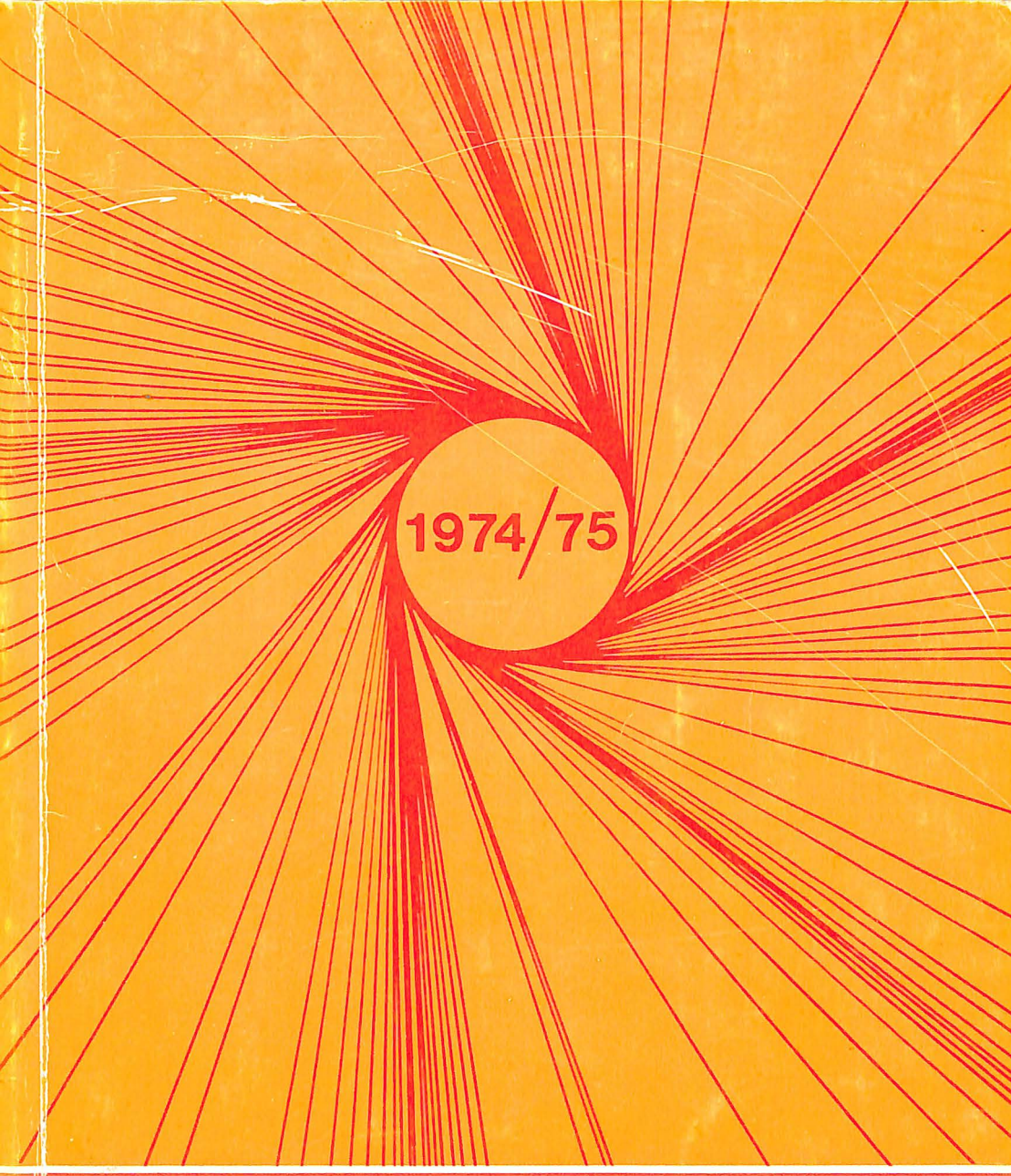
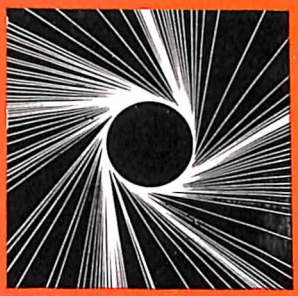


AEROSPACE FACTS AND FIGURES

OSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.



1974/75 AEROSPACE FACTS AND FIGURES

Compiled by

Economic Data Service

Aerospace Research Center

Aerospace Industries Association of America, Inc.

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- Commerce (Bureau of the Census)
- Defense (Comptroller, Public Affairs, Army, Navy, Air Force)
- Labor (Bureau of Labor Statistics)
- Transportation (Federal Aviation Administration)

CONTENTS

FOREWORD

Three years have passed since the United States became the first country in the world with a *trillion dollar* gross national product. This event was a memorable benchmark in our economic history—a testimony to the progressive thrust of our total national economy. Five years ago, man walked on the moon. The technological achievement which that feat represents also deserves being cast as a "memorable benchmark." Both of these historical facts are worth remembering.

The economy is now on its way toward eventually doubling its first trillion dollars. Mankind is also readying itself for even more daring inquiries into the cosmos. Each endeavor will need the support of a developing, sophisticated technology. The role of the aerospace industry in this regard was, and is, paramount.

Still, these are just two of the significant involvements of the aerospace industry. In the field of commercial aircraft, products designed, developed and produced by the U.S. aerospace industry still account for nearly 80 percent of the free world market, in spite of increased competition from foreign producers to capture a greater share of the market. Furthermore, the industry is the major supplier of systems used in supporting not only our national security efforts, but also those of many other nations.

Perhaps more important, however, is the simple fact that the aerospace industry has accepted the challenges and the risks posed by the plurality and conflicting nature of all the varied demands made on it, while at the same time developing and nurturing the necessary research effort for meeting future, undetermined needs in defense, in space, in transportation, and in areas which do not ordinarily fall under the purview of "aerospace." The data contained in this volume document those parallel achievements.

Global uncertainties, however, cloud the picture. During the past year, inflation, conflict in the Middle East, the energy crisis, negotiations on arms

limitations, and bilateral trade discussions all influenced the trading and financial posture of the aerospace industry. Nor did the importance of these events diminish when the curtain fell on 1973. Such factors may well affect the aerospace industry even more during 1974.

Worldwide inflation continues to impact unfavorably on competitive price structures and to erode profit levels. Middle East tensions with sporadic flare-ups remain as an overt influence on our short term armaments planning, and on our long term strategic planning as well. Continued conflict in that area of the world could drastically affect our detente with the Soviet Union, which in turn could result in dramatic reversals in either the ongoing Strategic Arms Limitation Talks (SALT) or in a number of bilateral trading agreements that are currently being negotiated. In any such event, the economy of the aerospace industry could be affected.

The fuel shortage and the scarcity of certain raw materials also remain as very real threats to the economic growth not only of the aerospace industry but also of the national economy itself.

The above developments notwithstanding, the signals for the future seem to indicate the aerospace industry is now on the upturn. We trust that government and industry officials, news writers and editors, legislators, analysts and students, as they consider the foregoing, will find this 22nd edition of *Aerospace Facts and Figures* a readily useable source of detailed information.

Karl G. Harr, Jr.
President
Aerospace Industries Association

Aerospace industry sales continued the beginning stages of its upturn throughout the whole of 1973. The previous year's increase (in current prices) of a modest $400 million over 1971 was tripled as total sales for the aerospace industry registered $23.8 billion in 1973, up from $22.6 billion in 1972. Sales in aircraft and non-aerospace products were the prime components in the upsurge. Both categories showed substantial increases over the previous year. Unfortunately, the rate of inflation during 1973 was such that gains in sales and other performance measurements, when adjusted to constant or "real" prices, would show only slight increases and in some instances even declines.

An analysis of the current price upturn reveals that non-government buyers accounted for a significantly larger share of the market for aerospace products and services. Somewhat offsetting declines in sales to both the Department of Defense and the National Aeronautics and Space Administration (NASA), however, obfuscate the gains made in the market for non-aerospace items.

As an indicator of how far the upturn will take the industry, backlog orders in current prices by the end of 1973 approximated the watershed levels recorded in 1968 ($30.7 billion). An adjustment for price inflation would, however,

show that backlog at the end of 1973 was significantly below the 1968 level. The actual backlog total for 1973 was $29.7 billion, an increase of nearly $2.8 billion over 1972. In apparent response to the Middle East conflict as well as the need to update important segments of our national security system, government buyers increased their unfilled orders by nearly $1.4 billion.

While the dollar volume of sales in the aerospace industry rose in 1973, it did not keep pace with the growth of the gross national product (GNP). As a result, for the fifth consecutive year, aerospace sales declined as a percent of GNP. Compared with 1972, when aerospace sales accounted for 2 percent of GNP, sales last year represented 1.8 percent of GNP.

Employment in the aerospace industry temporarily expanded during 1973 reflecting an increase in overall production partially in response to stepped-up delivery schedules in commercial aircraft. The liberalization of trade with non-market countries and the subsequent orders placed with aerospace manufacturers were in part responsible for rescheduling. Annual average employment showed an increase of 26,000 employees over 1972. However, the jump did not keep pace with the total employment for all manufacturing industries, and aerospace employment as a percent of all manufacturing declined slightly from 4.9 percent in 1972 to 4.8 percent last year. Payroll costs on the other hand increased by over $1.1 billion during 1973 with more than half that total going to production workers.

Exports of aerospace products rebounded substantially last year after suffering in 1972 the first decline in nearly a decade. (In 1964 aerospace exports were down $19 million from the 1963 total of $1.6 billion.) Reflecting last year's stupendous growth in total U.S. exports, aerospace exports registered gains of nearly 35 percent during 1973. Final figures show that the dollar value of aerospace exports increased by more than one-third and topped the $5 billion mark for the first time in the history of the industry. It should be noted here that the second U.S. dollar devaluation in February 1973 contributed significantly to the competitive position of aerospace products in world markets.

The latest available statistics show that the percentage of transport aircraft manufactured in the U.S. continued to increase in operation on the world's civil airlines (excluding the Soviet Union and the People's Republic of China). Nearly 80 percent of the transport aircraft in operation during 1972 were manufactured in the U.S. compared with 77.9 percent for 1971.

Net profit after taxes as a percent of sales for the aerospace industry was at its highest level in four years during 1973. This is consistent with the trend in all manufacturing corporations (except newspapers) which also reached new four-year highs last year. Aerospace still remained, however, considerably below the 4.7 percent profit level recorded for all manufacturing with a 2.9 percent net profit after taxes (as a percent of sales).

Despite the continuing downward trend in Department of Defense (DOD) outlays as a percent of the total federal budget, defense expenditures for aerospace products during the last half of fiscal year (FY) 1973 began to increase. This reflects in part the supplemental appropriations request for FY 1974 resulting from the Middle East conflict as well as the impact of continued inflation. As a result, basic program levels are still in a period of decline. Furthermore, DOD outlays as a percent of GNP went from 6.9 percent in 1972 to 6.0 percent in 1973.

Outlays for NASA were at their lowest point in FY 1973 in over a decade, dropping 3.2 percent to $3.3 billion. The delay in the Space Shuttle program is in part responsible for the downturn in NASA budget authority. The continued de-emphasis of the space effort, however, has had a more significant impact on the aerospace industry, as evidenced by the persistent downturn in NASA outlays for aerospace products and services beginning in 1967.

Overall, the tables and charts indicate that the aerospace industry has moved out of its downturn cycle of the past four to five years. However, its upward movement bears watching during 1974 particularly if inflation is unchecked and if research and development funds sufficient to meet high-technology needs are not provided on a large enough scale in the near future.

AEROSPACE SALES AND THE NATIONAL ECONOMY

Calendar Years 1960 to Date
(Billions of Dollars)

Year	TOTAL Gross National Product	Sales			Aerospace Sales as Percent of		
		Manufacturing Industries	Durable Goods Industry	Aerospace Industry	GNP	Manufacturing Industries	Durable Goods Industry
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	538.4	295.6	24.6	3.3	4.6	8.3
1967	793.5	557.4	302.5	27.3	3.4	4.9	9.0
1968	864.2	603.4	332.3	29.0	3.4	4.8	8.7
1969	930.3	642.7	353.5	26.1	2.8	4.1	7.4
1970	976.4	630.7	336.7	24.9	2.6	3.9	7.4
1971	1,050.4	667.0	358.6	22.2	2.1	3.3	6.2
1972[r]	1,155.2	749.6	406.7	22.6	2.0	3.0	5.6
1973	1,289.1	866.3	474.2	23.8	1.8	2.7	5.0

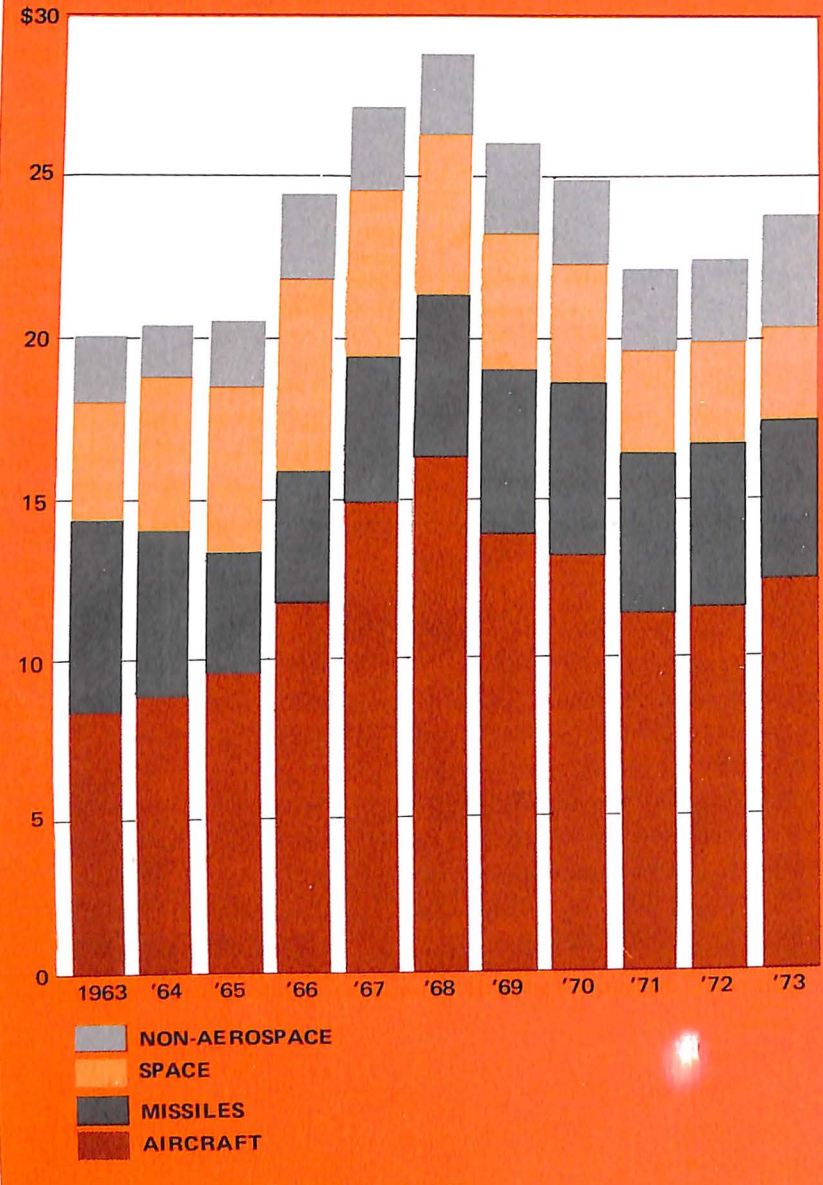
Source: Gross National Product, Manufacturing and Durable Goods Industries: Department of Commerce, "Survey of Current Business," (Monthly). Aerospace: Aerospace Industries Association estimates, based on latest available information.

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 Census.

r Revised.

AEROSPACE SALES BY PRODUCT GROUP 1963–1973

(Billions of Dollars)



Source: Aerospace Industries Association

AEROSPACE INDUSTRY SALES BY PRODUCT GROUP

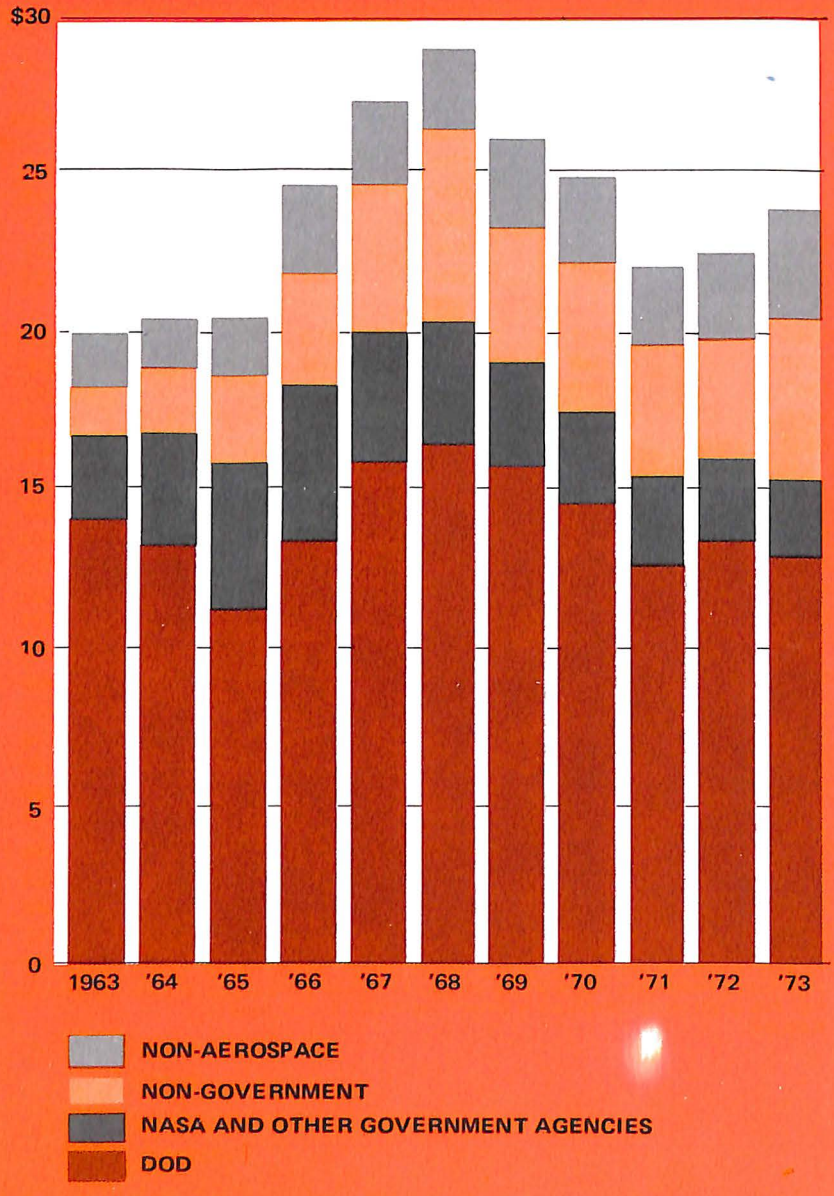
Calendar Years 1950 to Date
(Millions of Dollars)

Year	TOTAL SALES	Product Group			
		Aircraft	Missiles	Space Vehicles	Non-Aerospace
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	9,127	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]	22,186	11,442	5,018	3,203	2,523
1972[r]	22,609	11,659	5,217	3,087	2,646
1973	23,771	12,336	5,177	2,947	3,311

Source: Aerospace Industries Association estimates, based on latest available information.
NOTE: For explanation of "Aerospace Sales" see "NOTE" on page 9.
r Revised.

AEROSPACE SALES BY CUSTOMER 1963–1973

(Billions of Dollars)



Source: Aerospace Industries Association

AEROSPACE INDUSTRY SALES BY CUSTOMER

Calendar Years 1950 to Date
(Millions of Dollars)

Year	TOTAL SALES	Aerospace Products and Services			Non-Aerospace Products and Services
		Government		Non-Government	
		Department of Defense	NASA and Other Agencies		
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
1971r	22,186	12,584	2,777	4,302	2,523
1972r	22,609	13,295	2,606	4,062	2,646
1973	23,771	12,886	2,390	5,184	3,311

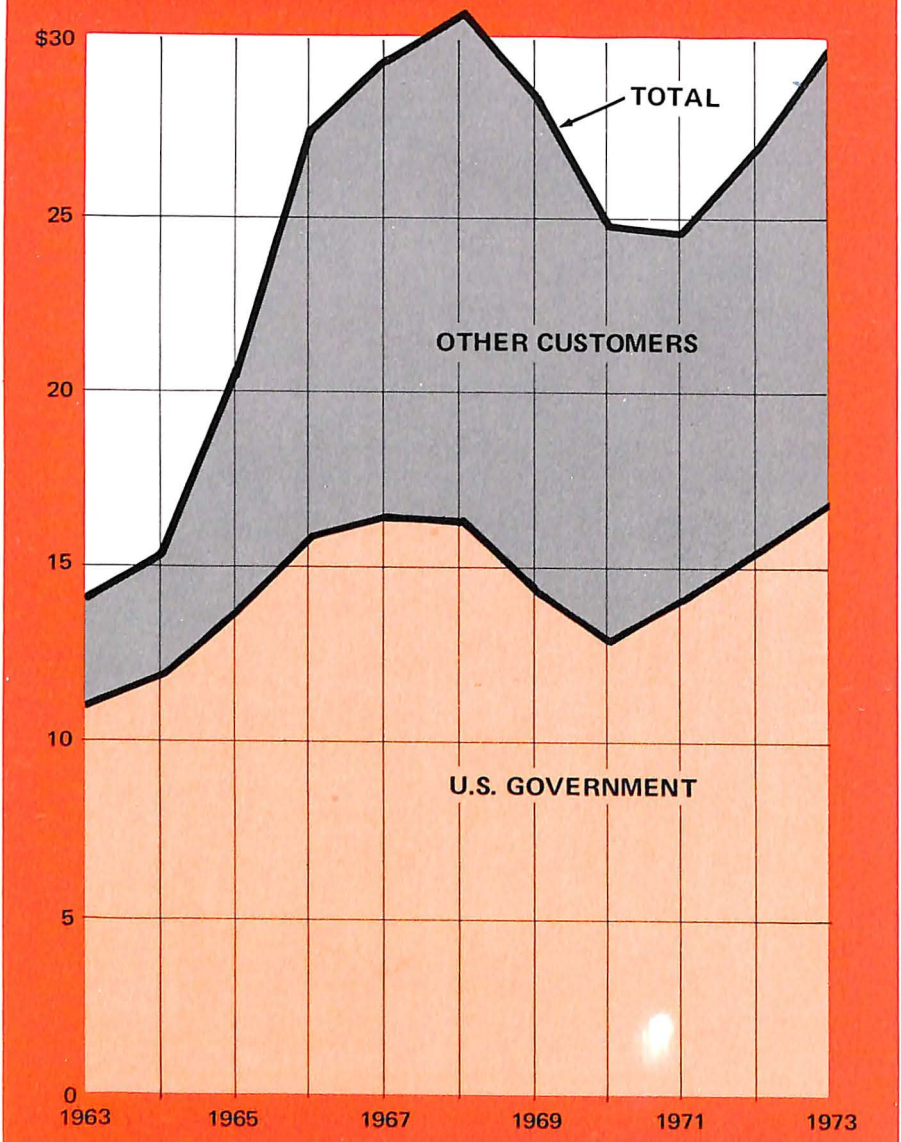
Source: Aerospace Industries Association estimates, based on latest available information.
NOTE: For explanation of "Aerospace Sales" see "NOTE" on page 9.
r Revised.

BACKLOG OF AEROSPACE COMPANIES

(As of December 31)

1963–1973

(Billions of Dollars)



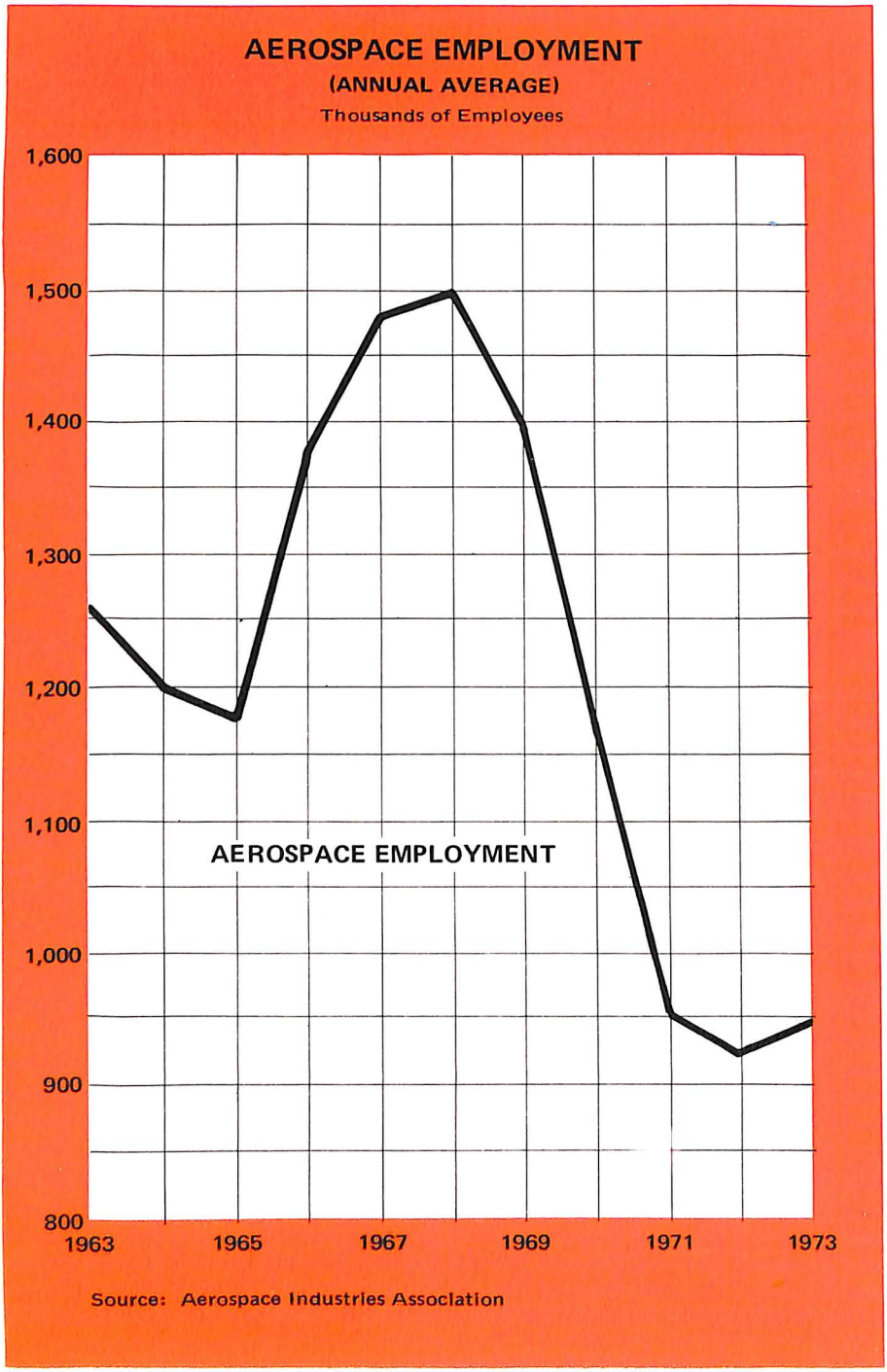
Source: Bureau of the Census

SALES AND BACKLOG OF MAJOR AEROSPACE COMPANIES BY PRODUCT GROUP

1960 to Date
(Millions of Dollars)

Year	GRAND TOTAL	TOTAL		Aircraft and Engines		Missiles & Space Incl. Propulsion	Other Aerospace		Non-Aerospace
		U.S. Gov't.	Other	U.S. Gov't.	Other		U.S. Gov't.	Other	
SALES									
1960	$10,997	$ 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	21,679	14,114	7,565	6,313	5,079	4,971	1,909	884	2,523
1972[r]	21,499	13,492	8,007	4,954	5,199	5,598	2,067	1,035	2,646
1973	24,277	14,532	9,745	5,643	6,679	5,649	2,047	948	3,311
BACKLOG									
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	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	24,579	13,997	10,582	6,221	8,059	4,780	2,232	1,042	2,245
1972[r]	26,922	15,322	11,600	7,027	8,605	5,272	2,018	972	3,028
1973	29,679	16,710	12,969	7,813	8,558	5,671	1,840	1,099	4,698

Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).
NOTE: Based on reports from about 55 aerospace companies.
N.A. Not Available.
a Of this amount, orders of aircraft by the U.S. Government are $7,071 million; by other customers are $9,306 million. Total engine sales are $4,251 million.
r Revised.


AEROSPACE EMPLOYMENT
(ANNUAL AVERAGE)
Thousands of Employees
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
1963
1965
1967
1969
1971
1973
AEROSPACE EMPLOYMENT
Source: Aerospace Industries Association

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	
				All 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	10,406	1,175	6.5	11.3
1966	19,214	11,284	1,375	7.2	12.2
1967	19,447	11,439	1,484	7.6	13.0
1968	19,781	11,626	1,502	7.6	12.9
1969[r]	20,167	11,895	1,402	7.0	11.8
1970[r]	19,349	11,195	1,166	6.0	10.4
1971[r]	18,529	10,565	951	5.1	9.0
1972	18,933	10,884	922	4.9	8.5
1973	19,820	11,633	948	4.8	8.1

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

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.).

r Revised.

EMPLOYMENT AND PAYROLL IN THE AEROSPACE INDUSTRY

Calendar Years 1961 to Date

Year	AEROSPACE EMPLOYMENT[a] Annual Average (Thousands of Employees)			AEROSPACE PAYROLL[c] (Millions of Dollars)			AEROSPACE as Percent of Total Manufacturing	
	TOTAL	Production Workers[r]	Other[br]	TOTAL	Production Workers	Other[b]	Employment	Payroll
1961	1,178	612	566	$ 9,140	$ 4,342	$ 4,798	7.2%	10.1%
1962	1,270	635	635	10,232	4,871	5,361	7.5	10.5
1963	1,267	625	642	10,173	4,588	5,585	7.5	10.1
1964	1,209	600	609	10,067	4,563	5,504	7.0	9.4
1965	1,175	597	578	10,188	4,504	5,684	6.5	8.8
1966	1,375	731	644	12,139	5,641	6,498	7.2	9.4
1967	1,484	804	680	13,727	6,382	7,345	7.6	10.2
1968	1,502	807	695	14,397	6,582	7,815	7.6	9.9
1969	1,402[r]	746	656	14,649	6,401	8,248	7.0	9.3
1970	1,166[r]	604	562	13,114[r]	5,648	7,466	6.0	8.3
1971	951[r]	480	471	11,618[r]	4,860	6,758	5.1	7.2
1972	922	453	469	11,860[r]	5,157	6,703	4.9	6.7
1973	948	475	473	12,924	5,780	7,144	4.8	6.6

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.

a For a description of Aerospace Employment, see "NOTE" page 17.

b "Other" employment includes salaried, clerical and maintenance employees, among others.

c Aerospace Payroll is estimated by a method similar to that used to estimate Aerospace Employment, see "NOTE" page 17.

r Revised.

U. S. MANUFACTURED TRANSPORT AIRCRAFT

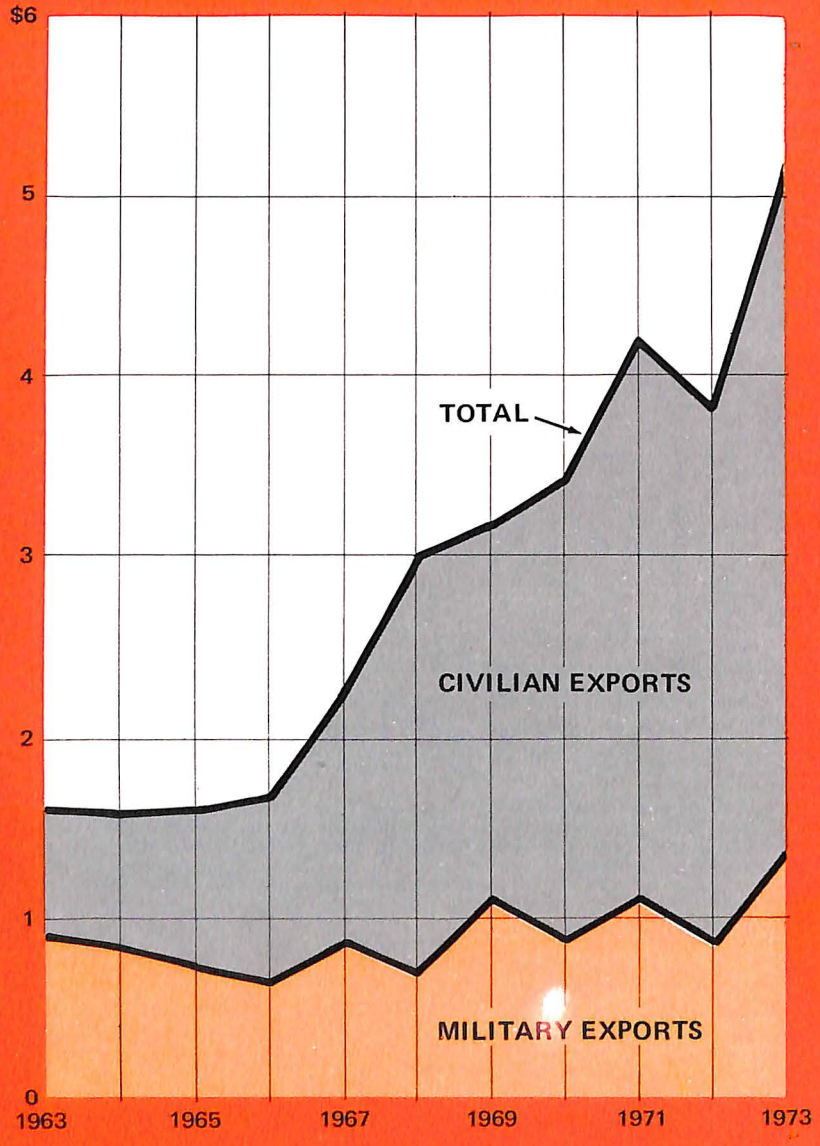
In Operation on World Civil Airlines
Calendar Years 1960 to Date

Year	TOTAL AIRCRAFT IN OPERATION	Number Manufactured in the United States	Percent Manufactured in the United States
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[r]	3,973	3,094	77.9
1972	4,095	3,247	79.3

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

EXPORTS OF U.S. AEROSPACE PRODUCTS 1963–1973

(Billions of Dollars)



Source: Bureau of the Census

U.S. EXPORTS AND EXPORTS OF AEROSPACE PRODUCTS

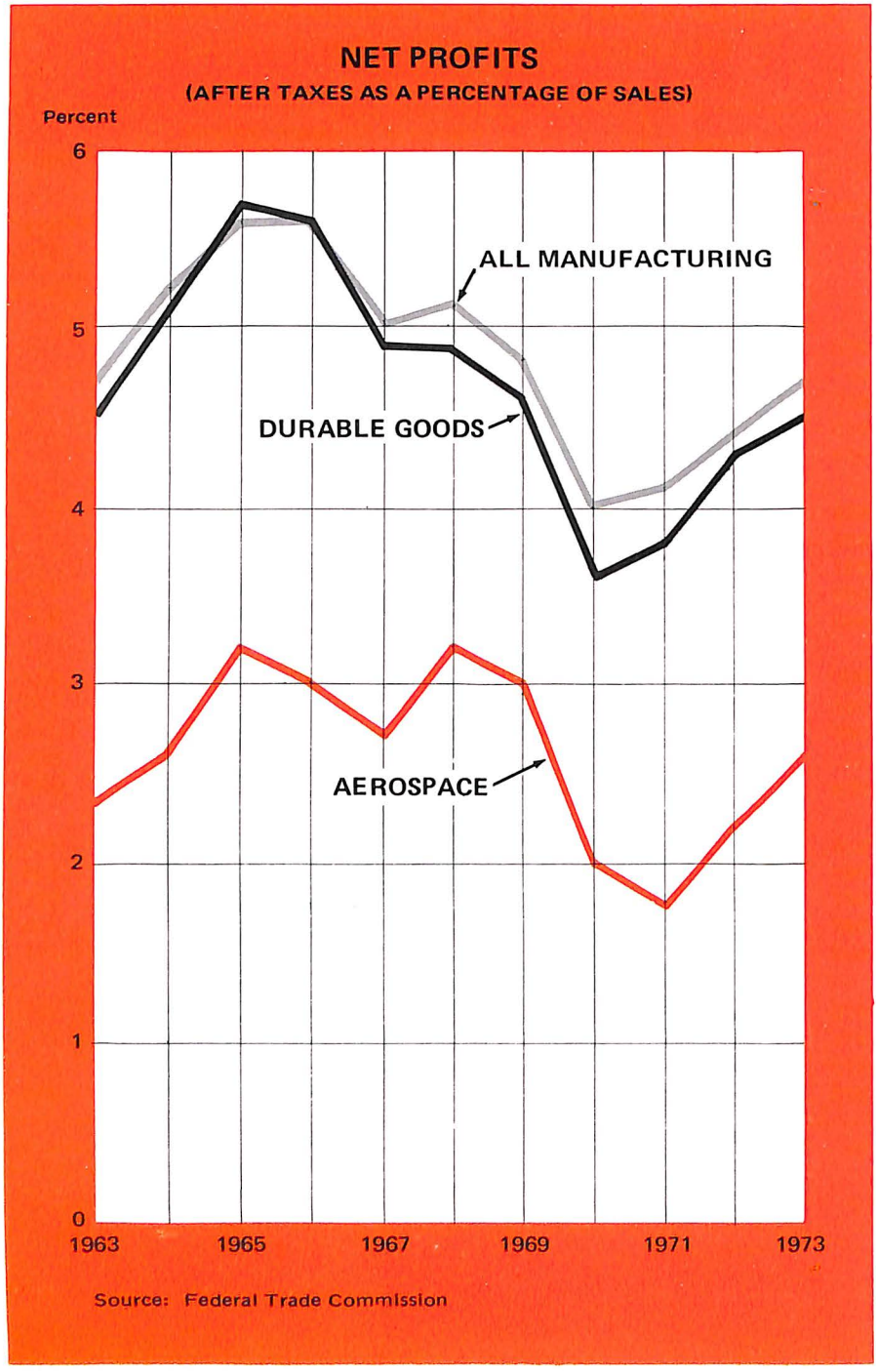
Calendar Years 1950 to Date
(Millions of Dollars)

Year	TOTAL Exports of U.S. Merchandise	Exports of Aerospace Products				
		Total	Percent of Total U.S. Exports	Civil		Military
				Transports	Other	
1950	$ 10,142	$ 242	2.4%	$ 40	$ 202	
1951	14,879	301	2.0	13	288	
1952	15,049	603	4.0	18	585	
1953	15,652	881	5.6	79	802	
1954	14,981	619	4.1	93	526	
1955	15,419	728	4.7	81	647	
1956	18,940	1,059	5.6	133	926	
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	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	37,462	3,138	8.4	947	1,080	1,111
1970	45,590	3,397	8.0	1,283	1,227	887
1971	43,492	4,196	9.6	1,567	1,508	1,121
1972[r]	48,979	3,807	7.8	1,119	1,829	859
1973	70,223	5,136	7.3	1,667	2,109	1,360

Source: 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).

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.

r Revised.


NET PROFITS
(AFTER TAXES AS A PERCENTAGE OF SALES)
Percent
6
5
4
3
2
1
0
1963
1965
1967
1969
1971
1973
ALL MANUFACTURING
DURABLE GOODS
AEROSPACE
Source: Federal Trade Commission

NET PROFIT AFTER TAXES AS A PERCENT OF SALES FOR MANUFACTURING CORPORATIONS

Calendar Years 1960 to Date

Year	All Manufacturing Corporations[a]	Non-Durable Goods	Durable Goods	Aerospace
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[r]	4.4	4.6	4.3	2.4
1973	4.7	5.0	4.5	2.9

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

a Does not include newspapers.

r Revised.

DEFENSE BUDGET, FEDERAL BUDGET, AND GNP

Selected Fiscal Years[a]
(Billions of Dollars)

Year		GNP	Federal Budget Outlays			DOD Outlays as Per Cent of	
			Net Total[b]	DOD	Others	GNP	Federal Budget
1950	Lowest defense budget since World War II peak	$ 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
1973	Last actual year	1,220.0	246.5	73.8	181.1	6.0	29.0
1974	Current estimate	1,340.0	274.7	79.5	205.2	5.9	27.9
1975	Budget estimate	1,455.0	304.4	85.8	229.2	5.9	27.2

Source: Department of Defense, OASD (Comptroller) February 4, 1974.
a Fiscal Years ending June 30.
b "Net Total" is government-wide total less intragovernmental transactions.

FEDERAL GOVERNMENT BUDGET AUTHORITY FOR AEROSPACE PRODUCTS AND SERVICES

Fiscal Years[a] 1962 to Date
(Millions of Dollars)

Year	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	,366	462	3,312
1972	17,309	14,006	8,414	5,203	389	3,303
1973	16,550	13,222	7,579	5,236	407	3,328
1974[E]	16,631	13,692	8,206	4,892	594	2,939
1975[E]	17,369	14,273	8,626	5,120	527	3,096

Source: Department of Defense, Press Package, February 4, 1974; NASA, "The Budget of the United States Government" (Annually).
NOTE: Excludes transfers from stock funds beginning with 1969.
a Fiscal Years ending June 30.
E Estimate.

FEDERAL OUTLAYS
SELECTED FUNCTIONS AND AEROSPACE PRODUCTS & SERVICES

Fiscal Years[a] 1960 to Date
(Millions of Dollars)

Year	Total National Defense	Total NASA	Federal Outlays for AEROSPACE Products and Services	AEROSPACE as Percent of Total National Defense and NASA
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	4,171	17,940	31.0
1965	49,578	5,093	15,697	28.7
1966	56,785	5,933	17,771	28.3
1967	70,081	5,426	20,193	26.7
1968	80,517	4,724	21,353	25.1
1969	81,232	4,252	20,472	23.9
1970	80,295	3,753	18,747	22.3
1971	77,661	3,382	17,335	21.4
1972	78,336	3,423	17,061	20.9
1973	76,021	3,315	15,945	20.1
1974[E]	80,573	3,179	N.A.	N.A.
1975[E]	87,729	3,275	N.A.	N.A.

Source: "The Budget of the United States Government" (Annually).
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. NASA construction is not included in "Total Aerospace Products and Services."

a Fiscal Years ending June 30.
E Estimate.
N.A. Not available.

DEPARTMENT OF DEFENSE
TOTAL OUTLAYS BY FUNCTIONAL TITLE

Fiscal Years[a] 1967 to Date
(Millions of Dollars)

	1967	1968
TOTAL	$ 68,315	$ 78,027
PROCUREMENT—TOTAL	19,012	23,283
AIRCRAFT	8,411	9,462
MISSILES	1,930	2,219
Ships	1,398	1,356
Combat Vehicles, Weapons & Torpedoes	(b)	738
Ordnance, Vehicles & Related Equipment	3,881	5,709
Electronics & Communications	1,284	1,595
Other procurement	2,108	2,204
RESEARCH, DEVELOPMENT, TEST & EVALUATION—TOTAL	7,160	7,747
AIRCRAFT	1,048	1,367
MISSILES	2,502	2,488
ASTRONAUTICS	983	1,221
Other	2,627	2,671
Military Personnel—Total	19,787	21,954
Active Forces	17,055	18,988
Reserve Forces	902	871
Retired Pay	1,830	2,095
Military Assistance	873	601
Military Construction	1,536	1,281
Family Housing	482	495
Civil Defense	100	108
Operations and Maintenance	19,000	20,578
Other	365	1,980

Source: Department of Defense: AIA estimates where Departmen of Defense data were not available.
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.
a Fiscal Years ending June 30.
b Amount included in entry for "Ordnance, Vehicles & Related Equipment".
E Estimate.
N.A. Not available.

DEPARTMENT OF DEFENSE
TOTAL OUTLAYS BY FUNCTIONAL TITLE (Continued)

Fiscal Years[a] 1967 to Date
(Millions of Dollars)

1969	1970	1971	1972	1973	1974[E]	1975[E]
$ 78,666	$ 77,880	$ 75,545	$ 75,957	$ 73,828	$ 79,500	$ 85,800
23,988	21,585	18,858	17,131	15,654	15,144	16,359
9,177	7,948	6,631	5,927	5,066	4,905	5,505
2,509	2,912	3,140	3,009	3,023	2,887	2,654
1,949	2,066	2,114	1,978	1,982	2,020	2,450
(b)	647	545	491	354	340	370
6,590	4,973	3,586	3,040	2,508	2,426	2,621
1,409	1,182	1,163	946	675	653	705
2,354	1,857	1,679	1,740	2,046	1,913	2,054
7,459	7,166	7,303	7,881	8,157	8,414	8,890
1,031	1,239	1,699	2,066	2,036	N.A.	N.A.
2,410	2,196	2,008	2,157	2,038	N.A.	N.A.
1,159	753	519	468	512	N.A.	N.A.
2,859	2,978	3,077	3,190	3,571	N.A.	N.A.
23,828	25,880	26,018	26,921	27,635	29,226	30,113
20,478	21,977	21,428	21,629	21,722	22,448	22,704
907	1,054	1,204	1,407	1,523	1,633	1,724
2,443	2,849	3,386	3,885	4,390	5,145	5,685
686	609	999	806	531	1,100	1,200
1,389	1,168	1,095	1,108	1,119	1,299	1,499
572	614	598	688	729	966	1,089
87	80	75	75	74	83	87
22,285	21,609	20,941	21,675	21,069	23,306	24,917
(1,628)	(831)	(342)	(328)	(1,140)	(38)	1,646

DEPARTMENT OF DEFENSE
AEROSPACE OUTLAYS

Fiscal Years[a] 1960 to Date
(Millions of Dollars)

Year	DOD Aerospace Outlays[b]		
	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	14,875	10,341	4,534
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
1973	12,675	8,089	4,586

Source: Department of Defense, OASD (Comptroller), FAD 748/73, June 30, 1973, and earlier reports.
a Fiscal Years ending June 30.
b Excludes Military Assistance.

ACTIVE MILITARY FORCES OF THE UNITED STATES

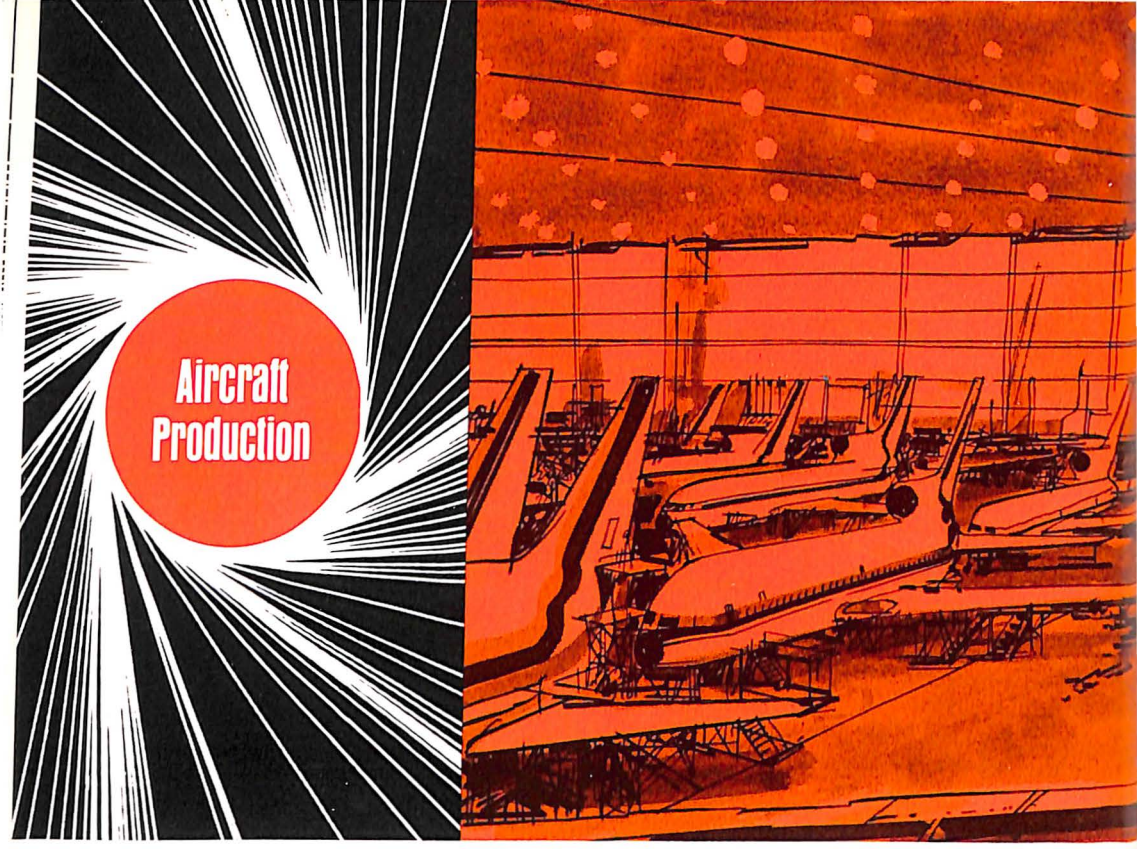
Fiscal Years[a] 1968 and 1973 to Date

Description	Actual		Estimated	
	1968	1973	1974	1975
Military Personnel (in thousands):				
Army	1,570	801	782	785
Navy	765	564	551	541
Marine Corps	307	196	196	196
Air Force	905	691	645	630
Total	3,547	2,252	2,174	2,152
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	28	27[b]
Manned Fighter Interceptor Squadrons	24	7	7	6
Army Air Defense Firing Batteries	20-1/2	21	21	—
General Purpose Forces:				
Army Divisions	18	16-1/3	13	13-1/3
Marine Corps Divisions	4	3	3	3
Air Force Wings	22	22	22	22
Navy Attack Wings	23	14	14	14
Marine Corps Wings	3	3	3	3
Attack & Antisubmarine Carriers	23	16	14	15
Nuclear Attack Submarines	33	60	61	67
Other Warships	328	242	186	191
Amphibious Assault Ships	157	66	65	65
Airlift & Sealift Forces:				
Aircraft Squadrons:				
C-5A	—	4	4	4
C-141	—	13	13	13
Troopships, Cargo Ships and Tankers	130	53	32	32

Source: Department of Defense, OASD (Comptroller), February 4, 1974.

a Fiscal Years ending June 30.

b Reflects reorganization, total number of strategic bombers remains the same.



Sales of complete aircraft, engines and parts rebounded in 1973 to $12.3 billion from its six-year low in 1972 of $10.2 billion. The most important contributing factor in the current price upturn was the nearly $1.8 billion increase in sales of aircraft and parts. For the second year in a row, U.S. government purchases in this category were less than the total purchases of other buyers.

Backlog as of December 31, 1973, exceeded $16 billion for the first time since 1969. Final figures show that total backlog for 1973 was $16.4 billion, an increase of $700 million over the previous year. Over 68 percent of the increase is in aircraft and parts.

DOD outlays for aircraft procurement continued its downward trend during FY 1973. Total outlays for the year ending June 30, 1973, were $5 billion, a decrease of about $900 million from FY 1972. Air Force procurement alone decreased by almost $800 million while Navy procurement added $210 million to its budget. Totals for FY 1973 were nearly $4.4 billion less than the high watermark of $9.5 billion in outlays during FY 1968.

In the commercial transport aircraft sector, the total value of aircraft shipped increased by over $1 billion in 1973 continuing the growth pattern

which began the previous year. After the drastic falloff in the number of air craft shipped, which declined by almost 300 units between 1969 and 1971, production and delivery for 1973 increased by 67 units over 1972. Total value of the number of aircraft shipped in 1973 was $3.7 billion. By type, the largest number of aircraft shipped were the tri-jet Boeing 727, the Lockheed L-1011 and the McDonnell Douglas DC-10. As indicated by jet transport orders for aircraft to be delivered in 1974 or later, these three aircraft continue to be the most popular with both foreign and domestic customers.

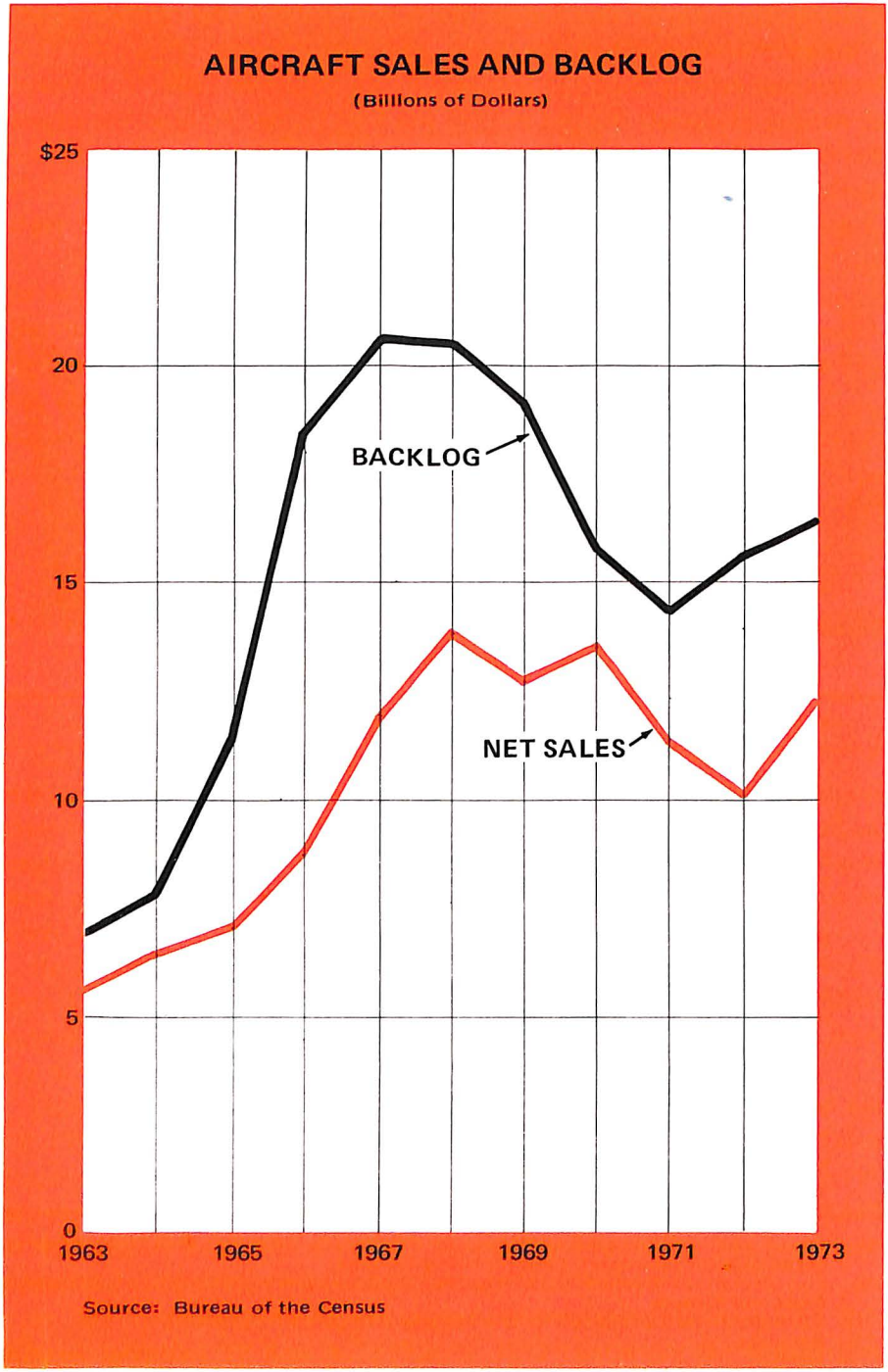
In spite of problems generated by the fuel crisis during the last quarter of 1973, general aviation experienced a steep rise both in the number of aircraft shipped and in the value of shipments in 1973. Based on data for selected manufacturers, unit shipments of general aviation aircraft rose to 13,645—up nearly 4,000 units over the 1972 total of 9,774. The value of these shipments amounted to $826.4 million, an increase of over a quarter of a billion dollars from 1972.

U. S. AIRCRAFT PRODUCTION

Calendar Years 1960 to Date
(Number of Aircraft)

Year	TOTAL[a]	Military	Civil
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	19,414	4,440	14,974
1969	16,841	3,644	13,197
1970	10,943	3,085	7,858
1971	9,876	2,232	7,644
1972	11,307[E]	1,400[E]	9,907[r]
1973	15,451[E]	1,200[E]	14,251

Source: Department of Commerce, Bureau of the Census, "Current Industrial Reports, Series M37G" (Monthly); Department of Defense.
NOTE: For aircraft production data prior to 1960, see earlier editions of **Aerospace Facts and Figures.**
a Excludes aircraft produced for the Military Assistance Program.
E Estimate.
r Revised.


AIRCRAFT SALES AND BACKLOG
(Billions of Dollars)
$25
20
15
10
5
0
1963
1965
1967
1969
1971
1973
BACKLOG
NET SALES
Source: Bureau of the Census

AIRCRAFT SALES AND BACKLOG BY MAJOR MANUFACTURERS OF COMPLETE AIRCRAFT, AIRCRAFT ENGINES, AND PARTS

Calendar Years 1950 to Date
(Millions of Dollars)

Year	Aircraft, Aircraft Engines and Parts	
	Net Sales	Backlog December 31
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	11,392	14,280
1972[r]	10,153	15,632
1973	12,322	16,371

Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).
NOTE: 1950 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.
r Revised.

AIRCRAFT SALES
BY MAJOR MANUFACTURERS
OF COMPLETE AIRCRAFT, AIRCRAFT ENGINES AND PARTS

Calendar Years 1950 to Date
(Millions of Dollars)

Year	TOTAL			Aircraft & Parts[a]		Aircraft Engines & Parts	
	TOTAL	U.S. Gov't	Other	U.S. Gov't	Other	U.S. Gov't	Other
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	11,392	6,313	5,079	4,953	4,093	1,360	986
1972[r]	10,153	4,954	5,199	3,666	4,085	1,288	1,114
1973	12,322	5,643	6,679	4,226	5,323	1,417	1,356

Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).
NOTE: 1950-1960 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.

a Includes Aircraft Propellers and Parts.
r Revised.

AIRCRAFT BACKLOG
BY MAJOR MANUFACTURERS
OF COMPLETE AIRCRAFT, AIRCRAFT ENGINES AND PARTS

1950 to Date
(Millions of Dollars)

As of 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
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[b]		7,071	9,306	4,251[b]	
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	14,280	6,221	8,059	4,876	7,123	1,345	936
1972[r]	15,632	7,027	8,605	5,705	7,355	1,322	1,250
1973	16,371	7,813	8,558	6,325	7,242	1,488	1,316

Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).
NOTE: 1950-1960 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.

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

r Revised.

CIVIL AIRCRAFT ENGINE PRODUCTION

By Selected Manufacturers
Calendar Years 1969 to Date
(Number of Engines)

Manufacturer and Engine Designation	1969	1970	1971	1972	1973
TOTAL	21,828	14,512	11,687	13,344	18,159[E]
Reciprocating	18,758	12,279	9,928	11,892	16,251[E]
Jet	3,070	2,233	1,759	1,452	1,908[E]
General Electric—TOTAL	192	148	235	261	393
CT-58	16	21	2	13	12
CF-700	54	34	27	26	118
CJ-610	122	93	87	100	101
CF-6	—	—	119	122	162
Pratt & Whitney—TOTAL	1,655	1,120	594	443	759
JT-3D	542	127	49	13	74
JT-12	129	79	—	—	52
JT-8D	821	448	176	282	469
JT-9D	163	466	369	148	164
Avco-Lycoming—TOTAL	9,870	5,199	6,480	8,198	10,995
O-720/IO-720	6	36	10	49	74
O-541/TIO-541/TIGO-541	142	160	113	157	294
O-540/IO-540/TIO-540/ LTIO-540/IGO-540/ IGSO-540/IVO-540/ VO-540/TIVO-540	3,580	1,355	1,876	1,824	2,814
O-480/GO-480/IGO-480/ IGSO-480/GSO-480	151	100	79	101	134
O-435/GO-435/VO-435/ TVO-435	164	114	133	76	99
O-360/IO-360/TIO-360/ LIO-360/HIO-360/ AIO-360/VO-360	1,925	1,442	1,828	2,840	3,233
O-320/IO-320/LIO-320/ AIO-320	3,437	1,684	2,007	2,731	3,859
O-290	9	6	3	—	—
O-235	456	302	430	420	488
Other	—	—	1	—	—
Other	10,111	8,045	4,497	4,442	6,012

Source: TOTAL: Federal Aviation Administration, Office of Aviation Economics. Production by Manufacturer: Aerospace Industries Association, company reports.
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 Estimate, FAA, "Aviation Forecasts, 1974—1985."

AIRCRAFT ENGINE PRODUCTION

Calendar Years 1950 to Date
(Number of Engines)

Year	TOTAL	Civil			Military		
		TOTAL	Reciprocating	Jet[a]	TOTAL	Reciprocating	Jet[a]
1950	13,675	4,314	4,314	—	9,361	3,122	6,239
1951	20,867	4,580	4,580	—	16,287	6,471	9,816
1952	31,041	5,382	5,382	—	25,659	8,731	16,928
1953	40,263	6,647	6,647	—	33,616	13,365	20,251
1954	26,959	5,519	5,519	—	21,440	7,868	13,572
1955	21,108	7,639	7,639	—	13,469	3,875	9,594
1956	21,348	11,499	11,499	—	9,849	2,663	7,186
1957	21,984	10,897	10,859	38	11,087	2,429	8,658
1958	18,869	10,748	10,233	515	8,121	1,452	6,669
1959	17,162	12,536	11,152	1,384	4,626	661	3,965
1960	16,189	12,516	10,891	1,625	3,673	756	2,917
1961	15,832	10,660	9,669	991	5,172	417	4,755
1962	15,919	10,478	9,921	557	5,441	241	5,200
1963	17,185	11,795	11,322	473	5,390	155	5,235
1964	19,585	14,205	13,346	859	5,380	175	5,205
1965	23,378	18,187	17,018	1,169	5,191	92	5,099
1966	30,810	23,262	21,324	1,938	7,548	45	7,503
1967	28,858	20,812	18,324	2,488	8,046	—	8,046
1968	29,761	21,219	17,806	3,413	8,542	—	8,542
1969	N.A.	21,828	18,758	3,070	N.A.	N.A.	N.A.
1970	N.A.	14,512	12,279	2,233	N.A.	N.A.	N.A.
1971	N.A.	11,687	9,928	1,759	N.A.	N.A.	N.A.
1972[r]	N.A.	13,344	11,892	1,452	N.A.	N.A.	N.A.
1973[E]	N.A.	18,159	16,251	1,908	N.A.	N.A.	N.A.

SOURCES: Military: Department of Defense.
Civil: 1950-1966: Bureau of the Census, "Current Industrial Reports" Series M37G (Monthly); 1967-1972: Federal Aviation Administration, Office of Aviation Economics; 1973: Federal Aviation Administration, "Aviation Forecasts, 1974-1985."

a Jet includes turboprop and turbojet.
r Revised.
E Estimate.
N.A. Not Available.

COMMERCIAL TRANSPORT AIRCRAFT PRODUCTION

(Fixed Wing, Multiple Engine)
Calendar Years 1969 to Date

Company and Aircraft	1969	1970	1971	1972	1973
TOTAL[a] Number of Aircraft Shipped	514	311	223	227	294
TOTAL Value of Aircraft (Millions of Dollars)	$2,939	$3,158	$2,594	$2,660	$3,718
Boeing					
B-707	59	19	10	3	11
B-727	115	54	33	41	92
B-737	114	37	29	22	17
B-747	4	92	69	30	28
Fairchild					
F-27	2	—	—	—	—
Lockheed					
C-130	13	25	13	34	29
L-1011	—	—	—	17	39
McDonnell Douglas					
DC-8	85	33	13	4	—
DC-9	122	51	43	24	21
DC-10	—	—	13	52	57

Source: Aerospace Industries Association, company reports.
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.

JET TRANSPORT ORDERS

Domestic and Foreign
As of December 31, 1973

	TOTAL Aircraft for Delivery in 1974 or Later	Domestic Orders	Foreign Orders
TRANSPORTS			
Number of Aircraft	573	195	378
Value—Millions of Dollars[a]	$ 7,252	$ 2,618	$ 4,634
NUMBER OF TRANSPORT AIRCRAFT			
Boeing			
B-707	21	0	21
B-727	104	54	50
B-737	36	2	34
B-747	19	2	17
Lockheed			
L-1011	142	88	54
L-100-30[b]	37	5	32
McDonnell Douglas			
DC-9	83	5	78
DC-10	131	39	92

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

GENERAL AVIATION AIRCRAFT SHIPMENTS

Calendar Years 1960 to Date

Year	TOTAL	Beech	Cessna	Gates Learjet	Grumman American	Piper	Rockwell Int'l.	Other
Number of Aircraft Shipped By Selected Manufacturers								
1960	7,588	962	3,720	—	—	2,313	155	438
1961	6,778	818	2,746	—	—	2,646	139	429
1962	6,697	830	3,124	—	—	2,139	121	483
1963	7,569	1,061	3,456	—	—	2,321	114	617
1964	9,336	1,103	4,188	3	—	3,196	109	737
1965	11,852	1,192	5,629	80	—	3,776	110	1,065
1966	15,747	1,535	7,888	51	70	4,437	265	1,501
1967	13,577	1,260	6,233	34	52	4,490	386	1,122
1968	13,698	1,347	6,578	41	N.A.	4,228	471	1,033
1969	12,457	1,061	5,887	61	306	3,951	344	847
1970	7,283	793	3,730	35	217	1,675	211	622
1971	7,466	519	3,859	23	435	2,055	202	373
1972	9,774	802	4,964	39	620	2,461	242	646
1973	13,645	1,110	7,262	66	663	3,233	418	893
Value[a] of Shipments of Aircraft By Selected Manufacturers (Millions of Dollars)								
1960	151.2	43.1	56.7	—	—	35.1	11.9	4.4
1961	124.3	37.1	42.3	—	—	28.9	11.0	5.0
1962	136.8	37.4	50.2	—	—	32.1	10.8	6.3
1963	153.4	38.6	55.7	—	—	38.5	11.8	8.8
1964	198.9	54.9	66.8	N.A.	—	54.5	12.0	10.7
1965	318.3	72.2	97.2	45.1	—	61.7	27.7	14.4
1966	444.2	97.3	128.2	28.6	N.A.	80.1	51.5	58.5
1967	359.6	92.0	116.6	20.2	N.A.	79.4	31.8	19.6
1968	421.5	115.7	138.8	28.7	N.A.	85.5	22.3	30.5
1969	584.5	113.1	145.6	46.5	129.0	8.2	25.4	26.7
1970	339.4	80.7	97.2	26.9	42.2	48.5	20.1	23.8
1971	321.5	52.1	102.4	18.1	45.6	56.7	24.7	21.9
1972	557.6	113.3	183.2	35.1	58.4	72.3	60.9	34.4
1973	826.4	140.4	298.0	61.5	75.0	126.8	80.4	44.3

Source: 1950-1969: Aerospace Industries Association, company reports.
1970-1973: General Aviation Manufacturers Association.
NOTE: "Other" includes Bellanca, Lake, Lockheed Jetstar, Maule and Swearingen.
N.A. Not Available.
a Manufacturers' Net Billing Price.

HELICOPTER COMMERCIAL PRODUCTION

Calendar Years 1969 to Date

	1969	1970	1971	1972	1973
TOTAL NUMBER OF HELICOPTERS SHIPPED	534	482	469	575	770
TOTAL VALUE OF HELICOPTERS (Millions of Dollars)	$ 75	$ 49	$ 69	$ 90	$121
Company and Model					
Bell—TOTAL	339	288	274	329	477
47 series	134	124	110	97	92
204 series	—	—	1	—	4
205 series	49	23	13	17	29
206 series	156	138	129	193	304
212 series	—	3	21	22	48
Boeing-Vertol—TOTAL	—	—	5	6	2
CH-47C	—	—	5	6	2
Enstrom—TOTAL	25	—	17	38	64
F-28A	25	—	17	38	64
Fairchild—TOTAL	42	37	21	28	10
FH-1100	40	37	21	28	10
12 series	2	—	—	—	—
Hughes—TOTAL	108	149	137	155	211
300's	43	74	54	71	96
500's	65	75	83	84	115
Sikorsky (UAC)—TOTAL	20	8	15	19	6
S-61	13	6	9	13	6
S-62	7	—	—	—	—
S-65	—	2	6	6	—

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

PRODUCTION OF HELICOPTERS
TOTAL, COMMERCIAL AND MILITARY

Calendar Years 1960 to Date

Year	TOTAL	Commercial	Military			
			TOTAL	Air Force	Navy	Army
1960	754	266	488	57	147	284
1961	744	378	366	42	187	137
1962	961	407	554	33	208	313
1963	1,176	504	672	45	165	462
1964	1,586	579	1,007	34	145	828
1965	2,068	598	1,470	60	195	1,216
1966	2,747	583	2,164	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	2,056	469	1,587	355	78	1,154
1972	N.A.	575	N.A.	N.A.	N.A.	N.A.
1973	N.A.	770	N.A.	N.A.	N.A.	N.A.

Sources: Aerospace Industries Association, company reports; Department of Defense.
N.A. Not Available.

FLYAWAY COST OF MILITARY AIRCRAFT

Army Acceptances by Type and Model
Calendar Year 1971
(Millions of Dollars)

Type and Model	Number	Flyaway Cost[a]	Weapon System Cost[b]
ARMY, TOTAL	1,176	$ 289	$ 299
Helicopters, Total	1,154	281	291
AH-1G	41	26	26
UH-1H	529	58	58
OH-58A	552	129	135
CH-47C	22	45	48
CH-54B	10	23	24
Observation, Total	22	8	8
U-21A	22	8	8

SOURCE: Department of the Army. Data released with a two-year lag for security reasons.

a Flyaway Cost includes airframe, engines, electronics, communicatons, armament and other installed equipment.

b Weapon System Cost includes flyaway items, initial spares, ground equipment and training equipment.

FLYAWAY COST OF MILITARY AIRCRAFT

Navy Acceptances by Type and Model
Calendar Year 1971
(Millions of Dollars)

Type and Model	Number	Flyaway Cost[a]
NAVY, TOTAL	333	$ 823
Patrol, Total	24	171
P-3C	22	163
RP-3D	1	8
S-3A	1	(b)
Attack, Total	98	376
A-4M	34	58
A-6E	10	52
EA-6B	13	166
A-7E	31	72
AV-8A	10	28
Fighter, Total	44	122
F-4J	38	122
F-14A	6	(b)
Trainers, Total	89	88
T-2C	24	16
TA-4J	65	72
Helicopters, Total	78	66
AH-1J	5	3
CH-46F	3	4
CH-53D	16	31
UH-1N	54	28

SOURCE: Department of the Navy. Data released with a two-year lag for security reasons.

a Flyaway Cost includes airframe, engines, electronics, communications, armament, and other installed equipment.

b Systems in Research and Development.

FLYAWAY COST OF MILITARY AIRCRAFT

Air Force Acceptances by Type and Model
Calendar Year 1971
(Millions of Dollars)

Type and Model	Number	Flyaway Cost[a]	Weapon System Cost[b]
AIR FORCE, TOTAL	723	$ 1,884	$ 2,045
Bombers, Total	24	226	270
FB-111	24	226	270
Fighters/Attack, Total	244	824	893
A-7	108	247	306
A-37	35	15	16
F-4	47	131	126
F-5, RF-5	10	9	9
F-111	44	422	436
Transports, Total	42	688	732
C-5	24	636	679
C-130	18	52	53
Trainers, Total	46	24	26
T-38	38	24	26
T-41	8	(c)	(c)
Helicopters, Total	355	122	124
UH-1	347	102	102
CH-53	8	20	22
Utility, Total	12	(c)	(c)
U-17	12	(c)	(c)

Source: Department of the Air Force. Data released with a two-year lag for security reasons.

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 Less than $500,000.

MILITARY AIRCRAFT PRODUCED
NUMBER AND FLYAWAY VALUE
Calendar Years 1960 to 1971

Year	TYPE OF AIRCRAFT						
	TOTAL	Bomber	Fighter/ Attack	Transport	Trainer	Helicopter	Other
NUMBER							
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
1971[a]	2,232	48	386	42	135	1,587	34
FLYAWAY VALUE[b] (Millions of Dollars)							
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
1971[a]	2,996	397	1,322	688	112	469	8

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

NOTE: Data exclude gliders and targets.

a 1960 - 1967, Navy attack planes included with Bombers. 1968 - 1970, Navy attack planes included under Fighter/Attack.

b 1960 value is based on unit prices in latest production contracts and does 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.

DEPARTMENT OF DEFENSE
OUTLAYS FOR AIRCRAFT PROCUREMENT

By Agency
Fiscal Years[a] 1960 to Date
(Millions of Dollars)

Year	TOTAL DEFENSE DEPARTMENT	Air Force	Navy	Army
1960	$ 6,272	$ 4,414	$ 1,765	$ 93
1961	5,898	3,926	1,832	140
1962	6,659	4,387	2,102	170
1963	6,309	3,747	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
1973	5,066	2,396	2,557	113

Source: Department of Defense, OASD (Comptroller), FAD 748/73, June 30, 1973, and earlier reports.
a Fiscal Years ending June 30.

MAJOR PROCUREMENT QUANTITIES
DEPARTMENT OF DEFENSE
Fiscal Years[a] 1973, 1974 and 1975

Item	1973	1974[E]	1975[E]
AIRCRAFT - Total	788	755	672
Air Force	471	441	256
Navy and Marine Corps	297	314	248
Army	20	—	168
Helicopters	241	243	293
Fixed Wing Aircraft	547	512	379
MISSILES - Total	24,820	39,395	57,363
Air Force	4,250	4,644	6,661
Navy and Marine Corps	3,508	8,645	10,788
Army	17,062	26,106	39,914
SHIPS - NAVY - Total	17	19	34
New Construction	9	14	30
Conversions	8	5	4
TRACKED COMBAT VEHICLES - Total	401	1,742	1,237
Army	166	1,622	1,043
Marine Corps	235	120	194
TORPEDOES - NAVY	500	500	450
OTHER WEAPONS - Total	72,009	38,272	19,857
Army	72,009	30,272	19,845
Navy and Marine Corps	—	8,000	12

Source: Department of Defense, OASD (Comptroller), February 4, 1974.
a Fiscal Years ending June 30.
E Estimate.

MILITARY AIRCRAFT PROGRAM ACQUISITION COSTS[a]
PROCUREMENT, INCLUDING INITIAL SPARES

By Department, Type and Model
Fiscal Years[b] 1973, 1974 and 1975
(Millions of Dollars)

Department, Type and Model	1973		1974[E]		1975[E]	
	Number	Cost	Number	Cost	Number	Cost
AIR FORCE						
A-7D Corsair II	24	$ 88.5	24	$ 81.5	—	$ —
A-10 Close Air Support	—	—	—	—	26	173.8
A-37B Attack Aircraft	60	32.2	—	—	29	15.7
E-3A AWACS	—	—	—	7.6	12	549.8
F-4E Phantom	48	170.1	24	99.6	—	15.6
F-5E Fighter Aircraft[c]	57	102.5	76	131.3	—	—
F-5F Fighter Aircraft	—	—	—	—	28	91.1
F/TF-15A Eagle	30	453.6	62	870.6	72	893.4
F-111F Fighter Aircraft	12	184.4	12	167.8	—	1.0
C-130H Hercules	20	90.0	42	216.2	4	37.0
E-4A AABNCP	2	69.0	1	32.3	—	—
NAVY						
A-4M Skyhawk	—	2.3	44	115.2	24	60.3
A-6E Intruder	21	163.0	15	126.4	12	131.7
EA-6B Prowler	7	151.5	6	120.0	6	123.1
A-7E Corsair II	48	177.0	30	145.1	34	150.6
F-14A Tomcat	48	570.1	50	693.1	50	744.5
UH-1N Iroquois	24	19.7	24	23.0	20	16.6
AH-1J Sea Cobra	20	33.8	15	26.2	20	30.6
P-3C Orion	12	127.9	18	201.8	12	151.1
S-3A Viking	35	578.5	45	542.3	45	559.6
E-2C Hawkeye	8	161.0	9	158.5	6	118.7
C-9B Skytrain II	3	17.3	—	—	7	41.9
CT-39 Sabre Liner	5	8.9	—	—	6	10.9
KC-130R Hercules	—	—	10	67.1	6	39.2
ARMY						
AH-1Q Cobra/TOW	—	—	—	—	21	28.7
CH-47C Chinook[d]	—	—	24	49.3	27	60.4
UH-1H Iroquois[d]	180	50.1	180	61.2	205	69.0

Source: "Program Acquisition Costs by Weapon System," Department of Defense Budget for Fiscal Year 1975.
a Total Obligational Authority.
b Fiscal Years ending June 30.
c Includes Navy procurement.
d Includes Air Force procurement.
E Estimate.

Last year was a "no growth" year for missile systems and parts. Final figures indicate that sales in current prices for this category of products amounted to $3.39 billion compared with $3.33 billion in 1972, thus reflecting a decline when adjusted to constant prices. Backlog for missile systems and parts was only slightly better, up $225 million at the end of the year for a FY 1973 total of $3.9 billion.

Outlays for DOD procurement of guided missiles reflected this leveling off as the FY figure remained for the most part stable. Procurement outlays totaled $3.0 billion in FY 1973, approximating the same level for FY 1972. Research, Development, Test and Evaluation (RDT&E) outlays suffered the largest cutback as outlays decreased by $119 million in FY 1973 to $2.0 billion. Total DOD outlays for both procurement and RDT&E were down from $5.2 billion in FY 1972 to $5.1 billion in FY 1973.

Overall, the downturn is in accord with certain preliminary agreements arrived at during the initial negotiations of the SALT talks between the U.S. and the Soviet Union. The second session (SALT II) is expected to also impact on future sales of missile systems and parts.

Engines and propulsion units for both missiles and space vehicles showed

an increase in net sales during 1973 in both military and non-military sales. Net sales were up by $19 million from $607 million in 1972 to $626 million in 1973. Backlog, however, was down considerably at the end of the year. The decline in both military and non-military orders totaled $45 million as new orders amounted to $626 million. This downturn in part reflects the increasing internationalization of space exploration as witnessed by the European Space Research Organization (ESRO) agreements with the U.S.; it also indicates the continued development of propulsion capabilities on the part of the European nations.

SALES AND BACKLOG OF MAJOR MANUFACTURERS OF MISSILE SYSTEMS AND PARTS

Calendar Years 1961 to Date
(Millions of Dollars)

Year	Missile Systems and Parts	
	Net Sales	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	2,641	3,344
1972[r]	3,335	3,642
1973	3,390	3,867

Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).
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 64.
r Revised.

SALES AND BACKLOG OF MAJOR MANUFACTURERS OF ENGINES AND PROPULSION UNITS FOR MISSILES AND SPACE VEHICLES

Calendar Years 1961 to Date
(Millions of Dollars)

Year	Net Sales			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	1,153	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	222	617	610	7
1971	605	596	9	520	513	7
1972[r]	607	596	11	671	659	12
1973	626	606	20	626	616	10

Source: Bureau of the Census, "Current Industrial Reports," Series MQ37D (Quarterly).
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.
a Data included in totals for space vehicle systems. See page 64.
r Revised.

DEPARTMENT OF DEFENSE
OUTLAYS FOR GUIDED MISSILES

Fiscal Years[a] 1960 to Date
(Millions of Dollars)

Year	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
1973	5,061	3,023	2,038

Source: Department of Defense, OASD (Comptroller), FAD 748/73, June 30, 1973, and earlier reports.
NOTE: Does not include Military Assistance.
a Fiscal Years ending June 30.

DEPARTMENT OF DEFENSE
OUTLAYS FOR GUIDED MISSILES PROCUREMENT

By Agency
Fiscal Years[a] 1960 to Date
(Millions of Dollars)

Year	TOTAL DEFENSE DEPARTMENT	Air Force	Navy	Army
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	2,100	981	496
1965	2,096	1,320	522	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
1973	3,023	1,454	628	941

Source: Department of Defense, OASD (Comptroller), FAD 748/73, June 30, 1973, and earlier reports.
NOTE: For data on research and development expenditures for missiles see page 96.
a Fiscal Years ending June 30.

MISSILE PROGRAM ACQUISITION COSTS[a]
PROCUREMENT, INCLUDING INITIAL SPARES

By Department, Type and Model
Fiscal Years[b] 1973, 1974 and 1975
(Millions of Dollars)

Department, Type and Model	1973		1974E		1975E	
	Units	Cost	Units	Cost	Units	Cost
AIR FORCE						
Minuteman II	—	$ 5.4	—	$ 13.1	—	$ 27.5
Minuteman III	—	670.8	—	615.2	—	587.8
SRAM	—	198.3	—	132.2	—	1.5
Maverick	3,000	70.9	3,000	60.7	6,000	88.4
NAVY						
Poseidon	—	290.3	—	187.1	—	48.0
Trident	—	—	—	5.0	—	12.6
Sparrow[c]	150	38.1	175	47.0	600	99.5
Sidewinder[c]	470	17.5	850	15.1	800	16.8
Phoenix	180	93.6	240	96.2	340	99.5
Shrike[c]	1,972	38.5	1,660	42.6	1,200	37.2
Condor	20	17.9	30	23.2	35	20.0
Standard-ARM[c]	616	79.4	—	0.9	—	0.6
Harpoon	—	—	—	—	150	81.7
Standard-MR	340	33.8	444	48.0	200	29.7
Standard-ER	100	12.7	68	10.1	—	3.8
Standard-SSM (ARM)	—	—	26	4.9	62	8.3
Standard Active SSM	—	—	—	—	74	33.6
ARMY						
Safeguard	—	300.0	—	159.3	—	—
Hawk[d]	947	136.3	950	134.0	750	100.9
Dragon[d]	3,950	48.7	7,000	62.0	16,578	129.4
TOW[d]	12,000	42.5	23,425	147.3	30,319	138.4
Lance	360	96.3	360	81.3	194	64.7
Pershing	20	30.9	26	50.2	—	8.9

Source: "Program Acquisition Costs by Weapon System," Department of Defense Budget for Fiscal Year 1975.
a Total Obligational Authority.
b Fiscal Years ending June 30.
c Includes Air Force procurement.
d Includes Marine Corps procurement.
E Estimate.

MAJOR MISSILES
DEVELOPMENT, PRODUCTION AND OPERATION

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	McDonnell Douglas	Thiokol/Hercules	Solid	Bell Tel. Lab/Western Electric	Operational
Point Defense	USN	Raytheon	—	Solid	—	Operational/Development
Redeye	Army	General Dynamics	Atlantic Research	Solid	General Dynamics	Operational
SAM-D	Army	Raytheon	—	Solid	—	Development
Sea Sparrow	USN	Raytheon	NAA/Rocketdyne	Solid	Raytheon	Operational
Standard (MR)	USN	General Dynamics	Aerojet	Solid	—	Operational
Standard (ER)	USN	General Dynamics	Atlantic Research	Solid	—	Operational
Stinger	Army	General Dynamics	—	—	—	Development
Talos	USN	Bendix	Bendix	Ramjet	Sperry	Operational
Tartar	USN	General Dynamics	Aerojet	Solid	General Dynamics	Operational
Terrier	USN	General Dynamics	Alleghany	Solid	General Dynamics	Operational
AIR-TO-AIR						
AGILE	USAF, USN	Hughes	Thiokol	Solid	Philco Ford/Hughes	Development
Brazo	USAF, USN	Hughes	—	—	—	Development
Falcon (AIM-4A, 4C, 4D, 4H, 47A)	USAF	Hughes	Lockheed Propulsion	Solid	Hughes	Operational
Falcon (AIM-26B)	USAF	Hughes	Thiokol	Solid	Hughes	Operational

(Continued on next page)

MAJOR MISSILES
DEVELOPMENT, PRODUCTION AND OPERATION
(Continued)

Project	Service	Systems Contractor	Propulsion		Guidance	Status
			Manufacturer	Type	Manufacturer	
AIR-TO-AIR (Continued)						
Genie	USAF	McDonnell Douglas	Aerojet	Solid	—	Operational
Phoenix	USN	Hughes	NAA/ Rocketdyne	Solid	Hughes	Development
Seekbat	USAF	General Dynamics	—	—	—	Development
Sidewinder-9D	USN	Raytheon/ Philco-Ford	NAA	Solid	Raytheon/ Philco-Ford	Operational
Sidewinder-9B	USAF	Philco-Ford	Navy	Solid	Philco-Ford	Production
Sidewinder-9C	USN	Motorola	NAA	—	Motorola	Operational
Sparrow	USN, USAF	Raytheon	—	Solid	Raytheon	Operational
SURFACE-TO-SURFACE						
Mace	USAF	Martin Marietta	—	Turbojet	Goodyear	Operational
Minuteman 2	USAF	Boeing	Thiokol/ Aerojet/ Hercules	Solid	NAA/Autonetics	Operational
Minuteman 3	USAF	Boeing	Thiokol/ Aerojet	Solid	NAA/Autonetics	Operational
Polaris A2	USN	Lockheed MSC	Aerojet/ Hercules	Solid	GE/MIT/ Hughes	Operational
Polaris A3	USN	Lockheed MSC	Aerojet/ Hercules	Solid	GE/MIT/ Hughes	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
Trident I	USN	Lockheed MSC	Hercules/ Thiokol	Solid	GM/Delco Electronics	Development

(Continued on next page)

MAJOR MISSILES
DEVELOPMENT, PRODUCTION AND OPERATION
(Continued)

Project	Service	Systems Contractor	Propulsion		Guidance Manufacturer	Status
			Manufacturer	Type		
AIR-TO-SURFACE						
Bullpup (12B)	USN, USAF	Maxson Electronics	Thiokol	Liquid	Maxson Electronics	Operational
Bullpup (12C)	USAF	Maxson Electronics	Thiokol	Liquid	Maxson Electronics	Operational
Condor	USN	NAA	NAA/ Rocketdyne	Solid	Hughes	Development
Harpoon	USN	McDonnell Douglas	Teledyne CAE	Solid	Texas Instruments	Development
Hornet	USAF	NAA/ Colombus	Thiokol	Solid	NAA/Autonetics	Development
Hound Dog	USAF	NAA	P & W	Turbojet	NAA/Autonetics	Operational
Maverick	USAF	Hughes	Thiokol	Solid	Hughes	Operational
Quail	USAF	McDonnell Douglas	General Electric	Turbojet	McDonnell Douglas	Operational
SAGMI	USAF	Beech	AMF	—	—	Development
SCAD	USAF	Boeing	Teledyne CAE	Turbojet	Litton	Development
Shrike	USN, USAF	Texas Instruments	NAA/ Rocketdyne	Solid	Texas Instruments SR/Univac	Operational
SRAM	USAF	Boeing	Lockheed Propulsion	Solid	Singer-General Precision	Operational
Standard ARM	USN, USAF	General Dynamics	Aerojet	Solid	Maxson Electronics	Operational
Walleye	USN, USAF	Martin Marietta/ Hughes	—	Glide Bomb	—	Operational

(Continued on next page)

MAJOR MISSILES
DEVELOPMENT, PRODUCTION AND OPERATION
(Continued)

Project	Service	Systems Contractor	Propulsion		Guidance Manufacturer	Status
			Manufacturer	Type		
BATTLEFIELD SUPPORT GUIDED MISSILES						
Lance	Army	LTV Aerospace	NAA/ Rocketdyne	Liquid	Arma	Operational
Dragon	Army	McDonnell Douglas	—	Solid	—	Operational
Hellfire	Army	—	—	—	—	Development
Little John	Army	Consolidated Western Steel/General Mills	Hercules	Solid	—	Operational
Pershing	Army	Martin Marietta	Thiokol	Solid	Bendix	Operational
Sergeant	Army	Sperry	Thiokol	Solid	Sperry	Operational
MGM-32A	USAF	Aerospatiale (France)	—	Solid	DEFA	Operational
Shillelagh	Army	Philco-Ford	Amoco Chem.	Solid	—	Operational
SS-11B1 (AGM-22)	Army	Aerospatiale (France)	SEPR	Solid	—	Operational
TOW	Army	Hughes	Hercules	Solid	—	Operational
ANTI-SUBMARINE						
Asroc	USN	Honeywell	Navy	Solid	—	Operational
Subroc	USN	Goodyear Aerospace	Thiokol	Solid	Singer-General Precision	Operational

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

Space Programs

During 1973 Skylab became the catchword for man's ability to endure in space for extended periods of time. The nation's first space station was launched and established in May of last year. And from the first manned launch of the project (Skylab 2) to the splashdown of Skylab 4, U.S. astronauts accumulated 4,117 hours and 15 minutes in space. The follow on to the now terminated Skylab project will be the joint U.S./Soviet Union Apollo Soyuz Test Project scheduled for 1975. In addition, the preliminary development of the Space Shuttle program is continuing.

In spite of the accomplishments of Skylab and the expectations regarding both the Soyuz and Space Shuttle missions, the overall U.S. space program again experienced a decline in outlays during FY 1973. This marked the seventh consecutive year of decreased funding for U.S. space activities. Total outlays amounted to $4.7 billion in FY 1973, down over $50 million from the previous year and down $3 billion from the peak year of 1966. NASA suffered the largest cutback (over $125 million) during FY 1973. The Atomic Energy Commission (AEC) and other agencies with the exception of DOD also were cut back. Outlays for space activities supported by DOD were up $87 million.

Consistent with the overall trend in space activity, the sale of space vehicle

systems declined again in 1973 with a $23 million drop resulting in net sales of $1.6 billion, the lowest amount in over a decade. Non-military sales declined by $71 million, while military purchases rose by nearly $50 million. Backlog orders on the other hand were recorded at $1.2 billion at the end of the year, up 22.8 percent over the previous year. Again, the drop was in the non-military category which was down by $60 million from 1972 totals; orders in the military column were up by $279 million.

While both the budget for manned space flights and aggregate net sales were on the downturn during 1973, unmanned space explorations continued to investigate the mysteries of the cosmos. Appropriately, the FY 1973 budget plan for space science and applications showed a significant improvement over the previous year. Increased funding amounting to $128 million brought 1973 budget totals in this category to $868 million. These funds were used to support Pioneer, Explorer and Mariner missions resulting in the accrual of new information regarding the planets Mercury, Mars, Jupiter and Venus. In addition, data on both the sun and the moon were retrieved during these missions.

OUTLAYS FOR SPACE ACTIVITIES

Fiscal Years[a] 1960 to Date
(Millions of Dollars)

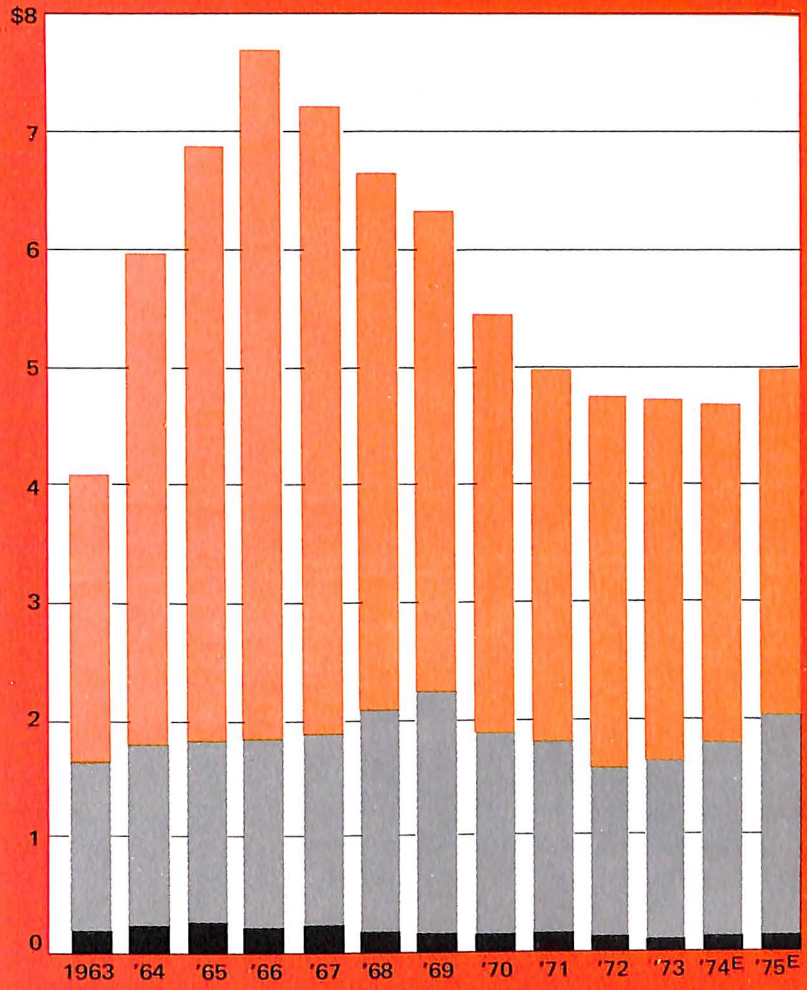
Year	TOTAL	National Aeronautics and Space Administration[b]	Department of Defense[c]	Atomic Energy Commission	Other
1960	$ 960	$ 401	$ 518	$ —	$ 41
1961	1,518	744	710	—	64
1962	2,418	1,257	1,029	130	2
1963	4,114	2,552	1,368	181	13
1964	5,970	4,171	1,564	220	15
1965	6,886	5,035	1,592	232	27
1966	7,719	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	4,719	3,069	1,557	51	42
1974[E]	4,695	2,889	1,688	40	78
1975[E]	4,983	2,963	1,900	42	78

Sources: 1960-1969: The Budget of the United States (Annually).
1970-Date: "Aeronautics and Space Report of the President" (Annually).
NOTE: See Chapter on Research and Development for additional tables.
a Fiscal Years ending June 30.
b Excludes amount for aircraft technology beginning with 1965.
c Includes the astronautics budget activity and other activities which contribute to the space effort.
E Estimate.

FEDERAL OUTLAYS FOR SPACE ACTIVITIES

FISCAL YEARS 1963–1975E

(Billions of Dollars)



Sources: 1963-1969—The Budget of the U.S.
1970-1975E—Aeronautics & Space Report of the President
E Estimate

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OUTLAYS BY BUDGET FUNCTION

Fiscal Years[a] 1960 to Date
(Millions of Dollars)

Year	TOTAL	Research and Development	Construction of Facilities	Research & Program Management
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	3,315	2,541	45	729
1974[E]	3,179	2,360.	75	744
1975[E]	3,275	2,423	102	750

Source: "The Budget of the United States" (Annually).
a Fiscal Years ending June 30.
E Estimate.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION RESEARCH AND DEVELOPMENT PROGRAMS BUDGET PLAN

Fiscal Years[a] 1971 to Date
(Millions of Dollars)

	1971	1972	1973	1974[E]	1975[E]
TOTAL	**$2,542**	**$2,508**	**$2,488**	**$2,305**	**$2,346**
MANNED SPACE FLIGHT—TOTAL	1,422	1,285	1,136	1,057	1,125
Apollo	914	601	56	—	—
Space Flight Operations	429	583	879	580	323
Advanced Missions	1	1	2	2	2
Space Shuttle	78	100	199	475	800
SPACE SCIENCE AND APPLICATIONS—TOTAL	566	740	868	763	725
Physics and Astronomy	116	110	126	94	141
Lunar and Planetary Explorations	145	292	332	333	266
Bioscience	13	—	—	—	—
Launch Vehicle Procurement	125	151	221	175	140
Space Applications	167	187	189	161	178
AERONAUTICS AND SPACE TECHNOLOGY—TOTAL	260	214	233	237	241
Aeronautical Research & Technology	100	109	151	168	166
Space & Nuclear Research & Technology	160	104	82	69	75
TRACKING AND DATA ACQUISITION—TOTAL	290	264	248	244	250
TECHNOLOGY UTILIZATION—TOTAL	4	5	4	4	5

Source: NASA, Briefing on the Budget of the United States, February 4, 1974.
NOTE: Administrative operations costs for NASA not included.
a Fiscal Years ending June 30.
E Estimate.

SALES AND BACKLOG OF MAJOR MANUFACTURERS
SPACE VEHICLE SYSTEMS

(Excluding Engines and Propulsion Units)
Calendar Years 1961 to Date
(Millions of Dollars)

Year	Net Sales			Backlog, December 31		
	TOTAL	Military	Non-Military	TOTAL	Military	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	1,976	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	1,725	860	865	916	603	313
1972[r]	1,656	905	751	959	646	313
1973	1,633	953	680	1,178	925	253

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

SPACECRAFT LAUNCHINGS AS OF MARCH 31, 1974

Country	TOTAL	Payloads in Earth Orbit	Payloads Decayed	Space Probes
TOTAL	1,631	625	959	47
United States	781	350	406	25
U.S.S.R.	801	237	542	22
France	9	9	—	—
United Kingdom	9	6	3	—
European Space Research Organization	7	4	3	—
Canada	6	6	—	—
Japan	5	5	—	—
Italy	4	1	3	—
West Germany	3	2	1	—
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

Calendar Years 1970–1973

Launch Date	Project	Pilots	Nation	Duration
Apr 11, 1970	Apollo 13	James A. Lovell, Jr. Fred W. Haise, Jr. John L. Swigert, Jr.	USA	142 hr. 55 min.
June 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.
June 6, 1971	Soyuz 11	George Dobrovolsky Vladislav Volkov Viktor Patsayev	USSR	570 hr. 22 min.
July 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.
May 25, 1973	Skylab 2	Charles Conrad, Jr. Joseph P. Kerwin Paul J. Weitz	USA	672 hr. 50 min.
July 28, 1973	Skylab 3	Alan L. Bean Jack R. Lousma Owen K. Garriott	USA	1,427 hr. 9 min.
Sept 27, 1973	Soyuz 12	Vasiliy Lazarev Oleg Makarov	USSR	47 hr. 16 min.
Nov 16, 1973	Skylab 4	Gerald P. Carr Edward G. Gibson William R. Pogue	USA	2,017 hr. 16 min.
Dec. 18, 1973	Soyuz 13	Petr Klimuk Valentin Lebedev	USSR	188 hr. 55 min.

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

U.S. MAN-HOURS SPACE FLIGHT TIME LOG

Calendar Years 1961–1973

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)	July 21, 1961	—	16	—	31
MA-6 (Glen)	Feb 20, 1962	4	55	5	26
MA-7 (Carpenter)	May 24, 1962	4	56	10	22
MA-8 (Schirra)	October 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)	June 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)	June 3, 1966	144	42	1,520	32
Gemini 10 (Young, Collins)	July 18, 1966	141	34	1,662	06
Gemini 11 (Conrad, Gordon)	Sept 12, 1966	42	34	1,804	40
Gemini 12 (Lovell, Aldrin)	Nov 11, 1966	189	10	1,993	50

(Continued on the next page)

U. S. MAN-HOURS SPACE FLIGHT TIME LOG

(Continued)

Mission	Launch Date	Man-Hours In Mission		Total Cumulative Time	
		Hrs.	Min.	Hrs.	Min.
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)	July 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)	July 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
Skylab 2 (Conrad, Kerwin, Weitz)	May 25, 1973	2,018	30	11,530	29
Skylab 3 (Bean, Lousma, Garriott)	July 28, 1973	4,287	27	15,817	56
Skylab 4 (Carr, Gibson, Pogue)	Nov 16, 1973	6,051	48	21,869	44

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

CHRONOLOGY OF MAJOR UNITED STATES LAUNCHINGS, 1973

Date	Designation	Objective
1973 Apr. 6	Pioneer 11	To obtain by a launch during the Jovian opportunity, precursory scientific information beyond the orbit of Mars with the following emphasis: (a) investigation of the interplanetary medium; (b) investigation of the nature of the asteroid belt; (c) exploration of Jupiter and its environment. Spacecraft began 7 month journey through the asteroid belt on Aug. 18. By Dec. 31, spacecraft was 360 million miles from the Earth. Jupiter encounter planned for early December 1974.
Apr. 20	Anik 2	To provide transmission of television, voice and other data throughout Canada. Launched by NASA for Canadian Domestic Communications Satellite System into transfer orbit. The American Satellite Corp. signed an agreement with Canada to lease satellite time, and on June 18 conducted the first relay of a telecast across the United States by a domestic communications satellite.
May 14	Skylab 1 (SL-1)	To establish the Skylab Orbital Assembly in Earth orbit; to obtain medical data on the crew for use in extending the duration of manned space flight; to perform in-flight experiments. Skylab Workshop successfully placed in circular orbit but during launch, vehicle vibration resulted in meteroid shield loss and solar array damage which resulted in electrical power shortage and temperature escalation inside to 125° F. Temperature was reduced somewhat by pitching Workshop axis to and away from Sun. Skylab 2 docked with Workshop, deployed solar parasol lowering temperatures and freed solar array wing 1 restoring electrical power. Workshop was employed for 3 manned visits (Skylab 2, 3, 4).
May 25	Skylab 2 (SL-2)	To establish the Skylab Orbital Assembly in Earth orbit; to obtain medical data on the crew for use in extending the duration of manned space flight; to perform in-flight experiments. First manned Skylab mission. Command Space Module crew entered Workshop and deployed makeshift solar parasol through the solar airlock. Temperatures decreased. On June 7, jammed solar array wing manually released during 3 hr 30 min 2-man Extra-Vehicular Activity. Power restored. On June 19, 1 hr 30 min 2-man Extra-Vehicular Activity to retrieve and replace Apollo Telescope film cassettes. Command Module splashdown at 9:50 a.m., e.d.t., June 22. Total flight time 28 days 50 min. Despite mission anomalies, 80 percent of solar data planned was obtained; 12 or 15 Earth resources data runs were accomplished; and all 16 medical experiments were conducted.
June 10	Explorer 49 (RAE)	To make measurements of galactic and solar radio noise at frequencies below inospheric cutoffs and external to terrestrial background interference by utilization of the Moon for occulation, focusing, or aperture blocking for increased resolution and discrimination. Conducted the most extensive study ever undertaken of low-frequency signals from galactic and extra-galactic radio sources. Last scheduled U.S. space mission to the moon.

(Continued on the next page)

CHRONOLOGY OF MAJOR UNITED STATES LAUNCHINGS, 1973

(Continued)

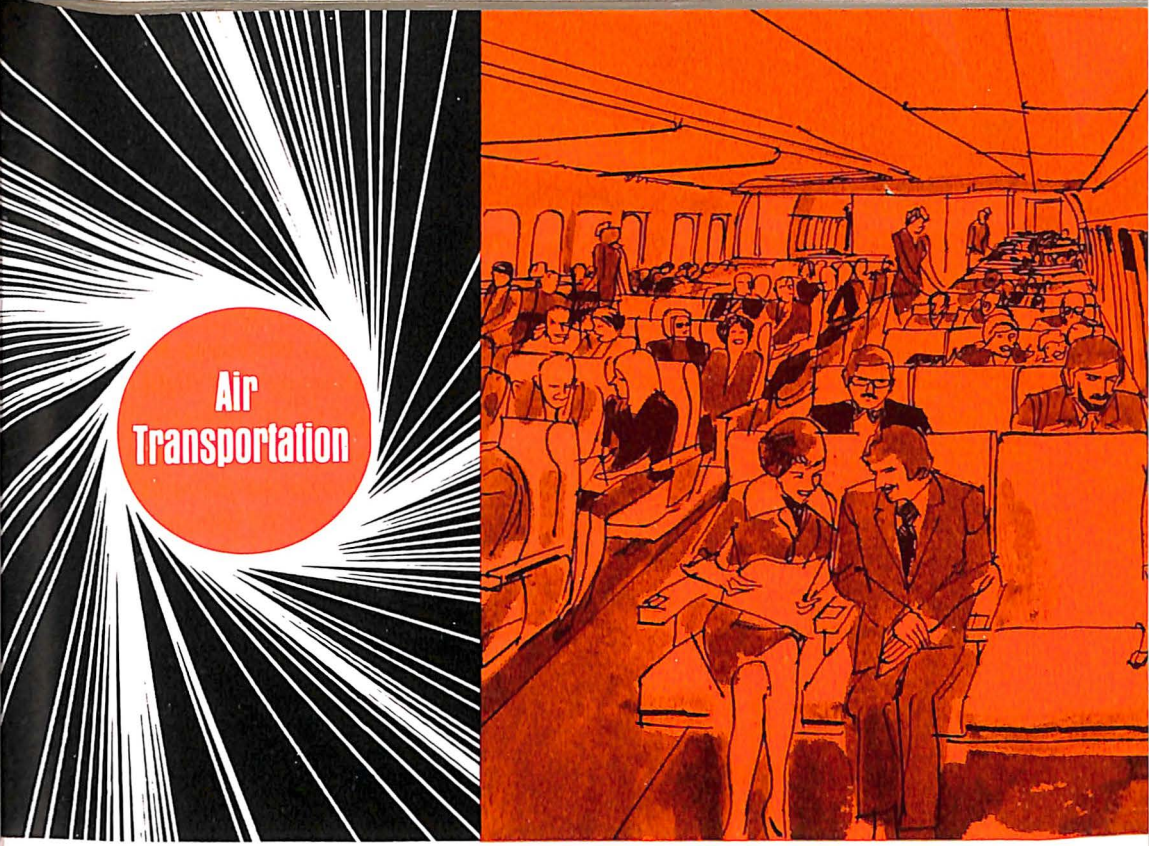
Date	Designation	Objective
July 29	Skylab 3 (SL-3)	To reactivate the Skylab orbital assembly in Earth orbit; to obtain medical data on the crew for use in extending the duration of manned space flights; to perform in-flight experiments. Second manned Skylab mission. Leak in 2 of 4 clusters of Command Space Module (CSM) steering rockets threatened safe reentry and rescue preparations initiated but not required. 2-man Extra-Vehicular Activity (EVA) on Aug 7 lasted 6 hr 31 min. 2-man EVA on Aug. 25 lasted 4 hr 31 min. Final 2-man EVA on Sept. 23 lasted 2 hr 41 min. Command Module (CM) splashdown at 6:20 p.m., e.d.t., Sept. 25. Total flight time 59 days, 11 hr 9 min. Experiment accomplishments surpassed all plans.
Aug. 23	Intelsat IV F-7	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. Fifth satellite in improved Intelsat IV series. Commercial operations began Sept. 9, 1973.
Oct. 26	Explorer 50 (IMP)	To perform detailed and near continuous studies of the interplanetary environment for orbital periods comparable to several rotations of active solar regions; to study particle and field interactions in the distant magnetotail including cross sectional mapping of the tail and neutral sheet. Spacecraft is in near-circular orbit halfway between Earth and Moon.
Nov. 3	Mariner 10	To conduct exploratory investigations of the planet Mercury and Venus during its flyby. Spacecraft will arrive at point of closest approach to Venus Feb. 5, 1974, after a 148 million mile trip in 94 days. During Venus flyby, spacecraft's speed reduced and trajectory path bent toward Sun; as craft travels toward Mercury, speed will be accelerated by the Sun's gravitational force. Spacecraft passed 621 miles above surface of Mercury on Mar. 29, 1974.
Nov. 6	NOAA 3 (ITOS F)	To place spacecraft in a sun-synchronous orbit having a local equator crossing time of approximately 8:30 a.m., descending to permit regular and dependable daytime and night-time meteorological observations in both direct readout and stored modes of operation.
Nov. 16	Skylab 4 (SL-4)	To perform unmanned Saturn Workshop operations; to reactivate the Skylab orbital assembly in Earth orbit; to obtain medical data on the crew for use in extending the duration of manned space flights; to perform in-flight experiments, to take earth resources photos and study comet Kohoutek. Third and final manned Skylab mission. On Nov. 22, crew repaired broken radar antenna during record 6 hr 34 min 35 sec EVA.
Dec. 16	Explorer 51	To investigate the photochemical processes accompanying the absorption of solar ultra-violet radiation in the Earth's atmosphere.

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

UNITED STATES SPACE LAUNCH VEHICLES

Vehicle	Stages	Thrust (in thousands of pounds)	Payload (pounds)	
			300 Nautical Miles Orbit	Escape
Scout	1. Algol III*	107.2	410	85
	2. Castor II*	61.1		
	3. Antares X-259*	22.0		
	4. FW4*	5.3		
Thor-Delta 2900 Series	1. Thor plus nine TX354-3*	205 plus	3,900	1,050
	2. Delta (DSV-3)	9.4		
	3. TE 364*	15		
Atlas-Agena	1. Atlas Booster and Sustainer (SLV-3A)	400	7,700	1,430
	2. Agena	16		
Titan IIIB-Agena	1. LR-87	464	7,500	1,100
	2. LR-91	102		
	3. Agena	16		
Titan IIIC	1. Two 5-segment 120" diameter*	2,400	26,000	6,200
	2. LR-87	523		
	3. LR-91	102		
	4. Transtage	16		
Titan IIID	1. Two 5-segment 120" diameter*	2,400	21,000	–
	2. LR-87	523		
	3. LR-91	102		
Titan IIIE Centaur	1. Two 5-segment 120" diameter*	2,400	–	11,500
	2. LR-87	523		
	3. LR-91	102		
	4. Centaur (Two RL-10)	30		
Atlas-Centaur	1. Atlas Booster and Sustainer	431	10,300	2,500
	2. Centaur (Two RL-10)	30		
Saturn IB	1. S-IB (8H-1)	1,640	34,000	–
	2. S-IVB (1J-2)	230		

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



While the general economic downturn in 1973 and the energy crisis threatened the airline industry's performance, year-end statistics, nevertheless, show that the scheduled air transportation industry did increase its performance and financial record. All indicators—passenger-miles, passengers carried, cargo ton-miles, and mail ton-miles—were up over the previous year, although not at the levels which could have been attained had the economic disruptions not been present.

The U.S. scheduled airlines accounted for 162 billion passenger-miles, 43 percent of the 379 billion passenger-miles carried world-wide. Of the total number of passengers carried, 478 million world-wide, U.S. scheduled airlines moved 202 million, or about 42 percent of the world total.

While the number of total aircraft operated by U.S. airlines increased by only 28 in 1973, the mix within the total changed considerably. Turbojet-powered aircraft continued to replace aircraft of earlier vintage. A significant trend is observed in the phasing-out of older four-engine turbojet Boeing, McDonnell Douglas and Convair transports, replacing them with three-engine vehicles. For example, 66 four-engine turbojets were phased out of the fleet during the year while 113 three-engine B-727s, L-1011s and DC-10s were added by the operators.

New deliveries of flight equipment assisted immeasurably the general improvement in the financial picture of the airlines during the year. Total gross value of flight equipment was up by $952 million; and when considered with the $439 million increase in depreciation charges, the airlines' net value of flight equipment was valued at $7.1 billion at the end of 1973. Total assets employed by the U.S. domestic carriers were recorded at $8.3 billion, indicating that flight equipment accounts for 85 percent of the total assets employed by the industry.

In 1972, the last year for which figures are available, total operating income from all sources was $8.7 billion, an increase of $900 million over the previous year. As expected, passenger revenue, $7.6 billion, accounted for the principal share of the carriers' business. Undoubtedly, the lower operating cost and higher productivity of the more recent wide-bodied airplanes employed by the carriers were primary factors contributing to this improved financial position.

U.S. CIVIL AND JOINT CIVIL-MILITARY AIRPORTS

By Length of Runway and Region[a]
December 31, 1972

FAA Region	TOTAL	Airports by Length of Runway (in feet)		
		Under 5,000	5,000-9,999	10,000 & Over
TOTAL	12,405	10,859	1,259	287
New England	457	376	54	27
Eastern	1,543	1,406	108	29
Great Lakes	2,419	2,208	164	47
Central	1,159	1,087	64	8
Southern[b]	1,397	1,200	185	12
Southwest	1,986	1,759	195	32
Rocky Mountain	869	728	133	8
Western	1,064	891	153	20
Northwest	685	601	72	12
Alaska	766	561	115	90
Pacific	48	40	7	1
Outside U.S.[c]	12	2	9	1

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

U.S. MANUFACTURED TRANSPORT AIRCRAFT

In Operation on World Civil Airlines, By Model
Calendar Years 1968 to Date

	1968	1969	1970	1971[r]	1972
TOTAL, MANUFACTURED IN U.S.	2,890	3,030	3,042	3,094	3,247
4 Engine, Total	1,374	1,428	1,493	1,490	1,417
Turbojets	1,102	1,221	1,318	1,355	1,309
Boeing 707	547	600	604	584	568
Boeing 720/720B	119	113	101	106	57
Boeing 747	—	4	89	163	191
McDonnell Douglas DC-8	372	437	465	451	445
Convair 880	48	47	45	41	41
Convair 990	16	20	14	10	7
Turboprops	85	62	55	42	34
Lockheed Electra	82	59	51	38	31
Lockheed L-100 Hercules	3	3	4	4	3
Piston Engine	187	145	120	93	74
Lockheed Constellation	10	3	1	—	—
Douglas DC-7	5	3	1	1	—
Douglas DC-6	76	72	58	43	38
Douglas DC-4	96	67	60	49	36
3 Engine, Total	561	671	713	738	870
Turbojets	561	671	713	738	870
Boeing 727	561	671	713	725	790
McDonnell Douglas DC-10	—	—	—	13	63
Lockheed L-1011	—	—	—	—	17
2 Engine, Total	925	902	815	826	899
Turbojets	392	498	547	595	662
Boeing 737	70	124	143	154	160
Lear Jet 24	1	1	—	—	—
McDonnell Douglas DC-9	321	373	404	441	501
Lockheed Jetstar	—	—	—	—	1
Turboprops	34	26	24	30	52
Fairchild F-27/F-227	23	21	17	23	6
Convair 640/580	10	5	4	5	43
Other	1	—	3	2	3
Piston Engine	499	378	244	201	185
Convair 240, 340, 440	120	100	53	43	28
Curtiss Commando C-46	23	18	7	2	1
Douglas DC-3/C-47	320	237	164	137	118
Other	36	23	20	19	38
1 Engine, Total	12	14	4	25	47
Helicopters	18	15	17	15	14
All Manufacturers, Grand Total	3,903	3,999	3,983	3,973	4,095
Percent of Grand Total Manufactured in U.S.	74.0	75.8	76.4	77.9	79.3

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

AIRLINE TRAFFIC
WORLD SCHEDULED AIRLINES

Calendar Years 1960 to Date
(Millions)

Year	Miles Flown	Passengers Carried	Passenger-Miles	Cargo Ton-Miles	Mail Ton-Miles
	Excludes U.S.S.R.				
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	3,730	261	192,500	5,425	1,610
1969	4,170	293	218,000	6,685	1,720
1970	4,360	311	237,000	7,165	1,885
1971[r]	4,390	329	252,000	7,870	1,750
1972[r]	4,490	367	288,000	9,040	1,660
1973[E]	4,660	390	316,000	10,480	1,740
	Includes U.S.S.R.				
1970	N.A.	383	286,000	8,180	2,150
1971[r]	N.A.	407	308,000	8,990	1,980
1972[r]	N.A.	450	345,000	10,200	1,900
1973[E]	N.A.	478	379,000	11,710	1,990

Source: International Civil Aviation Organization, "Development of World Scheduled Revenue Traffic" (Annually).

NOTE: Excludes the People's Republic of China, and states whic' were not members of ICAO on December 31, 1973. Figures represent evenue traffic on international and domestic scheduled services.

r Revised.

E Estimate.

N.A. Not available.

AIRLINE TRAFFIC
UNITED STATES SCHEDULED AIRLINES
Calendar Years 1960 to Date
(Millions)

Year	Miles Flown	Passengers Carried	Passenger-Miles	Cargo Ton-Miles[a]	Mail Ton-Miles[b]
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
1973	2,448	202	161,957	5,283	1,209

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

U. S. AIRLINE FLEET
TYPE OF AIRCRAFT, NUMBER OF ENGINES AND MODEL
(Number of Aircraft)

Type of Aircraft, Number of Engines and Model	As of January 1		
	1972	1973	1974
TOTAL AIRCRAFT	2,642	2,583	2,611
TOTAL FIXED-WING	2,628	2,569	2,598
Turbine-Powered, Total	2,482	2,436	2,461
Four-Engine, Total	979	890	824
Turbojet, Total	890	811	750
Boeing 707	365	342	316
Boeing 720	106	57	45
Boeing 747	104	106	111
Convair 880	41	41	37
Convair 990	8	8	8
McDonnell Douglas DC-8	265	256	233
Lockheed L-1329	1	1	—
Turboprop, Total	89	79	74
Armstrong Whitworth AW-650	6	—	—
Boeing 377S	1	1	1
Canadair CL-44	1	—	—
Lockheed 188	60	57	53
Lockheed 382	21	21	20
Three-Engine Turbojet, Total	678	759	872
Boeing 727	665	683	733
Lockheed L-1011	—	17	48
McDonnell Douglas DC-10	13	59	91
Twin-Engine, Total	822	787	765
Turbojet, Total	564	548	535
Boeing 737	155	153	152
British Aircraft Corp. BAC-111	62	58	43
Dassault MD-20	5	2	—
McDonnell Douglas DC-9	341	335	340
Hamburger Flugzeugbau HF-320	1	—	—
Turboprop, Total	258	239	230
Aero Commander AC-680-V	—	1	1
Beech 99	5	1	—
Convair 580	106	104	105
Convair 600, 640	33	34	32
DeHavilland DHC-6	8	13	9
Fairchild F-27	34	29	25
Fairchild FH-227	48	32	31
Grumman G-159	1	1	1
Hawker Siddley HS748	—	—	1
Nihon YS-11	21	22	23
Short SC-7	2	2	2
Single-Engine Turboprop, Total	3	—	—

(Continued on next page)

U. S. AIRLINE FLEET (Continued)
TYPE OF AIRCRAFT, NUMBER OF ENGINES AND MODEL
(Number of Aircraft)

Type of Aircraft, Number of Engines and Model	As of January 1		
	1972	1973	1974
Piston-Powered, Total	146	133	137
Four-Engine, Total	31	27	42
Boeing 377	1	1	1
Douglas DC-4	4	3	4
Douglas DC-6	17	21	31
Douglas DC-7	7	–	5
Lockheed 749	1	1	–
Lockheed 1049/1649	1	1	1
Twin-Engine, Total	104	93	81
Aero Commander 500	1	1	1
Aero Commander 680E	2	1	–
Cessna 402	–	3	2
Convair 240	–	1	–
Convair 340/440	5	7	6
Curtiss CW-46	31	22	30
Douglas DC-3	23	20	12
Fairchild FC-82	2	2	2
Grumman G-21	12	11	6
Grumman G-44	2	1	1
Grumman G-73	1	1	1
Martin 202	1	1	–
Martin 404	22	21	18
Other	2	1	2
Single-Engine, Total	11	13	14
TOTAL ROTARY WING	14	14	13
Turbine-Powered, Total	11	11	10
Sikorsky S-61	8	7	7
Bell BL-206	3	4	3
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).

PASSENGER SERVICE
U.S. DOMESTIC AND INTERNATIONAL AIRLINES
Calendar Years 1950 to Date

Year	Domestic		International	
	Passenger-Miles Flown (Millions)	Passengers Carried (Thousands)	Passenger-Miles Flown (Millions)	Passengers Carried (Thousands)
1950	8,029.1	17,468	2,214.0	1,752
1951	10,589.7	22,711	2,613.8	2,140
1952	12,559.3	25,176	3,065.0	2,391
1953	14,793.9	28,901	3,450.8	2,745
1954	16,802.4	32,529	3,810.4	2,919
1955	19,852.1	38,221	3,398.9	3,488
1956	22,398.6	41,937	5,226.2	4,068
1957	25,378.8	45,162	5,882.0	4,259
1958	25,375.5	44,741	6,123.9	4,428
1959	29,307.6	51,000	7,064.2	4,999
1960	30,556.6	52,377	8,306.2	5,499
1961	31,062.3	52,712	8,768.5	5,699
1962	33,623.0	55,950	10,138.0	6,598
1963	38,456.6	63,925	11,905.4	7,513
1964	44,141.3	72,988	14,352.4	8,775
1965	51,887.4	84,460	16,789.0	10,195
1966	60,590.8	97,746	19,298.4	11,646
1967	75,487.3	118,669	23,259.3	13,424
1968	87,507.6	134,423	26,450.6	15,728
1969	95,945.8	142,340	29,468.3	16,848
1970	104,146.8	153,662	27,563.2	16,260
1971	106,293.9	156,098	29,357.9	17,569
1972	118,138.0	172,452	34,268.3	18,897
1973	126,317.3	183,272	35,640.0	18,936

Source: Civil Aeronautics Board, Bureau of Accounts and Statistics.
NOTE: Figures represent total scheduled passenger services excluding nonrevenue operations of certificated route air carriers.

U. S. DOMESTIC AIRLINES[a]
TOTAL ASSETS AND INVESTMENT IN FLIGHT EQUIPMENT
Fiscal Years[b] 1960 to Date
(Millions of Dollars)

Year	TOTAL NET ASSETS[c]	Value of Flight Equipment				Investment in Flight Equipment as a Percent of Total Assets
		TOTAL Gross Value	Less: Depreciation	Plus: Construction Work in Process	Equals: Net Value of Flight Equipment	
1960	$ 1,760	$ 2,174	$ 890	$ 90	$ 1,374	78.1%
1961	2,099	2,719	1,062	77	1,734	82.6
1962	2,273	3,006	1,183	52	1,875	82.4
1963	2,211	3,132	1,341	27	1,818	82.2
1964	2,415	3,383	1,402	48	2,029	84.0
1965	2,816	3,844	1,505	52	2,391	84.9
1966	3,747	4,520	1,646	107	2,981	79.6
1967	5,003	5,485	1,805	153	3,833	76.6
1968	6,294	6,936	2,044	204	5,096	76.6
1969	7,107	8,003	2,334	195	5,864	82.5
1970	7,417	8,546	2,814	298	6,030	81.3
1971	7,664	9,375	3,231	203	6,347	82.8
1972	8,017	9,813	3,484	200	6,529	81.4
1973	8,312	10,766	3,923	258	7,101	85.4

Source: Civil Aeronautics Board, Bureau of Accounts and Statistics.
a Includes data for domestic and local service carriers only. International carriers, helicopter service and air taxi operators are excluded.
b Fiscal Years ending June 30.
c Comprises net investment in buildings and ground equipment, flight equipment, working capital, etc.

REVENUES AND EXPENSES, SCHEDULED DOMESTIC PASSENGER/CARGO OPERATORS AND CERTIFICATED AIR CARRIERS[a]

Calendar Years 1960 to Date
(Millions of Dollars)

REVENUES AND EXPENSES

Year	Total Operating Revenues	Total Operating Expense	Net Operating Income
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[r]	7,753	7,496	257
1972	8,652	8,158	494

SOURCES OF OPERATING REVENUE

Year	TOTAL Operating Revenues	Passenger	Mail (including subsidy)	Express and Freight	Excess Baggage	Other
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[r]	7,753	6,736	227	527	13	250
1972	8,652	7,565	230	596	13	248

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

ACTIVE AIRMAN CERTIFICATES HELD

1960 to Date

Year as of Jan 1	Pilots						Non-Pilots	Other[a]
	TOTAL	Students	Private	Commercial	Airline	Other		
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
1974[c]	714,607	181,905	298,921	182,444	38,319	13,198	304,147	185,037

Source: Federal Aviation Administration, Office of Management Systems.
a "Other" includes instrument ratings and flight instructor certificates.
b Includes special certificates issued to foreign nationals.
c The decrease in 1974 data is due to a change in computer systems and subsequent refinement of the data files.
E Estimate.

ACTIVE CIVIL AIRCRAFT

By Type
Calendar Years 1960 to 1972[a]

Year	Active Civil Aircraft							
	TOTAL	TOTAL Air Carrier[b]	General Aviation Aircraft					
			TOTAL	Fixed-Wing Aircraft			Rotorcraft[c]	Other[d]
				Multi-Engine	Single-Engine			
					4-place & over	3-place & less		
1960[e]	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	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

Source: Federal Aviation Administration.
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.

a Latest information released by the Federal Aviation Administration.
b Registered, not necessarily in operation. Includes helicopters.
c Includes autogiros; excludes air carrier helicopters.
d Includes gliders, dirigibles, and balloons.
e Excludes approximately 4,000 unclassified active aircraft.

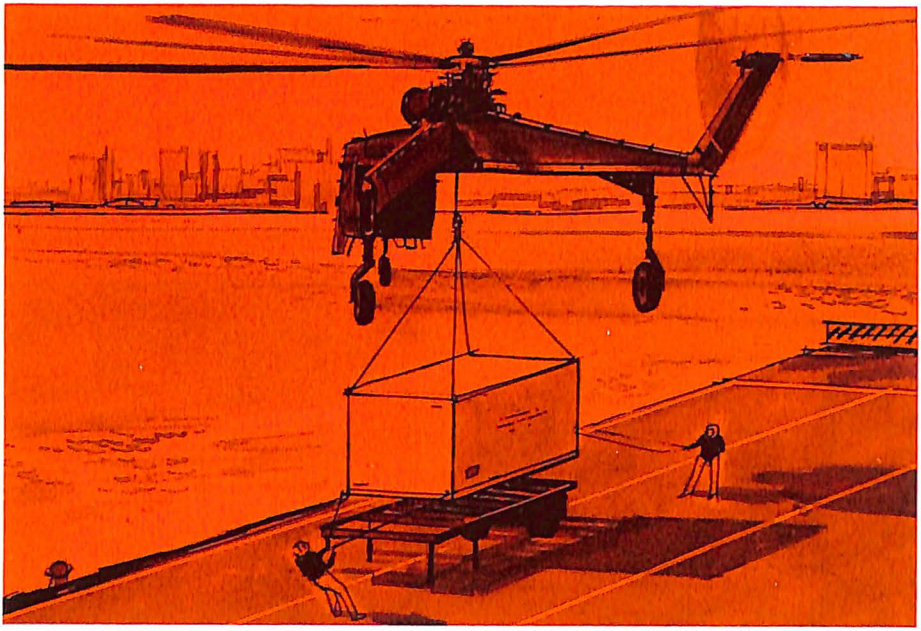
GENERAL AVIATION
MILES AND HOURS FLOWN
By Type of Flying
Calendar Years 1960-1971[a]

Year	TOTAL	Business		Commercial		Instructional		Personal & Other	
		Units	Per-cent	Units	Per-cent	Units	Per-cent	Units	Per-cent
Miles Flown by Type of Flying (Millions of Miles)									
1960	1,769	881	50	299	17	194	11	395	22
1961	1,858	888	48	333	18	203	11	434	23
1962	1,965	935	48	367	18	256	13	407	21
1963	2,049	983	48	369	18	266	13	431	21
1964	2,181	1,047	48	393	18	284	13	457	21
1965	2,562	1,204	47	461	18	359	14	538	21
1966	3,336	1,536	46	516	16	646	19	638	19
1967	3,440	1,431	42	569	16	713	21	727	21
1968	3,701	1,406	38	666	18	814	22	815	22
1969	3,926	1,426	36	723	19	910	23	867	22
1970	3,207	1,136	35	773	24	467	15	831	26
1971	3,143	1,129	36	727	23	430	14	857	27
Hours Flown by Type of Flying (Thousands of Hours)									
1960	13,121	5,699	44	2,365	18	1,828	14	3,229	24
1961	13,602	5,699	42	2,634	19	1,796	13	3,473	26
1962	14,500	5,431	38	3,051	21	2,385	16	3,633	25
1963	15,106	5,740	38	3,172	21	2,417	16	3,777	25
1964	15,738	5,823	37	3,305	21	2,675	17	3,935	25
1965	16,733	5,857	35	3,348	20	3,346	20	4,182	25
1966	21,023	7,057	33	3,555	17	5,674	27	4,737	23
1967	22,153	6,578	30	3,918	18	6,262	28	5,395	24
1968	24,053	6,976	29	4,810	20	6,494	27	5,773	24
1969	25,351	7,064	28	4,928	19	7,023	28	6,336	25
1970	26,030	7,182	28	6,657	25	4,722	18	7,469	29
1971	25,512	7,141	28	6,370	25	4,309	17	7,692	30

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

a Latest information released by Federal Aviation Administration.

Vertical Lift Aircraft



The civil helicopter fleet representing the commercial, executive and civil government agency owner/operators totaled 4,601 in 1973, an increase of nearly 10 percent over 1972.

The commercial operators, the largest segment of the helicopter operating industry, with 3,295 helicopters, showed a 10 percent increase for the year. These helicopters range in size from the small three place piston-powered machines used extensively in agriculture, power line patrol and instruction, to the larger five place turbine-powered helicopters used as air taxis, as bank runners, as ambulances, in offshore oil operations and other widely diverse uses by industry, twin-engine turbine vehicles used in logging, heavy construction, ship to shore un-loading and as 15 to 30 place transports by the scheduled airlines.

There has been a steady increase in heliports from 2,326 in 1972 to 2,384 in August 1973, an increase of 2.5 percent. This growth reflects the expanding role of the helicopter in traffic patrol, crime control, fire-fighting, highway ambulance patrol and rescue.

Significantly, the number of hospital heliports in the U.S., Canada and Puerto

Rico totaled 384 by 1973, representing a tenfold increase during the past decade. The expansion of the Military Assistance to Safety and Traffic (MAST) program and the development of Trauma Centers in many states in order to provide around-the-clock specialized medical care for accident victims has contributed to this increased usage of helicopters as ambulances.

In 1973, the helicopter scheduled airlines again reported more passengers carried, more revenue ton-miles flown and more revenue passenger-miles.

The Aerospace Industries Association's 1974 directory of helicopter operators is expected to show an additional increase in the number of helicopters in use.

SCHEDULED HELICOPTER AIRLINES

Available Service and Utilization
Calendar Years 1960 to Date
(In Thousands)

Year	Passengers Carried	Revenue Ton-Miles Flown	Revenue Passenger-Miles Flown	Revenue Plane-Miles Flown
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
1973	613	1,108	10,936	1,085

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

REVENUE TON-MILE TRAFFIC CARRIED
SCHEDULED HELICOPTER AIRLINES

Calendar Years 1960 to Date
(In Thousands)

Year	TOTAL TON-MILES	Passenger	U.S. Mail	Express	Freight	Excess Baggage
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)
1973	1,108	1,094	3	8	3	(a)

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

CIVIL HELICOPTER OPERATORS AND HELICOPTERS OPERATED IN THE UNITED STATES AND CANADA

1960 to Date

As of February 1	TOTAL	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
1973	1,532	752	599	181
Helicopters Operated[b]				
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
1973	4,601	3,295	780	526

Source: Aerospace Industries Association, Manufacturers' and owner/operators' reports.
a Federal, state and local governments.
b Totals include helicopters on order.

HELIPORTS AND HELISTOPS IN THE UNITED STATES, CANADA, AND PUERTO RICO

By Region
Calendar Years 1966 to Date

Region	1966	1968	1970	1972	1973
TOTAL	1,225	1,892	2,310	2,326	2,384
(elevated)	(125)	(158)	(216)	(211)	(241)
New England	93	138	93	87	78
Middle Atlantic	203	346	514	571	581
East North Central	139	258	293	281	307
West North Central	43	81	107	109	110
South Atlantic	105	157	192	190	204
East South Central	28	41	47	65	64
West South Central	118	195	205	216	217
Mountain	92	126	157	168	176
Pacific	358	470	593	545	551
Other	46	80	109	94	96

Source: Aerospace Industries Association.
NOTE: Data for 1967, 1969 and 1971 are not available. Totals include proposed facilities.

HOSPITAL HELIPORTS IN THE UNITED STATES AND CANADA

By Region
Calendar Years 1968 to Date

Region	1968	1969	1970	1972	1973
TOTAL	147	161	285	354	384
New England	2	2	5	5	5
Middle Atlantic	19	22	29	43	42
East North Central	50	52	74	82	99
West North Central	4	4	18	22	21
South Atlantic	19	24	33	39	50
East South Central	1	1	5	18	18
West South Central	16	17	20	26	26
Mountain	9	11	24	29	32
Pacific	27	28	73	87	87
Other	—	—	4	3	4

Source: Aerospace Industries Association.
NOTE: Data for 1971 are not available. Totals include proposed facilities.

Federal outlays for R&D continued to rise in FY 1973. The progress of such efforts was diminished considerably, however, by inflation.

The DOD R&D budget outlays increased by nearly $300 million over 1972. And both the AEC and other federal agencies were on the rise, reflecting at least a tacit concern for the future growth of technology. The single exception was NASA which experienced a decline of over $100 million. Still, aggregate totals for FY 1973 measured $17.4 billion, up nearly $800 million from the previous year.

Within DOD all of the military agencies—other than Navy—showed an increase in the RDT&E outlays for FY 1973. The Navy budget actually declined by over $20 million. Estimates for FY 1974, however, show increases across the board with the Navy getting the lion's share of the increase. With the total increase being nearly $260 million, the Navy is earmarked for almost two-thirds of the total RDT&E increase.

Most of the RDT&E increase during FY 1973 was not in aerospace, however. While astronautics was budgeted for $512 million—an increase of almost $45 million—both aircraft and missiles budgets declined. The actual increase (nearly one half billion dollars) was in outlays for other than aerospace items.

In terms of new obligational authority (NOA) for aeronautics R&D, FY 1973

figures showed a decrease of over $100 million to $2.2 billion. Although increased NOA was requested for NASA, both DOD and the Department of Transportation (DOT) experienced a significant decline. Furthermore, estimates for FY 1974 show reduced levels for all three agencies.

The overall federal pattern seems to indicate a continued decline in R&D outlays. This trend has been offset somewhat during recent years by the investment of company funds in industrial R&D, particularly in the aerospace industry. However, the influx of private funds began to decline in this industrial sector as early as 1970, until the total of company funds (in the aerospace industry) dipped below the billion dollar mark in 1972 for the first time since 1966. (Figures for 1973 are not yet available.) Still, total funds for industrial R&D continued to increase in 1972. Final figures showed an increase of nearly $1.2 billion in 1972 with totals standing at $19.5 billion for all industries.

For aerospace, both federal research monies in the form of government contracts and company funds in the area of basic research showed only a nominal increase during 1972. Applied R&D funds–although increased by over $200 million during 1972–continued the three-year decline in the private sector as company allocations were down $86 million.

FEDERAL AERONAUTICS RESEARCH AND DEVELOPMENT

New Obligational Authority
Fiscal Years[a] 1967 to 1975
(Millions of Dollars)

Year	TOTAL	NASA	DOD	DOT
1967	$ 1,613	$ 105	$ 1,199	$ 309
1968	1,404	136	1,126	142
1969	1,300	169	1,161	- 30[b]
1970	1,882	199	1,641	42
1971	1,990	210	1,707	73
1972	2,295	236	1,964	95
1973	2,187	313	1,799	75
1974[E]	2,031	276	1,682	73
1975[E]	2,263	311	1,869	83

Source: "Aeronautics and Space Report of the President," (Annually).
a Fiscal years ending June 30.
b Unobligated balances for SST research and development, rescinded in 1969.

INDUSTRIAL RESEARCH AND DEVELOPMENT
ALL INDUSTRIES AND THE AEROSPACE INDUSTRY

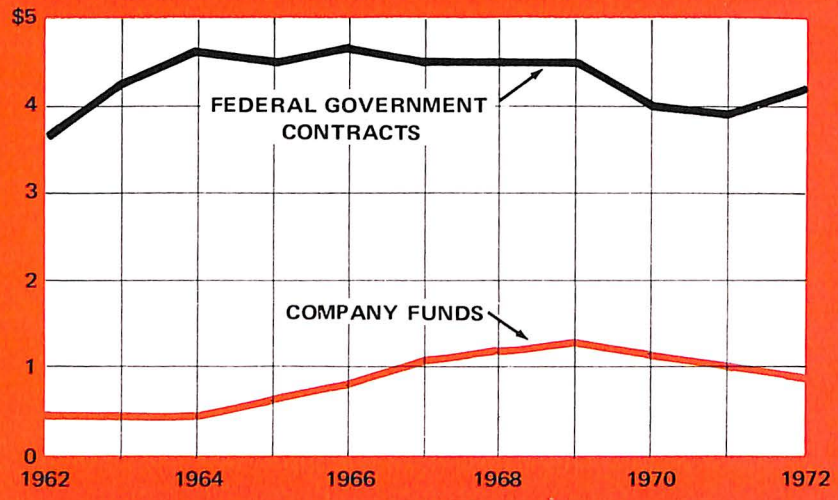
Calendar Years 1960 to Date
(Millions of Dollars)

Year	ALL INDUSTRIES	AEROSPACE[a] INDUSTRY		
	TOTAL	Total	Federal Government Funds	Company Funds
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	12,630	4,712	4,261	452
1964	13,512	5,078	4,621	457
1965	14,185	5,148	4,499	649
1966	15,548	5,526	4,724	802
1967	16,385	5,669	4,531	1,138
1968	17,429	5,776	4,544	1,232
1969	18,318	5,909	4,554	1,355
1970	18,062	5,245	4,032	1,213
1971[r]	18,332	4,940	3,928	1,012
1972	19,521	5,177	4,250	927

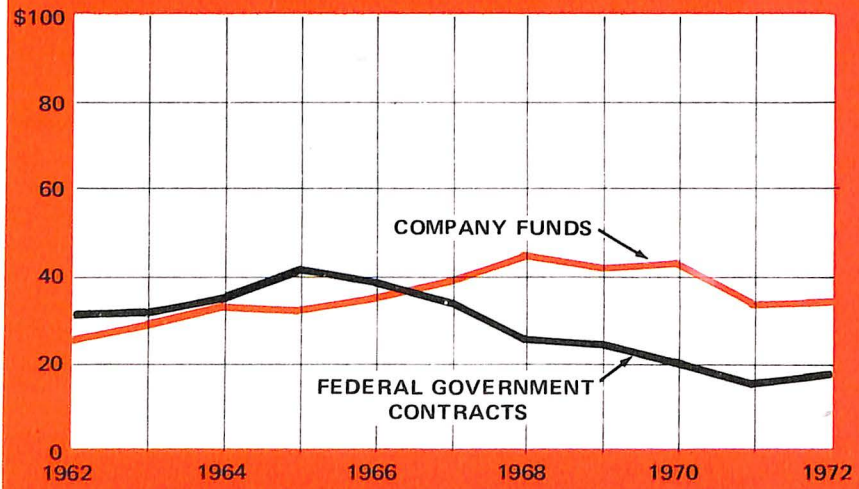
Source: National Science Foundation.
a Includes companies primarily engaged in the manufacture of aircraft and parts, SIC Code 372, and the manufacture of ordnance and accessories, including complete guided missiles and space vehicles, SIC Code 19.
r Revised.

SOURCE OF FUNDS FOR INDUSTRIAL RESEARCH AND DEVELOPMENT IN AEROSPACE 1962–1972

Applied Research & Development Funds (Billions of Dollars)



Basic Research Funds (Millions of Dollars)



Source: National Science Foundation

INDUSTRIAL RESEARCH AND DEVELOPMENT IN AEROSPACE

By Type of Research and Fund Source
Calendar Years 1960 to Date
(Millions of Dollars)

Year	TOTAL AERO-SPACE	Applied Research and Development Funds			Basic Research Funds		
		Total	Federal Govern-ment Contracts	Company	Total	Federal Govern-ment Contracts	Company
1960	$3,514	$3,452	$3,118	$ 334	$62	$32	$30
1961	3,829	3,789	3,417	372	40	20	20
1962	4,042	3,987	3,558	429	55	30	25
1963	4,712	4,653	4,229	424	59	31	28
1964	5,078	5,010	4,585	424	68	35	33
1965	5,148	5,074	4,457	617	74	42	32
1966	5,526	5,452	4,685	767	74	39	35
1967	5,669	5,596	4,497	1,099	73	34	39
1968	5,776	5,705	4,518	1,187	71	26	45
1969	5,909	5,842	4,529	1,313	67	25	42
1970	5,245	5,182	4,012	1,170	63	20	43
1971	4,940	4,890	3,912	978	50	16	34
1972	5,177	5,124	4,232	892	53	18	35

Source: National Science Foundation.

FEDERAL OUTLAYS FOR RESEARCH AND DEVELOPMENT

Fiscal Years[a] 1960 to Date
(Millions of Dollars)

Year	TOTAL	Department of Defense	National Aeronautics and Space Administration	Atomic Energy Commission	Other
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	17,408	8,574	3,316	1,623	3,895
1974[E]	18,479	8,851	3,179	1,814	4,635
1975[E]	19,643	9,369	3,275	2,018	4,981

Source: "The Budget of the United States Government," (Annually).
NOTE: Includes military personnel, procurement, civil functions and some other items not included in other tables. Includes R&D facilities and administrative operating costs.
a Fiscal Years ending June 30.
E Estimate.

DEPARTMENT OF DEFENSE
OUTLAYS FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION

By Agency
Fiscal Years[a] 1960 to Date
(Millions of Dollars)

Year	TOTAL	Air Force	Navy	Army	Other
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	180
1963	6,376	3,301	1,429	1,355	291
1964	7,021	3,722	1,578	1,338	383
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	8,157	3,362	2,404	1,912	479
1974[E]	8,414	3,406	2,572	1,932	504
1975[E]	8,890	3,411	3,013	1,945	521

Source: Department of Defense, OASD (Comptroller), FAD 730/75, January 15, 1974.
NOTE: For RDT&E for aircraft, missiles and astronautics, see page 96.
a Fiscal Years ending June 30.
E Estimate.

DEPARTMENT OF DEFENSE
OUTLAYS FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION

By Function
Fiscal Years[a] 1960 to Date
(Millions of Dollars)

Year	TOTAL, ALL RDT&E FUNCTIONS	AEROSPACE				Other
		Total	Aircraft	Missiles	Astro-nautics	
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	8,157	4,586	2,036	2,038	512	3,571
1974[E]	8,414	N.A.	N.A.	N.A.	N.A.	N.A.
1975[E]	8,890	N.A.	N.A.	N.A.	N.A.	N.A.

Source: Department of Defense, OASD (Comptroller), January 15, 1974.
a Fiscal Years ending June 30.
E Estimate.
N.A. Not available.

MILITARY AIRCRAFT PROGRAM ACQUISITION COSTS[a]
RESEARCH, DEVELOPMENT, TEST AND EVALUATION

By Department, Type and Model
Fiscal Years[b] 1973, 1974 and 1975
(Millions of Dollars)

Department, Type and Model	1973	1974[E]	1975[E]
AIR FORCE			
A-10 Close Air Support	$ 48.1	$107.4	$ 93.9
E-3A AWACS	194.2	155.8	219.7
F-5E Fighter Aircraft	17.7	4.2	3.1
F-5F Fighter Aircraft	1.9	32.1	14.1
F/TF-15A Eagle	454.5	258.0	182.6
F-111F Fighter Aircraft	2.1	—	—
E-4A AABNCP	48.3	17.3	67.7
Light Weight Fighter Prototype[c]	43.0	47.0	22.7
Adv. Med. STOL Transport[c]	25.0	25.0	55.8
Advanced Tanker Aircraft[c]	—	—	20.0
B-1 Bomber[c]	444.5	448.5	499.0
EF-111A[c]	2.5	15.0	36.7
Air Combat Fighter[c]	—	—	36.0
NAVY			
A-4M Skyhawk	—	1.0	6.7
A-6E Intruder	5.5	10.9	10.4
EA-6B Prowler	5.4	4.0	5.9
A-7E Corsair II	4.0	5.1	7.6
F-14A Tomcat	56.8	40.7	11.8
S-3A Viking	38.9	5.2	1.0
E-2C Hawkeye	13.9	1.4	—
CH-53E Sea Stallion[c]	10.0	28.8	46.7
VFX-Fighter Prototype[c]	—	—	34.0
ARMY			
AH-IQ Cobra/TOW	7.3	7.2	—
CH-47C Chinook	—	5.0[d]	3.0
HLH Heavy Lift Helicopter[c]	38.0	59.9	57.7
UTTAS[c]	50.4	102.7	54.1
AAH[c]	20.0	49.3	60.8

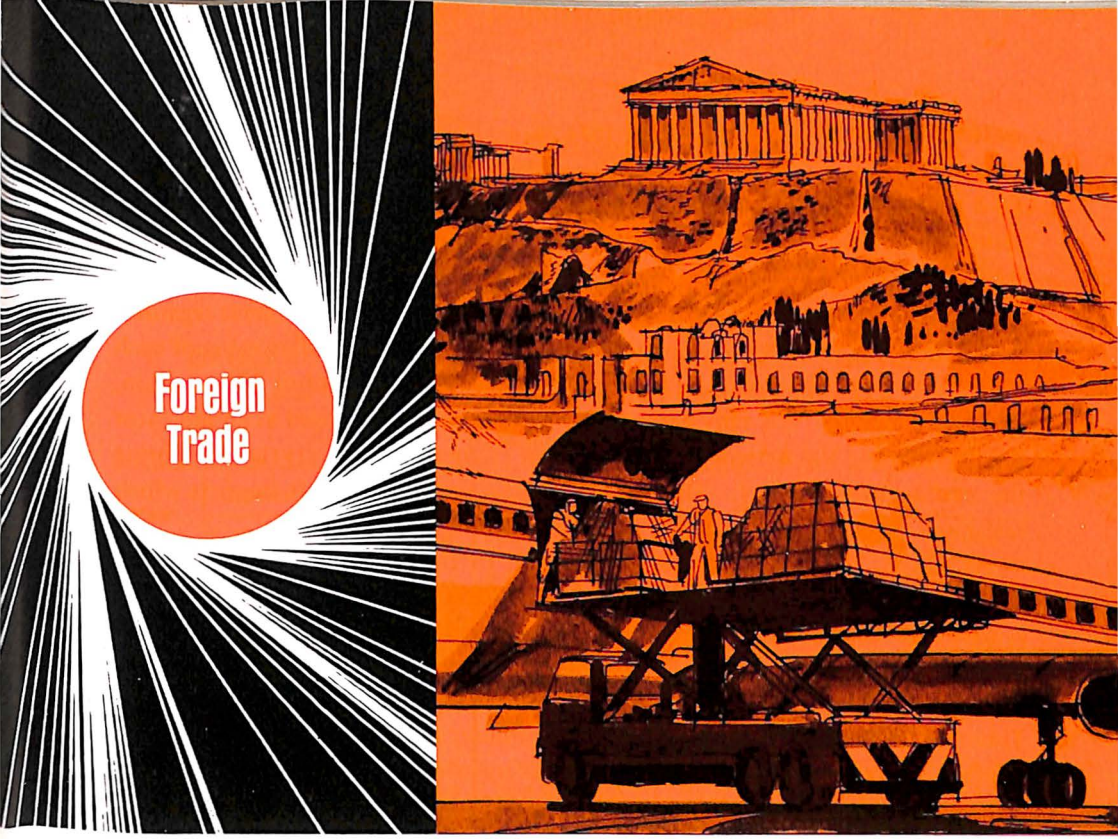
Source: "Program Acquisition Costs by Weapon System", Department of Defense Budget for Fiscal Year 1975.
a Total Obligational Authority.
b Fiscal Years ending June 30.
c Systems in R&D only.
d Supplemental request.
E Estimate.

MISSILE PROGRAM ACQUISITION COSTS[a]
RESEARCH, DEVELOPMENT, TEST AND EVALUATION

By Department, Type and Model
Fiscal Years[b] 1973, 1974 and 1975
(Millions of Dollars)

Department, Type and Model	1973	1974[E]	1975[E]
AIR FORCE			
Minuteman II	$ 4.2	$ 3.4	$ –
Minuteman III	135.4	96.3	142.9
Maverick	8.2	–	–
Adv. ICBM (M-X)	7.9	4.2	37.3
Air Launched Cruise Missile	48.6	11.0	80.0
NAVY			
Trident	348.4	527.7	648.8
Sparrow	8.7	7.3	7.7
Sidewinder	8.6	8.9	0.5
Phoenix	5.0	4.2	–
Shrike	2.0	1.1	–
Condor	8.0	9.4	10.2
Standard ARM	3.3	2.1	0.8
Harpoon	59.9	81.1	57.7
Standard SSM (ARM)	22.8	10.3	2.1
Standard Active SSM	19.5	8.2	1.3
AGILE	16.5	18.0	20.0
Standard Missile II (SM-2)	12.1	15.9	32.2
Strategic Cruise Missile	4.0	2.6	45.0
AEGIS	78.5	40.2	67.0
ARMY			
Safeguard	299.4	181.8	60.8
Hawk	7.4	3.3	8.5
Dragon	4.6	0.7	–
TOW	0.8	6.5	10.7
Lance	7.5	–	–
Pershing	6.6	5.7	–
Low Altitude Forward Area Defense System (c)	5.7	11.1	44.7
Low Altitude Forward Area Defense System (c)	–	2.3[d]	–
Site Defense (c)	80.1	110.1	160.0
Stinger (c)	20.0	24.7	33.7
SAM-D (c)	171.1	194.4	111.2

Source: "Program Acquisition Costs by Weapon System", Department of Defense Budget for Fiscal Year 1975.
a Total Obligational Authority.
b Fiscal Years ending June 30.
c Weapon Systems in R&D only.
d Supplemental request.
E Estimate.



During 1973, exports of aerospace products increased dramatically. For the first time in the history of the industry, export sales reached and passed the $5 billion mark. Final figures for 1973 exceeded $5.1 billion.

Although military sales abroad showed a significant increase in the past year with sales totalling almost $1.4 billion, the biggest jump came in civil aerospace exports. In 1972, sales in this category amounted to nearly $2.9 billion; in 1973, exports of civil aerospace products amounted to slightly less than $3.8 billion. Over half of this increase—$548 million—was due to increased exports of transport aircraft. In the military column, the major increase came in the fighter and bomber category where exports increased by $382 million to $588 million in 1973. In large part, this upswing was the result of materiel needs created by the Middle East conflict.

The overall impact of trade in aerospace products is best seen in terms of the significant contribution such trade makes to the total U.S. trade balance. Last year, the U.S. rebounded from a $6.3 billion deficit to a favorable balance amounting to $1.6 billion. The aerospace trade balance for 1973 was even more impressive; final figures show an increase of $1.1 billion over 1972 for a total of

$4.4 billion. This figure, because of the overall negative balance that would have resulted without aerospace, constitutes a record 279 percent of the total U.S. trade balance.

The complete picture of the aerospace trade balance includes figures regarding the total aerospace imports for the past year. In 1973 the dollar value of such imports increased by nearly $200 million over 1972 for a total of $754 million. The importance of this tally rests in the fact that it may be used as an indicator for determining the extent to which foreign competition has crystalized during the past couple of years. The largest increase came in aircraft imports which registered a gain of $80 million in 1973 over 1972.

As stated, the largest single contribution to the favorable aerospace trade balance was in the field of civil aerospace products. A breakdown of the figures reveals that the upswing occurred in all major categories of foreign sales. Exports of civil transports were up in terms of both number of units and dollar value. In 1973, 151 units were shipped abroad with a sales tag approximating $1.7 billion. This represents an increase of over a half billion dollars from 1972. General aviation aircraft also continued its two-year upswing in exports, as 3,163 units valued at $201 million were exported during 1973. This represents an increase of over 1,000 units since 1972 worth an additional $70 million. Finally, exports of commercial helicopters experienced similar growth during the past year. Over 150 additional units were exported during 1973 at a value of $85 million, an increase of $11 million over 1972.

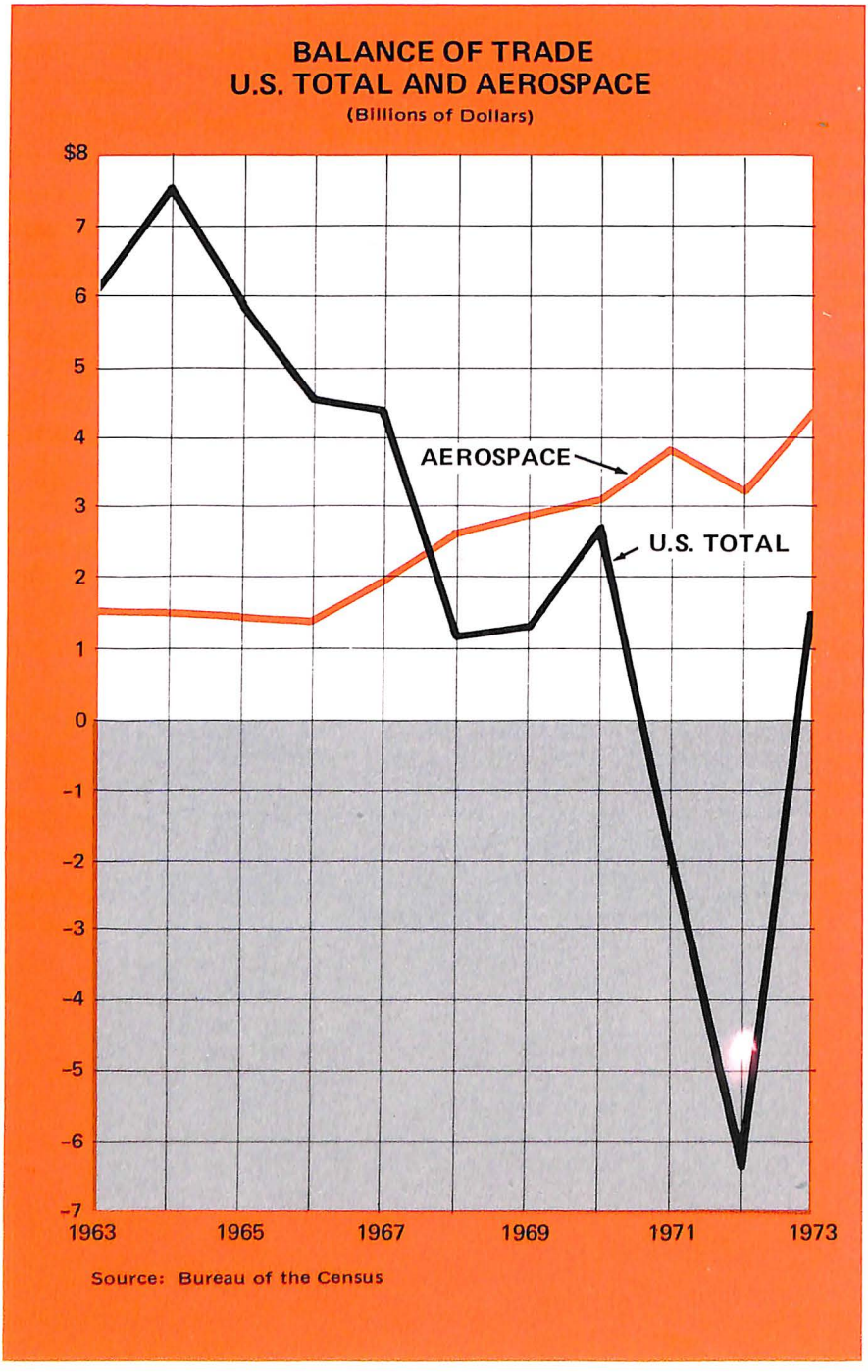
In support of the export growth in commercial aircraft, the Export-Import Bank authorized credits and guarantees amounting to $966 million in 1973. This increased by almost one-third the amount extended in 1972. The bulk of both credits and guarantees were authorized in support of sales of jet aircraft. In this category alone, the amount was $879 million.

EXPORT-IMPORT BANK
GROSS AUTHORIZATIONS OF CREDITS AND GUARANTEES IN SUPPORT OF COMMERCIAL AIRCRAFT EXPORTS

Fiscal Years[a] 1960 to Date
(Millions of Dollars)

Year	Credits and Guarantees			Credits[b]			Guarantees[c]		
	TOTAL	Jets	Other	TOTAL	Jets	Other	TOTAL	Jets	Other
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
1973	965.7	879.3	86.4	722.4	689.7	32.7	243.3	189.6	53.7

Source: Export-Import Bank of the United States.
a Fiscal Years ending June 30.
b "Credit" is a commitment of direct financing by the Export-Import Bank.
c "Guarantee" by the Export-Import Bank of principal and interest on a loan made by another institution such as a commercial bank.


BALANCE OF TRADE
U.S. TOTAL AND AEROSPACE
(Billions of Dollars)
$8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
AEROSPACE
U.S. TOTAL
1963
1965
1967
1969
1971
1973
Source: Bureau of the Census

TOTAL AND AEROSPACE BALANCE OF TRADE

Calendar Years 1960 to Date
(Millions of Dollars)

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]	-2,024[b]	3,823	4,196	373	(c)
1972[r]	-6,331	3,242	3,807	565	(c)
1973	1,567	4,382	5,136	754	279.6

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).

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.

EXPORTS OF U.S. AEROSPACE PRODUCTS

Calendar Years 1969 to Date
(Millions of Dollars)

	1969	1970	1971	1972[r]	1973
GRAND TOTAL	$3,138.4	$3,397.4	$4,195.9	$3,807.3	$5,136.2
TOTAL MILITARY	1,111.4	887.3	1,121.3	859.1	1,360.0
Complete Aircraft, TOTAL	601.0	467.0	633.3	403.0	790.8
Transports	37.9	81.9	80.7	124.6	131.2
General Aviation	0.6	4.5	0.5	1.4	1.0
Rotary Wing	32.5	22.7	43.8	53.1	37.6
Fighters & Bombers	483.6	330.8	477.7	206.1	588.3
Trainers	10.2	12.9	12.0	14.4	12.1
Other, including Used	36.2	14.2	18.6	3.4	20.5
Engines, TOTAL	50.0	45.1	48.2	56.5	46.4
Jet & Gas Turbine	38.1	28.1	29.7	44.6	36.3
Missile Turbine	8.0	10.0	12.6	5.1	2.9
Internal Combustion	3.9	7.0	5.9	6.8	7.2
Parts, Accessories & Equipment Including Spares, TOTAL	303.4	266.5	319.9	298.5	420.9
Engine Spares & Accessories	58.4	63.9	58.3	78.5	105.0
Other Spares & Equipment	245.0	202.6	261.6	220.0	315.9
Rockets, Guided Missiles & Parts, TOTAL	157.0	108.7	119.9	101.1	101.9
Complete Rockets & Guided Missiles	67.3	8.1	26.1	18.0	31.9
Parts & Accessories for Rockets & Guided Missiles	89.7	100.6	93.8	83.1	70.0
TOTAL CIVILIAN	2,027.0	2,510.1	3,074.6	2,948.2	3,776.2
Complete Aircraft, TOTAL	1,241.0	1,528.2	1,913.8	1,614.5	2,315.4
Transports	946.9	1,283.1	1,566.5	1,119.1	1,667.2
General Aviation	125.6	112.5	89.4	140.3	206.4
Rotary Wing	29.1	26.9	45.7	50.3	83.3
Other, including Used	139.4	105.7	212.2	304.8	358.5
Engines, TOTAL	102.4	117.6	148.5	84.3	175.7
Jet & Gas Turbine	82.0	98.4	128.6	158.6	144.8
Internal Combustion	20.4	19.2	19.9	25.7	30.9
Parts, Accessories & Equipment for Aircraft and Engines, Including Spares, TOTAL	683.6	864.3	1,012.3	1,149.4	1,285.1
Engine Spares & Accessories	177.0	201.1	226.8	268.2	360.2
Other Spares & Equipment	506.6	663.2	785.5	881.2	924.9

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

U.S. AEROSPACE IMPORTS

Calendar Years 1960 to Date
(Thousands of Dollars)

Year	TOTAL	Aircraft[a]	Aircraft Engines	Aircraft Parts[b]
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	372,698	78,613	35,996	258,089
1972	564,989	101,170	155,127	308,692
1973	754,359	181,050	219,179	354,130

Source: Bureau of the Census, "U.S. Imports, General and Consumption, Schedule A, Commodity and Country," Reports FT 110, 125, 135 (Monthly).
a Aircraft includes new and used airplanes, seaplanes and amphibians.
b Aircraft parts not elsewhere specified.

U.S. EXPORTS OF CIVIL TRANSPORTS

Calendar Years 1960 to Date
(Millions of Dollars)

Year	TOTAL		Under 33,000 Pounds Airframe Weight		33,000 Pounds and Over Airframe Weight	
	Number	Value	Number	Value	Number	Value
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	173	1,566.5	25	24.5	148	1,542.0
1972[r]	148	1,129.1	43	10.0	105	1,119.1
1973	151	1,673.0	21	5.8	130	1,667.2

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

U.S. 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	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
1973	3,163	200.6	2,392	53.2	149	8.4	622	139.0

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

U.S. EXPORTS OF USED AIRCRAFT

Calendar Years 1960 to Date
(Millions of Dollars)

Year	TOTAL		Military		Non-Military	
	Number	Value	Number	Value	Number	Value
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	489	30.7	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	419	205.3	6	0.1	413	205.2
1972r	471	301.4	21	2.4	450	299.0
1973	600	556.8	4	202.3	596	354.5

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

U.S. EXPORTS
MILITARY AND CIVIL AIRCRAFT ENGINES[a] AND PARTS

Calendar Years 1960 to Date
(Millions of Dollars)

Year	TOTAL	Internal Combustion			Jet and Gas Turbine			Missile Engines and Parts
		Total	Engines	Parts	Total	Engines	Parts	
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	481.8	110.0	25.8	84.2	357.8	158.3	199.5	14.0
1972[r]	587.5	126.5	32.4	94.1	451.5	203.2	248.3	9.5
1973	687.3	155.6	38.1	117.5	520.8	181.0	339.8	10.9

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

U.S. EXPORTS
NEW AND USED CIVIL AIRCRAFT ENGINES
Calendar Years 1960 to Date
(Millions of Dollars)

Year	TOTAL		Jet and Gas Turbine		Internal Combustion	
	Number	Value	Number	Value	Number	Value
1960	3,725	$ 70.7	480	$ 47.5	3,245	$ 23.2
1961	3,640	75.3	364	53.6	3,276	21.7
1962	3,690	63.0	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	3,530	148.5	707	128.6	2,823	19.9
1972[r]	3,823	184.3	592	158.6	3,231	25.7
1973	5,017	175.7	641	144.8	4,376	30.9

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

U.S. EXPORTS OF NEW SMALL CIVIL AIRCRAFT ENGINES[a]

Calendar Years 1960 to Date

Year	Number	Value (Thousands of Dollars)
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	1,799	9,422
1972[r]	1,972	12,052
1973	2,927	16,250

Source: Bureau of the Census, "U.S. Exports, Schedule B Commodity and Country," Report FT 410 (Monthly).
a 1960-1964, under 400 h.p.; 1965 to date, 500 h.p.
r Revised.

EXPORTS OF LIGHT TRANSPORTS AND GENERAL AVIATION AIRCRAFT BY SELECTED MANUFACTURERS, BY DESTINATION

Calendar Year 1973

Total and Destination	Number	Value[a] (Thousands of Dollars)
TOTAL	**3,530**	**$230,239.5**
Canada and Greenland	428	19,634.7
Latin America	1,125	69,102.7
Europe	1,268	89,067.3
Asia	121	10,048.4
Oceania	319	17,141.1
Africa	269	25,245.3

Source: General Aviation Manufacturers Association.
NOTE: Data are based on exports for Beech, Bellanca, Cessna, Gates Learjet, Grumman American Aviation, Lake, Maule, Piper, Rockwell and Swearingen of new civil aircraft under 20,000 pounds empty airframe weight.
a Manufacturers' Net Billing Price.

EXPORTS OF LIGHT TRANSPORTS AND GENERAL AVIATION AIRCRAFT BY SELECTED U.S. MANUFACTURERS

Calendar Years 1960 to Date

Year	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
1973	3,530	230,239.5

Source: 1960-1969, Aerospace Industries Association.
1970-1973, General Aviation Manufacturers Association.
NOTE: Data are based on exports for Beech, Bellanca, Cessna, Gates Learjet, Grumman American Aviation, Lake, Maule, Piper, Rockwell and Swearingen of new civil aircraft under 20,000 pounds empty airframe weight.
a Manufacturers' Net Billing Price.

EXPORTS OF COMMERCIAL HELICOPTERS BY SELECTED U.S. MANUFACTURERS AND BY DESTINATION

Calendar Year 1973
(Thousands of Dollars)

Total and Destination	Number	Value[a]
TOTAL	413	$ 84,775.5
Canada and Greenland	68	11,225.9
Latin America	82	23,828.1
Europe	126	32,011.7
Asia	88	12,783.3
Oceania	27	1,698.2
Africa	22	3,228.3

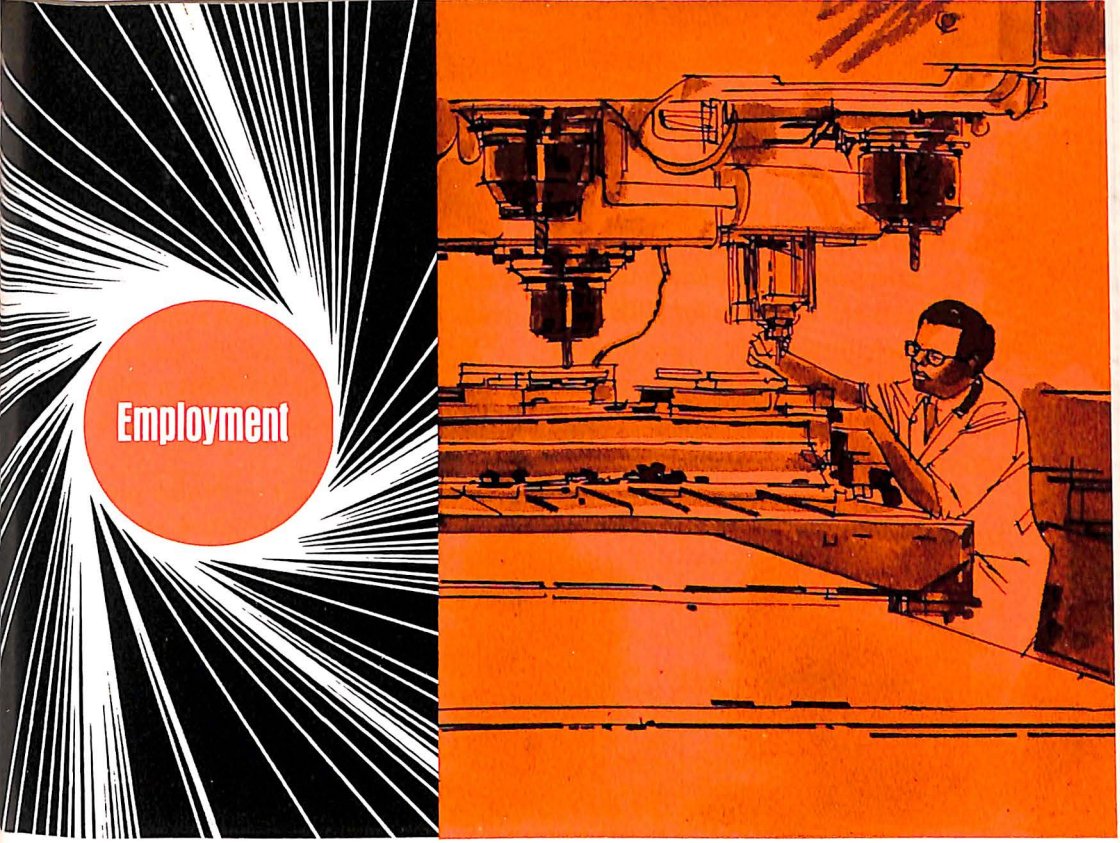
Source: Aerospace Industries Association, company reports.
NOTE: Data based on exports for Bell, Fairchild, Hughes Helicopters, Sikorsky and Vertol.
a Manufacturers' Net Billing Price.

EXPORTS OF COMMERCIAL HELICOPTERS BY SELECTED U.S. MANUFACTURERS

Calendar Years 1960 to Date

Year	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
1973	413	84,775.5

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



The employment picture in the aerospace industry was revitalized somewhat during 1973 and increased by 26,000 from its 1972 base of 922,000 to 948,000 workers. Two main factors were responsible for the upturn. First, the growth in sales of the aerospace industry justified a slight increase over 1972 employment levels. Second, stepped-up delivery schedules resulted in an increased demand for production workers, particularly during the last quarter of the year.

By category, the aircraft segment of the industry continued to be the prime employer with 514,000 workers on the payroll during 1973. This accurately reflects the thrust of aerospace sales during the year. Out of the total aircraft segment, airframe production accounted for well over half of the total employee strength with a monthly average of 274,000 employees. However, the 13,000 person increase over 1972 came largely in the category of aircraft engines and parts which went from an average of 138,500 workers in 1972 to an average of 144,800 employees in 1973.

Hourly earnings continued to rise as did weekly earnings for the aircraft segment of the industry. An average of $5.00 per hour was earned by production workers during 1973, compared with $4.65 per hour in the previous year. Average

weekly earnings for production workers rose to $207.50 per week, up from the average of $193.44 per week a year ago.

The aerospace industry continued to be one of the nation's primary employers of scientists and engineers for R&D. As of January 1, 1973, the nation employed 362,500 scientists and engineers for R&D; aerospace accounted for 20.5 percent of the total with 74,300 workers in this category. The totals represent a mild upturn following the cutbacks of 1970-71. However, the aerospace industry as a percent of the total declined for the ninth year in a row.

Consistent with the downturn in space activity, employment on NASA programs declined again during FY 1973. This is the eighth consecutive yearly decline in such employment and estimates for FY 1974 predict a similar course. Employment statistics in this category include both NASA employees and contractor employees; both sections experienced a downturn in FY 1973. The significant cutback was in contractor employees where 3,300 jobs were eliminated.

EMPLOYMENT ON NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PROGRAMS

1960 to Date

As of June 30	TOTAL	NASA Employees	Contractor Employees[E]
1960	46,768	10,268	36,500
1961	74,577	17,077	57,500
1962	137,656	22,156	115,500
1963	246,304	27,904	218,400
1964	379,084	31,984	347,100
1965	409,900	33,200	376,700
1966	393,924	33,924	360,000
1967	306,926	33,726	273,200
1968	267,871	32,471	235,400
1969	218,345	31,745	186,600
1970	160,850	31,350	129,500
1971	143,578	29,478	114,100
1972	138,800	27,500	111,300
1973	134,850	26,850	108,000
1974[E]	128,970	24,970	104,000
1975[E]	133,616	24,616	109,000

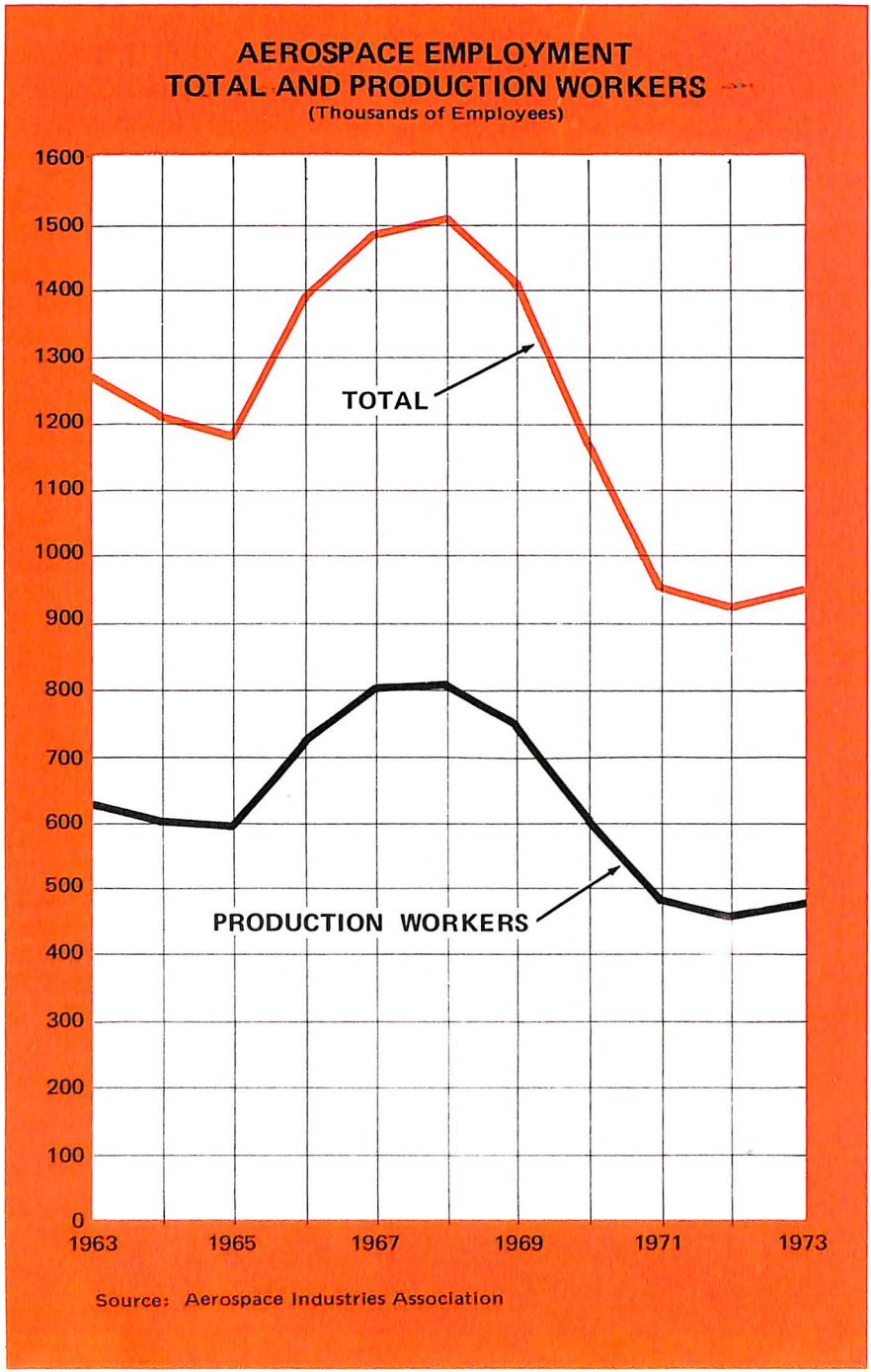
Source: NASA, Briefing on the Budget of the United States, February 4, 1974.
E Estimate.

LABOR TURNOVER RATES IN THE AEROSPACE INDUSTRY

Calendar Years 1961 to Date
(Rates per 100 Employees per Year)

Year	Complete Missiles and Spacecraft		Aircraft							
			TOTAL		Airframes		Engines and Engine Parts		Other Parts and Equipment	
	Accessions	Separations	Accessions	Separations	Accessions	Separations	Accessions	Separations	Accessions	Separations
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	31.2	26.4	24.0	25.2	22.8	22.8	21.6	19.2	33.6	38.4
1973	24.0	32.4	27.6	25.2	24.0	24.0	22.8	20.4	43.2	37.2

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


AEROSPACE EMPLOYMENT
TOTAL AND PRODUCTION WORKERS
(Thousands of Employees)
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
1963
1965
1967
1969
1971
1973
TOTAL
PRODUCTION WORKERS
Source: Aerospace Industries Association

AEROSPACE EMPLOYMENT

Calendar Years 1961 to Date
(Thousands of Employees)

Year	TOTAL	Aircraft	Missiles & Space	Communi-cations 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[r]	1,402	804	124	179	295
1970[r]	1,166	669	98	152	247
1971[r]	951	531	88	129	203
1972	922	501	90	132	199
1973	948	514	95	134	205
Production Workers					
1961[r]	612	348	56	75	133
1962[r]	635	349	58	90	138
1963[r]	625	351	55	82	137
1964[r]	600	339	54	74	133
1965[r]	597	356	51	62	128
1966[r]	731	446	55	73	157
1967[r]	804	502	55	78	169
1968[r]	807	506	52	80	169
1969[r]	746	464	41	86	155
1970[r]	604	369	31	77	127
1971[r]	480	285	26	66	103
1972	453	271	27	57	98
1973	475	281	31	59	104

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

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.

r Revised.

EMPLOYMENT IN THE AIRCRAFT AND PARTS INDUSTRY

Calendar Years 1961 to Date
(Thousands of Employees)

Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
Total Employment				
1961	609.7	317.1	186.6	106.0
1962	638.4	334.7	198.9	104.9
1963	639.2	335.9	200.7	102.6
1964	605.4	319.2	189.1	97.1
1965r	624.2	333.3	187.9	103.1
1966r	753.3	417.3	208.1	127.8
1967	833.6	468.2	221.0	144.4
1968	852.0	487.8	216.4	147.8
1969r	804.4	456.7	205.0	142.7
1970r	668.7	369.6	179.9	119.2
1971r	530.8	287.7	150.6	92.6
1972	501.1	272.2	138.5	90.5
1973	514.0	274.6	144.8	94.5
Production Workers				
1961	347.7	175.9	103.9	67.9
1962r	349.1	175.1	108.5	65.6
1963	350.8	176.9	107.2	66.7
1964	338.6	175.7	99.2	63.7
1965r	356.3	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
1969r	464.0	255.1	114.1	94.8
1970r	369.3	197.0	95.0	77.3
1971r	284.5	147.1	79.0	58.4
1972	271.2	139.5	73.5	58.2
1973	280.8	140.6	79.1	61.1

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

AVERAGE HOURLY EARNINGS IN AIRCRAFT AND PARTS PLANTS

Production Workers Only
(Includes Overtime Premiums)
Calendar Years 1961 to Date

Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
1961	$ 2.77	$ 2.78	$ 2.81	$ 2.70
1962	2.87	2.87	2.91	2.80
1963[r]	2.95	2.95	2.99	2.89
1964[r]	3.02	3.00	3.09	2.98
1965[r]	3.14	2.15	3.17	3.08
1966[r]	3.31	3.34	3.32	3.21
1967[r]	3.45	3.49	3.42	3.35
1968	3.62	3.64	3.65	3.53
1969[r]	3.86	3.90	3.87	3.76
1970[r]	4.11	4.17	4.10	3.99
1971[r]	4.32	4.36	4.36	4.15
1972	4.65	4.74	4.70	4.37
1973	5.00	5.13	5.05	4.66

Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly).
NOTE: The production workers surveyed include substantial missile and spacecraft employment. See NOTE page 117.
r Revised.

AVERAGE WEEKLY EARNINGS IN AIRCRAFT AND PARTS PLANTS

Production Workers Only
(Includes Overtime Premiums)
Calendar Years 1961 to Date

Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
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	122.54
1964r	125.03	123.30	127.31	126.35
1965r	131.88	131.36	133.46	132.13
1966r	143.32	142.95	144.09	142.85
1967r	146.97	147.28	145.35	146.73
1968	152.04	152.88	151.11	151.44
1969r	161.35	163.41	158.28	159.05
1970r	168.51	170.97	166.05	166.78
1971r	175.82	178.76	173.53	170.98
1972	193.44	197.66	193.17	183.10
1973	207.50	210.84	211.09	196.19

Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly).
NOTE: The production workers surveyed include substantial missile and spacecraft employment. See NOTE page 117.
r Revised.

EMPLOYMENT OF SCIENTISTS AND ENGINEERS FOR RESEARCH AND DEVELOPMENT

Total and Aerospace
1960 to Date

As of January 1	TOTAL	Aerospace	Aerospace as a Percent of Total
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	340,200	101,100	29.7
1965	343,600	99,200	28.9
1966	353,200	99,300	28.1
1967	367,200	100,400	27.3
1968	376,700	101,100	26.8
1969	387,100	99,100	25.6
1970	384,100	92,600	24.1
1971	370,600	78,300	21.1
1972[r]	352,300	72,700	20.6
1973	362,500	74,300	20.5

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

WORK-INJURY RATES[a]
FOR ALL MANUFACTURING AND AIRCRAFT AND PARTS
Calendar Years 1960 to Date

Year	All Manufacturing	Aircraft and Parts
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	16.6	N.A
1972	15.6	8.0

Source: Department of Labor, Bureau of Labor Statistics.
N.A. Not Available.
a Defined as the number of injuries 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.

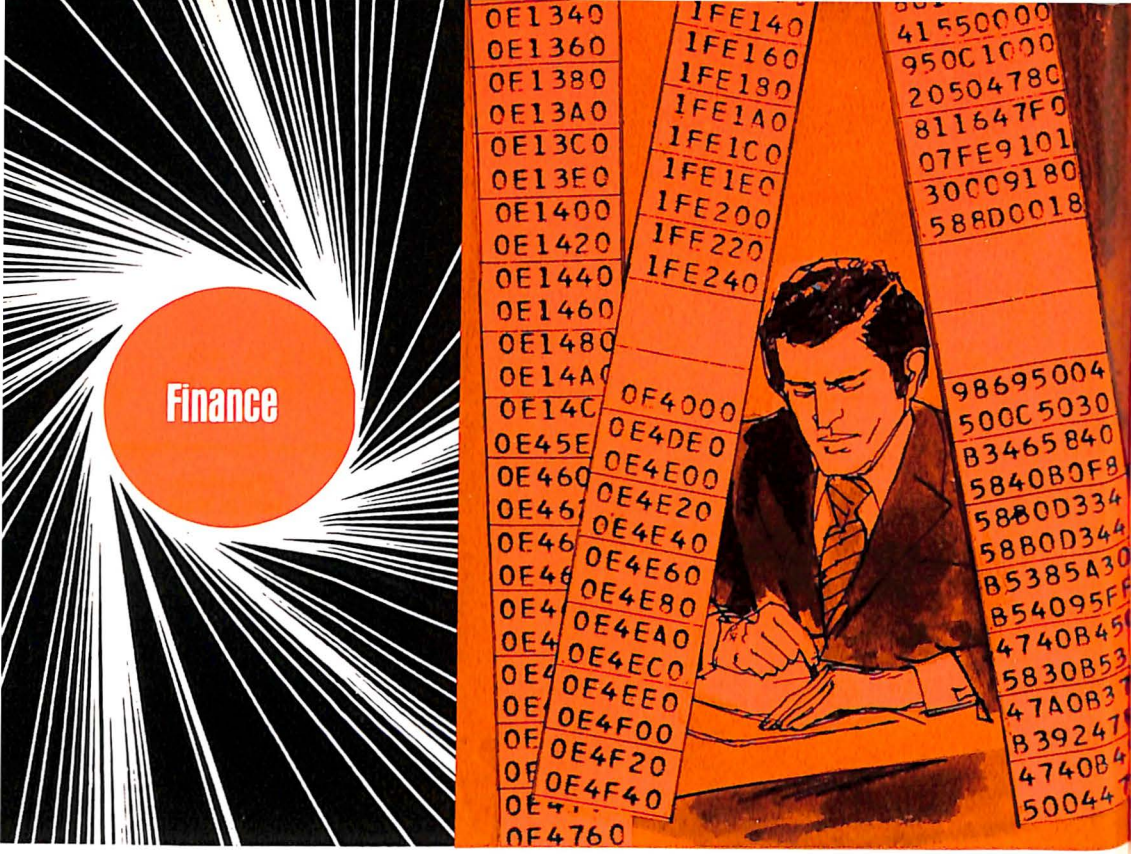
WORK STOPPAGES IN THE AIRCRAFT AND PARTS INDUSTRY

Calendar Years 1950 to Date

Year	Number of Strikes	Number of Workers Involved	Man-Days Idle in Year
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
1972	18	20,800	148,100

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

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.



The aerospace industry in 1973 continued to improve its financial performance, a trend which has continued unabated for the last three years. Profits as a percent of sales continued to increase from 2.4 percent in 1972 to 2.9 percent in 1973. Net profits from operations were up to $1.6 billion—almost twice the level reached in 1971 and just short of the all-time high achieved in 1968 of nearly $1.7 billion.

According to the Federal Trade Commission (FTC), which uses a different definition of the industry than does either the Department of Commerce or AIA, net sales increased nearly 20 percent over 1972, primarily due to the penetration of non-government and non-aerospace markets. The increase in sales also provided the industry with the ability to substantially increase its capability to retain its profits within the business. Retained profits were up 68 percent from $340 million in 1972 to $571 million in 1973, a level that exceeded the high of 1968.

At the end of 1973 assets and stockholders' equity were both up over 1972 levels. Increases in assets were primarily attributable to receivables which increased by 10.5 percent and gross inventories which were up 5.9 percent. Additions to plant and equipment and other non-current assets were up slightly from the

previous year's level. While total liabilities increased by 4.8 percent, long term debt was decreased by 4.4 percent; at the same time, net working capital was also reduced modestly. It would appear, therefore, that the financial and economic health of the industry was enhanced during 1973.

During the year there was a slight re-ordering of the placement of military aerospace contracts by geographic region. In each case, the Pacific Coast, encompassing California, Washington and Oregon, improved its percentage share of prime contract awards; most notable were aircraft contracts where percentages increased from 16 percent in 1972 to 23 percent in 1973. The gain for the Pacific Coast region was primarily at the expense of the South Atlantic and the West North Central regions. Both New England and the Pacific Coast increased their share of missile and space systems contract awards by 3 percent. As in aircraft, these gains were due to a substantial decrease in the South Atlantic region.

TAXES AND PROFITS
AEROSPACE COMPANIES
Calendar Years 1960 to Date

Year	Net Federal Taxes as a Percent of Total Income	Net Profit After Taxes as a Percent of Sales
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	2.0
1971	44.4	1.8
1972[r]	44.8	2.4
1973	40.9	2.9

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

Among the major defense contractors, Lockheed Aircraft Corporation continued in first place, a position it has enjoyed over the last five years. General Electric jumped from fourth to second place. The Boeing Company improved its position during the year from fifth to third place. McDonnell Douglas Corporation occupied the number four position in 1973 rather than its second place position in 1972. General Dynamics Corporation, in third place in 1972, dropped to ninth place in 1973.

There was also, during the year, a change in the positions of the major contractors doing business with NASA. Rockwell International Corporation replaced McDonnell Douglas Corporation in the number one position; however, McDonnell Douglas enjoyed the number two slot. In order of the value of contracts awarded the next three major contractors to NASA were Martin Marietta Corporation, the General Electric Company and General Dynamics. The Boeing Company which in 1972 was in the top five moved into seventh position.

INCOME ACCOUNTS
AEROSPACE COMPANIES

Calendar Years 1969 to Date
(Millions of Dollars)

	1969	1970	1971	1972[r]	1973
Net Sales	$ 26,392	$ 25,505	$ 23,566	$ 24,838	$ 29,494
Net Profit from Operations	1,493	980	893	1,254	1,619
Total Income before Federal Income Taxes	1,433	881	761	1,103	1,449
Provision for Federal Income Taxes . . .	629	380	338	494	593
Net Profit after Taxes.	804	501	423	609	855
Net Profit Retained in Business	467	237	181	340	571

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

BALANCE SHEET COMPARISONS
AEROSPACE COMPANIES

Calendar Years 1969 to Date
(Millions of Dollars)

	1969	1970	1971	1972[r]	1973
Assets:					
Current Assets					
Cash	$ 763	$ 758	$ 844	$ 685	$ 643
U.S. Government Securities	170	9	4	11	80
Total Cash and U.S. Government Securities	$ 933	$ 767	$ 848	$ 696	$ 723
Receivables (total)	3,318	3,254	3,400	3,276	3,621
Inventories (gross)	11,179	10,763	10,589	10,918	11,559
Other current assets	435	467	458	608	525
Total Current Assets	$ 15,865	$ 15,251	$ 15,295	$ 15,498	$ 16,428
Total Net Plant	4,496	4,527	4,296	4,108	4,376
Other Non-Current Assets	2,317	2,639	2,789	2,998	3,173
Total Assets	$ 22,678	$ 22,417	$ 22,379	$ 22,604	$ 23,976
Liabilities:					
Current Liabilities					
Short Term Loans	$ 1,132	$ 1,146	$ 1,152	$ 649	$ 934
Advances by U.S. Govt.	5,135	4,241	2,837	2,210	2,456
Trade accounts and notes payable	2,303	2,212	1,860	2,048	2,111
Federal income taxes accrued	365	455	463	638	720
Installments due on long term debts	186	338	325	272	359
Other current liabilities	2,213	2,148	3,870	4,048	4,223
Total Current Liabilities	$ 11,334	$ 10,540	$ 10,507	$ 9,865	$ 10,803
Long Term Debt	3,618	4,113	4,004	4,351	4,159
Other Non-Current Liabilities	412	514	551	571	540
Total Liabilities	$ 15,364	$ 15,167	$ 15,062	$ 14,787	$ 15,502
Stockholders' Equity:					
Capital Stock	$ 2,505	$ 2,491	$ 2,541	$ 2,763	$ 2,758
Earned Surplus and Reserves	4,807	4,757	4,776	5,053	5,717
Total Net Worth	$ 7,312	$ 7,248	$ 7,317	$ 7,816	$ 8,475
Total Liabilities and Stockholders' Equity	$ 22,678	$ 22,417	$ 22,379	$ 22,604	$ 23,976
Net Working Capital	$ 4,531	$ 4,711	$ 4,788	$ 5,633	$ 5,625

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

NEW PLANT AND EQUIPMENT EXPENDITURES

Calandar Years 1950 to Date
(Billions of Dollars)

Year	All Industries	All Manufacturing Industries	Durable Goods	Aerospace
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	0.46
1958	31.89	12.38	5.61	0.28
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	0.83
1970	79.71	31.95	15.80	0.55
1971	81.21	29.99	14.15	0.38
1972[r]	88.44	31.35	15.64	0.43
1973	99.74	38.01	19.39	0.53
1974[E]	112.72	45.37	22.61	0.72

Source: 1950-1967: U.S. Department of Commerce, Survey of Current Business, Jan. 1970; 1968-1971: U.S. Department of Commerce, Securities and Exchange Commission, Joint Statistical Report; 1972-1974: U.S. Department of Commerce, Bureau of Economic Analysis, BEA 74-14.

r Revised.

E Estimate, based on a survey conducted in November and December 1973.

MILITARY PRIME CONTRACT AWARDS OF $10,000 OR MORE FOR SELECTED MAJOR MILITARY HARD GOODS

By Geographic Region
Fiscal Years[a] 1971, 1972, 1973

Program and Region	Million Dollars			Percent of Program Total		
	1971	1972	1973	1971	1972	1973
AIRCRAFT–TOTAL	$ 7,126	$ 8,617	$ 7,442	100.0%	100.0%	100.0%
New England	7,779	955	867	10.9	11.1	11.6
Middle Atlantic	1,277	1,476	1,240	17.9	17.1	16.7
East North Central	670	614	638	9.4	7.1	8.6
West North Central	748	1,702	1,132	10.5	19.8	15.2
South Atlantic	814	1,017	509	11.4	11.8	6.8
South Central	1,813	1,416	1,258	25.4	16.3	16.9
Mountain	53	77	77	0.7	0.9	1.0
Pacific[b]	972	1,360	1,721	13.6	15.8	23.1
MISSILE AND SPACE SYSTEMS–TOTAL	$ 4,634	$ 5,219	$ 4,891	100.0%	100.0%	100.0%
New England	616	601	701	13.3	11.5	14.3
Middle Atlantic	716	743	618	15.4	14.2	12.6
East North Central	144	153	138	3.1	2.9	2.8
West North Central	96	110	69	2.1	2.1	1.4
South Atlantic	537	735	468	11.6	14.1	9.6
South Central	133	132	134	2.9	2.5	2.7
Mountain	206	389	411	4.4	7.5	8.4
Pacific[b]	2,186	2,356	2,352	47.2	45.1	48.1
ELECTRONICS AND COMMUNICATION EQUIPMENT–TOTAL	$ 3,398	$ 4,104	$ 3,889	100.0%	100.0%	100.0%
New England	390	498	461	11.5	12.1	11.8
Middle Atlantic	832	935	941	24.5	22.8	24.2
East North Central	296	385	238	8.7	9.4	6.1
West North Central	127	150	158	3.7	3.7	4.1
South Atlantic	516	606	585	15.2	14.8	15.0
South Central	232	296	230	6.8	7.2	5.9
Mountain	78	81	146	2.3	2.0	3.8
Pacific[b]	927	1,153	1,130	27.3	28.1	29.0

Source: Department of Defense, Office of the Secretary of Defense, Directorate For Information Operations, "Military Prime Contract Awards by Region and State, Fiscal Years 1971, 1972, 1973."

a Fiscal Years ending June 30.

b Includes Alaska and Hawaii.

MILITARY PRIME CONTRACT AWARDS OF $10,000 OR MORE FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

By Region and By Type of Contractors
Fiscal Year[a] 1973

	TOTAL		Type of Contractor					
			Educational Institutions		Other Non-Profit Institutions[b]		Business Firms	
	Million Dollars	Percent	Million Dollars	Percent	Million Dollars	Percent	Million Dollars	Percent
TOTAL	$5,761	100.0%	$ 369	100.0%	$ 273	100.0%	$5,119	100.0%
REGION								
New England .	658	11.4	139	37.6	23	8.5	496	9.7
Middle Atlantc	1,021	17.7	32	8.8	29	10.4	960	18.8
East North Central	295	5.1	25	6.8	22	7.8	248	4.8
West North Central	438	7.6	4	1.1	1	0.5	433	8.4
South Atlantic	908	15.8	97	26.3	65	24.0	746	14.6
South Central	262	4.5	12	3.2	13	4.9	237	4.6
Mountain . . .	170	3.0	17	4.5	4	1.6	149	2.9
Pacific[c]	2,009	34.9	43	11.8	116	42.3	1,850	36.1

Source: Department of Defense, Office of the Secretary of Defense, Directorate For Information Operations "Military Prime Contract Awards by Region and State, Fiscal Years 1971, 1972, 1973."

a Fiscal Year ending June 30.
b Includes contracts with other government agencies.
c Includes Alaska and Hawaii.

MAJOR DEFENSE CONTRACTORS

Listed by rank according to net value of military prime contracts awarded during Fiscal Year[a] 1973 (Millions of Dollars)

Company	1969	1970	1971	1972	1973
U.S. TOTAL, ALL CONTRACTS	$36,889	$31,315	$29,752	$33,362	$31,627
Lockheed Aircraft Co.	2,040	1,848	1,511	1,705	1,659
General Electric Co.	1,621	1,001	1,041	1,259	1,416
Boeing Co.	654	475	732	1,171	1,229
McDonnell Douglas Corp.	1,070	883	897	1,700	1,143
Grumman Corp.	417	661	1,098	1,120	909
American Telephone & Telegraph Co.	915	931	1,200	1,122	775
Textron, Inc.	428	431	325	242	747
United Aircraft Corp.	997	874	733	996	741
General Dynamics Corp.	1,243	1,183	1,489	1,289	707
Rockwell International	674	707	478	703	704
Raytheon Co.	547	380	455	507	680
Hughes Aircraft Co.	439	497	516	688	547
Westinghouse Electric Corp.	430	418	437	387	505
Sperry Rand Corp.	468	399	359	414	447
Northrop Corp.	179	184	151	370	446
Litton Industries Inc.	317	543	516	616	424
LTV Corp.	914	479	725	449	347
International Business Machines Corp.	257	256	316	260	302
Honeywell, Inc.	436	398	237	334	272
RCA Corp.	299	263	251	275	254
International Telephone & Telegraph Corp.	238	217	233	258	249
General Motors Corp.	584	386	344	256	249
EXXON Corp.	291	229	187	209	238
Martin Marietta Corp.	264	251	187	256	225
Tenneco Inc.	237	249	917	505	214
Ford Motor Co.	396	346	218	197	214
Teledyne Inc.	309	238	216	180	188
General Tire & Rubber Co.	264	262	159	197	187
TRW, Inc.	170	179	177	146	177
Chrysler Corp.	113	92	155	94	152

Source: Department of Defense, "100 Companies and their Subsidiary Corporations Listed According to Net Value of Military Prime Contract Awards," (Annually).

a Fiscal Years ending June 30.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Major Contractors listed by rank according to net value of NASA prime contracts awarded during Fiscal Year[a] 1973 (Millions of Dollars)

Company	1969	1970	1971	1972	1973
U.S. TOTAL, ALL CONTRACTS	$3,022.3	$2,759.2	$2,279.5	$2,143.3	$2,063.8
Rockwell International Corp.	680.9	531.5	172.5	175.1	317.8
McDonnell Douglas Corp.	207.5	236.3	302.9	343.1	272.4
Martin Marietta Corp.	56.0	108.0	107.6	208.4	192.0
General Electric Co.	150.1	131.7	161.4	114.9	86.9
General Dynamics Corp.	34.0	38.0	50.8	66.6	80.4
Bendix Corp.	127.6	109.8	121.4	88.0	79.1
Boeing Co.	228.7	158.6	114.4	94.2	75.5
International Business Machines Corp.	112.5	133.4	72.4	72.0	61.3
Fairchild Industries	6.9	1.9	16.4	42.0	43.7
RCA Corp.	51.6	54.5	93.9	57.2	38.2
Philco Ford Corp.	22.4	24.0	23.1	36.2	37.5
Lockheed Electronics (b)	(b)	(b)	26.5	24.4	29.3
TRW Inc.	50.0	58.3	62.3	33.3	28.2
Chrysler Corp.	42.5	16.7	15.3	24.3	27.7
Sperry Rand Corp.	34.1	48.1	31.7	33.5	26.6
Computer Sciences Corp.	8.3	11.0	17.4	23.3	25.1
United Aircraft Corp.	26.2	27.1	28.4	15.9	25.0
Federal Electric Corp.	27.0	26.3	21.8	23.5	24.8
Hughes Aircraft Co.	7.5	9.0	20.9	22.0	20.9
LTV Aerospace Corp.	18.3	17.9	15.4	21.9	19.9
Northrop Services, Inc. (c)	(c)	(c)	1.5	4.9	16.5
Lockheed Missile & Space Co., Inc. (d)	(d)	(d)	(d)	16.4	14.7
Kentron Hawaii, Ltd.	(e)	(e)	(e)	(e)	13.0
Honeywell, Inc.	8.1	11.5	11.9	11.1	12.4
Grumman Corp.	369.2	284.4	113.7	28.5	12.0
Litton Systems, Inc.	(e)	1.8	(e)	6.0	11.2
Computing & Software, Inc.	6.0	7.7	11.3	10.5	9.8
Teledyne Industries, Inc.	(f)	(f)	6.7	6.0	9.8
American Science & Engineering, Inc.	8.4	9.8	7.7	6.8	8.9
Brown Engineering Co., Inc.	11.1	9.9	11.3	11.8	8.6

Source: National Aeronautics and Space Administration, "NASA Annual Procurement Report," (Annually).

a Fiscal Years ending June 30.
b Included with Lockheed Aircraft Corp. prior to 1971.
c Included with Northrop Corp. prior to 1971.
d Included with Lockheed Aircraft Corp. prior to 1972.
e Not in list of major contractors for indicated year.
f Included with Teledyne, Inc. prior to 1971.

Glossary

Accessions, the total number of permanent and temporary additions to the employment roll, including both new and rehired employees (see **Labor Turnover**).

Aerospace Industry, the industry primarily engaged in the manufacture of aircraft, guided missiles, spacecraft—i.e., all air and space vehicles and their related components and parts.

AIA, Aerospace Industries Association of America, Inc., formerly Aircraft Industries Association.

Air Carriers, the commercial system of air transportation. Consists of scheduled domestic and (U.S.) international aircarriers, supplemental and other carriers.

Aircraft, all airborne vehicles supported either by buoyancy or by dynamic action. Used in this volume in a restricted sense to mean an airplane—any winged aircraft, including helicopters but excluding gliders and guided missiles.

Aircraft Industry, the industry primarily engaged in the manufacture of aircraft, aircraft engines and parts, aircraft propellers and parts, and aircraft parts and auxiliary equipment. A sector of the aerospace industry.

Airframe, the structural components of an airplane, such as fuselage, empennage, wings, landing gear, and engine mounts, but excluding engines, accessories and other parts that may be replaced from time to time.

Airlines, see **Air Carriers.**

Appropriation (Federal Budget), an act of Congress authorizing an agency to incur obligations and make payments out of funds held by the Department of the Treasury.

Assets, Net, the sum of all recorded assets after reducing such amount by allowance or reserve for bad debts, depreciation and amortization, but before deducting any liabilities, mortgages or other indebtedness.

Astronautics, the art and science of designing, building and operating manned or unmanned objects through space.

Average Hourly Earnings, see **Earnings.**

Average Weekly Earnings, see **Earnings.**

Average Weekly Hours, average hours for which pay was received; different from standard or scheduled hours.

Backlog, the sales value of orders accepted (supported by legal documents) that have not yet passed through the sales account.

Budget Authority, authority provided by the Congress, mainly in the form of *appropriations* which allows Federal agencies to incur obligations to spend or lend money. (Some agencies still use the term **New Obligational Authority** when referring to **Budget Authority.**)

Depreciation, the general conversion of the depreciable cost of a fixed asset into expense, spread over its remaining life. There are numerous methods, all based on a periodic charge to an expense account and a corresponding credit to a reserve account.

Development, the process or activity of working out a basic design, idea or piece of equipment (see **Research**).

DOD, Department of Defense.

Durable Goods Industry, comprises major manufacturing industry groups with Standard Industrial Classification Codes 19, 24, 25, and 32 through 39. All other major manufacturing industry groups in SIC Codes 19 through 39 are considered as nondurable goods manufacturing industry groups.

Earnings, the actual return to the worker for a stated period of time while rates are the amounts stipulated for a given unit of work or time. Irregular bonuses, retroactive items, payments of various welfare benefits, payroll taxes paid by employers are excluded.

> **Average Hourly Earnings,** on a "gross" basis, reflecting not only changes in basic hours and incentive wage rates, but also such variable factors as premium pay for overtime and late shift work, and changes in output of workers paid on an incentive plan.
>
> **Average Weekly Earnings,** derived by multiplying average weekly hours by hourly earnings.

Establishment, the basis for reporting to the Census of Manufacturers. It is an operating facility in a single location. Where one facility engages in different lines of activity it is required to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

Evaluation (Department of Defense), determination of technical suitability of material, equipment or a system.

Expenditures (Federal Budget), see **Outlays.**

Exports, domestic merchandise including commodities which are grown, produced, or manufactured in the United States, and commodities of foreign origin which have been changed in the United States from the form in which they were imported, or which have been enhanced in value by further manufacture in the United States, and which are traded or sold to other nations.

FAA, Federal Aviation Administration (formerly the Federal Aviation Agency), part of the Department of Transportation.

Facility, a physical plant or installation, including real property, building, structures, improvements and plant equipment.

Fiscal Year (Federal Budget), year beginning July 1 and ending June 30, and designated by the calendar year in which it ends.

FY, see **Fiscal Year.**

General Aviation, all civil flying except that of the trunk, regional and supplemental airlines.

GNP (Gross National Product), the market value of the total output of goods and services produced by the Nation's economy before deduction of depreciation charges and other allowances for business and institutional consumption of durable goods. It includes the purchase of goods and services by consumers and government, gross private domestic investment, and net exports. Beginning with 1960, the estimates include data for Alaska and Hawaii.

Helicopter, a rotary-wing aircraft which depends principally for its support and motion in the air upon the lift generated by one or more power-driven rotors, rotating on substantially vertical axes. A helicopter is a V/STOL—a vertical and/or short take-off and landing aircraft.

Heliport, an area, either at ground level or elevated on a structure, that is used for the landing and take-off of helicopters and includes some or all of the various facilities useful to helicopter operations such as helicopter parking, hanger, waiting room, fueling and maintenance equipment.

Helistop, a minimum facility heliport, either at ground level, or elevated on a structure for the landing and take-off of helicopters but without such auxiliary facilities as waiting room, hanger, parking, etc.

Hours, Overtime, that portion of the gross average weekly hours which were in excess of regular hours and for which premium payments were made.

ICBM, Intercontinental Ballistic Missile, with a range of more than 5,000 miles.

Imports, classified as "general imports" or "imports for consumption." This volume refers generally to "imports for consumption," which are entries for immediate consumption plus merchandise withdrawn from bonded storage warehouses for consumption. Data are compiled from Import Entries filed with U.S. Customs officials. Import values are in general based on the market value or price in the foreign country at the time of exportation of such merchandise. These values include the cost of containers and coverings, as well as other charges and expenses incidental to placing the merchandise in condition, packed and ready for shipment to the United States, but exclude import duties, insurance, ocean freight and other charges incidental to arrival of the goods in the United States. The foreign values of imported merchandise are converted into U. S. currency at the rate of exchange prevailing on the day the merchandise is shipped to the United States.

Income

Net Operating Income, total net sales (see **Sales**) less total operating costs.

Net Income (Before Income Taxes), Net Operating Income plus or minus "Other Income and Expense."

Other Income and Expense, includes interest income, royalty income, capital gains and losses, interest expense, cash discounts, etc.

Net Income (After Income Taxes), Net Income (Before Income Taxes) less federal income taxes.

Labor Turnover, the gross movement of wage and salary workers into and out of employed status with respect to individual establishments. This movement, which relates to a calendar month, is divided into two broad types: accessions (new hires and rehires) and separations (terminations of employment initiated by either employer or employee). Each type of action is accumulated for a calendar month and expressed as a rate per 100 employees. The data relate to all employees, whether full- or part-time, permanent or temporary, including executive, office, sales, other salaried personnel, and production workers.

Accessions, the total number of permanent and temporary additions to the employment roll, including both new and rehired employees.

New Hires, temporary or permanent additions to the employment roll of persons who have never before been employed in the establishment.

Other Accessions, not published separately, but included in total accessions; all additions to the employment roll which are not classified as new hires.

Separations, terminations of employment during the calendar month or year, classified according to cause: quits, layoffs, and other separations, as defined below:

Quits, terminations of employment initiated by employees, failure to report after being hired, and unauthorized absences.

Layoffs, suspensions without pay lasting or expected to last more than seven consecutive calendar days, initiated by the employer without prejudice to the worker.

Other Separations, terminations of employment because of discharge, permanent disability, death, retirement, etc.

Manufacturing Industries, those establishments engaged in the mechanical or chemical transformation of inorganic or organic substances into new products, and usually described as plants, factories, or mills, which characteristically use power driven machines and materials handling equipment; also establishments engaged in assembling component parts of manufactured products if the new product is neither a structure nor other fixed improvement.

Merchandise Trade Balance, the difference between the value of U.S. goods exported to other countries and foreign goods imported into this country. The rade balance is generally regarded as "favorable" when exports exceed imports—a trade surplus—and "unfavorable" when imports exceed exports—a trade deficit.

Military Assistance, see **Mutual Security Program.**

Missile, a weapon which travels through space, guided along its flight path at the moment of its launching, but thereafter subjected to various external forces that affect the accuracy and speed with which it flies toward the target.

Mutual Security Program, designed by the U.S. Government to maintain the domestic security, promote foreign policy, and provide for the general welfare of the U.S.; based on the Mutual Security Act of 1954.

NASA, National Aeronautics and Space Administration.

N.A.T.O., North Atlantic Treaty Organization.

Net Assets, see **Assets, Net.**

Net Income, see **Income.**

New Obligational Authority (Federal Budget), see **Budget Authority.**

Net Operating Profit, see **Income.**

Net Profit on Sales, see **Income.**

Net Sales, see **Sales.**

New Hires, see **Labor Turnover.**

Non-Aerospace Products and Services, includes all nonaircraft, nonspace vehicle, and nonmissile products and services and all basic research produced or performed by those companies and/or establishments whose principal business is the development and/or production of aircraft, aircraft engines, missile and spacecraft engines, missiles and/or spacecraft.

Obligations (Federal Budget), commitments made by Federal agencies to pay out money for products, services or other purposes—as distinct from the actual payments. Obligations incurred may not be larger than budget authority.

Other Aerospace Products and Services, all conversions, modifications, site activation, other aerospace products (including drones) and services, and receipts for applied research and development on items such as drones, etc.

Outlays, checks issued, interest accrued on the public debt, or other payments made, net of refunds and reimbursements. (Some agencies still use the term **Expenditures** when referring to **Outlays.**)

Overtime, see **Hours, Overtime.**

Payroll, includes the gross earning paid in the calendar year to all employees on the payroll of operating manufacturing establishments. Includes all forms of compensation directly to workers such as salaries, wages, commissions, dismissal pay, all bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. Does not include employers' Social Security contributions or other non-payroll labor costs such as employees' pension plans, group insurance premiums, and workmen's compensation.

Passenger Mile, one Passenger moved one mile.

Procurement, the process whereby the executive agencies of the federal government acquire goods and services from enterprises other than the federal government.

Profit, see **Income.**

Production Workers, include working foremen and all non-supervisory workers (including leadmen and trainees) engaged in fabricating, processing, assembling, inspection, receiving, storage, handling, janitorial and watchman services, product development, auxiliary production, for plant's own use and record keeping and services closely associated with the above production operations.

Quits, see **Labor Turnover.**

Research and Development, research, basic and applied, is systematic, intensive study directed towards fuller scientific knowledge of the subject studied.

Development is the systematic use of scientific knowledge directed towards the production of useful materials, devices, systems, or methods including design and development of prototypes and processes.

R & D, research and development.

RDT&E (Department of Defense), research, development, test and evaluation.

Rotorcraft, an aircraft which in all its usual flight attitudes is supported in the air wholly or in part by a rotor or rotors, i.e., by airfoils rotating or revolving about an axis (see **Helicopters**).

Sales, net of returns, allowances and discounts; the dollar value of shipments less returns and allowances, including dealer's commissions, if any.

Satellite, a body that rotates about another body, such as the Moon revolving around the Earth, or a man-made object rotating about any body such as the Sun, Earth or Moon.

Separations, see **Labor Turnover.**

Space Vehicle, an artificial body operating in outer space; may be manned or pilotless.

Stockholders Equity, assets minus all obligations of the corporation, except those to stockholders. Annual data are average equity for the year (using four end-of-quarter figures). For details, see Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations."

STOL, short takeoff and landing aircraft.

Test (Department of Defense), an experiment designed to assess progress in attainment or accomplishment of development objectives (see **RDT&E**).

Thrust, the driving force exerted by an engine, particularly an aircraft or missile engine, in propelling the vehicle to which it is attached.

Ton Mile, one ton moved one mile.

Total Obligational Authority, the sum of budget authority granted or requested from the Congress in a given year, plus unused budget authority from prior years.

Trade Balance, see **Merchandise Trade Balance.**

Turbine, Turbo, a mechanical device or engine that spins in reaction to a fluid flow that passes through or over it. Frequently used in "turbo-prop" or "turbo-jet".

U.K., United Kingdom.

U.S., United States.

USA, United States Army.

USAF, United States Air Force.

USN, United States Navy.

USSR, Union of Soviet Socialist Republics.

Utility Aircraft, an aircraft designed for general purpose work.

V/STOL, vertical or short takeoff and landing aircraft.

VTOL, vertical takeoff and landing aircraft.

Wages, the payroll (see **Payroll**) of production and related workers.

Index

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