,623

[r] Revised.
NOTE: Based on data from about 55 companies engaged in the manufacture of aerospace products. Data exclude sales of military engines and propulsion units. See page 52.
Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).

SALES AND BACKLOG OF ENGINES AND PROPULSION UNITS
FOR MISSILES AND SPACE VEHICLES
Reported by Major Manufacturers
1961 to Date
(Millions of Dollars)

Year Ending December 31	Net Sales During Year			Backlog as of Dec. 31		
	TOTAL	Military	Non-Military	TOTAL	Military	Non-Military
1961	N.A.	$ 784	[a]	N A.	$367	[a]
1962	N.A.	1,060	[a]	N.A.	498	[a]
1963	$1,675	1,135	$522	$ 888	699	$189
1964	1,579	851	728	1,024	557	467
1965	1,288	560	728	883	513	370
1966	1,211	511	700	859	534	325
1967	978	441	537	609	405	204
1968	907	676	231	535	406	129
1969	702	667	35	497	485	12
1970	640	618	22	617	610	7
1971[r]	605	596	9	520	513	7
1972	607	596	11	670	658	12

[a] Data included in totals for space vehicle systems. See page 66.
[r] Revised.
NOTE: Based on data from about 55 companies engaged in the manufacture of aerospace products. The figures are inflated by the inclusion of subcontracts.
N.A.—Not available.
Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).

DEPARTMENT OF DEFENSE
OUTLAYS FOR GUIDED MISSILES
Fiscal Year 1960 to Date
(Millions of Dollars)

	TOTAL DEFENSE DEPARTMENT	Procurement	Research, Development, Test and Evaluation
1960	$5,086	$3,027	$2,059
1961	5,997	2,972	3,025
1962	6,219	3,442	2,777
1963	6,058	3,817	2,241
1964	5,929	3,577	2,352
1965	3,997	2,096	1,901
1966	3,870	2,069	1,801
1967	4,432	1,930	2,502
1968	4,741	2,219	2,522
1969	4,919	2,509	2,410
1970	5,108	2,912	2,196
1971	5,148	3,140	2,008
1972	5,166	3,009	2,157

NOTE: Does not include military assistance.
Source: Department of Defense, OASD (Comptroller), FAD-695, June 30, 1972, and earlier reports.

INTERCONTINENTAL BALLISTICS MISSILES PRODUCED FOR THE AIR FORCE
Calendar Year 1961 to Date

Year Ending December 31	Weapons Systems in Acquisition December 31	Intercontinental Ballistics Missiles Delivered
1961	4	111
1962	4	186
1963	2	486
1964	1	405
1965	1	172
1966	1	221
1967	1	216
1968	1	101
1969	1	104
1970	1	83
1971	1	116
1972	1	148

Source: Department of Defense.

DEPARTMENT OF DEFENSE
OUTLAYS FOR GUIDED MISSILE PROCUREMENT, BY AGENCY
Fiscal Years 1951 to Date
(Millions of Dollars)

Year Ending June 30	TOTAL DEFENSE DEPARTMENT	Air Force	Navy	Army
1951	$ 21	$ 16	$ 5	—
1952	169	66	56	$ 46
1953	245	N.A.	N.A.	N.A.
1954	417	N.A.	N.A.	N.A.
1955	604	N.A.	N.A.	N.A.
1956	1,005	N.A.	N.A.	N.A.
1957	1,855	N.A.	N.A.	N.A.
1958	2,434	N.A.	N.A.	N.A.
1959	3,337	N.A.	N.A.	N.A.
1960	3,027	2,021	423	583
1961	2,972	1,922	493	557
1962	3,442	2,385	593	464
1963	3,817	2,676	718	423
1964	3,577	2,101	981	496
1965	2,096	1,320	521	254
1966	2,069	1,313	512	244
1967	1,930	1,278	432	220
1968	2,219	1,388	436	395
1969	2,509	1,382	534	593
1970	2,912	1,467	702	743
1971	3,140	1,497	791	852
1972	3,009	1,334	831	844

NOTE: For data on research and development expenditures for missiles see pages 53 and 76.
N.A.—Not available.
Source: Department of Defense, OASD (Comptroller), FAD-695, June 30, 1972, and earlier reports.

MISSILE PROGRAM ACQUISITION COSTS
(BY DEPARTMENT, TYPE AND MODEL)
Fiscal Years 1972 to 1974
(in millions of dollars)

Department, Type and Model	Year ending June 30					
	1972		1973		1974	
	Procurement[a]	RDT&E[b]	Procurement[a]	RDT&E[b]	Procurement[a]	RDT&E[b]
AIR FORCE						
Minuteman II, Ballistic	$ 42.3	$ 24.5	$ 6.8	$ 1.4	$ 3.8	$ 5.4
Minuteman III, Ballistic	714.1	157.1	666.8	138.3	670.2	94.4
SRAM	233.1	5.9	198.7	—	138.1	—
Maverick	83.7	7.8	70.9	8.3	112.2	—
NAVY						
Poseidon	336.3	8.1	298.8	—	252.6	—
Trident	—	59.1	—	349.1	5.0	531.7
Sparrow	40.2	28.3	41.1	12.6	91.3	7.4
Sidewinder	12.2	—	17.3	—	16.8	—
Phoenix	104.4	3.6	93.6	5.0	96.2	4.1
Shrike	19.6	1.6	38.5	—	21.7	—
Condor	—	21.1	13.0	8.0	23.2	8.3
Harpoon	—	38.4	—	60.0	19.0	66.6
Standard—MR	29.8	—	34.0	—	29.8	—
Standard—ER	32.2	—	12.7	—	10.3	—
Standard—SSM	—	16.6	—	25.0	—	12.0
Standard—ARM	1.3	—	80.0	—	0.5	—
ARMY						
Safeguard	639.0	297.6	300.0	299.7	185.0	216.5
Dragon	15.3	12.5	56.9	4.3	69.9	0.7
Hawk	92.0	3.3	136.1	6.4	137.4	1.9
SAM-D	—	115.5	—	171.3	—	194.1
Lance	86.7	25.9	96.3	7.9	85.2	—
Pershing	44.8	5.8	29.7	6.6	53.8	4.0
TOW	55.0	1.1	42.5	1.6	57.9	8.1
TSQ-73	—	3.8	1.9	3.3	11.4	0.4

[a] Includes initial spares.
[b] Research, Development, Test and Evaluation.
Source: Department of Defense Budget, "Program Acquisition Costs by Weapon Systems, Fiscal Year 1974."

MAJOR MISSILES IN DEVELOPMENT OR PRODUCTION

Project	Service	Systems Contractor	Propulsion		Guidance Manufacturer	Status
			Manufacturer	Type		
SURFACE-TO-AIR						
Chaparral	Army	Philco-Ford	NAA/Rocketdyne	Solid	GE/Raytheon	Operational
Hawk	Army	Raytheon	Aerojet	Solid	Raytheon	Operational
Nike-Hercules	Army	Western Electric	Thiokol/Hercules	Solid	Bell Tel. Lab./Western Electric	Operational
Redeye	Army	General Dynamics	Atlantic Research	Solid	Norden	Operational
SAM-D	Army	Raytheon	Thiokol	Solid	Raytheon	Development
Sea Sparrow	USN	Raytheon	NAA/Rocketdyne	Solid	Raytheon	Operational
Safeguard/Spartan	Army	Bell Tel. Lab./Western Electric	Thiokol	Solid	Bell Tel. Lab./Western Electric	Development
Safeguard/Sprint	Army	Bell Tel. Lab./Western Electric	Hercules	Solid	Bell Tel. Lab./Western Electric	Development
Standard (MR)	USN	General Dynamics	Aerojet	Solid	General Dynamics	Operational
Standard (ER)	USN	General Dynamics	Atlantic Research	Solid	General Dynamics	Operational
Stinger	Army	General Dynamics	Atlantic Research	—	General Dynamics	Development
Talos	USN	Bendix	Bendix	Ramjet	Bendix	Operational
Tartar	USN	General Dynamics	Aerojet	Solid	General Dynamics	Operational
Terrier	USN	General Dynamics	Atlantic Research	Solid	General Dynamics	Operational
AIR-TO-AIR						
Falcon	USAF	Hughes	Thiokol	Solid	Hughes	Operational
Falcon	USAF	Hughes	Lockheed Propulsion	Solid	Hughes	Operational
Super Falcon	USAF	Hughes	Thiokol	Solid	Hughes	Operational
Nuclear Falcon	USAF	Hughes	Thiokol	Solid	Hughes	Operational
Genie	USAF	McDonnell Douglas	Thiokol	Solid	—	Operational
Phoenix	USN	Hughes	NAA/Rocketdyne	Solid	Hughes	Production
Sidewinder	USN	Raytheon	—	Solid	—	Production
Sidewinder	USAF	Philco-Ford	—	Solid	Philco	Production
Sidewinder	USN	NWC/Raytheon	—	—	Philco/Raytheon	Production
Sidewinder 1C	USN	NWC/Raytheon, General Electric	NAA/Rocketdyne	Solid	Raytheon/GE	Operational
Sparrow	USN	Raytheon	NAA/Rocketdyne	Solid	Raytheon	Operational

(*Continued on next page*)

MAJOR MISSILES IN DEVELOPMENT OR PRODUCTION—*Continued*

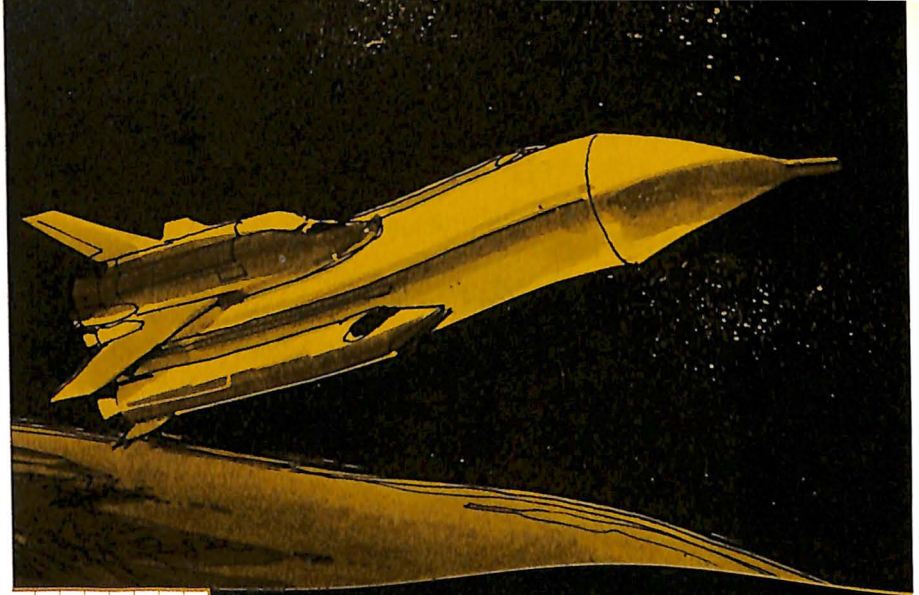
Project	Service	Systems Contractor	Propulsion		Guidance Manufacturer	Status
			Manufacturer	Type		
SURFACE-TO-SURFACE						
Mace B	USAF	Martin Marietta	GM/Allison	Turbojet	GM/Delco Electronics	Operational
Minuteman 2	USAF	Boeing	Thiokol/ Aerojet/ Hercules	Solid	NAA/Auto-netics	Operational
Minuteman 3	USAF	Boeing	Thiokol/ Aerojet	Solid	NAA/Auto-netics	Operational
Polaris A2	USN	Lockheed MSC	Aerojet/ Hercules	Solid	GE/MIT/ Hughes/ Raytheon	Operational
Polaris A3	USN	Lockheed MSC	Aerojet/ Hercules	Solid	GE/MIT/ Hughes/ Raytheon	Operational
Poseidon	USN	Lockheed MSC	Thiokol/ Hercules	Solid	GE/MIT/ Hughes/ Raytheon	Operational
Titan II	USAF	AFSC/SAMSO/ TRW	Aerojet	Liquid	GM/Delco Electronics	Operational
AIR-TO-SURFACE						
Bullpup A	USN	Maxson Electronics	Thiokol	Liquid	Maxson Electronics	Operational
Bullpup B	USN	Maxson Electronics	Thiokol	Liquid	Maxson Electronics	Operational
Condor	USN	Naval Air Systems Command/ NAA	NAA/Rocket-dyne	Solid	NAA/ Columbus	Development
Harpoon	USN	McDonnell Douglas	Aerojet Garrett/ Teledyne CAE	Solid Turbojet	Texas Instruments	Development
Hornet	USAF	NAA/ Columbus	Thiokol	Solid	NAA/Auto-netics	Development
Hound Dog	USAF	NAA	P & W	Turbojet	NAA/Auto-netics	Operational
Maverick	USAF	Hughes	Thiokol	Solid	—	Production
Quail	USAF	McDonnell Douglas	General Electric	Turbojet	McDonnell Douglas	Operational
SAGMI	USAF	Beech	AMF	—	—	Development
SCAD	USAF	—	—	—	—	Development
Shrike	USN/AF	NASC/NWC	NAA/Rocket-dyne	Solid	Texas Instruments SR/Univac	Operational
SRAM	USAF	Boeing	Lockheed Propulsion	Solid	Singer-General Precision	Operational
Standard ARM	USN/AF	General Dynamics	Aerojet	Solid	Maxson Electronics	Operational
Walleye	USN	Martin Marietta/ Hughes	—	Glide Bomb	Martin Marietta/ Hughes	Operational

(*Continued on next page*)

MAJOR MISSILES IN DEVELOPMENT OR PRODUCTION—*Continued*

Project	Service	Systems Contractor	Propulsion		Guidance Manufacturer	Status
			Manufacturer	Type		
BATTLEFIELD SUPPORT GUIDED MISSILES						
Lance	Army	LTV Aerospace	NAA/Rocketdyne	Liquid	E-Systems/ Donner/ Arma	Operational
Dragon	Army	McDonnell Douglas	McDonnell Douglas	Solid	McDonnell Douglas	Operational
Hellfire	Army	—	—	—	—	Development
Honest John	Army	Emerson Electric	Hercules	Solid	—	Operational
Pershing 1-A	Army	Martin Marietta	Thiokol	Solid	Bendix/ Eclipse-Pioneer	Operational
Sergeant	Army	Sperry Rand/ Univac	Thiokol	Solid	Sperry Rand/ Univac	Operational
Shillelagh	Army	Philco-Ford	Amoco Chem.	Solid	Philco-Ford	Operational
SS-11B1 (AGM-22)	Army	Aerospatiale (France)	Aerospatiale	Solid	Aerospatiale	Operational
TOW	Army	Hughes	Hercules	Solid	—	Operational
ANTI-SUBMARINE						
Asroc	USN	Navy	Navy	Solid	—	Operational
Subroc	USN	Goodyear Aerospace	Thiokol	Solid	Singer-General Precision	Operational

Source: Aerospace Industries Association, based on latest available information.



Space Programs

The splashdown of the Apollo 17 crew on December 19, 1972, marked the end of the astonishingly successful Apollo program that achieved world leadership in manned space exploration for the U. S. by landing 12 men on the moon and returning them to Earth.

Apollo 17, appropriately, set these records:

- Longest man-hours in mission: 905 hours, 36 minutes.
- Longest total extravehicular activity time: 23 hours, 12 minutes.
- Longest time in lunar orbit: 147 hours, 48 minutes.

Early in 1972 the Administration proposed and Congress approved proceeding with the development of the Space Shuttle. This will be the prime instrument for the U. S. space program in the late 1970's and 1980's. The Shuttle is a reuseable manned space vehicle which will be utilized in a wide variety of missions in earth orbit.

Between the end of the Apollo program and the launch of the first Space Shuttle, the manned space program will involve Skylab and the joint U.S./U.S.S.R. Apollo Soyuz Test Project (ASTP).

Skylab, scheduled for launch in the summer of 1973, will be the nation's first space station. The first two launches, planned on successive

days, will get Skylab started on a eight-month operational period during which the spacecraft cluster will be visited three times for periods up to 59 days by three-man crews who will conduct experiments in earth resources, medical, solar astronomy and other disciplines.

President Nixon's visit to Russia in May 1972 resulted in an agreement with Chairman Kosygin to conduct an earth orbital rendevous and docking between a U. S. spacecraft (Apollo) and a U.S.S.R. spacecraft (Soyuz). The astronauts and cosmonauts will visit both spacecraft and perform a number of scientific tasks. One primary purpose of Apollo/Soyuz is to develop a rescue capability by demonstrating compatible systems that will permit orbital docking by future manned spacecraft of the two nations.

In space science, Mariner 9, placed into orbit around Mars late in 1971, circled the planet 698 times in 349 days before being shut down in October 1972. The spacecraft completely mapped the Martian surface. The findings of Mariner 9 laid the groundwork for the next venture to Mars by the U. S.—the Viking expedition in 1975-76 which will search for evidence of life on the planet.

The Pioneer 10 launch toward Jupiter early in 1972 was man's first probe of the giant outer planets. At year's end, Pioneer 10 had completed about three-fourths of its journey with about a quarter of a billion miles to fly before reaching the planet, which is about 1,000 times larger than Earth.

Two other scientific satellites, Explorers 47 and 48, were launched in 1972. Explorer 47 studied earth-sun interactions from an orbit reaching halfway to the moon, and Explorer 48 surveyed the sky for gamma ray sources. Explorer 48 was launched for NASA from the Indian Ocean by an Italian crew.

In the applications satellite area, a major step was taken in July 1972 with the launch of the first Earth Resources Technology Satellite (ERTS). Principal purpose of the first mission was to demonstrate the usefulness of remote sensing of conditions on the Earth's surface and of the environment on a global, repetitive basis. The data is making important contributions to the fields of agriculture, forestry, geology, geography, hydrology, pollution control, oceanography, meteorology and ecology.

Two weather satellites, the National Oceanic and Atmospheric Administration-2 and NASA's Nimbus-5, were launched in 1972. In addition, a small communications relay satellite, Oscar-6, was carried into orbit

aboard the NOAA-2 launch vehicle. Oscar-6 is being used by ham radio operators around the world.

On the economic side of space, total outlays for space activities (NASA, DOD, AEC and other agencies) in Fiscal Year 1973 will amount to $4,467 million, down more than $300 million from FY 1972. However, it is estimated that total space outlays for FY 1974 will increase to $4,722 million, primarily due to increased DOD activity.

OUTLAYS FOR SPACE ACTIVITIES
Fiscal Years 1955 to Date
(Millions of Dollars)

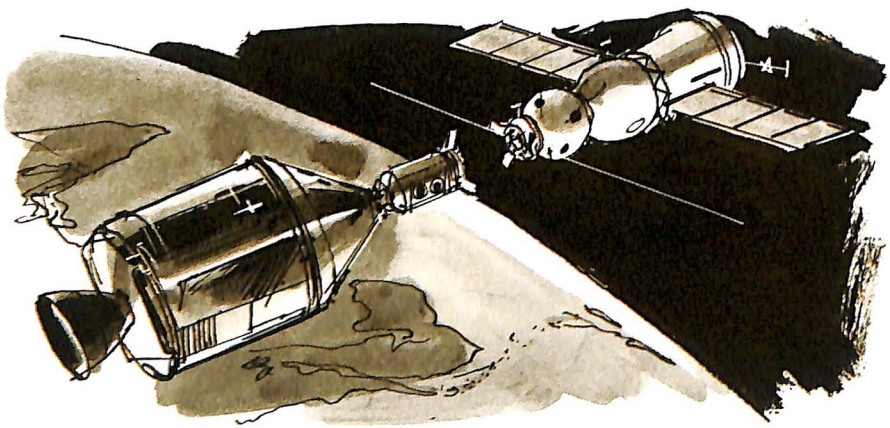
Year Ending June 30	TOTAL	National Aeronautics and Space Administration[a]	Department of Defense[b]	Atomic Energy Commission	Other
1955	$ 75	$ 74	$ 1	N.A.	—
1956	100	71	17	N.A.	$12
1957	150	76	48	N.A.	26
1958	249	89	136	N.A.	24
1959	521	146	341	N.A.	34
1960	960	401	518	N.A.	41
1961	1,518	744	710	N.A.	64
1962	2,418	1,257	1,029	$130	2
1963	4,114	2,552	1,368	181	13
1964	5,970	4,171	1,564	220	15
1965	6,886	5,035	1,592	232	27
1966	7,719	5,858	1,638	188	35
1967	7,237	5,337	1,673	184	43
1968	6,667	4,595	1,890	146	36
1969	6,330	4,083	2,095	116	36
1970	5,453	3,565	1,756	103	29
1971	4,999	3,171	1,693	97	38
1972	4,772	3,195	1,470	60	47
1973[E]	4,467	2,812	1,557	54	44
1974[E]	4,722	2,866	1,767	38	51

NOTE: See Chapter on Research and Development for additional tables.
[E] Estimate.
[a] Excludes amount for aircraft technology beginning with 1965.
[b] This includes the astronautics budget activity and other activities which contribute to the space effort.
Sources: 1955-1969: The Budget of the United States (Annually). 1970-Date: National Aeronautics and Space Council, Aeronautics and Space Report of the President, (Annually).

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
OUTLAYS BY BUDGET FUNCTION
Fiscal Years, 1959 to Date
(Millions of Dollars)

Year Ending June 30	TOTAL	Research and Development	Construction of Facilities	Research & Program Management
1959	$ 145	$ 34	$ 25	$ 87
1960	401	256	54	91
1961	744	487	98	159
1962	1,257	936	114	207
1963	2,552	1,912	225	417
1964	4,171	3,317	438	416
1965	5,093	3,984	531	578
1966	5,933	4,741	573	619
1967	5,426	4,487	289	650
1968	4,724	3,946	126	652
1969	4,251	3,530	65	656
1970	3,753	2,992	54	707
1971	3,382	2,630	44	708
1972	3,422	2,623	50	749
1973[E]	3,062	2,296	54	712
1974[E]	3,136	2,359	70	707

[E] Estimate.
Source: "The Budget of the United States" (Annually).



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
RESEARCH AND DEVELOPMENT PROGRAMS BUDGET PLAN
Fiscal Years 1970 to Date
(Millions of Dollars)

	1970	1971	1972	1973[E]	1974[E]
TOTAL	$3,110	$2,542	$2,508	$2,510	$2,288
MANNED SPACE FLIGHT—					
TOTAL	2,030	1,422	1,285	1,157	1,057
Apollo	1,684	914	601	77	—
Space Flight Operations	343	429	583	879	581
Advanced Missions	3	1	1	1	1
Space Shuttle	—	78	100	200	475
SPACE SCIENCE AND APPLICATIONS—TOTAL	520	566	740	868	737
Physics and Astronomy	113	116	110	126	95
Lunar and Planetary Exploration	151	145	292	332	312
Bioscience	20	13	—	—	—
Launch Vehicle Procurement	108	125	151	221	177
Space Applications	128	167	187	189	153
AERONAUTICS AND SPACE TECHNOLOGY—TOTAL	271	260	214	233	240
Aeronautical Research & Technology	96	100	109	151	171
Space Research & Technology	120	105	74	65	65
Nuclear Power & Propulsion	55	55	30	17	4
TRACKING AND DATA ACQUISITION—TOTAL	278	290	264	248	250
UNIVERSITY AFFAIRS—TOTAL	7	—	—	—	—
TECHNOLOGY UTILIZATION— TOTAL	5	4	5	4	4

NOTE: Administrative operations costs for NASA are not included.
Source: NASA, Briefing on the Budget of the United States, January 27, 1973.
[E] Estimate.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
SPACE SCIENCE BUDGET PLAN[a]
Fiscal Years 1970 to Date
(Millions of Dollars)

	1970	1971	1972	1973[E]	1974[E]
TOTAL	$392	$399	$553	$679	$584
PHYSICS AND ASTRONOMY—TOTAL	113	116	110	126	95
Solar and Astronomical Observatories	48	40	45	48	18
Orbiting Explorers	19	26	23	33	33
Sounding Rockets	18	19	18	20	20
Airborne Research	1	5	3	4	4
Balloon Program	1	1	1	1	1
Supporting Research and Technology	17	17	15	15	14
Data Analysis	9	8	5	5	5
LUNAR AND PLANETARY EXPLORATION—TOTAL	151	145	292	332	312
Mariner Series	64	42	62	39	9
Viking	40	35	176	229	201
Outer Planets Missions	—	—	9	7	32
Pioneer	22	40	13	10	6
Helios	—	2	3	2	1
Supporting Research and Technology	18	18	19	19	17
Planetary Astronomy	4	5	5	5	4
Data Analysis	3	4	3	4	10
Planetary Quarantine	—	—	2	2	1
Planetary Flight Support	—	—	—	15	22
Lunar Sample Analysis	—	—	—	—	4
Lunar Science Operations	—	—	—	—	5
LAUNCH VEHICLE PROCUREMENT—TOTAL	108	125	151	221	177
Scout	14	13	15	16	12
Centaur	32	66	82	121	115
Delta	46	38	41	76	46
Titan IIIC	7	4	9	5	—
Agena	5	—	—	—	—
Supporting Research and Technology	4	4	4	3	4
BIOSCIENCE—TOTAL	20	13	—	—	—
Planetary Quarantine	3	2	—	—	—
Biosatellite	6	—	—	—	—
Supporting Research and Technology	11	11	—	—	—

[a] See page 63 for total NASA Research and Development Programs Budget Plan.
E Estimate.
NOTE: Administrative operations costs for NASA are not included.
Source: NASA, Briefing on the Budget of the United States, January 27, 1973.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACE FLIGHT BUDGET PLAN[a]
Fiscal Years 1970 to Date
(Millions of Dollars)

	1970	1971	1972	1973[E]	1974[E]
TOTAL	$2,030	$1,422	$1,285	$1,157	$1,057
SPACE FLIGHT OPERATIONS—TOTAL	331	429	583	879	581
Skylab	325	405	538	502	234
Apollo Soyuz Test Project	—	—	7	38	90
Development, Test and Mission Operations	—	—	—	294	220
Space Life Sciences	—	—	20	24	21
Mission Systems and Integration	6	24	18	21	16
SPACE SHUTTLE—TOTAL	12	78	100	200	475
Orbiter	—	—	15	143	377
Main Engine	—	—	45	41	56
Solid Rocket Boosters	—	—	—	—	18
External Tanks	—	—	—	—	24
Technology and Related Development	—	—	26	16	—
Vehicle and Engine Definition	—	—	14	—	—
ADVANCED MISSION STUDIES	3	1	1	1	1
APOLLO—TOTAL	1,684	914	601	77	—
Spacecraft	776	398	120	51	—
Saturn V	487	189	158	26	—
Operations	422	315	310	—	—
Advanced Development	—	12	13	—	—

[a] See page 63 for total NASA Research and Development Programs Budget Plan.
[E] Estimate.
NOTE: Administrative operations costs for NASA are not included.
Source: NASA, Briefing on the Budget of the United States, January 27, 1973.

SALES AND BACKLOG OF SPACE VEHICLE SYSTEMS
(Excluding Engines and Propulsion Units)
Reported by Major Manufacturers
1961 to Date
(Millions of Dollars)

Year Ending December 31	Net Sales During Year			Backlog, December 31		
	TOTAL	Military[a]	Non-military	TOTAL	Military[a]	Non-military
1961	$ 775	$ 551	$ 224[a]	$ 586	$ 350	$ 236[a]
1962	1,319	712	607[a]	1,435	852	583[a]
1963	1,911	1,061	850	1,612	856	756
1964	2,222	732	1,490	1,611	391	1,220
1965	2,449	602	1,847	2,203	503	1,700
1966	2,710	734	1,967	1,494	428	1,066
1967	2,199	789	1,410	1,974	1,096	878
1968	2,357	899	1,458	1,329	834	495
1969	2,282	1,187	1,095	1,330	869	461
1970	1,956	1,025	931	1,184	786	398
1971[r]	1,725	860	865	916	603	313
1972	1,689	907	782	984	637	347

NOTE: Based on data from about 55 companies engaged in the manufacture of aerospace products.
[r] Revised.
[a] Includes engines and propulsion units.
Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).

SPACECRAFT LAUNCHINGS AS OF MARCH 11, 1973

Country	TOTAL	Payloads in Earth Orbit	Payloads Decayed	Space Probes
TOTAL	1,492	565	888	39
United States	754	338	394	22
U.S.S.R.	694	192	485	17
France	9	9	—	—
European Space Research Organization	7	4	3	—
United Kingdom	7	5	2	—
Canada	5	5	—	—
Japan	4	4	—	—
Italy	3	—	3	—
West Germany	3	3	—	—
Australia	2	1	1	—
People's Republic of China	2	2	—	—
N.A.T.O.	2	2	—	—

Source: National Aeronautics and Space Administration.

CHRONOLOGY OF MANNED SPACE FLIGHTS, 1969 TO DATE

Launch Date	Project	Pilots	Nation	Duration
Jan 14, 1969	Soyuz 4	Vladimir Shatalov	USSR	71 hr. 22 min.
Jan 15, 1969	Soyuz 5	Boris Volynov Aleksey Yeliseyev Yevgeniy Khrunov	USSR	72 hr. 40 min.
Mar 3, 1969	Apollo 9	James A. McDivitt David R. Scott Russell L. Schweickart	USA	241 hr. 53 min.
May 18, 1969	Apollo 10	Thomas P. Stafford John W. Young Eugene A. Cernan	USA	192 hr. 3 min.
Jul 16, 1969	Apollo 11	Neil A. Armstrong Michael Collins Edwin E. Aldrin, Jr.	USA	195 hr. 19 min.
Oct 11, 1969	Soyuz 6	Georgiy Shonin Valeriy Kubasov	USSR	118 hr. 21 min.
Oct 12, 1969	Soyuz 7	Anatoliy Filipchenko Vladislav Volkov Viktor Gorbatko	USSR	118 hr. 43 min.
Oct 13, 1969	Soyuz 8	Vladimir Shatalov Aleksey Yeliseyev	USSR	118 hr. 51 min.
Nov 14, 1969	Apollo 12	Charles Conrad, Jr. Richard F. Gordon, Jr. Alan L. Bean	USA	244 hr. 36 min.
Apr 11, 1970	Apollo 13	James A. Lovell. Jr. Fred W. Haise, Jr. John L. Swigert, J.	USA	142 hr. 55 min.
Jun 1, 1970	Soyuz 9	Andrian G. Nikolayev Vitaliy I. Sevastianov	USSR	424 hr. 59 min.
Jan 31, 1971	Apollo 14	Alan B. Shepard, Jr. Edgar D. Mitchell Stuart A. Roosa	USA	216 hr. 42 min.
Apr 22, 1971	Soyuz 10	Vladimir Shatalov Aleksey Yeliseyev Nikolai Rukavishnikov	USSR	47 hr. 46 min.
Jun 6, 1971	Soyuz 11	Georgi Dobrovolsky Vladislav Volkov Viktor Patsayev	USSR	570 hr. 22 min.
Jul 26, 1971	Apollo 15	David R. Scott Alfred M. Worden James B. Irwin	USA	295 hr. 12 min.
Apr 16, 1972	Apollo 16	John W. Young Charles M. Duke, Jr. Thomas K. Mattingly, II	USA	265 hr. 51 min.
Dec 17, 1972	Apollo 17	Eugene A. Cernan Harrison H. Schmitt Ronald E. Evans	USA	301 hr. 52 min.

NOTE: For data for earlier years see previous editions of "Aerospace Facts and Figures."
Source: Aeronautics and Space Report of the President (Annually).

CHRONOLOGY OF MAJOR UNITED STATES LAUNCHINGS, 1972

Date	Designation	Purpose
1972		
Jan. 23	Intelsat IV (F-4)	To provide equivalent of 3,000 to 9,000 telephone circuits simultaneously or 12 color TV channels or a combination of telephone, TV, and other forms of communications traffic. Used during President Nixon's China trip.
Jan. 31	HEOS 2	To investigate interplanetary space and high Latitude magnetosphere and its boundary in the region around the northern neutral point. ESRO-built satellite launched into highly eccentric orbit by NASA.
Mar. 3	Pioneer 10	To obtain, during the 1972 Jovian opportunity, precursory scientific information beyond the orbit of Mars. First of a new generation Pioneer series. Reached highest launch velocity ever attained (32,000 mph) with first use of Atlas-Centaur as a 3-stage vehicle. First NASA spacecraft powered entirely by nuclear energy and first intended to ultimately escape solar system into interstellar space.
Mar. 12	TD-1A	To make UV spectrometer measurements of the celestial sphere on an approximate 180 day cycle. ESRO-built satellite launched into sun-synchronous orbit by NASA. Largest and most advanced scientific satellite ever built in Western Europe.
Apr. 16	Apollo 16 (CSM-113)	To perform selenological inspection, survey, and sampling of materials and surface features in a preselected area of the Descartes region; to emplace and activate surface experiments; to conduct in-flight experiments and photographic tasks. Fifth successful lunar landing mission. Extensive geology traverses with lunar roving vehicle.
June 13	Intelsat IV (F-5)	To provide equivalent of 3,000 to 9,000 telephone circuits simultaneously or 12 color TV channels or a combination of telephone, TV, and other forms of communications traffic. Used during Olympic games held in Munich, West Germany.
July 23	ERTS 1	To acquire synoptic multispectral repetitive images for a period of three months from which useful data can be obtained for investigations in such disciplines as agriculture and forestry resources, mineral and land resources, land use, water resources, marine resources, mapping and charting, and the environment.
Aug. 21	OAO-3 (Copernicus)	To obtain high-resolution spectra of a number of stars in the ultraviolet range between 1000 and 3000 Å to investigate the composition, density, and physical state of matter in interstellar space and stellar sources. Heaviest scientific satellite ever launched by the United States; contains largest telescope ever orbited.

(*Continued on next page*)

CHRONOLOGY OF MAJOR UNITED STATES LAUNCHINGS, 1972
(Continued)

Date	Designation	Purpose
Sept. 23	Explorer 47 (IMP)	To perform detailed and near continuous studies of the interplanetary environment for orbital periods comparable to several rotations of active solar regions; and to study particle and field interactions in the distant magnetotail including cross sectional mapping of the tail and neutral sheet.
Oct. 15	NOAA 2 (ITOS D)	First operational spacecraft to provide temperature soundings of the earth's atmosphere as well as direct readout and globally recorded cloud-cover data.
Oct. 15	Oscar 6	To conduct an experimental program of multiple-access communication techniques using a large number of relatively low-powered earth terminals. Built by American, Australian, and German amateur groups working through the Radio Amateur Satellite Corporation (AMSAT). Launched by NASA as secondary payload.
Nov. 10	Anik 1	To provide transmission of television, voice, and other data throughout Canada. Launched by NASA for Canadian Domestic Communications Satellite System into stationary transfer orbit. Western world's first operational domestic communications satellite.
Nov. 15	Explorer 48 (SAS)	To measure the spatial and energy distribution of primary galactic and extra-galactic gamma radiation. NASA-built satellite launched into equatorial orbit from San Marco range by an Italian launch crew.
Nov. 22	ESRO 4	To investigate and measure several phenomena in the polar ionosphere, a region of high intensity that begins in the upper atmosphere and extends to an indefinite height in space.
Dec. 7	Apollo 17 (CSM-114)	To perform selenological inspection, survey, and sampling of materials and surface features in a preselected area of the Taurus-Littrow region; to emplace and activate surface experiments; to conduct in-flight experiments and photographic tasks. Sixth successful lunar landing mission. Extensive geology traverses with lunar roving vehicle.
Dec. 11	Nimbus 5	To improve and extend the capability for vertical sounding of temperatures and moisture in the atmosphere, particularly with regard to altitude coverage, and with regard to the interfering effects of clouds, by the acquisition of synoptic data for a period of 10 weeks; to demonstrate improved thermal mapping of the earth.
Dec. 16	Aeros	To measure the main aeronomic parameters of the upper atmosphere and the solar ultra-violet radiation in the wavelength band of main absorption. German-built satellite launched by NASA.

NOTE: For data for earlier years, see previous editions of "Aerospace Facts and Figures."
Source: Aeronautics and Space Reports of the President (Annually).

U.S. MAN-HOURS SPACE FLIGHT TIME LOG

Mission	Launch Date	Man-Hours In Mission		Total Cumulative Time	
		Hrs.	Min.	Hrs.	Min.
MR-3 (Shepard)	May 5, 1961	—	15	—	15
MR-4 (Grissom)	Jul 21, 1961	—	16	—	31
MA-6 (Glenn)	Feb 20, 1962	4	55	5	26
MA-7 (Carpenter)	May 24, 1962	4	56	10	22
MA-8 (Schirra)	Oct 3, 1962	9	13	19	35
MA-9 (Cooper)	May 15, 1963	34	20	53	55
Gemini 3 (Grissom, Young)	Mar 23, 1965	9	46	63	41
Gemini 4 (McDivitt, White)	Jun 3, 1965	195	52	259	33
Gemini 5 (Cooper, Conrad)	Aug 21, 1965	381	50	641	23
Gemini 6 (Schirra, Stafford)	Dec 15, 1965	51	42	693	05
Gemini 7 (Borman, Lovell)	Dec 4, 1965	661	10	1,354	15
Gemini 8 (Armstrong, Scott)	Mar. 16, 1966	21	21	1,375	36
Gemini 9 (Stafford, Cernan)	Jun 3, 1966	144	42	1,520	32
Gemini 10 (Young, Collins)	Jul 18, 1966	141	34	1,662	06
Gemini 11 (Conrad, Gordon)	Sep 12, 1966	142	34	1,804	40
Gemini 12 (Lovell, Aldrin)	Nov 11, 1966	189	10	1,993	50
Apollo 7 (Schirra, Eisele, Cunningham)	Oct 11, 1968	780	27	2,774	17
Apollo 8 (Borman, Lovell, Anders)	Dec 21, 1968	441	03	3,215	20
Apollo 9 (McDivitt, Scott, Schweikart)	Mar 3, 1969	723	03	3,938	23
Apollo 10 (Stafford, Young, Cernan)	May 18, 1969	576	09	4,514	32
Apollo 11 (Armstrong, Collins, Aldrin)	Jul 16, 1969	585	57	5,100	29
Apollo 12 (Conrad, Gordon, Bean)	Nov 14, 1969	733	48	5,834	17
Apollo 13 (Lovell, Haise, Swigert)	Apr 11, 1970	428	45	6,623	02
Apollo 14 (Shepard, Stuart, Mitchell)	Jan 31, 1971	650	06	6,913	08
Apollo 15 (Scott, Worden, Irwin)	Jul 26, 1971	885	36	7,808	44
Apollo 16 (Young, Duke, Mattingly)	Apr 16, 1972	797	33	8,606	17
Apollo 17 (Cernan, Schmitt, Evans)	Dec 7, 1972	905	36	9,511	53

Source: Aeronautics and Space Report of the President (Annually).

UNITED STATES SPACE LAUNCH VEHICLES

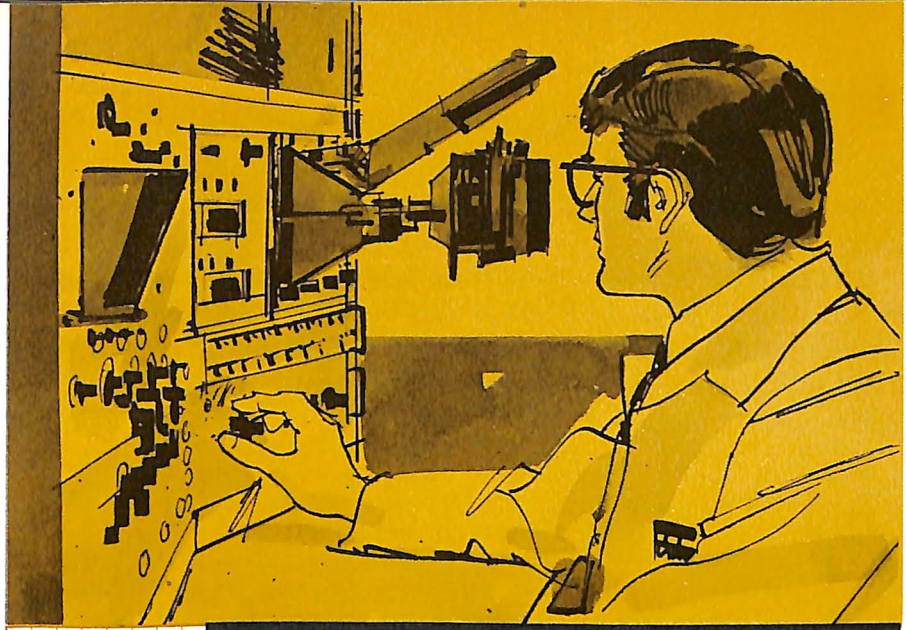
Vehicle	Stages	Thrust (in thousands of pounds)	Payload (pounds)	
			100 Nautical Miles Orbit	Escape
Scout	1. Algol (IIB)* 2. Castor II* 3. Antares II* 4. Altair III* or FW4*	100.9 60.7 20.9 5.9	520	50
Thrust-augmented Thor-Delta	1. Thor (SLV-2J) plus nine TX354-5* 2. Delta (DSV-3) 3. TE 364*	205 plus 57 each 9.2 15	4,650	1,150
Thrust-augmented Thor-Agena	1. Thor (SLV-2H) plus 3 TX 354-5* 2. Agena	170 plus 52 each 16	3,500	—
Atlas-Burner II	1. Atlas Booster and Sustainer (SLV-3A) 2. Burner II*	400 10	7,000	700
Atlas-Agena	1. Atlas Booster and Sustainer (SLV-3A) 2. Agena	400 16	8,500	1,430
Titan IIIB-Agena	1. LR-87 2. LR-91 3. Agena	464 102 16	9,950	1,975
Titan IIIC	1. Two 5-segment 120″ diameter* 2. LR-87 3. LR-91 4. Transtage	2,400 523 102 16	29,000	6,000

(Continued on next page)

UNITED STATES SPACE LAUNCH VEHICLES—*Continued*

Vehicle	Stages	Thrust (in thousands of pounds)	Payload (pounds)	
			100 Nautical Miles Orbit	Escape
Titan IIID	1. Two 5-Segment 120″ diameter*	2,400	30,000	—
	2. LR-87	523		
	3. LR-91	102		
Titan IIID-Centaur	1. Two 5-Segment 120″ diameter*	2,400	34,000	12,000
	2. LR-87	523		
	3. LR-91	102		
	4. Centaur (Two RL-10)	30		
Atlas-Centaur	1. Atlas Booster and Sustainer	400	11,650	2,700
	2. Centaur (Two RL-10)	30		
Saturn IB	1. S-IB (8H-1)	1,640	40,000	—
	2. S-IVB (1J-2)	230		
Saturn V	1. S-IC (5F-1)	7,570	285,000	103,000
	2. S-II (5J-2)	1,150		
	3. S-IVB (1J2)	230		

* Solid propellant, all other are liquid.
Source: Aeronautics and Space Report of the President (Annually).



Research and Development

The wind-down of the Apollo program of the National Aeronautics and Space Administration (NASA) and cutbacks in the Department of Defense outlays have signalled what is in effect a reduction in the U. S. research and development effort.

The tables in this chapter of *Facts and Figures* show some down-trends and some slight up-trends. The hard fact about even the up-trends is that the funding effort necessary to preserve the country's technological leadership that means both social and economic progress in the future is not keeping pace with inflation.

Federal outlays for R&D peaked at about $16.9 billion in 1968. After a steady decline for three years they were back up to $16.6 billion in 1972, with an increase to $17.6 billion estimated by 1974. (These overall figures include the costs of constructing facilities and of administrative operations.)

Comparing the peak year of 1968 and 1972, the Department of Defense went from about $8.1 billion to some $8.3 billion. Defense R&D is forecast to be nearly $8.5 billion in 1974. Among DOD R&D efforts in 1972 a decrease was recorded in outlays for astronautics, with in-

creases registered for the aircraft, missiles and miscellaneous R&D categories.

NASA's R&D funding dollars, which held steady at $3.4 billion in FY 1971 and FY 1972 are estimated to drop to less than $3.1 billion in 1973 and to level off at slightly above $3.1 billion in 1974. This represents a drop of 47 per cent in NASA R&D funding from the high point of $5.9 billion in R&D outlays in 1966.

FEDERAL OUTLAYS FOR RESEARCH AND DEVELOPMENT
Fiscal Years, 1954 to Date
(Millions of Dollars)

Year Ending June 30	TOTAL	Department of Defense	National Aeronautics and Space Administration	Atomic Energy Commission	Other
1954	$ 3,148	$2,487	$ 90	$ 383	$ 188
1955	3,308	2,630	74	385	219
1956	3,446	2,639	71	474	262
1957	4,462	3,371	76	657	358
1958	4,990	3,664	89	804	433
1959	5,803	4,183	145	877	598
1960	7,738	5,654	401	986	697
1961	9,278	6,618	744	1,111	805
1962	10,379	6,812	1,257	1,284	1,026
1963	12,000	6,849	2,552	1,335	1,264
1964	14,694	7,517	4,171	1,505	1,501
1965	14,875	6,728	5,093	1,520	1,534
1966	16,002	6,735	5,933	1,462	1,872
1967	16,842	7,680	5,426	1,467	2,269
1968	16,865	8,148	4,724	1,593	2,400
1969	16,208	7,858	4,252	1,654	2,444
1970	15,632	7,568	3,753	1,616	2,695
1971	15,050	7,541	3,382	1,303	2,824
1972	16,630	8,275	3,423	1,552	3,380
1973[E]	16,583	8,047	3,062	1,621	3,853
1974[E]	17,554	8,491	3,136	1,731	4,196

NOTE: Includes military personnel, procurement, civil functions, and some other items not included in other tables. Includes R & D facilities and administrative operating costs.
[E] Estimate.
Source: "The Budget of the United States Government," (Annually).

DEPARTMENT OF DEFENSE
OUTLAYS FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION
Fiscal Years 1951 to Date
(Millions of Dollars)

Year Ending June 30	Department of Defense	Air Force	Navy	Army	Other
1951	$ 758	N.A.	N.A.	N.A.	N.A.
1952	1,165	N.A.	N.A.	N.A.	N.A.
1953	2,148	N.A.	N.A.	N.A.	N.A.
1954	2,187	N.A.	N.A.	N.A.	N.A.
1955	2,261	N.A.	N.A.	N.A.	N.A.
1956	2,101	N.A.	N.A.	N.A.	N.A.
1957	2,406	N.A.	N.A.	N.A.	N.A.
1958	2,504	N.A.	N.A.	N.A.	N.A.
1959	2,866	N.A.	N.A.	N.A.	N.A.
1960	4,710	$2,348	$1,129	$1,021	$212
1961	6,131	3,300	1,435	1,207	189
1962	6,319	3,493	1,364	1,280	181
1963	6,376	3,301	1,429	1,355	291
1964	7,021	3,722	1,578	1,338	384
1965	6,236	3,146	1,294	1,344	452
1966	6,259	2,948	1,407	1,412	492
1967	7,160	3,229	1,791	1,634	506
1968	7,747	3,800	2,003	1,434	510
1969	7,457	3,386	2,045	1,521	505
1970	7,166	2,937	2,084	1,665	480
1971	7,303	2,809	2,405	1,569	520
1972	7,881	3,205	2,427	1,779	470
1973[E]	7,622	3,005	2,319	1,822	476
1974[E]	8,069	3,097	2,559	1,917	496

[E] Estimate.
N.A.—Not available.
NOTE: For RDT&E for aircraft, missiles and astronautics, see page 76.
Source: "Budget of the United States Government" (Annually).

The Atomic Energy Commission's R&D cost for FY 1972 is estimated to increase slightly in FY 1973 to $1.6 billion, and then go up to $1.7 billion in 1974.

Meanwhile, the R&D expenditures elsewhere in the Government—for health services, social science, mass transit and other programs—had an increase of 20 per cent to $3.4 billion between FY 1971 and 1972, and

are expected to increase an additional 14 per cent to an estimated $3.9 billion in FY 1973 and then to an estimated $4.2 billion in 1974. At this rate R&D outlays for these programs in 1974 will be up 75 per cent over 1968.

"Industrial Research and Development" covers both Federal and industry funds devoted to "Applied R&D" and to "Basic Research." These categories cover the funds spent on the development of materials, products, processes and services for the present time, and the funds devoted to research for the future.

The latest available figures (through 1971) show some interesting but not necessarily comforting trends. Industrial Research and Development for all industries was at a high $18.3 billion in 1969. In 1971 it was again at $18.3 billion, following a decrease of 1.4 per cent in 1970. The interesting point is that between 1969 and 1971 Research and Develop-

DEPARTMENT OF DEFENSE
OUTLAYS FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION, BY FUNCTIONS
Fiscal Years, 1960 to Date
(Millions of Dollars)

Year Ending June 30	TOTAL, ALL RDT&E FUNCTIONS	AEROSPACE				Other
		TOTAL	Aircraft	Missiles	Astronautics	
1960	$4,710	$3,203	$ 632	$2,059	$ 512	$1,507
1961	6,131	4,090	547	3,025	518	2,041
1962	6,319	4,150	624	2,777	749	2,169
1963	6,376	3,731	544	2,241	946	2,645
1964	7,021	4,575	939	2,352	1,284	2,446
1965	6,236	3,839	1,017	1,901	921	2,397
1966	6,259	3,707	976	1,801	930	2,552
1967	7,160	4,533	1,048	2,502	983	2,627
1968	7,747	5,077	1,335	2,522	1,220	2,670
1969	7,457	4,600	1,031	2,410	1,159	2,857
1970	7,166	4,188	1,239	2,196	753	2,978
1971	7,303	4,226	1,699	2,008	519	3,077
1972	7,881	4,691	2,066	2,157	468	3,190
1973[E]	7,622	N.A.	N.A.	N.A.	N.A.	N.A.
1974[E]	8,069	N.A.	N.A.	N.A.	N.A.	N.A.

[E] Estimate.
N.A.—Not available.
Source: Department of Defense, OASD (Comptroller), January 12, 1973.

AIRCRAFT PROGRAM ACQUISITION COSTS
RESEARCH, DEVELOPMENT, TEST & EVALUATION
(BY DEPARTMENT, TYPE AND MODEL)
Fiscal Years 1972 to 1974

Product, Department, Type and Model	Year ending June 30		
	1972	1973[E]	1974[E]
	Millions of Dollars		
AIR FORCE			
AX Close Air Support	$ 47.0	$ 48.1	$112.4
E-3A AWACS	139.3	194.2	197.8
F-5E Fighter	42.5	17.7	2.6
F-15 Fighter	420.2	454.5	229.5
C-5A Cargo/Transport	22.4	—	—
AABNCP Adv. Airborne Command Post	—	48.3	37.3
NAVY			
A-6E Intruder Attack A/C	2.0	6.0	10.0
EA-6B Prowler Attack A/C	14.9	7.1	4.0
A-7E Corsair II Attack A/C	2.0	4.1	5.1
F-14A Tomcat Fighter	126.0	58.0	40.4
S-3A Viking Anti-Submarine	204.2	38.8	5.2
E-2C Hawkeye	30.8	14.1	1.4
AIRCRAFT SYSTEMS IN R&D ONLY			
B-1 Bomber	370.3	444.5	473.5
UTTAS Tactical Transport A/C	23.5	50.4	108.1
HLH Heavy Lift Helicopter	29.5	38.0	60.0
CH-53E Shipboard Lift Helicopter	—	10.0	30.0
Advanced Attack Helicopter	2.1	20.0	49.3
Advanced Med. STOL Transport A/C	6.0	25.0	67.2

NOTE: For Missile Program Acquisition Costs, including RDT&E, see page 55.
[E] Estimate.
Source: Department of Defense Budget, "Program Acquisition Costs by Weapon System, Fiscal Year 1974."

ment in the aerospace industry dropped by about 16 per cent (from $5.9 billion to $4.9 billion) while R&D in all other industries climbed about 8 per cent during the same period.

Within this overall decline "Applied R&D" funds dropped 16 per cent (Federal support down 14 per cent and company support down 25 per cent) and "Basic Research" funds reduced by 25 per cent (Federal support down 36 per cent and company support down about 19 per cent). "Basic Research" always has been, and always will be a small portion of the overall Federal and company IR&D effort. Even so, it has been declining at a much faster rate than "Applied R&D."

INDUSTRIAL RESEARCH AND DEVELOPMENT, ALL INDUSTRIES AND THE AEROSPACE INDUSTRY
Calendar Years 1956 to Date
(Millions of Dollars)

Year	TOTAL, RESEARCH AND DEVELOPMENT	AEROSPACE[a]		
		Total	Federal Government Funds	Company Funds
1956	$ 6,605	$2,138	N.A.	N.A.
1957	7,731	2,574	$2,275	$ 299
1958	8,389	2,609	2,276	333
1959[r]	9,618	3,090	2,754	335
1960	10,509	3,514	3,150	364
1961	10,908	3,829	3,438	392
1962	11,464	4,042	3,588	454
1963[r]	12,630	4,712	4,261	452
1964[r]	13,512	5,078	4,621	457
1965[r]	14,185	5,148	4,499	649
1966[r]	15,548	5,526	4,724	802
1967[r]	16,385	5,669	4,531	1,138
1968[r]	17,429	5,776	4,544	1,232
1969[r]	18,318	5,909	4,554	1,355
1970[r]	18,062	5,245	4,032	1,213
1971	18,314	4,940	3,928	1,012

[r] Revised.
N.A.—Not available.
[a] Includes companies primarily engaged in the manufacture of aircraft and parts, SIC Code 372, and the manufacture of ordnance and accessories, including complete guided missiles and space vehicles, SIC Code 19.
Source: National Science Foundation.

INDUSTRIAL RESEARCH AND DEVELOPMENT IN AEROSPACE, BY TYPE OF RESEARCH AND FUND SOURCE
Calendar Years 1957 to Date
(Millions of Dollars)

Year	TOTAL AERO-SPACE	Applied Research and Development Funds			Basic Research Funds		
		Total	Federal Government Contracts	Company	Total	Federal Government Contracts	Company
1957[r]	$2,574	$2,549	$2,265	$ 284	$25	$10	$15
1958	2,609	2,583	2,266	317	26	10	16
1959[r]	3,090	3,058	2,738	320	32	17	15
1960[r]	3,514	3,452	3,118	334	62	32	30
1961[r]	3,829	3,789	3,417	372	40	20	20
1962[r]	4,042	3,987	3,558	429	55	30	25
1963[r]	4,712	4,653	4,229	424	59	31	28
1964[r]	5,078	5,010	4,585	424	68	35	33
1965[r]	5,148	5,074	4,457	617	74	42	32
1966[r]	5,526	5,452	4,685	767	74	39	35
1967[r]	5,669	5,596	4,497	1,099	73	34	39
1968[r]	5,776	5,705	4,518	1,187	71	26	45
1969[r]	5,909	5,842	4,529	1,313	67	25	42
1970[r]	5,245	5,182	4,012	1,170	63	20	43
1971	4,940	4,890	3,912	978	50	16	34

[r] Revised.
Source: National Science Foundation.

Foreign Trade

Aerospace exports, which peaked at $4.2 billion in 1971, declined 8.9 per cent to $3.8 billion in 1972. This figure includes both civil and military sales abroad.

Overall, civilian exports decreased by $118 million (3.9 per cent) and military exports decreased by $255 million (22.7 per cent) from 1971.

The *balance* of trade for aerospace products declined from $3.8 billion in 1971 to $3.3 billion in 1972. A part of the downward shift was accounted for by increased imports of aerospace products, up from $373 million in 1971 to $565 million in 1972.

The aerospace industry, however, continued to be a major bulwark of the U.S. foreign balance of trade position. In 1971 the U.S. registered its first overall negative trade balance (—$2.0 billion) since calendar year 1888. Without aerospace the negative balance would have been $5.8 billion. In 1972 the second consecutive overall annual negative trade balance for the U.S. amounted to $6.4 billion. Without the aerospace plus of $3.3 billion the deficit would have been some $9.7 billion.

It is obvious that foreign competition in the aerospace field, which is

EXPORTS OF U. S. AEROSPACE PRODUCTS
Calendar Years 1968 to Date
(Millions of Dollars)

	1968	1969	1970	1971[r]	1972
GRAND TOTAL	$2,994.4	$3,138.4	$3,397.4	$4,195.9	$3,822.9
TOTAL MILITARY	765.6	1,111.4	887.3	1,121.3	866.6
COMPLETE AIRCRAFT. TOTAL	407.9	601.0	467.0	633.3	405.5
Transports	100.6	37.9	81.9	80.7	126.1
General Aviation	0.6	0.6	4.5	0.5	1.4
Rotary	9.8	32.5	22.7	43.8	53.4
Fighters & Bombers	278.6	483.6	330.8	477.7	206.1
Trainers	11.0	10.2	12.9	12.0	14.5
Other, including Used	7.3	36.2	14.2	18.6	4.0
ENGINES, TOTAL	31.1	50.0	45.1	48.2	57.4
Jet & Gas Turbine	24.1	38.1	28.1	29.7	44.5
Missile Turbine	3.0	8.0	10.0	12.6	6.0
Internal Combustion	4.0	3.9	7.0	5.9	6.9
PARTS, ACCESSORIES & EQUIPMENT INCLUDING SPARES, TOTAL	192.8	303.4	266.5	319.9	300.0
Engine Spares & Accessories	41.9	58.4	63.9	58.3	79.0
Other Spares & Equipment	150.9	245.0	202.6	261.6	221.0
ROCKETS, GUIDED MISSILES & PARTS, TOTAL	133.8	157.0	108.7	119.9	103.7
Complete Rockets & Guided Missiles	41.6	67.3	8.1	26.1	18.0
Parts & Accessories for Rockets & Guided Missiles	92.2	89.7	100.6	93.8	85.7
TOTAL, CIVILIAN	2,228.8	2,027.0	2,510.1	3,074.6	2,956.3
COMPLETE AIRCRAFT. TOTAL	1,405.4	1,241.0	1,528.2	1,913.8	1,622.4
Transports, New	1,200.2	946.9	1,283.1	1,566.5	1,135.0
General Aviation, New	101.3	125.6	112.5	89.4	130.3
Rotary Wing, New	33.0	29.1	26.9	45.7	52.3
Other, including Used	70.9	139.4	105.7	212.2	304.8
ENGINES, TOTAL, NEW & USED	115.7	102.4	117.6	148.5	183.9
Jet & Gas Turbine	92.4	82.0	98.4	128.6	158.6
Internal Combustion	23.3	20.4	19.2	19.9	25.3
PARTS, ACCESSORIES & EQUIPMENT FOR AIRCRAFT AND ENGINES, INCLUDING SPARES, TOTAL	707.7	683.6	864.3	1,012.3	1,150.0
Engine Spares & Accessories	191.0	177.0	201.1	226.8	268.3
Other Spares & Equipment	516.7	506.6	663.2	785.5	881.7

[r] Revised.
NOTE: For earlier years, see previous editions of "Aerospace Facts and Figures."
Source: Bureau of the Census, "U.S. Exports, Schedule B Commodity and Country." Report FT 410 (Monthly).

TOTAL AND AEROSPACE BALANCE OF TRADE
Calendar Years 1960 to Date
(Dollar Figures in Millions)

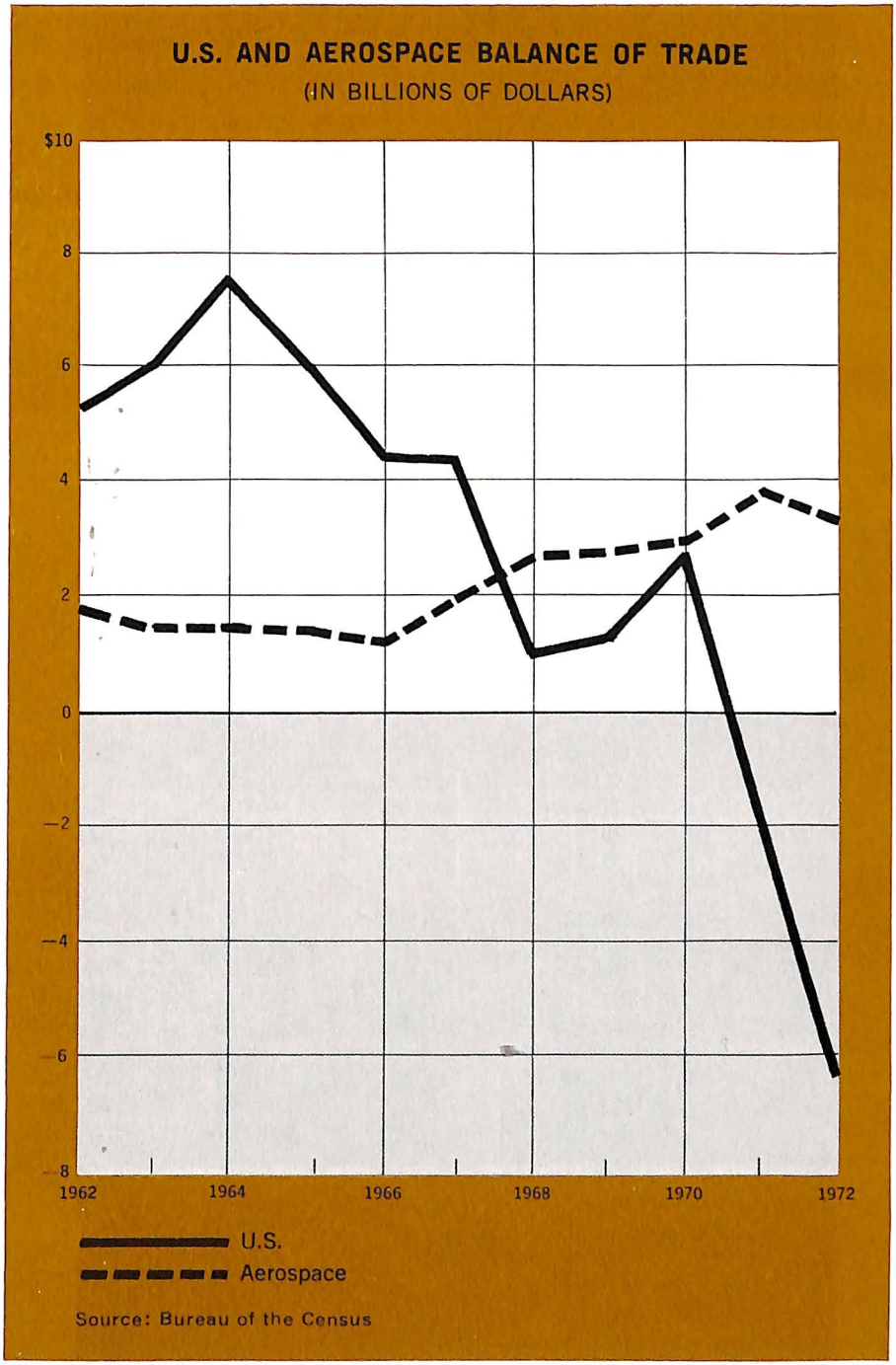
Year	Total U. S. Trade Balance[a]	Aerospace			Aerospace Trade Balance as Percent of U. S. Total
		Trade Balance	Exports	Imports	
1960	$5,369	$1,665	$1,726	$ 61	31.0
1961	6,096	1,501	1,653	152	24.6
1962	5,178	1,795	1,923	128	34.7
1963	6,060	1,532	1,627	95	25.3
1964	7,556	1,518	1,608	90	20.1
1965	5,852	1,459	1,618	159	24.9
1966	4,524	1,370	1,673	303	30.3
1967	4,409	1,961	2,248	287	44.4
1968	1,133	2,661	2,994	333	234.9
1969	1,289	2,831	3,138	307	219.6
1970	2,708	3,089	3,397	308	114.6
1971[r]	−2,014[b]	3,823	4,196	373	[c]
1972	−6,439	3,258	3,823	565	[c]

[a] U. S. Balance of Trade is the difference between exports of domestic merchandise and imports for consumption.
[b] First negative U.S. Balance of Trade since 1888.
[c] Not applicable.
[r] Revised.
Source: Bureau of the Census, "U. S. Exports, Schedule B Commodity and Country," Report FT 410; "U. S. Imports, General and Consumption, Schedule A Commodity and Country," Report FT 135; "Highlights of U. S. Export and Import Trade," FT 990 (All are monthly publications).

expressed in terms of both lower exports and increased imports (up from $61 million in 1960 to $565 million in 1972), is a matter for concern.

In 1972 the U.S. export of civil transports declined by 25 aircraft, from 173 to 148, and the dollar value dropped $431.5 million from $1.57 billion in 1971 to $1.14 billion in 1972. In the future today's development programs abroad promise more competition from foreign manufacturers—British, French, German, Italian and Japanese.

General aviation (non-airline) aircraft sales were a bright spot in the aviation export picture. In 1972 selected U.S. manufacturers reported exports of 2,233 aircraft worth $129.9 million, up about $51 million in value over the 1,845 aircraft exported in 1971.


U.S. AND AEROSPACE BALANCE OF TRADE
(IN BILLIONS OF DOLLARS)
$10
8
6
4
2
0
−2
−4
−6
−8
1962
1964
1966
1968
1970
1972
U.S.
Aerospace
Source: Bureau of the Census

Commercial helicopter exports increased by 15 units in 1972 and by more than $10 million in value (259 units worth $73.7 million). By geographical areas the largest purchasers were in Canada and Greenland (75), Latin America (63), Europe (58) and Asia (34).

A third upward trending category in which sales helped to offset the overall decline was that of used aircraft. Sales amounting to $302 million in 1972 were $96.6 million higher than during the previous year.

U. S. AEROSPACE IMPORTS
Calendar Years 1955 to Date
(Thousands of Dollars)

Year Ending Dec. 31	TOTAL	Aircraft[a]	Aircraft Engines	Aircraft Parts, N.E.C.
1955	$ 32,096	$ 14,415	$ 1,265	$ 16,416
1956	86,790	55,594	2,300	28,896
1957	52,671	15,476	1,639	35,556
1958	78,560	32,716	5,991	39,854
1959	68,066	16,273	7,510	44,283
1960	60,901	6,841	7,388	46,672
1961	151,667	82,821	17,485	51,361
1962	128,204	54,280	9,707	64,217
1963	95,290	26,831	4,675	63,784
1964	90,062	21,505	6,573	61,984
1965	158,837	73,406	20,149	65,282
1966	303,264	162,645	32,774	107,845
1967	286,968	61,136	30,750	195,082
1968	333,469	110,817	37,913	184,739
1969	306,625	104,375	30,540	171,710
1970	308,334	48,297	33,686	226,351
1971[r]	372,698	78,613	35,996	258,089
1972	564,989	101,170	155,127	308,692

[a] Aircraft includes new and used airplanes, seaplanes, and amphibians.
[r] Revised.
Source: Bureau of the Census, "U. S. Imports, General and Consumption, Schedule A, Commodity and Country," Reports FT 110, 125, 135 (Monthly).

U. S. EXPORTS OF CIVIL TRANSPORTS
Calendar Years 1958 to Date
(Value in Millions of Dollars)

Year	TOTAL		Under 33,000 Pounds Airframe Weight		33,000 Pounds and Over Airframe Weight	
	Number	Value	Number	Value	Number	Value
1958	128	$228.9	45	$90.8	83	$138.1
1959	65	107.6	26	4.0	39	103.6
1960	159	480.1	67	15.8	92	464.3
1961	119	262.5	68	11.2	51	251.3
1962	172	259.2	122	13.8	50	245.4
1963	181	190.9	151	18.1	30	172.8
1964	225	211.1	193	29.1	32	182.0
1965	76	351.8	16	4.9	60	346.9
1966	82	420.8	6	0.1	76	420.7
1967	134	611.4	13	4.4	121	607.0
1968	240	1,200.2	19	9.9	221	1,190.1
1969	182	946.9	17	25.5	165	921.4
1970	184	1,283.1	19	6.8	165	1,276.3
1971[r]	173	1,566.5	25	24.5	148	1,542.0
1972	148	1,135.0	43	10.0	105	1,125.0

[r] Revised.
Source: Bureau of the Census, "U. S. Exports, Schedule B Commodity and Country," Report FT 410 (Monthly).

EXPORTS OF COMMERCIAL HELICOPTERS,
BY SELECTED U. S. MANUFACTURERS, BY DESTINATION
Calendar Year 1972
(Thousands of Dollars)

Total and Destination	Number	Value[a]
TOTAL	259	$73,673.0
Canada and Greenland	75	11,189.1
Latin America	63	14,157.3
Europe	58	23,850.0
Asia	34	8,541.0
Oceania	12	588.4
Africa	7	665.5
Other Country	10	14,681.7

[a] Manufacturers' Net Billing Price.
NOTE: Data based on exports for Bell, Fairchild, Hughes Tool Co., Sikorsky and Vertol.
Source: Aerospace Industries Association, company reports.

EXPORTS OF GENERAL AVIATION AIRCRAFT
Calendar Years 1965 to Date

Year	TOTAL		Single Engine		Multi-Engine			
					Under 3000 Lbs.		3000 Lbs. & Over	
	Number	Value (Millions)	Number	Value (Millions)	Number	Value (Millions)	Number	Value (Millions)
1965	2,457	$ 68.8	2,031	$ 30.6	184	$ 8.4	242	$29.8
1966	2,985	89.1	2,387	35.2	261	13.4	337	40.5
1967	3,125	91.2	2,554	36.9	198	9.5	373	44.8
1968	2,890	101.3	2,295	36.1	163	8.5	432	56.7
1969	2,461	125.6	1,761	35.0	211	11.9	489	78.7
1970	2,037	112.5	1,493	31.5	142	8.7	402	72.3
1971[r]	1,566	89.4	1,199	26.1	80	5.1	287	58.2
1972	2,072	130.3	1,546	34.6	92	5.0	434	90.7

[r] Revised.
Source: Bureau of the Census, "U.S. Exports, Schedule B Commodity and Country." Report FT 410 (Monthly).
NOTE: For data prior to 1965, see earlier editions of *Aerospace Facts and Figures.*

EXPORTS OF COMMERCIAL HELICOPTERS
BY SELECTED U. S. MANUFACTURERS
Calendar Years 1960 to Date

Year Ending December 31	Number	Value[a] (Thousands of Dollars)
1960	89	$11,445.9
1961	122	10,483.4
1962	78	11,124.1
1963	69	14,982.4
1964	102	20,080.0
1965	173	25,120.5
1966	121	12,100.1
1967	220	27,298.1
1968	219	26,545.9
1969	268	48,047.3
1970	276	32,825.6
1971	244	62,853.0
1972	259	73,673.0

[a] Manufacturers' Net Billing Price.
NOTE: Data based on exports for Bell, Fairchild, Hughes Tool Co., Sikorsky and Vertol.
Source: Aerospace Industries Association, company reports.

EXPORTS OF LIGHT TRANSPORTS AND GENERAL AVIATION AIRCRAFT BY SELECTED U.S. MANUFACTURERS, BY DESTINATION, CALENDAR YEAR 1972

Total and Destination	Number	Value[a] (Thousands of Dollars)
TOTAL	2,233	$129,918.0
Canada and Greenland	283	11,348.9
Latin America	616	42,867.7
Europe	892	47,563.6
Asia	88	9,249.2
Oceania	132	5,297.5
Africa	222	13,591.1

N.A.—Not available.
[a] Manufacturers' Net Billing Price.
NOTE: Data are based on exports for Aerostar Aircraft, American Aviation, Beech, Bellanca, Cessna, Champion, Gates Learjet, Lake, Maule, North American Rockwell, Piper and Swearingen of new civil aircraft under 20,000 pounds empty airframe weight.
Source: General Aviation Manufacturers Association.

EXPORTS OF LIGHT TRANSPORTS AND GENERAL AVIATION AIRCRAFT BY SELECTED U.S. MANUFACTURERS
Calendar Years, 1960 to Date

Year Ending December 31	Number	Value[a] (Thousands of Dollars)
1960	1,481	$27,312.6
1961	1,583	29,789.8
1962	1,458	30,938.7
1963	1,579	35,060.6
1964	1,775	44,118.4
1965	2,242	59,596.1
1966	2,903	75,373.3
1967	3,035	76,540.9
1968	2,803	91,448.1
1969	2,626	107,766.7
1970	2,169	99,298.2
1971	1,845	78,506.7
1972	2,233	129,918.0

[a] Manufacturers' Net Billing Price.
NOTE: 1972 data based on exports for Aerostar Aircraft, American Aviation, Beech, Bellanca, Cessna, Champion, Gates Learjet, Lake, Maule, North American Rockwell, Piper and Swearingen of new civil aircraft under 20,000 pounds, empty airframe weight.
Sources: 1960-1969, Aerospace Industries Association, company reports. 1970-1972, General Aviation Manufacturers Association, company reports.

U. S. EXPORTS OF USED AIRCRAFT
Calendar Years 1958 to Date
(Value in Millions of Dollars)

Year Ending Dec. 31	TOTAL		Military		Non-Military	
	Number	Value	Number	Value	Number	Value
1958	595	$35.8	—	—	595	$35.8
1959	632	22.9	171	$ 3.1	461	19.8
1960	634	26.2	70	0.5	564	25.7
1961	618	35.1	124	1.2	494	33.9
1962	511	37.5	129	0.9	382	36.6
1963	423	16.6	67	0.2	356	16.4
1964	589	31.7	201	2.8	288	27.9
1965	474	39.7	67	0.7	407	39.0
1966	397	45.7	33	15.0	364	30.7
1967	391	85.5	29	25.3	362	60.2
1968	304	75.5	14	6.8	290	68.7
1969	382	137.7	3	[a]	379	137.7
1970	361	106.1	3	2.1	358	104.0
1971[r]	419	205.3	6	0.1	413	205.2
1972	471	301.9	21	2.9	450	299.0

[r] Revised.
[a] Less than $0.05 million.
Source: Bureau of the Census, "U. S. Exports, Schedule B Commodity and Country," Report FT 410 (Monthly).

U. S. EXPORTS OF
NEW AND USED CIVIL AIRCRAFT ENGINES
Calendar Years 1958 to Date
(Value in Millions of Dollars)

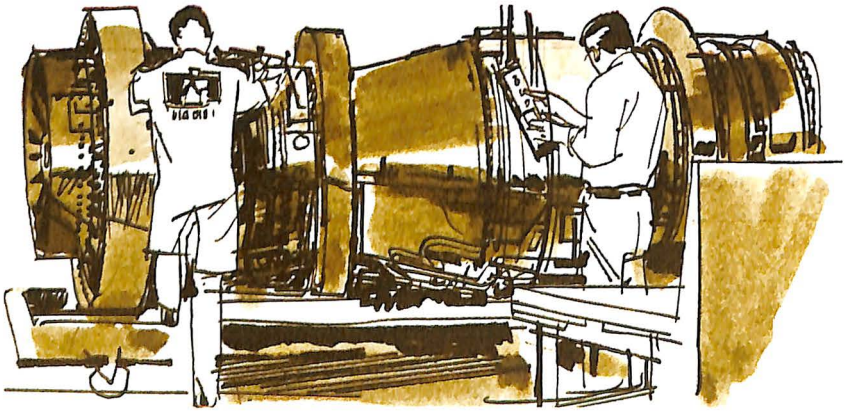
Year	TOTAL		Jet and Gas Turbine		Internal Combustion	
	Number	Value	Number	Value	Number	Value
1958	3,904	$ 48.3	61	$ 8.0	3,843	$ 40.3
1959	2,900	43.7	313	18.6	2,587	25.1
1960	3,725	70.7	480	47.5	3,245	23.2
1961	3,630	75.3	364	53.6	3,276	21.7
1962	3,690	63.1	341	44.8	3,349	18.2
1963	3,143	45.1	253	25.7	2,890	19.4
1964	4,062	46.7	247	25.0	3,815	21.7
1965	3,330	56.2	372	38.8	2,958	17.4
1966	4,006	77.0	564	49.3	3,442	27.7
1967	4,236	101.2	756	69.6	3,480	31.6
1968	3,279	115.6	866	92.4	2,413	23.2
1969	4,178	102.4	759	82.0	3,419	20.4
1970	3,790	117.6	634	98.4	3,156	19.2
1971[r]	3,530	148.5	707	128.6	2,823	19.9
1972	3,823	183.9	592	158.6	3,231	25.3

[r] Revised.
Source: Bureau of the Census, "U. S. Exports, Schedule B Commodity and Country," Report FT 410 (Monthly).

VALUE OF U. S. EXPORTS OF MILITARY AND CIVIL ENGINES[a] AND PARTS
Calendar Years 1958 to Date
(Millions of Dollars)

Year Ending Dec. 31	TOTAL	Internal Combustion			Jet and Gas Turbine			Missile Engines and Parts
		Total	Engines	Parts	Total	Engines	Parts	
1958	$213.5	$204.6	$68.5	$136.1	$ 8.9	$ 8.9	N.A.	N.A.
1959	208.0	186.9	43.1	143.8	21.1	21.1	N.A.	N.A.
1960	235.1	184.1	32.5	151.6	51.0	51.0	N.A.	N.A.
1961	279.8	214.0	27.4	186.6	65.8	65.8	N.A.	N.A.
1962	309.6	250.5	23.1	227.4	59.1	59.1	N.A.	N.A.
1963	293.3	240.8	27.2	213.6	52.5	52.5	N.A.	N.A.
1964	251.3	201.4	26.8	174.6	49.9	49.9	N.A.	N.A.
1965	276.4	156.8	40.6	116.2	113.8	60.9	$52.9	$5.8
1966	292.3	150.8	35.0	115.8	136.7	69.1	67.6	4.8
1967	335.2	158.9	36.8	122.1	173.1	88.4	84.7	3.2
1968	379.7	149.0	27.3	121.7	227.4	116.5	110.9	3.3
1969	387.8	129.6	24.3	105.3	250.0	120.1	129.9	8.2
1970	427.7	126.4	26.2	100.2	290.8	126.5	164.3	10.5
1971[r]	481.8	110.0	25.8	84.2	357.8	158.3	199.5	14.0
1972	588.5	126.8	32.2	94.6	451.4	203.1	248.3	10.3

[r] Revised.
N.A.—Not available.
[a] Includes new and used.
Source: Bureau of the Census, "U. S. Exports, Schedule B Commodity and Country," Report FT 410 (Monthly).



U. S. EXPORTS OF NEW SMALL AIRCRAFT ENGINES[a] FOR CIVILIAN AIRCRAFT
Calendar Years 1948 to Date

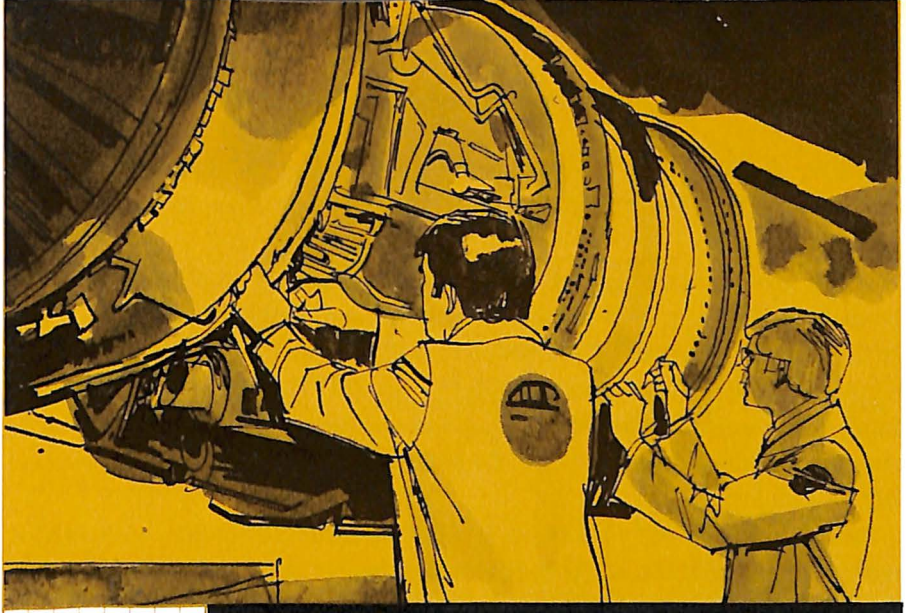
Year Ending December 31	Number	Value (Thousands of dollars)
1948	660	$ 326
1949	107	112
1950	247	285
1951	304	509
1952	551	941
1953	347	708
1954	728	1,516
1955	897	2,016
1956	1,371	3,529
1957	1,516	3,860
1958	1,552	4,312
1959	948	2,448
1960	1,464	3,716
1961	1,575	4,399
1962	1,819	4,510
1963	1,292	3,635
1964	1,677	5,257
1965	1,491	4,815
1966	1,714	6,726
1967	1,748	6,816
1968	1,176	7,155
1969	2,321	8,712
1970	2,179	9,197
1971[r]	1,799	9,422
1972	1,972	11,699

[r] Revised.
[a] 1948 and 1949, under 250 h.p.; 1950 to date, under 500 h.p.
Source: Bureau of the Census, "U. S. Exports, Schedule B Commodity and Country," Report FT 410 (Monthly).

EXPORT-IMPORT BANK GROSS AUTHORIZATIONS OF CREDITS AND GUARANTEES IN SUPPORT OF COMMERCIAL AIRCRAFT EXPORTS
Fiscal Years 1957 to Date
(Millions of Dollars)

Year Ending June 30	Credits and Guarantees			Credits[a]			Guarantees[b]		
	TOTAL	Jets	Other	TOTAL	Jets	Other	TOTAL	Jets	Other
1957	$ 46.8	$ 17.2	$29.6	$ 46.8	$ 17.2	$29.6	—	—	—
1958	53.4	46.0	7.4	53.4	46.0	7.4	—	—	—
1959	21.8	13.7	8.1	21.8	13.7	8.1	—	—	—
1960	93.8	93.1	0.7	93.8	93.1	0.7	—	—	—
1961	94.3	93.8	0.5	94.3	93.8	0.5	—	—	—
1962	51.4	50.6	0.8	4.2	3.7	0.5	$ 47.2	$ 46.9	$ 0.3
1963	20.3	15.7	4.6	3.0	—	3.0	17.3	15.7	1.6
1964	80.0	79.2	0.8	32.6	32.6	—	47.4	46.6	0.8
1965	93.6	86.9	6.7	1.4	1.4	—	92.2	85.5	6.7
1966	132.1	122.3	9.8	99.3	94.4	4.9	32.8	27.9	4.9
1967	811.2	791.3	19.9	806.3	789.1	17.2	4.9	2.2	2.7
1968	400.4	386.8	13.6	336.8	336.8	—	63.6	50.0	13.6
1969	318.1	308.7	9.4	204.7	197.5	7.2	113.4	111.2	2.2
1970	736.4	677.4	59.0	636.2	598.2	38.0	100.2	79.2	21.0
1971	887.7	847.8	39.9	490.4	484.2	6.2	397.3	363.6	33.7
1972	682.3	651.3	31.0	479.6	475.4	4.2	202.7	175.9	26.8

[a] "Credit" is a commitment of direct financing by the Export-Import Bank.
[b] "Guarantee" by the Export-Import Bank of principal and interest on a loan made by another institution such as a commercial bank.
Source: Export-Import Bank of the United States.



Manpower

In 1968 Average monthly employment in the aerospace industry totalled about 1,502,000. In 1971 the figure was down to 969,000, and last year it dropped again to an estimated 922,000—a total drop of 38.6 per cent (580,000 employees) in four years.

However, 1972's drop of some 47,000 amounted to a reduction of only about 4.9 per cent from 1971, indicating that the industry, which still is one of the nation's largest single manufacturing employers, may be "bottoming out" in the shakedown period caused by significant defense and space cutbacks.

During the period from 1968 through 1972 a cutback of 326,000 production workers amounted to a reduction of 41.9 per cent. The balance of the decline was in scientists and engineers, administration, and other categories. It is interesting to note that in 1964 the aerospace industry employed nearly 30 per cent of all scientists and engineers involved in research and development in the U. S., but by 1972 that share had dropped to 20.4 per cent.

Between 1971 and 1972, the number of scientists and engineers en-

gaged in research and development throughout U. S. industry was reduced by 14,500. More than one-third (5,600) were engaged in aerospace R&D.

In the overall reduction of some 47,000 aerospace employees (4.9 per cent) from 1971 to 1972 about 37,000 (6.1 per cent) of the cutback was in the aircraft segment of the industry with production workers dropping 17,000 (5.1 per cent) from 288,000 to 271,000. There was a loss of 2,000 employees in the communications equipment field and 8,000 employees in other miscellaneous fields, with "missiles and space" remaining level at 90,000 employees.

NASA employment peaked at 409,900 in 1965, including both NASA agency and contractor employees working on NASA programs. Since that year contractor efforts have been cut back to the point that a 1965 work force of 376,700 has been reduced by 265,400 to a 1972 average monthly total of 111,300. During the same period direct NASA employment dropped 8,230 from 33,200 to 24,970. The total reduction for NASA and NASA contractor programs has gone from 409,900 in 1965, as noted, to 138,800 in 1972, a loss of 271,000 employees, or 66 per cent.

Additional but more modest reductions are forecast for 1973 and 1974 with total employment on NASA programs estimated to go down from 138,800 in 1972 to about 125,000 in 1974.

Although there were some 18,000 fewer production workers in the aerospace industry in 1972 than there were in 1971, on an average they earned more money. The hourly wage went up 33¢ to $4.65 per hour, including overtime premiums. The average weekly paycheck for production workers in aircraft and parts plants was $193.44 in 1972, up from $175.82 for the preceding year.

ESTIMATED AEROSPACE EMPLOYMENT
Calendar Years 1961 to Date
(Thousands of Employees)

YEAR	TOTAL	AIRCRAFT	MISSILES & SPACE	COMMUNICATIONS EQUIPMENT	OTHER
Total Employment					
1961	1,178	610	152	160	256
1962	1,270	638	165	193	274
1963	1,267	639	173	183	272
1964	1,209	605	166	171	267
1965	1,175	624	155	145	251
1966	1,375	753	159	166	297
1967	1,484	834	157	179	314
1968	1,502	852	150	184	316
1969	1,411	812	126	178	295
1970	1,199	690	102	155	252
1971	969	538	90	134	207
1972	922	501	90	132	199
Production Workers					
1961	577	348	56	47	126
1962	596	349	58	59	130
1963	592	351	55	55	131
1964	572	339	54	51	128
1965	574	356	51	43	124
1966	706	446	55	52	153
1967	778	502	55	56	165
1968	779	506	55	58	163
1969	715	468	41	56	150
1970	603	380	32	64	127
1971	471	288	27	56	100
1972	453	271	27	57	98

NOTE: Aerospace employment as shown is the sum of the estimated monthly average employment in the aircraft and missile and space industries (SIC 372 and 1925), plus estimated aerospace employment in the communications industry (SIC 3662) and estimated aerospace employment in the instruments and certain other industries (SIC 3811, 3821, 28, 35, 73, 89, etc). Currently published data for the aircraft industry (SIC 372) include substantial missile and spacecraft employment. Thus, aircraft employment is actually lower, missile and space employment higher, than shown.

Sources: Bureau of Labor Statistics "Employment and Earnings" (Monthly); Aerospace Industries Association Estimates.

EMPLOYMENT IN THE AIRCRAFT AND PARTS INDUSTRY
Calendar Years 1914 to Date
(Thousands of Employees)

Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
1914	0.2	N.A.	N.A.	N.A.
1919	4.2	N.A.	N.A.	N.A.
1923	3.5	N.A.	N.A.	N.A.
1929	18.6	N.A.	N.A.	N.A.
1935	14.9	N.A.	N.A.	N.A.
1939	63.2	45.1	11.3	6.8
1940	148.6	101.8	31.4	15.4
1941	347.1	234.6	75.3	37.2
1942	831.7	549.6	192.0	90.1
1943	1,345.6	882.1	314.9	148.6
1944	1,296.6	815.5	339.7	141.4
1945	788.1	489.9	210.9	87.3
1946	237.3	159.0	49.9	28.4
1951	467.8	313.3	95.0	59.5
1953	795.5	472.4	191.2	131.9
1955	761.3	466.6	168.0	126.7
1957	895.8	519.0	213.2	163.6
1959	720.6	399.3	182.8	138.5
1960	627.9	337.4	173.6	116.9
1961	609.7	317.1	186.6	106.0
1962	638.5	334.7	198.9	104.9
1963	639.2	335.9	200.7	102.6
1964	605.4	319.2	189.1	97.1
1965	624.3	333.3	187.9	103.1
1966	753.2	417.3	208.1	127.8
1967	833.6	468.2	221.0	144.4
1968	852.0	487.8	216.4	147.8
1969	811.9	463.3	205.0	143.6
1970	689.9	387.8	180.0	122.1
1971	538.1	290.7	153.4	93.9
1972	501.1	272.2	138.5	90.5

NOTE: The above figures include substantial missile and spacecraft employment in recent years. They do not, however, represent total aerospace employment, estimates for which appear in preceding tables in this chapter.

Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly).

PRODUCTION WORKERS IN THE AIRCRAFT AND PARTS INDUSTRY
Calendar Years 1914 to Date
(Thousands of Production Workers)

Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
1914	0.2	N.A.	N.A.	N.A.
1919	3.5	N.A.	N.A.	N.A.
1923	2.9	N.A.	N.A.	N.A.
1929	14.7	N.A.	N.A.	N.A.
1935	11.4	N.A.	N.A.	N.A.
1939	49.6	34.8	9.5	5.3
1940	118.0	79.2	26.5	12.3
1941	278.3	183.8	65.0	29.5
1942	674.8	433.9	168.3	72.6
1943	1,090.5	692.1	278.8	119.6
1944	1,016.0	616.3	290.3	109.4
1945	591.0	360.5	164.9	65.6
1946	167.5	113.1	34.0	20.4
1951	348.4	234.8	66.5	47.1
1953	586.2	346.8	136.1	103.3
1955	525.5	322.5	108.5	94.5
1957	591.4	342.4	132.1	116.9
1959	445.7	248.2	104.1	93.4
1960	369.6	198.4	96.6	74.6
1961	347.7	175.9	103.9	67.9
1962	349.2	175.1	108.5	65.6
1963	350.8	176.9	107.2	66.7
1964	338.6	175.7	99.2	63.7
1965	356.4	184.7	102.7	69.0
1966	446.4	239.8	119.4	87.2
1967	501.5	272.9	129.4	99.2
1968	505.5	280.9	123.9	100.7
1969	468.1	258.7	114.1	95.3
1970	380.4	206.7	95.0	78.7
1971	287.8	148.7	80.5	58.6
1972	271.2	139.5	73.5	58.2

NOTE: The above figures include substantial missile and spacecraft employment in recent years. They do not, however, represent total aerospace employment, estimates for which appear in preceding tables in this chapter.
Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly).

AVERAGE HOURLY EARNINGS IN AIRCRAFT AND PARTS PLANTS
1947 to Date
PRODUCTION WORKERS ONLY
(Includes Overtime Premiums)

Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
1947	$1.37	$1.36	$1.38	N.A.
1952	1.89	1.87	1.94	N.A.
1957	2.35	2.35	2.35	N.A.
1958	2.50	2.51	2.51	$2.44
1959	2.62	2.64	2.64	2.55
1960	2.70	2.71	2.73	2.64
1961	2.77	2.78	2.81	2.70
1962	2.87	2.87	2.91	2.80
1963	2.95	2.95	2.99	2.90
1964	3.05	3.05	3.09	2.99
1965	3.14	3.15	3.17	3.06
1966	3.30	3.34	3.32	3.19
1967	3.44	3.49	3.42	3.33
1968	3.62	3.64	3.65	3.53
1969	3.87	3.90	3.87	3.77
1970	4.12	4.17	4.10	4.01
1971	4.32	4.36	4.36	4.17
1972	4.65	4.74	4.70	4.37

NOTE: The production workers surveyed include substantial missile and spacecraft employment. See NOTE page 97.
N.A.—Not available.
Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly).

AVERAGE WEEKLY EARNINGS IN AIRCRAFT AND PARTS PLANTS
PRODUCTION WORKERS ONLY
1947 to Date
(Includes Overtime Premiums)

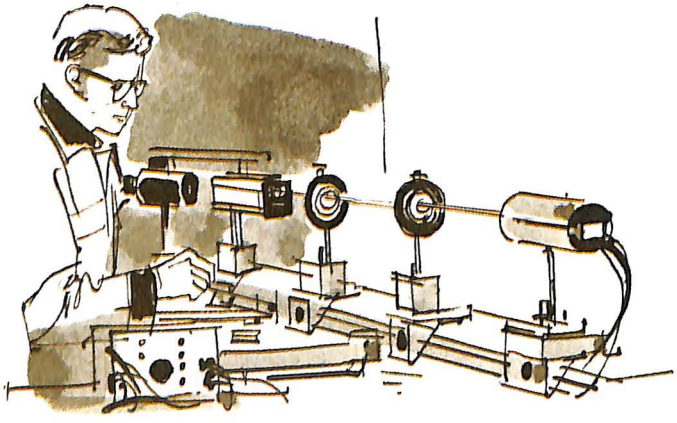
Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
1947	$ 54.74	$ 54.13	$ 54.67	N.A.
1952	81.27	79.85	84.20	N.A.
1957	96.35	95.88	95.65	N.A.
1958	101.25	101.66	99.65	$100.53
1959	106.63	105.86	108.50	106.34
1960	110.43	110.03	112.20	109.30
1961	114.68	114.26	116.62	113.40
1962	119.97	119.97	120.77	118.72
1963	122.43	121.84	123.49	122.67
1964	125.36	123.53	127.31	126.78
1965	131.88	131.26	133.46	131.27
1966	143.89	143.95	144.09	141.96
1967	146.54	147.28	145.35	146.19
1968	152.04	152.88	151.11	151.44
1969	161.77	163.41	158.28	159.47
1970	168.92	170.97	166.05	167.62
1971	175.82	178.76	173.53	171.80
1972	193.44	197.66	193.17	183.10

NOTE: The production workers surveyed include substantial missile and spacecraft employment. See NOTE page 97.
N.A.—Not available.
Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly).

RESEARCH AND DEVELOPMENT—SCIENTISTS AND ENGINEERS—
TOTAL AND AEROSPACE
1957 to Date

As of January	TOTAL Scientists and Engineers	Aircraft and Missiles Scientists and Engineers	Aerospace as a Percent of Total
1957	229,400	58,700	25.6
1958	243,800	58,600	24.0
1959	268,400	65,900	24.6
1960	292,000	72,400	24.8
1961	312,100	78,500	25.2
1962	312,000	79,400	25.4
1963	327,300	90,700	27.7
1964[r]	340,200	101,100[r]	29.7
1965[r]	343,600	99,200[r]	28.9
1966[r]	353,200	99,300[r]	28.1
1967[r]	367,200	100,400[r]	27.3
1968[r]	376,700	101,100[r]	26.8
1969[r]	387,100	99,100[r]	25.8
1970[r]	384,100	92,600[r]	24.1
1971[r]	370,600[r]	78,300[r]	21.1
1972	356,100	72,700	20.4

NOTE: Scientists and engineers working less than full time have been included in terms of their full time equivalent number.
[r] Revised.
Source: National Science Foundation.



Work-Injury Rates[a] for all Manufacturing and Aircraft and Parts 1958 to Date

Year	All Manufacturing	Aircraft and Parts
1958	11.4	3.5
1959	12.4	3.4
1960	12.0	3.5
1961	11.8	3.5
1962	11.9	3.3
1963	11.9	3.3
1964	12.3	3.4
1965	12.8	3.3
1966	13.6	4.7
1967	14.0	4.3
1968	14.0	3.9
1969	14.8	4.3
1970	15.2	4.5
1971[a]	16.6	N.A.

[a] Defined as the number of injuries and illnesses per 100 man-years of work; prior to 1971, "Injury Frequency Rates" were defined as the number of disabling injuries per million employee-hours worked.

N.A.—Not available.

Source: Department of Labor, Bureau of Labor Statistics, "Injury Rates by Industry, 1970" (BLS Report 406); 1971, Department of Labor, Bureau of Labor Statistics, USDL 73-27, February 6, 1973.

Employment on National Aeronautics and Space Administration Programs 1960 to Date

June	NASA Employees	Contractor Employees[E]	Total Employment
1960	10,268	36,500	46,786
1961	17,077	57,500	74,577
1962	22,156	115,500	137,656
1963	27,904	218,400	246,304
1964	31,984	347,100	379,084
1965	33,200	376,700	409,900
1966	33,924	360,000	393,924
1967	33,726	273,200	306,926
1968	32,471	235,400	267,871
1969	31,745	186,600	218,345
1970	31,350	129,500	160,850
1971	29,478	114,100	143,579
1972	27,500	111,300	138,800
1973[E]	26,850	103,600	130,450
1974[E]	24,970	100,000	124,970

[E] Estimate.

Source: NASA, Briefing on the Budget of the United States, January 27, 1973.

LABOR TURNOVER RATES IN THE AEROSPACE INDUSTRY
Calendar Years 1958 to Date
(Rates per 100 Employees per Year)

Year Ending Dec. 31	Complete Missiles and Spacecraft		Aircraft							
			TOTAL		Airframes		Engines and Parts		Other Parts and Equipment	
	Accessions	Separations	Accessions	Separations	Accessions	Separations	Accessions	Separations	Accessions	Separations
1958	58.1	26.0	28.3	33.3	26.9	29.8	27.8	35.0	33.8	42.0
1959	48.9	29.2	27.4	37.9	22.4	36.5	29.1	35.0	39.4	45.0
1960	32.3	30.9	28.6	39.2	23.4	33.8	35.1	39.5	34.3	53.9
1961	37.0	27.2	32.6	30.9	31.3	29.3	28.9	24.8	43.2	44.9
1962	37.2	31.6	35.2	31.3	32.9	29.0	30.5	23.9	49.3	47.9
1963	29.9	31.5	28.9	29.4	28.6	27.9	24.3	25.0	39.5	42.9
1964	23.5	39.1	24.7	31.0	23.0	28.9	20.2	28.0	38.6	42.9
1965	32.6	28.7	38.7	26.9	38.5	22.8	32.2	28.4	51.9	20.5
1966	44.1	30.8	48.6	31.5	47.3	28.1	43.2	31.0	61.0	46.9
1967	43.5	34.0	37.4	32.2	36.6	27.9	32.5	34.1	46.6	43.9
1968	40.7	45.4	28.1	32.3	27.1	30.2	22.9	31.3	39.8	41.1
1969	27.4	46.6	23.4	33.2	20.8	30.8	24.6	32.2	31.5	42.4
1970	19.3	48.7	16.1	41.7	13.9	43.8	15.1	32.1	26.2	47.4
1971	21.6	37.2	20.4	36.0	21.6	32.4	13.2	34.8	27.6	50.4
1972[E]	31.7	25.4	24.6	24.8	22.9	23.1	21.3	18.9	34.5	38.5

[E] Estimate.
Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly).

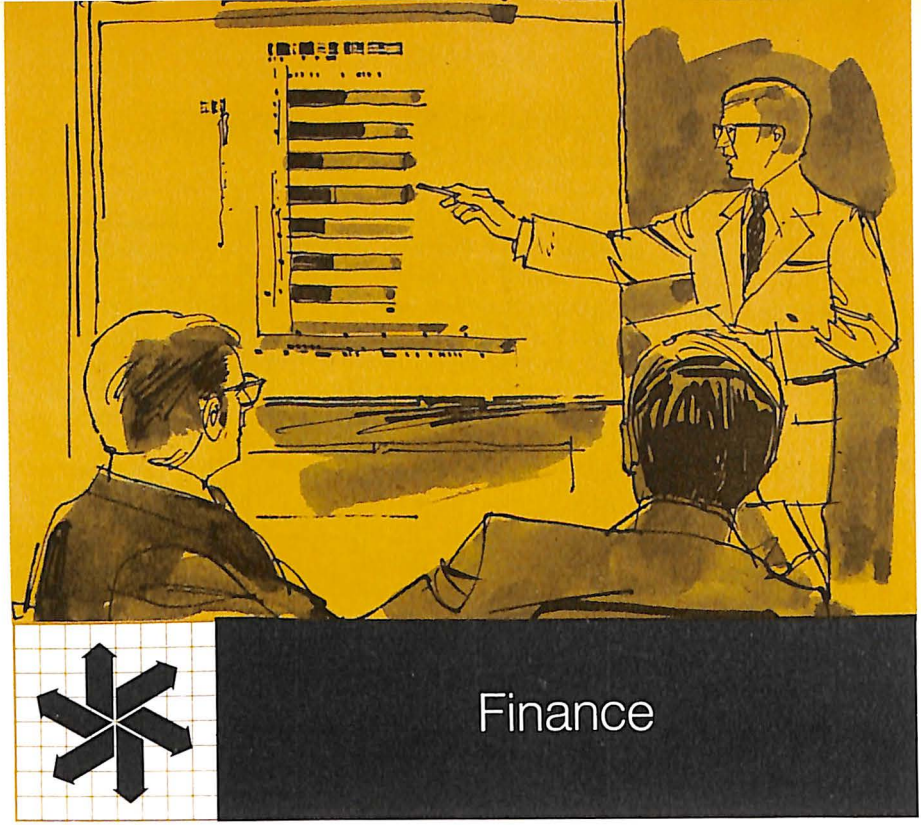
WORK STOPPAGES IN THE AIRCRAFT AND PARTS INDUSTRY
Calendar Years 1927 to Date

Year Ending December 31	Number of Strikes	Number of Workers Involved	Man-Days Idle in Year
1927–1936	9	6,060	136,813
1937	6	9,390	90,964
1938	N.A.	N.A.	N.A.
1939	2	1,263	85,319
1940	3	6,270	36,402
1941	29	28,422	112,549
1942	15	6,584	12,416
1943	60	52,481	130,112
1944	103	189,801	386,371
1945	85	150,200	581,000
1946	15	21,300	557,000
1947	10	3,520	67,900
1948	8	21,400	1,100,000
1949	10	10,300	451,000
1950	18	23,900	145,000
1951	29	48,800	765,000
1952	44	81,000	927,000
1953	31	57,800	1,350,000
1954	11	6,350	171,000
1955	38	48,500	403,000
1956	21	23,100	1,040,000
1957	18	23,200	88,200
1958	20	36,700	308,000
1959	26	21,700	312,000
1960	28	82,400	1,190,000
1961	14	2,440	35,000
1962	19	23,000	555,000
1963	12	7,510	53,700
1964	19	20,300	160,000
1965	22	74,900	946,000
1966	23	38,000	204,000
1967	22	28,800	161,000
1968	46	45,500	594,300
1969	26	76,400	1,564,600
1970	12	6,800	552,500
1971	24	17,200	465,500

N.A.—Not available.

NOTE: The "aircraft and parts industry" to which this table applies includes substantial missile and spacecraft employment. It represents approximately 60 per cent of total aerospace employment.

Source: Department of Labor, Bureau of Labor Statistics, Division of Wages and Industrial Relations.



Finance

Profits in the aerospace industry, which declined steadily beginning in 1969, turned upward slightly in 1972. Net profits after taxes, which had decreased in 1970 and 1971, increased by $179 million to $602 million in 1972.

Net sales in 1972 stood at $25.1 billion, up $1.5 billion from 1971, but still down $1.8 billion from 1968.

At the end of 1972, assets, stockholders' equity and net working capital reported by aerospace companies were up from their totals at the end of 1971. At the same time liabilities were down, particularly short-term debt. At the end of 1972 short-term loans, which carry higher interest rates, were down from $1,152 million in 1971 to $649 million, and installments due on long-term loans were down from $325 million to $272 million. This indicates growing stability as the aerospace industry squares away for the future.

For the first time since 1968 net profits of the aerospace industry (measured as a per cent of sales after taxes) turned upwards in 1972. The downward profit percentage trend, which stood at 3.2 per cent in 1968, reached a low of 1.8 per cent in 1971 ($423 million), and recovered to 2.4 per cent in 1972 ($602 million).

Total assets of aerospace companies increased slightly in 1972 (by 3.7 per cent) while total liabilities decreased by 1.4 per cent.

The current new plant and equipment expenditures for all industries was $91.9 billion in 1972, and is expected to be $102.6 billion in 1973, an increase of nearly 12 per cent. In the aerospace industry area, however, new plant and equipment expenditures of $420 million in 1972 is expected to increase to $450 million in 1973 (about 7 per cent up from 1972).

A review of prime contract awards for selected major military hard goods for the last three years shows some change in the geographical spread of aircraft contracts. In 1972 the West North Central region moved into first place, supplanting the South Central region, which dropped to third behind the Middle Atlantic region. The Pacific region (including Alaska and Hawaii) retained the lead in both the missile and space systems fields, and in contracts for electronics and communication equipment. The

TAXES AND PROFITS, AEROSPACE COMPANIES
1957 to Date

Year	Net Federal Taxes as a Percent of Total Income	Net Profit After Taxes as a Percent of Sales
1957	52.3%	2.9%
1958	51.7	2.4
1959	52.3	1.6
1960	44.4	1.4
1961	50.7	1.8
1962	47.2	2.4
1963	47.5	2.3
1964	46.9	2.6
1965	46.7	3.2
1966	45.2	3.0
1967	44.5	2.7
1968	46.6	3.2
1969	43.9	3.0
1970	43.1	?.0
1971	44.4	1.8
1972	45.0	2.4

NOTE: Does not include data for companies which produce aerospace products but are classified in industries other than group 372.
Source: Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations."

Pacific region also was first in research and development contracts (39.2 per cent of the total).

Lockheed Aircraft Corporation again in 1972 was the largest of the major defense contractors. McDonnell Douglas Corporation moved from sixth place in 1971 to second place in 1972, to within $5 million of Lockheed. General Dynamics Corporation dropped from second to third place; General Electric Company moved from fifth to fourth, and the Boeing Company moved up to fifth place from ninth the year before. Others in the first 10 major defense contractors in 1972 were American Telephone and Telegraph Company, Grumman Corporation, North American Rockwell Corporation (now Rockwell International Corporation), and Hughes Aircraft Company.

Among major NASA contractors McDonnell Douglas Corporation remained in first place. The Martin Marietta Corporation moved from seventh to second place, Rockwell International Corporation ended 1972 in third place, with the General Electric Company and the Boeing Company completing the first five listings. Others in the first 10 were Bendix Corporation, IBM Corporation, General Dynamics Corporation, RCA Corporation, and Fairchild Industries.

INCOME ACCOUNTS, AEROSPACE COMPANIES
1968 to Date
(Millions of Dollars)

	1968	1969	1970	1971	1972
Net Sales	$26,852	$26,392	$25,505	$23,566[r]	$25,071
Net Profit from Operations	1,661	1,493	980	893	1,247
Total Income before Federal Income Taxes	1,606	1,433	881	761	1,097
Provision for Federal Income Taxes	749	629	380	338	494
Net Profit after Taxes	857	804	501	423	602
Net Profit Retained in Business	552	467	237	181	319

NOTE: Does not include data for companies which produce aerospace products but are classified in other than industry group 372.
[r] Revised.
Source: Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations."

BALANCE SHEET COMPARISONS, AEROSPACE COMPANIES
1968 to Date
(Millions of Dollars)

	1968	1969	1970	1971[r]	1972
Assets:					
Current Assets					
Cash	$ 576	$ 763	$ 758	$ 844	$ 902
U.S. Government Securities	37	170	9	4	11
Total Cash and U.S. Government Securities	$ 613	$ 933	$ 767	$ 848	$ 913
Receivables (total)	2,840	3,318	3,254	3,400	3,309
Inventories (gross)	9,267	11,179	10,763	10,589	10,942
Other current assets	396	435	467	458	613
Total Current Assets	$13,116	$15,865	$15,251	$15,295	$15,777
Total Net Plant	3,542	4,496	4,527	4,296	4,289
Other Non-Current Assets	1,674	2,317	2,639	2,789	3,140
Total Assets	$18,332	$22,678	$22,417	$22,379	$23,205
Liabilities:					
Current Liabilities					
Short term loans	$ 789	$ 1,132	$ 1,146	$ 1,152	$ 649
Advances by U.S. Govt.	4,317	5,135	4,241	2,837	2,210
Trade accounts and notes payable	1,922	2,303	2,212	1,860	2,100
Federal income taxes accrued	304	365	455	463	640
Installments due on long term debts	110	186	338	325	272
Other current liabilities	1,906	2,213	2,148	3,870	4,053
Total Current Liabilities	$ 9,348	$11,334	$10,540	$10,507	$ 9,924
Long Term Debt	2,668	3,618	4,113	4,004	4,351
Other Non-Current Liabilities	279	412	514	551	583
Total Liabilities	$12,295	$15,364	$15,167	$15,062	$14,858
Stockholders' Equity:					
Capital Stock	$ 2,254	$ 2,505	$ 2,491	$ 2,541	$ 2,770
Earned Surplus and Reserves	3,783	4,807	4,757	4,776	5,576
Total Net Worth	$ 6,037	$ 7,312	$ 7,248	$ 7,317	$ 8,346
Total Liabilities and Stockholders' Equity	$18,332	$22,678	$22,417	$22,379	$23,205
Net Working Capital	$ 3,766	$ 4,531	$ 4,711	$ 4,788	$ 5,853

NOTE: Includes 72 companies classified in industry group 372 which filed reports with the Securities and Exchange Commission.
Source: Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations."
[r] Revised

NEW PLANT AND EQUIPMENT EXPENDITURES
Calendar Years 1947 to Date
(Billions of Dollars)

Year Ending December 31	All Industries	All Manufacturing Industries	Durable Goods	Aircraft, Including Guided Missiles and Space Vehicles
1947	$19.33	$ 8.44	$ 3.25	$0.04
1948	21.30	9.01	3.30	0.05
1949	18.98	7.12	2.45	0.05
1950	20.21	7.39	2.94	0.06
1951	25.46	10.71	4.82	0.18
1952	26.43	11.45	5.21	0.18
1953	28.20	11.86	5.31	0.15
1954	27.19	11.24	4.91	0.15
1955	29.53	11.89	5.41	0.23
1956	35.73	15.40	7.45	0.37
1957	37.94	16.51	7.84	0.48
1958	31.89	12.38	5.61	0.30
1959	33.55	12.77	5.81	0.30
1960	36.75	15.09	7.23	0.34
1961	35.91	14.33	6.31	0.30
1962	38.39	15.06	6.79	0.40
1963	40.77	16.22	7.53	0.45
1964	46.97	19.34	9.28	0.42
1965	54.42	23.44	11.50	0.46
1966	63.51	28.20	14.96	0.92
1967	65.47	28.51	14.06	0.93
1968	67.76	28.37	14.12	0.86
1969	75.56	31.68	15.96	0.84
1970	79.71	31.95	15.80	0.55
1971	83.18	30.35	14.61	0.35
1972	91.94	33.64	16.86	0.42
1973[a]	102.63	37.43	19.07	0.45

[a] Plans according to a survey conducted in January and February 1973.

Sources: 1947-1967: U.S. Department of Commerce, Survey of Current Business, January 1970, p. 25; 1968-1971: U.S. Department of Commerce, Securities and Exchange Commission, Joint Statistical Report; 1972-1973: U.S. Department of Commerce, Bureau of Economic Analysis, BEA 73-12, March 8, 1973.

Military Prime Contract Awards of $10,000 or More for Selected Major Military Hard Goods, by Geographic Region
Fiscal Years 1970–1972

Program and Region	Million Dollars			Percent of Program Total		
	1970	1971	1972	1970	1971	1972
Aircraft	$6,993	$7,126	$8,617	100.0	100.0	100.0
New England	955	779	955	13.7	10.9	11.1
Middle Atlantic	988	1,277	1,476	14.1	17.9	17.1
East North Central	682	670	614	9.7	9.4	7.1
West North Central	742	748	1,703	10.6	10.5	19.8
South Atlantic	1,060	814	1,017	15.2	11.4	11.8
South Central	1,727	1,813	1,415	24.7	25.5	16.5
Mountain	69	53	77	1.0	0.8	0.9
Pacific[a]	769	972	1,360	11.0	13.6	15.8
Missile and Space Systems	$5,021	$4,634	$5,219	100.0	100.0	100.0
New England	605	616	601	12.0	13.3	11.5
Middle Atlantic	640	716	743	12.8	15.4	14.2
East North Central	128	144	153	2.6	3.1	2.9
West North Central	131	96	110	2.6	2.1	2.1
South Atlantic	508	537	735	10.1	11.6	14.1
South Central	100	133	131	2.0	2.9	2.5
Mountain	305	206	390	6.1	4.4	7.5
Pacific[a]	2,604	2,186	2,356	51.8	47.2	45.1
Electronics and Communication Equipment	$3,519	$3,398	$4,104	100.0	100.0	100.0
New England	444	390	498	12.6	11.5	12.1
Middle Atlantic	797	832	935	22.7	24.5	22.8
East North Central	290	296	385	8.2	8.7	9.4
West North Central	154	127	150	4.4	3.7	3.7
South Atlantic	622	516	606	17.7	15.2	14.8
South Central	265	232	296	7.5	6.8	7.2
Mountain	88	78	81	2.5	2.3	2.0
Pacific[a]	859	927	1,153	24.4	27.3	28.1

[a] Includes Alaska & Hawaii.

Source: Department of Defense, Office of the Secretary of Defense, Directorate For Information Operations, "Military Prime Contract Awards by Region and State, Fiscal Years 1970, 1971, 1972."

MILITARY PRIME CONTRACT AWARDS OF $10,000 OR MORE FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK, BY REGION AND BY TYPE OF CONTRACTOR
Fiscal Year 1972
(Dollar Figures in Millions)

Region	TOTAL		Type of Contractor					
			Educational Institutions		Other Non-Profit Institutions[a]		Business Firms	
	Million Dollars	Percent	Million Dollars	Percent	Million Dollars	Percent	Million Dollars	Percent
TOTAL	$5,387	100.0	$356	100.0	$286	100.0	$4,745	100.0
New England ...	529	9.8	107	29.9	40	14.0	382	8.1
Middle Atlantic .	1,072	19.9	42	11.9	27	9.5	1,002	21.1
East North Central	295	5.5	36	10.2	20	7.2	238	5.0
West North Central	230	4.3	9	2.4	2	0.6	220	4.6
South Atlantic ..	714	13.2	87	24.4	52	18.2	575	12.1
South Central ...	266	4.9	14	4.0	7	2.4	246	5.2
Mountain	170	3.2	18	5.1	7	2.4	145	3.1
Pacific[b]	2,111	39.2	43	12.0	131	45.8	1,937	40.8

[a] Includes contracts with other government agencies.
[b] Includes Alaska and Hawaii.
Source: Department of Defense, Office of the Secretary of Defense, Directorate For Information Operations "Military Prime Contract Awards by Region and State, Fiscal Years 1970, 1971, 1972."

MAJOR DEFENSE CONTRACTORS
(Listed by rank according to net value of military prime contracts awarded July 1, 1971–June 30, 1972)
(Millions of Dollars)

Company	Fiscal Years Ending June 30				
	1968	1969	1970	1971	1972
U. S. TOTAL ALL CONTRACTS	$38,827	$25,175	$31,315	$29,752	$33,362
Lockheed Aircraft Corp...	1,870	2,040	1,848	1,510	1,705
McDonnell Douglas Corp..	1,101	1,070	883	897	1,700
General Dynamics Corp...	2,239	1,243	1,183	1,489	1,289
General Electric Co.	1,489	1,621	1,001	1,041	1,259
Boeing Company	762	654	475	732	1,171
American Telephone and Telegraph Co.	776	915	931	1,200	1,122
Grumman Corp.	629	417	661	1,098	1,120
United Aircraft Corp.	1,329	997	874	733	996
North American Rockwell Corp.	669	674	707	478	703
Hughes Aircraft Co.	286	439	497	516	688
Litton Industries Inc	466	317	543	516	616
Raytheon Co.	452	547	380	455	507
Tenneco Inc.....	[a]	237	249	917	505
LTV Corp.	754	914	479	725	449
Sperry Rand Corp.	447	468	399	359	414
Westinghouse Electric Corp.	251	430	418	437	387
Northrop Corp.	310	179	184	151	370
Honeywell, Inc.	352	436	398	237	334
RCA Corp.	255	299	263	251	275
International Business Machines Corp.	224	257	256	316	260
International Telephone & Telegraph Corp.....	242	238	217	233	258
Martin Marietta Corp....	394	264	251	187	256
General Motors Corp.....	630	584	386	344	256
Textron Inc.	501	428	431	325	242
Standard Oil Co. (N.J.) ..	274	291	229	187	209
Bendix Corp.	224	184	168	162	201
General Tire & Rubber Co.	248	264	262	159	197
Ford Motor Co.	381	396	346	218	197
Texas Instruments	169	133	191	142	190
American Motors Corp. ..	[a]	[a]	266	251	187

[a] Not in list of major contractors for indicated year.
Source: Department of Defense, "100 Companies and their Subsidiary Corporations Listed According to Net Value of Military Prime Contract Awards," (Annually).

MAJOR NATIONAL AERONAUTICS AND SPACE ADMINISTRATION CONTRACTORS
(Listed by rank according to net value of NASA prime contracts awarded July 1, 1971 to June 30, 1972)
(Millions of Dollars)

Company	Fiscal Years Ending June 30				
	1968	1969	1970	1971	1972
U. S. TOTAL ALL CONTRACTS	$3,446.7	$3,022.3	$2,759.2	$2,279.5	$2,143.3
McDonnell Douglas Corp..	209.0	207.5	236.3	302.9	343.1
Martin Marietta Corp....	26.8	56.0	108.0	107.6	208.4
North American Rockwell Corp.	838.7	680.9	531.5	172.5	175.1
General Electric Co.	190.7	150.1	131.7	161.4	114.9
Boeing Company	296.7	228.7	158.6	114.4	94.2
Bendix Corp.	123.8	127.6	109.8	121.4	88.0
International Business Machines Corp.	147.7	112.5	133.4	72.4	72.0
General Dynamics Corp...	54.4	34.0	38.0	50.8	66.6
RCA Corp.	63.2	51.6	54.5	93.9	57.2
Fairchild Industries.....	6.7	6.9	1.9	16.4	42.0
Philco-Ford Corp.	31.8	22.4	24.0	23.1	36.2
Sperry Rand Corp.	31.8	34.1	48.1	31.7	33.5
TRW, Inc.	52.4	50.0	58.3	62.3	33.3
Grumman Aerospace Corp.	394.1	369.2	284.4	113.7	28.5
Aerojet-General Corp. ...	67.1	64.9	71.6	54.6	25.7
Lockheed Electronics Corp.	[a]	[a]	[a]	26.5	24.4
Chrysler Corp.	62.6	42.5	16.7	15.3	24.3
Federal Electric Corp. ...	22.0	27.0	26.3	21.8	23.5
Computer Sciences Corp..	11.8	8.3	11.0	17.4	23.3
Hughes Aircraft Co.	9.7	7.5	9.0	20.9	22.0
LTV Aerospace Corp.....	42.7	18.3	17.9	15.4	21.9
Lockheed Missiles & Space Co.	[a]	[a]	[a]	[a]	16.4
Brown & Root/Northrop[b].	14.5	12.7	16.6	10.3	16.3
United Aircraft Corp. ...	18.1	26.2	27.1	28.4	15.9
Service Technology Corp..	[c]	26.2	27.5	22.4	15.5
Brown Engineering Co. ..	16.3	11.1	9.9	11.3	11.8
Honeywell, Inc.	15.7	8.1	11.5	11.9	11.1
Computing & Software, Inc.	4.7	6.0	7.7	11.3	10.5
Singer Company[d]	12.4	9.7	12.3	13.9	10.2
ILC Industries, Inc.	8.1	12.2	13.0	5.4	9.0

[a] Included with Lockheed Aircraft Corp.
[b] Joint venture.
[c] Not in list of major contractors for indicated year.
[d] General Precision before FY 1969.

Air Transportation

Financially the air transportation industry has headed upward from the low registered in 1970.

In 1972 U. S. scheduled airlines transported 191 million passengers a total of 152,406 million revenue passenger miles. This was more than 42 per cent of the passengers reported world-wide by the International Civil Aviation Organization (including the U.S.S.R.), and more than 43 per cent of the passenger miles. In other categories, U. S. airlines carried more than 48 per cent of the air cargo lifted and some 64 per cent of the air mail, both on a ton-mile basis.

The figures for 1971, the latest available from the International Air Transport Association, show that U. S. manufacturers still held a pre-eminent position, having produced 3,101 (78 per cent) of the 3,967 aircraft being operated by free world airlines.

As for U. S. carriers, passengers carried and revenue passenger miles flown increased in 1972 on both domestic and international routes. U. S. airlines carried 16,354,000 more passengers in 1972 than in 1971 on domestic routes and 1,328,000 more passengers on international flights, for a total of 17,682,000 more passengers flown than in 1971.

The picture outlined above is responsible for a healthy turnaround in

net operating income for scheduled domestic passenger/cargo operators and certificated air carriers (a category which includes intra-Alaska, intra-Hawaii, helicopter and other commercial but non-scheduled carriers). Net operating income peaked at $481 million in 1966. Thereafter it dropped steadily until in 1970 it was only $3 million.

In 1971, the last year for which figures are available, *net* operating income for scheduled domestic passenger/cargo operators and certificated air carriers rose to $246 million. This significant turnaround is illustrated by the fact that in 1970 net operating income was .4 per cent of total operating revenues, and one year later this figure had climbed to 3.2 per cent. Analysis indicates that this change upward can be attributed in significant degree to airline management efforts and to the productivity of the new generation of aircraft—fewer flights carrying more passengers.

Civil and joint-use airports in the United States increased by 809 during 1972.

In other areas, the number of people holding active airman certificates increased by 9,860 in 1972; general aviation (non-airline) hours flown and miles flown both decreased slightly in 1971, and the number of civil aircraft in operation also declined slightly in 1972.

U. S. CIVIL AND JOINT-USE AIRPORTS
By Length of Runway and Region[a]
January 1, 1972

FAA Region	TOTAL	Airports by Length of Runway (in feet)		
		Under 5,000	5,000–9,999	10,000 & over
TOTAL	12,070	10,537	1,254	279
New England	463	383	56	24
Eastern	1,505	1,364	113	28
Great Lakes	2,258	2,058	159	41
Central	1,125	1,054	62	9
Southern[b]	1,365	1,171	180	14
Southwest	1,913	1,689	192	32
Rocky Mountain	871	731	134	6
Western	1,059	886	154	19
Northwestern	680	593	74	13
Alaskan	762	556	115	91
Pacific	58	50	7	1
Outside U.S.[c]	11	2	8	1

[a] Includes seaplane bases, heliports and military fields having joint-civil use.
[b] Includes Puerto Rico (20 airports) and the Virgin Islands (4 airports.)
[c] American Samoa, Canton Island, Guam and Wake.
Source: Department of Transportation, Federal Aviation Administration.

UNITED STATES SCHEDULED AIRLINES
Selected Calendar Years, 1949 to Date

Year Ending Dec 31	Revenue Miles Flown (Millions)	Passengers Carried (Millions)	Revenue Passenger-Miles (Millions)	Cargo Ton-Miles[a] (Millions)	Mail Ton-Miles[b] (Millions)
1949	463	17	8,827	196	66
1951	527	25	13,204	324	92
1953	657	32	18,245	359	106
1955	780	42	24,351	503	150
1956	869	46	27,625	634	160
1957	976	49	31,261	721	169
1958	973	49	31,499	726	185
1959	1,030	56	36,372	853	209
1960	998	58	38,863	880	250
1961	970	58	39,831	1,023	308
1962	1,010	63	43,760	1,388	350
1963	1,095	71	50,365	1,346	368
1964	1,189	82	58,494	1,634	383
1965	1,354	95	68,676	2,270	494
1966	1,482	109	79,889	3,048	762
1967	1,834	132	98,484	3,537	985
1968	2,146	150	113,958	3,872	1,268
1969	2,385	159	125,414	4,443	1,345
1970	2,418	170	131,710	3,862	1,484
1971	2,379	174	135,652	4,637	1,327
1972	2,376	191	152,406	5,198	1,205

NOTE: Figures represent total scheduled service excluding nonrevenue operations of U.S international and domestic certificated route air carriers.
[a] Includes freight plus express revenue ton-miles in scheduled and nonscheduled operations.
[b] U.S. mail ton-miles plus foreign mail ton-miles in scheduled and nonscheduled operations.
Source: Civil Aeronautics Board, Bureau of Accounts and Statistics.

COMPOSITION OF U.S. AIR LINE FLEET, BY TYPE OF AIRCRAFT, NUMBER OF ENGINES, AND MODEL, JANUARY 1, 1971, 1972 & 1973
(Number of Aircraft)

Type of Aircraft, Number of Engines, and Model	1971	1972	1973
TOTAL AIRCRAFT	2,679	2,642	2,583
Total fixed-wing	2,663	2,628	2,569
Turbine-powered—total	2,510	2,482	2,436
Four-engine—total	1,041	979	890
Turbojet—total	931	890	811
Boeing 707	406	365	342
Boeing 720	115	106	57
Boeing 747	79	104	106
Convair 880	41	41	41
Convair 990	5	8	8
McDonnell Douglas DC-8	285	265	256
Lockheed L-1329	—	1	1
Turboprop—total	110	89	79
Armstrong Whitworth Argosy AW-650	8	6	—
Boeing 377S	—	1	1
Canadair CL-44	8	1	—
Lockheed 188	69	60	57
Lockheed 382	22	21	21
Vickers Viscount 745	3	—	—
Three-engine—total	659	678	759
Turbojet—total	659	678	759
Boeing 727	659	665	683
Lockheed 1011	—	—	17
McDonnell Douglas DC-10	—	13	59
Twin-engine—total	805	822	787
Turbojet—total	546	564	548
Boeing 737	149	155	153
British Aircraft Corp. BAC-111	59	62	58
Dassault MD-20	—	5	2
McDonnell Douglas DC-9	337	341	335
Hamburger Flugzeugbau HF-320	1	1	—
Turboprop—total	259	258	239
Aero Commander AC-680-V	—	—	1
Beech 99	3	5	1
Convair 580	108	106	104
Convair 600	24	24	25
Convair 640	10	9	9
DeHavilland DHC-6	6	8	13
Fairchild F-27	37	34	29
Fairchild FH-227	47	48	32
Grumman G-159	1	1	1
Nihon YS-11	21	21	22
Short SC-7	2	2	2

(*Continued on next page*)

COMPOSITION OF U.S. AIR LINE FLEET, BY TYPE OF AIRCRAFT, NUMBER OF ENGINES AND MODEL, JANUARY 1, 1971, 1972 & 1973—*Continued*
(Number of Aircraft)

Type of Aircraft, Number of Engines, and Model	1971	1972	1973
Single-engine turboprop—total	5	3	—
Piston-powered—total	153	146	133
Four-engine—total	34	31	27
Boeing 377	2	1	1
Douglas DC-4	8	4	3
Douglas DC-6	17	17	21
Douglas DC-7	6	7	—
Lockheed 749	1	1	1
Lockheed 1049/1649	—	1	1
Twin-engine—total	110	104	93
Aero Commander 500	—	1	1
Aero Commander 680E	1	2	1
Cessna 402	—	—	3
Convair 240	—	—	1
Convair 340/440	6	5	7
Curtiss CW-46	42	31	22
Douglas DC-3	22	23	20
Fairchild FC-82	2	2	2
Grumman G-21	12	12	11
Grumman G-44	2	2	1
Grumman G-73	1	1	1
Martin 202	1	1	1
Martin 404	19	22	21
Other	2	2	2
Single engine—total	9	11	13
Rotary Wing—total	16	14	14
Turbine-powered—total	13	11	11
Sikorsky S-61	6	8	7
Vertol V-107-II	4	—	—
Bell BL-206	3	3	4
Piston-powered—total	3	3	3
Sikorsky S-58C	3	3	3

Source: Department of Transportation, Federal Aviation Administration, "FAA Statistical Handbook of Civil Aviation" (Annually).

WORLD CIVIL AIRLINES
Selected Calendar Years, 1919 to Date
(Revenue Traffic, Scheduled Services, International and Domestic)
(Data in Millions)

Year	Miles Flown	Passengers Carried	Passenger-Miles	Freight Ton-Miles[r]	Mail Ton-Miles
	Excludes USSR				
1919	1	N.A.	N.A.	N.A.	N.A.
1929	55	N.A.	105	N.A.	N.A.
1939	185	N.A.	1,260	N.A.	N.A.
1949	840	27	15,000	370	130
1951	1,005	42	22,000	595	160
1953	1,210	53	29,000	680	190
1955	1,425	68	38,000	850	255
1956	1,580	77	44,000	960	275
1957	1,765	86	51,000	1,050	295
1958	1,820	88	53,000	1,075	320
1959	1,920	98	61,000	1,255	355
1960	1,930	106	67,500	1,400	415
1961	1,940	111	72,500	1,615	490
1962	2,015	121	80,500	1,900	555
1963	2,130	135	91,500	2,130	590
1964	2,300	155	106,000	2,575	625
1965	2,550	177	123,000	3,290	755
1966	2,780	200	142,000	3,905	1,050
1967	3,280	233	169,500	4,470	1,295
1968[r]	3,730	261	192,500	5,425	1,610
1969[r]	4,170	293	218,000	6,685	1,720
1970[r]	4,360	311	237,000	7,165	1,885
1971[r]	4,390	329	252,000	7,865	1,755
1972	4,440	360	286,000	9,380	1,630
	Includes USSR				
1970[r]	N.A.	383	286,000	8,180	2,150
1971[r]	N.A.	407	308,000	8,980	1,980
1972	N.A.	448	349,000	10,340	1,870

N.A.—Not available.
[r] Revised.
NOTE: Excludes the People's Republic of China, and states which were not members of ICAO at 31 December 1972. 1972 data are subject to revision.
Source: International Civil Aviation Organization, "Development of World Scheduled Revenue Traffic" (Annually).

U. S. MANUFACTURED AIRCRAFT IN OPERATION ON WORLD AIRLINES
1967 to Date

	1967	1968	1969	1970	1971
TOTAL, MANUFACTURED IN U. S. ..	2,735	2,890	3,030	3,042	3,101
4 Engine	1,424	1,374	1,428	1,493	1,490
Turbojets	941	1,102	1,221	1,318	1,352
Boeing 707	467	547	600	604	584
Boeing 720/720B	121	119	113	101	106
Boeing 747	—	—	4	89	163
McDonnell Douglas DC-8	276	372	437	465	448
Convair 880	58	48	47	45	41
Convair 990	19	16	20	14	10
Turboprops	127	85	62	55	41
Lockheed Electra	124	82	59	51	38
Lockheed L-100 Hercules	3	3	3	4	3
Piston Engine	356	187	145	120	97
Lockheed Constellation	31	10	3	1	—
Douglas DC-7	23	5	3	1	—
Douglas DC-6	193	76	72	58	52
Douglas DC-4	109	96	67	60	45
3 Engine	441	561	671	713	747
Turbojets	441	561	671	713	747
Boeing 727	441	561	671	713	734
McDonnell Douglas DC-10	—	—	—	—	13
2 Engine	836	925	902	815	825
Turbojets	176	392	498	547	594
Boeing 737	—	70	124	143	154
Lear Jet 24	—	1	1	—	—
McDonnell Douglas DC-9	176	321	373	404	440
Turboprops	28	34	26	24	30
Fairchild F-27/F-227	22	23	21	17	23
Convair 640/580	6	10	5	4	5
Other	—	1	—	3	2
Piston Engine	632	499	378	244	201
Convair 240, 340, 440	161	120	100	53	43
Curtiss Commando C-46	44	23	18	7	2
Douglas DC-3/C-47	391	320	237	164	137
Other	36	36	23	20	19
1 Engine	10	12	14	4	25
Helicopters	24	18	15	17	14
ALL MANUFACTURERS GRAND TOTAL	3,725	3,903	3,999	3,983	3,967
Percent of Grand Total Manufactured in U. S.	73.4	74.0	75.8	76.4	78.2

NOTE: Excludes U.S.S.R. and People's Republic of China.
Source: International Air Transport Association, "World Air Transport Statistics" (Annually).

U. S. Domestic and International Airline Passenger Service
Selected Calendar Years, 1926 to Date

Year Ending Dec 31	Domestic		International	
	Passengers Carried (Thousands)	Revenue Passenger-Miles Flown (Millions)	Passengers Carried (Thousands)	Revenue Passenger-Miles Flown (Millions)
1926	6	1.3	N.A.	N.A.
1930	385	85.1	33	7.8
1935	679	281.2	111	46.7
1940	2,803	1,052.2	163	99.8
1945	6,541	3,360.3	511	450.1
1950	17,468	8,029.1	1,752	2,214.0
1951	22,711	10,589.7	2,140	2,613.8
1952	25,176	12,559.3	2,391	3,065.0
1953	28,901	14,793.9	2,745	3,450.8
1954	32,529	16,802.4	2,919	3,810.4
1955	38,221	19,852.1	3,488	3,398.9
1956	41,937	22,398.6	4,068	5,226.2
1957	45,162	25,378.8	4,259	5,882.0
1958	44,741	25,375.5	4,428	6,123.9
1959	51,000	29,307.6	4,999	7,064.2
1960	52,377	30,556.6	5,499	8,306.2
1961	52,712	31,062.3	5,699	8,768.5
1962	55,950	33,623.0	6,598	10,138.0
1963	63,925	38,456.6	7,513	11,905.4
1964	72,988	44,141.3	8,775	14,352.4
1965	84,460	51,887.4	10,195	16,789.0
1966	97,746	60,590.8	11,646	19,298.4
1967	118,669	75,487.3	13,424	23,259.3
1968	134,423	87,507.6	15,728	26,450.6
1969	142,340	95,945.8	16,848	29,468.3
1970	153,662	104,146.8	16,260	27,563.2
1971	156,098	106,293.9	17,569	29,357.9
1972	172,452	118,138.0	18,897	34,268.3

Note: Figures represent total scheduled services excluding nonrevenue operations of certificated route air carriers. Passenger originations only.
N.A.—Not available.
Source: Civil Aeronautics Board, Bureau of Accounts and Statistics.

U. S. Domestic Airlines
Total Assets and Net Investment in Flight Equipment
(Dollar Figures in Millions)
1958 to Date

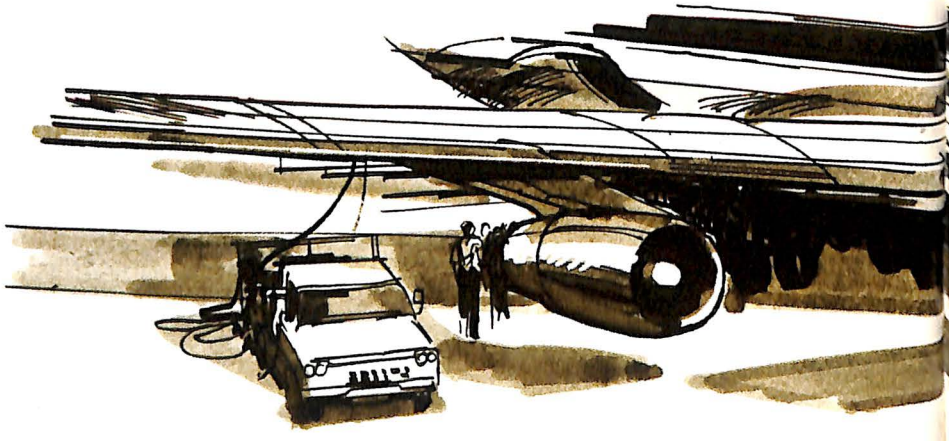
As of June 30	Total Assets[a]	Flight Equipment (Net-after depreciation)	Percent of Total Assets in Flight Equipment
1958	$1,182	$ 852	72.1%
1959	1,494	1,048	70.1
1960	1,760	1,374	78.1
1961	2,099	1,734	82.6
1962	2,273	1,874	82.4
1963	2,211	1,818	82.2
1964	2,415	2,030	84.0
1965	2,816	2,391	84.9
1966	3,747	2,981	79.6
1967	5,003	3,833	76.6
1968	6,294	5,096	76.6
1969	7,107	5,864	82.5
1970	7,417	6,030	81.3
1971	7,664	6,347	82.8
1972	8,017	6,529	81.4

[a] Comprises net investment in buildings and ground equipment, flight equipment, working capital, etc.
Note: Includes data for system trunk and local service carriers only.
Source: Civil Aeronautics Board, Bureau of Accounts and Statistics.

U. S. DOMESTIC AIRLINES, VALUE OF FLIGHT EQUIPMENT[a]
1958 to Date
(Millions of Dollars)

As of June 30	Total Gross Value of Flight Equipment	Less: Depreciation	Plus: Construction Work in Process	Equals: Net Value of Flight Equipment
1958	$1,498.5	$ 709.8	$ 63.4	$ 852.1
1959	1,752.8	816.8	112.3	1,048.3
1960	2,174.3	889.6	89.5	1,374.2
1961	2,719.2	1,062.0	76.7	1,733.9
1962	3,006.0	1,183.3	51.7	1,874.4
1963	3,132.4	1,341.4	27.1	1,818.1
1964	3,382.7	1,401.6	48.4	2,029.5
1965	3,843.5	1,504.7	51.7	2,390.5
1966	4,519.7	1,645.5	106.9	2,981.1
1967	5,485.0	1,805.6	153.2	3,832.6
1968	6,936.2	2,043.7	203.7	5,096.2
1969	8,003.5	2,334.2	194.6	5,863.8
1970	8,546.3	2,813.9	297.9	6,030.3
1971	9,375.2	3,231.0	203.0	6,347.2
1972	9,813.3	3,483.7	199.7	6,529.3

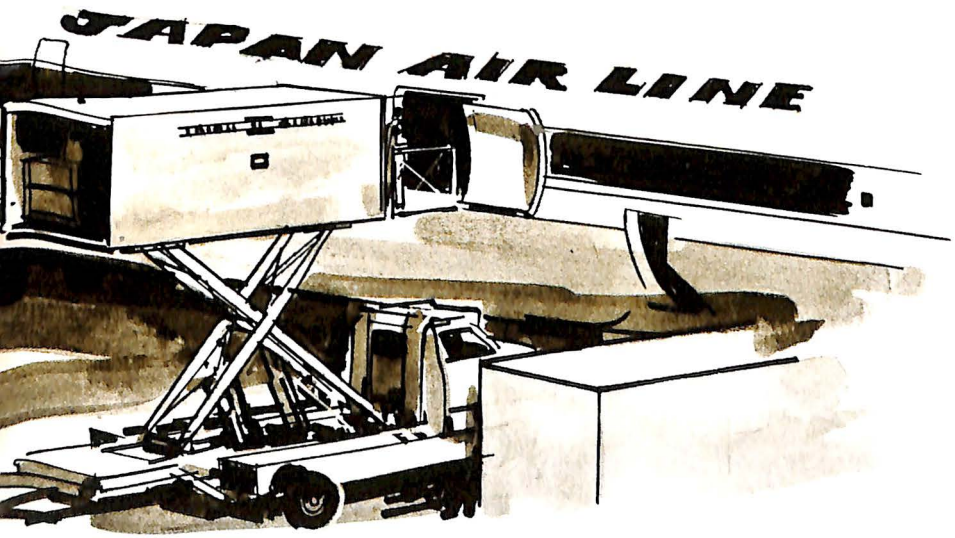
[a] Includes data for system trunk and local service carriers only.
Source: Civil Aeronautics Board, Bureau of Accounts and Statistics.



OPERATING REVENUES OF SCHEDULED DOMESTIC PASSENGER/CARGO OPERATORS AND CERTIFICATED ROUTE AIR CARRIERS[a]
Calendar Years 1957 to Date
(Millions of Dollars)

Calendar Years	Total Operating Revenues	Passenger	Mail (including subsidy)	Express and Freight	Excess Baggage	Other
1957	$1,530	$1,347	$ 75	$ 68	$ 19	$ 21
1958	1,636	1,432	82	78	19	25
1959	1,955	1,723	95	91	21	25
1960	2,129	1,860	113	103	21	32
1961	2,245	1,951	130	115	20	29
1962	2,498	2,168	139	136	20	35
1963	2,722	2,375	143	152	17	35
1964	3,095	2,701	149	182	17	46
1965	3,608	3,142	157	220	12	77
1966	4,070	3,534	162	251	6	117
1967	4,887	4,260	170	287	7	163
1968	5,606	4,913	182	343	9	159
1969	6,438	5,662	186	401	10	179
1970	7,131	6,246	205	461	12	207
1971	7,694	6,729	225	485	13	242

[a] Includes Intra-Alaska, Intra-Hawaii, Helicopter and other carriers.
Source: Civil Aeronautics Board, Bureau of Accounts and Statistics.



OPERATING REVENUES, EXPENSES AND NET OPERATING INCOME OF SCHEDULED DOMESTIC PASSENGER/CARGO OPERATORS AND CERTIFICATED AIR CARRIERS[a]
Calendar Years 1957 to Date
(Millions of Dollars)

Calendar Years	Total Operating Revenues	Total Operating Expense	Net Operating Income
1957	$1,530	$1,489	$ 41
1958	1,636	1,539	97
1959	1,955	1,848	107
1960	2,129	2,091	38
1961	2,245	2,244	1
1962	2,498	2,408	90
1963	2,722	2,580	142
1964	3,094	2,778	316
1965	3,608	3,165	443
1966	4,070	3,589	481
1967	4,887	4,476	411
1968	5,606	5,298	308
1969	6,438	6,156	282
1970	7,131	7,128	3
1971	7,694	7,448	246

[a] Includes Intra-Alaska, Intra-Hawaii, Helicopter and other carriers.
NOTE: Figures before 1961 do not include items of ground and indirect expense.
Source: Civil Aeronautics Board, Bureau of Accounts and Statistics.

ACTIVE AIRMAN CERTIFICATES HELD
1955 to Date

Year as of Jan. 1	TOTAL	Pilots					Non-pilots	Other[a]
		Students	Private	Commercial	Airline	Other		
1955	349,729	71,969	184,595	80,346	12,129	690	140,199	64,263
1956	298,076	80,494	132,525	72,957	11,774	326	148,335	71,307
1957	259,567	96,124	96,864	54,545	11,173	861	155,121	62,927
1958	309,212	98,498	124,799	70,813	13,964	1,138	149,274	74,682
1959	354,365	103,456	140,573	93,126	15,840	1,370	157,424	88,079
1960	359,875	107,815	139,804	93,815	16,950	1,491	167,074	91,259
1961	348,062	99,182	138,869	89,904	18,279	1,828	169,598	94,723
1962	352,860[E]	93,973	144,312[E]	92,976[E]	19,155[E]	2,444[E]	175,287[E]	98,257[E]
1963	365,971	95,870	149,755	96,047	20,032	4,267	181,982	101,793
1964	378,700	105,298	152,209	96,341	20,269	4,583	186,304	83,800
1965	431,041	120,743	175,574	108,428	21,572	4,724	195,396	116,600
1966	479,770	139,172	196,393	116,665	22,440	5,100	204,463	128,541
1967	548,757	165,177	222,427	131,539	23,917	5,697	217,132	146,068
1968	617,931	181,287	254,069	150,135	25,817	6,623	231,801	166,994
1969	691,695	209,406	281,728[b]	164,458	28,607	7,496	250,151	169,707
1970	720,028	203,520	299,491	176,585	31,442	8,990	269,775	189,871
1971	732,729	195,861	298,627	186,821	34,430	16,990	289,681	207,670
1972	741,009	186,428	312,656	192,409	35,949	13,567	307,057	217,021
1973	750,869	181,477	321,413	196,228	37,714	14,037	319,177	225,767

[E] Estimated.
[a] "Other" includes instrument ratings and flight instructor certificates.
[b] Includes special certificates issued to foreign nationals.
Source: Federal Aviation Administration, Office of Management Systems.

GENERAL AVIATION, HOURS, AND MILES FLOWN, BY TYPE OF FLYING
Calendar Years 1931 to Date

Year Ending December 31	Total	Business		Commercial		Instructional		Personal		Other	
		Units	Per Cent	Units	Per Cent	Units	Per Cent	Units	Per Cent	Units	Per Cent
ESTIMATED HOURS FLOWN, Thousands											
1931	1,083	152	14	281	26	307	28	343	32	—	—
1936	1,059	122	12	245	23	380	36	312	29	—	—
1941	4,460	250	6	511	11	2,816	63	883	20	—	—
1946	9,788	1,068	11	943	10	5,996	61	1,686	17	95	1
1951	8,451	2,950	35	1,584	19	1,902	23	1,880	22	135	1
1953	8,527	3,626	42	1,649	19	1,248	15	1,846	22	158	2
1955	9,500	4,300	45	1,950	21	1,275	13	1,975	21	—	—
1957	10,938	4,864	45	2,013	18	1,864	17	2,109	19	88	1
1959	12,903	5,699	44	2,365	18	2,043	16	2,796	22	—	—
1960	13,121	5,699	44	2,365	18	1,828	14	3,172	24	57	[a]
1961	13,602	5,699	42	2,634	19	1,796	13	3,398	25	75	1
1962	14,500	5,431	38	3,051	21	2,385	16	3,489	24	144	1
1963	15,106	5,740	38	3,172	21	2,417	16	3,626	24	151	1
1964	15,738	5,823	37	3,305	21	2,675	17	3,777	24	156	1
1965	16,733	5,857	35	3,348	20	3,346	20	4,016	24	166	1
1966	21,023	7,057	33	3,555	17	5,674	27	4,540	22	197	1
1967	22,153	6,578	30	3,918	18	6,262	28	5,173	23	222	1
1968	24,053	6,976	29	4,810	20	6,494	27	5,532	23	241	1
1969	25,351	7,064	28	4,928	19	7,023	28	5,999	24	337	1
1970	26,030	7,182	28	6,657	25	4,722	18	6,936	27	533	2
1971	25,512	7,141	28	6,370	25	4,309	17	7,252	28	439	2
ESTIMATED MILES FLOWN, Millions											
1931	94	13	14	26	28	25	27	29	31	—	—
1936	93	12	13	25	26	30	33	27	28	—	—
1941	346	27	8	51	15	197	57	71	20	—	—
1946	875	122	14	108	12	479	55	157	18	10	1
1951	975	380	39	190	20	190	19	200	21	15	1
1953	1,045	499	48	210	20	121	11	196	19	19	2
1955	1,216	628	52	246	20	121	10	222	18	—	—
1957	1,426	721	51	249	17	202	14	241	17	13	1
1959	1,716	858	50	292	17	223	13	243	20	—	—
1960	1,769	881	50	299	17	194	11	387	22	8	[a]
1961	1,858	888	48	333	18	203	11	425	23	9	[a]
1962	1,965	935	48	367	18	256	13	388	20	20	1
1963	2,049	983	48	369	18	266	13	410	20	20	1
1964	2,181	1,047	48	393	18	284	13	436	20	22	1
1965	2,562	1,204	47	461	18	359	14	512	20	26	1
1966	3,336	1,546	46	516	16	646	19	606	18	32	1
1967	3,440	1,431	42	569	16	713	21	691	20	36	1
1968	3,701	1,406	38	666	18	814	22	777	21	37	1
1969	3,926	1,426	36	723	19	910	23	829	21	38	1
1970	3,207	1,136	35	773	24	467	15	755	24	76	2
1971	3,143	1,129	36	727	23	430	14	795	25	62	2

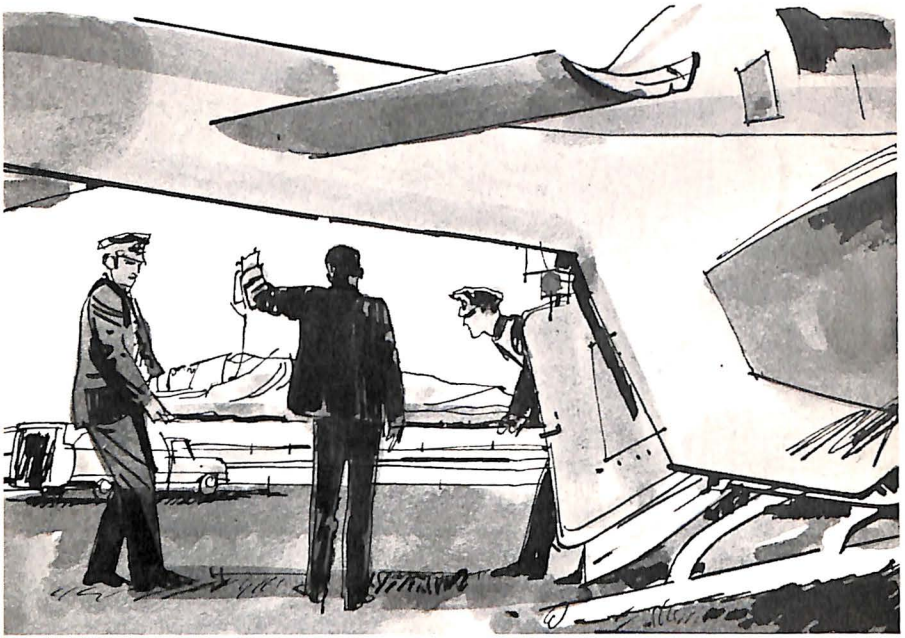
[a] Less than 0.5 percent.
Source: Federal Aviation Administration.

ACTIVE CIVIL AIRCRAFT BY TYPE
Calendar Years 1954 to Date

Year Jan. 1	Active Civil Aircraft							
	TOTAL	Total Air Carrier[a]	General Aviation Aircraft					
			TOTAL	Fixed-Wing Aircraft			Rotorcraft[b]	Other[c]
				Multi-engine	Single-Engine			
					4-place & over	3-place & less		
1954	55,505	1,615	53,890	N.A.	N.A.	N.A.	N.A.	N.A.
1955	58,994	1,606	57,388	2,600	17,078	37,278	235	197
1956	60,432	1,642	58,790	3,342	19,240	35,654	283	271
1957	64,638	1,802	62,886	4,183	22,805	35,291	350	257
1958	67,153	1,864	65,289	5,036	23,751	35,809	433	260
1959	69,718	1,879	67,839	5,416	26,170	35,440	521	292
1960[d]	70,747	2,020	68,727	6,034	27,301	34,543	525	324
1961	78,760	2,211	76,549	7,243	34,829	33,472	634	361
1962	82,853	2,221	80,632	8,401	38,206	32,800	798	427
1963	86,287	2,166	84,121	9,186	41,120	32,341	967	507
1964	87,267	2,179	85,088	9,695	42,657	30,977	1,171	588
1965	90,935	2,193	88,742	10,644	45,777	30,367	1,306	648
1966	97,741	2,299	95,442	11,977	49,789	31,364	1,503	809
1967	107,085	2,379	104,706	13,548	52,972	35,687	1,622	877
1968	116,781	2,595	114,186	14,651	56,865	39,675	1,899	1,096
1969	127,164	2,927	124,237	16,760	60,977	42,830	2,350	1,320
1970	133,814	3,008	130,806	18,111	63,703	45,001	2,557	1,434
1971[r]	134,539	2,796	131,743	16,034	64,622	44,870	2,255	1,554
1972	133,870	2,722	131,148	17,855	64,464	44,792	2,352	1,685

NOTE: As of January 1971 the definition used for determining the active general aviation fleet was changed. Formerly an active aircraft was one certificated as eligible to fly. Now an active aircraft must have a current registration and have been flown during the previous calendar year.
N.A.—Not available.
[a] Registered, not necessarily in operation. Includes helicopters.
[b] Includes autogiros; excludes air carrier helicopters.
[c] Includes gliders, dirigibles, and balloons.
[d] Excludes approximately 4,000 unclassified active aircraft.
[r] Revised.
Source: Federal Aviation Administration.

VERTICAL LIFT AIRCRAFT



In 1972 helicopter scheduled airlines registered increases in passengers carried, revenue ton-miles flown and revenue passenger miles. For example New York Airways Inc. operating four Sikorsky S-61 transport helicopters between five area heliports, carried more than 400,000 passengers for a record revenue of more than $6 million.

There were regional shifts in the number of heliports and helistops in the U.S., Canada and Puerto Rico during 1972, with a net gain of 16 being reported. This figure does not include such heliport/helistops as those operated by the U. S. Forest Service or on off-shore oil rigs (2,300 or more).

In addition to helipads on Navy aircraft carriers and amphibious assault vessels, the U.S. Coast Guard's fleet of cutters and ice breakers all are equipped with helipads and aviation fuel. These 35 cutters and ice breakers can serve for offshore rescues by the Coast Guard helicopters and as ports in a storm for any helicopters in an emergency.

A greater gain in 1972 was registered in the category of hospital heliports. Increases in almost every region totalled 69. There is a growing movement on the part of many states to encourage the establishment of

hospital heliports as a vital link in the increasing use of helicopters in the efforts to save lives. There is also a growing awareness of the need for rooftop heliports for use in combatting high-rise building fires which can't be reached by ground fire-fighting equipment.

During 1972 the number of civil helicopter operators increased by 67 to 1,491, and the number of helicopters operated increased by 311 to 4,185.

The Aerospace Industries Association's two special annual directories of heliports and helicopter operators are expected to show increases in all categories.

HELICOPTER SCHEDULED AIRLINES
Available Service and Utilization
Calendar Years 1952 to Date
(In Thousands)

Year Ending Dec. 31	Passengers Carried	Revenue Ton-Miles Flown	Revenue Passenger-Miles Flown	Revenue Plane-Miles Flown
1952	—	75	—	632
1953	1	127	26	1,007
1954	8	151	183	1,074
1955	29	193	628	1,152
1956	54	281	1,585	1,318
1957	153	449	3,275	1,604
1958	230	594	4,885	1,675
1959	366	856	7,477	1,899
1960	430	1,054	9,475	2,219
1961	490	963	8,604	2,157
1962	359	897	8,192	1,518
1963	458	1,317	12,510	1,462
1964	608	1,668	16,003	1,976
1965	718	1,948	18,811	1,984
1966	1,067	2,562	25,420	2,241
1967	1,220	2,960	29,670	2,660
1968	1,042	2,482	24,856	2,547
1969	737	1,703	17,074	1,909
1970	573	1,167	11,341	1,427
1971	551	917	8,973	1,048
1972	587	1,020	10,009	1,022

Source: Civil Aeronautics Board, Bureau of Accounts and Statistics.

HELICOPTER SCHEDULED AIRLINES
Revenue Ton-Mile Traffic Carried
Calendar Years 1952 to Date
(In Thousands)

Year Ending Dec. 31	TOTAL TON-MILES	Passenger	U. S. Mail	Express	Freight	Excess Baggage
1952	75	—	75	—	—	—
1953	127	2	125	—	2	—
1954	151	18	116	13	4	—
1955	193	59	97	32	5	—
1956	281	146	91	36	7	1
1957	449	314	91	34	7	3
1958	594	468	84	33	6	3
1959	856	717	87	41	7	4
1960	1,054	911	91	40	7	5
1961	963	818	94	40	7	5
1962	897	778	65	44	6	3
1963	1,317	1,189	74	44	6	5
1964	1,668	1,520	92	45	6	6
1965	1,948	1,787	84	60	10	6
1966	2,562	2,415	60	70	10	7
1967	2,960	2,819	61	64	9	8
1968	2,482	2,361	57	48	8	7
1969	1,704	1,626	34	37	6	4
1970	1,167	1,134	5	25	4	[a]
1971	917	897	4	13	3	[a]
1972	1,020	1,001	5	12	3	[a]

[a] Effective January 1, 1970, the certificated route air carriers no longer report excess baggage separately. Excess baggage is now combined with passenger ton-miles and passenger weight standardized at 200 lbs.

Source: Civil Aeronautics Board, Bureau of Accounts and Statistics.

Heliports and Helistops in the United States, Canada, and Puerto Rico 1965 to Date

Region	1965	1966	1968	1970	1972[r]
Total	1,118	1,225	1,892	2,310	2,326
(elevated)	(95)	(125)	(158)	(216)	(211)
New England	88	93	138	93	87
Middle Atlantic	179	203	346	514	571
East North Central	122	139	258	293	281
West North Central	47	43	81	107	109
South Atlantic	97	105	157	192	190
East South Central	25	28	41	47	65
West South Central	116	118	195	205	216
Mountain	78	92	126	157	168
Pacific	320	358	470	593	545
Other	46	46	80	109	94

Note: Data for 1967, 1969 and 1971 are not available. Totals include proposed facilities.
[r] Revised.
Source: Aerospace Industries Association.

Hospital Heliports in the United States, by Region 1967 to Date

Region	1967	1968	1969	1970	1972[r]
Total	88	147	161	285	354
New England	2	2	2	5	5
Middle Atlantic	10	19	22	29	43
East North Central	14	50	52	74	82
West North Central	2	4	4	18	22
South Atlantic	16	19	24	33	39
East South Central	1	1	1	5	18
West South Central	16	16	17	20	26
Mountain	8	9	11	24	29
Pacific	19	27	28	73	87
Other	—	—	—	4	3

Note: Data for 1971 are not available. Totals include proposed facilities.
[r] Revised.
Source: Aerospace Industries Association.

CIVIL HELICOPTER OPERATORS AND HELICOPTERS OPERATED
1960 to Date

As of February 1	TOTAL Number	Users		
		Commercial	Companies and Executives	Government Agencies[a]
CIVIL HELICOPTER OPERATORS				
1960	318	193	94	31
1961	406	265	106	35
1962	503	322	145	36
1963	600	405	150	45
1964	710	451	212	47
1965	860	508	299	53
1966	933	519	353	61
1967	1,023	522	427	74
1969	1,379	689	596	94
1971	1,424	672	590	162
1972	1,491	758	566	167
HELICOPTERS OPERATED				
1960	936	705	134	97
1961	1,179	882	173	124
1962	1,319	994	213	112
1963	1,497	1,157	218	122
1964	1,767	1,333	311	123
1965	2,053	1,537	401	115
1966	2,318	1,699	475	144
1967	2,438	1,764	487	187
1969	3,433	2,390	770	273
1971	3,874	2,605	802	467
1972	4,185	2,992	745	448

NOTE: Includes United States and Canada.
[a] Federal, state and local governments.
Source: Aerospace Industries Association, manufacturers' and owner/operators' reports.

INDEX

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
1725 DE SALES STREET, N.W., WASHINGTON, D. C. 20036