

Perspectives on Human Spaceflight and American History

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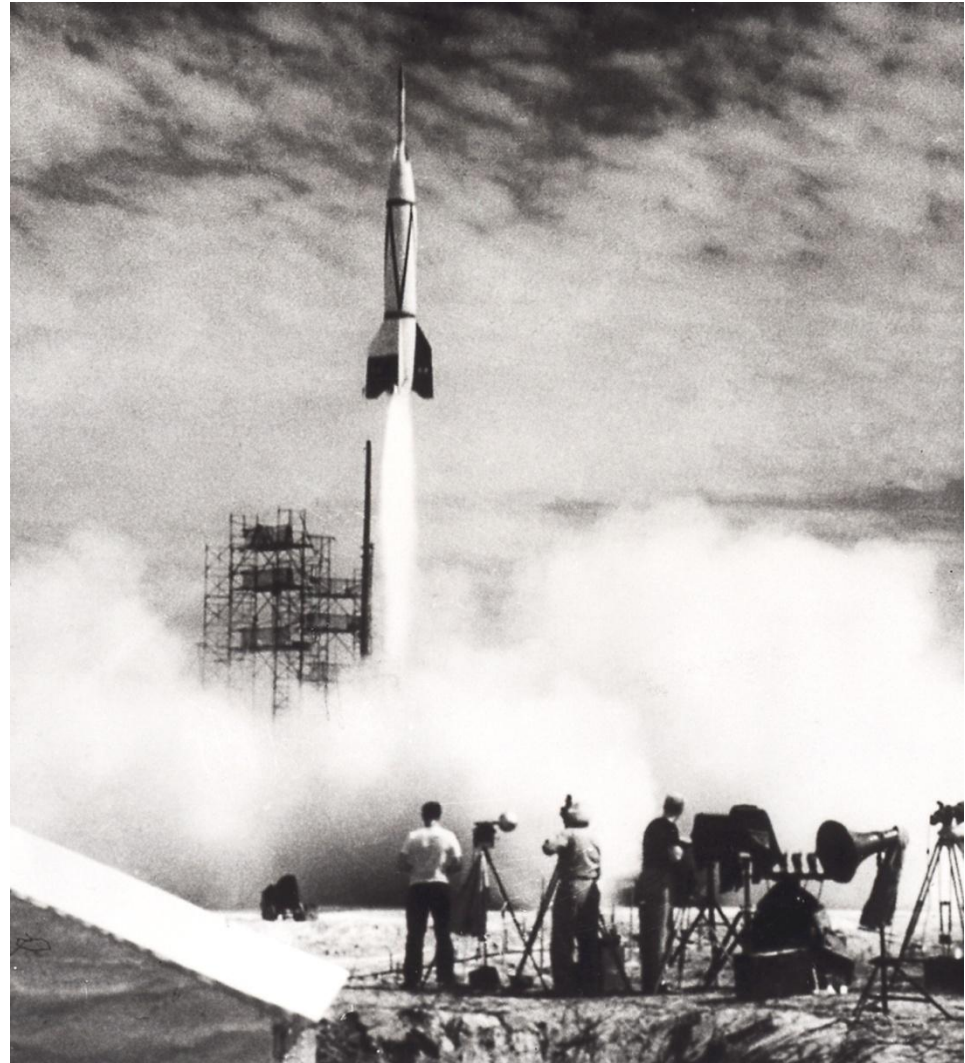
Rationales for Spaceflight



- Scientific Discovery and Understanding
- National Security
- Economic Competitiveness
- Human Destiny/Survival of the Species
- National Prestige

The Pre-Sputnik Space Program

- ICBM Development.
- Satellite Reconnaissance Development.
- Scientific Activities under NAS/DoD Launchers.
- IGY Satellite Effort.
- Between 1953-1957 spent \$11.8 billion on space R&D.
- Projected total costs through FY63 was 47 billion (then-year dollars).



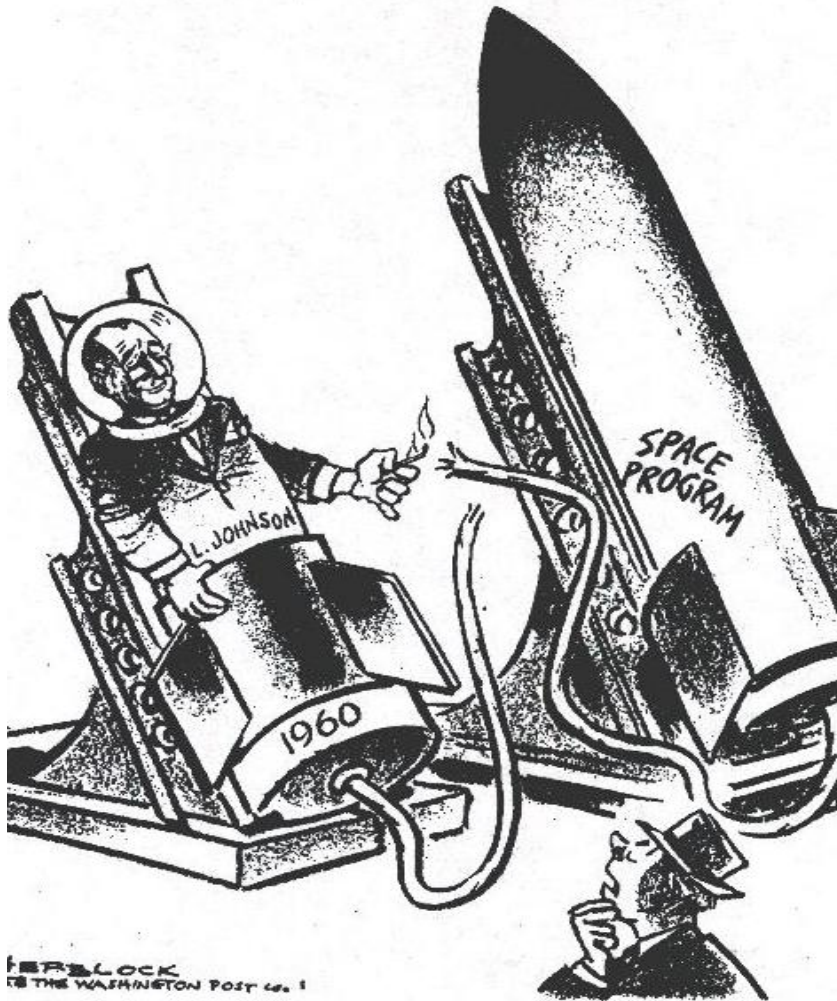
The IGY and Sputnik Crisis

- As part of International Geophysical Year, on Friday, October 4, 1957, Sputnik 1, launched at Soviet Union's rocket testing facility near Tyuratam in the Kazakh Republic.
- Sputnik 1: 22-inch aluminum sphere, four trailing spring-loaded whip antennae, weight of 183 pounds, elliptical Earth orbit every 96 minutes.
- Small radio beacon provided telemetry to verify exact locations on Earth.
- Established precedent of “freedom of space.”



Launching NASA

"Lyndon, Are You Sure That's All
You're Trying to Launch?"



- PSAC developed plan for new space agency under strengthened NACA, Feb. 4, 1958.
- National Aeronautics and Space Act of 1958 signed into law, Jul. 29, 1958.
- NASA began operating Oct. 1, 1958.
- Incorporated NACA, several DOD space assets.
 - JPL (Army)
 - MSFC (Army)
 - KSC (Army)
 - GSFC (Naval Research Lab)
- Thereafter debate over civil space has been about what type of activities should be conducted, not about whether or not to do it.

Human Spaceflight's Dominant Frames

- Cold War Competition
 - U.S./USSR national security
 - Dominant in period between 1950s and 1980s
 - Combat by non-lethal means
 - Pride and prestige powerful drivers
- Cultural Conceptions
 - Historical perceptions of exploration
 - National narratives (frontier, progress, exceptionalism, etc.)
- Economics and Commerce
 - Dominated by movement of electrons (comsats, remote sensing, etc.)
 - Ground-based components central to commercial viability (GPS and ground-based uses worth billions)

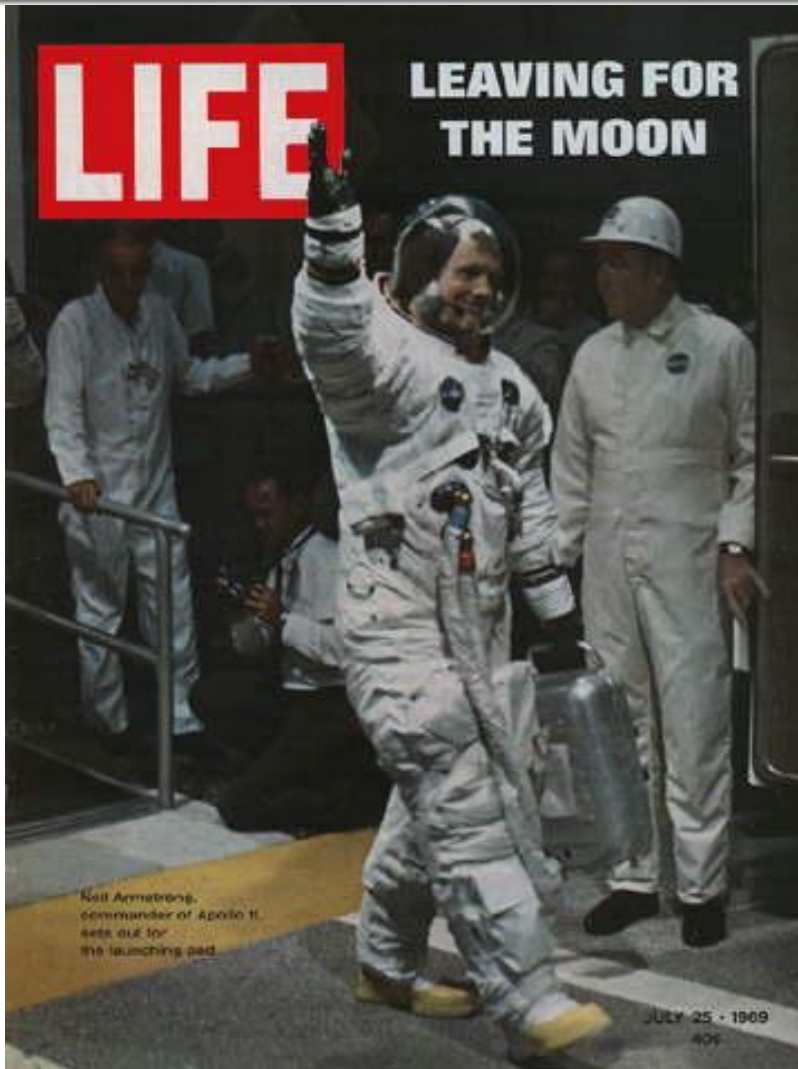


The Decision to Go to the Moon

- Project Apollo was in large measure a result of Cold War rivalry.
- JFK Speech, May 25, 1961.
- “I believe this Nation should commitment itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish.”



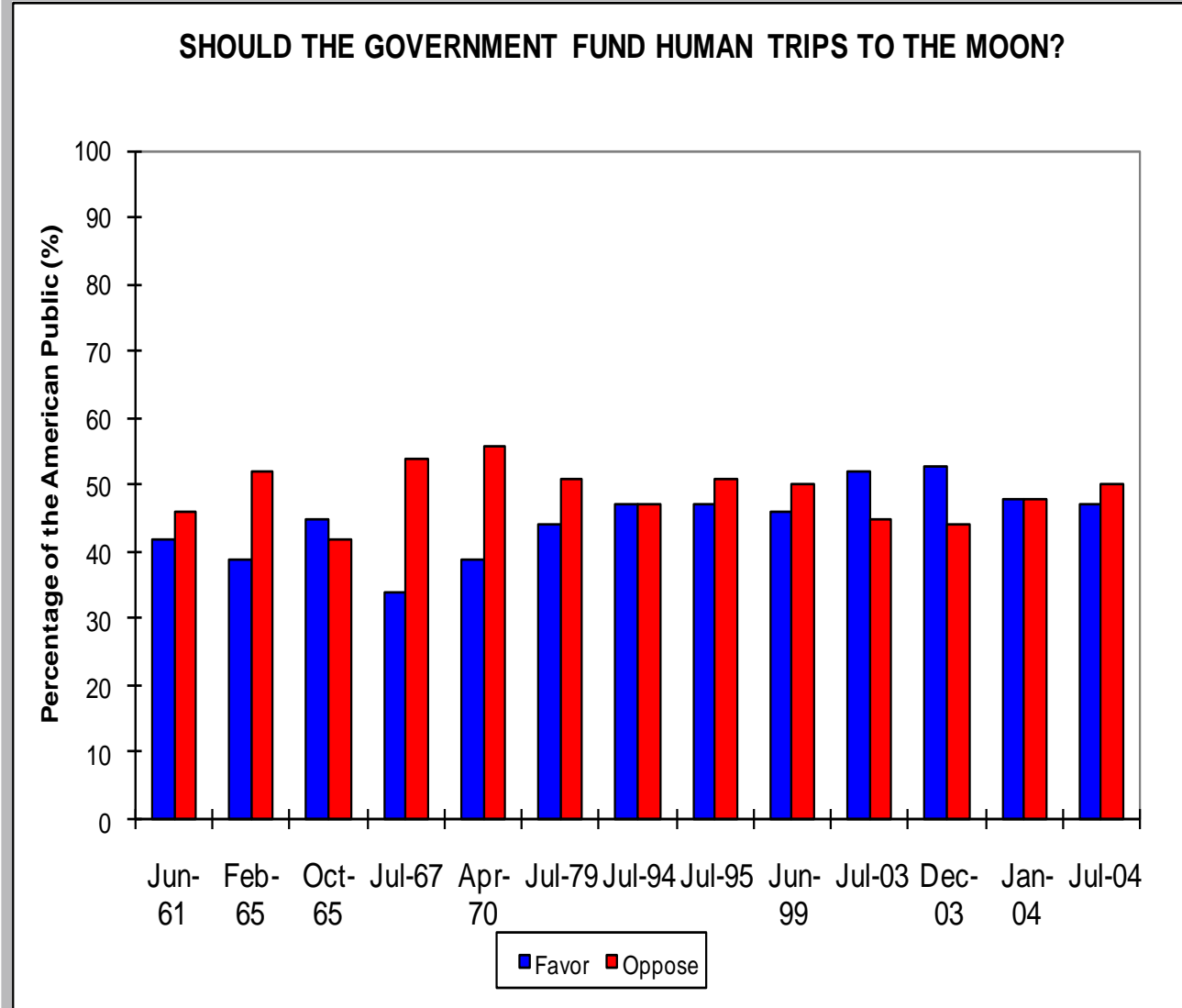
Apollo as Strategic Imperative



- Apollo may only be understood as response to Cold War rivalry:
 - JFK/Khrushchev personal relations
 - Gagarin flight
 - Bay of Pigs Fiasco
- Window was very short for decision—6 weeks in Apr-May 1961.
- JFK sought variety of ways to get out of commitment.
- After 1963, Apollo became critical to Kennedy legacy.

Public Support for Apollo

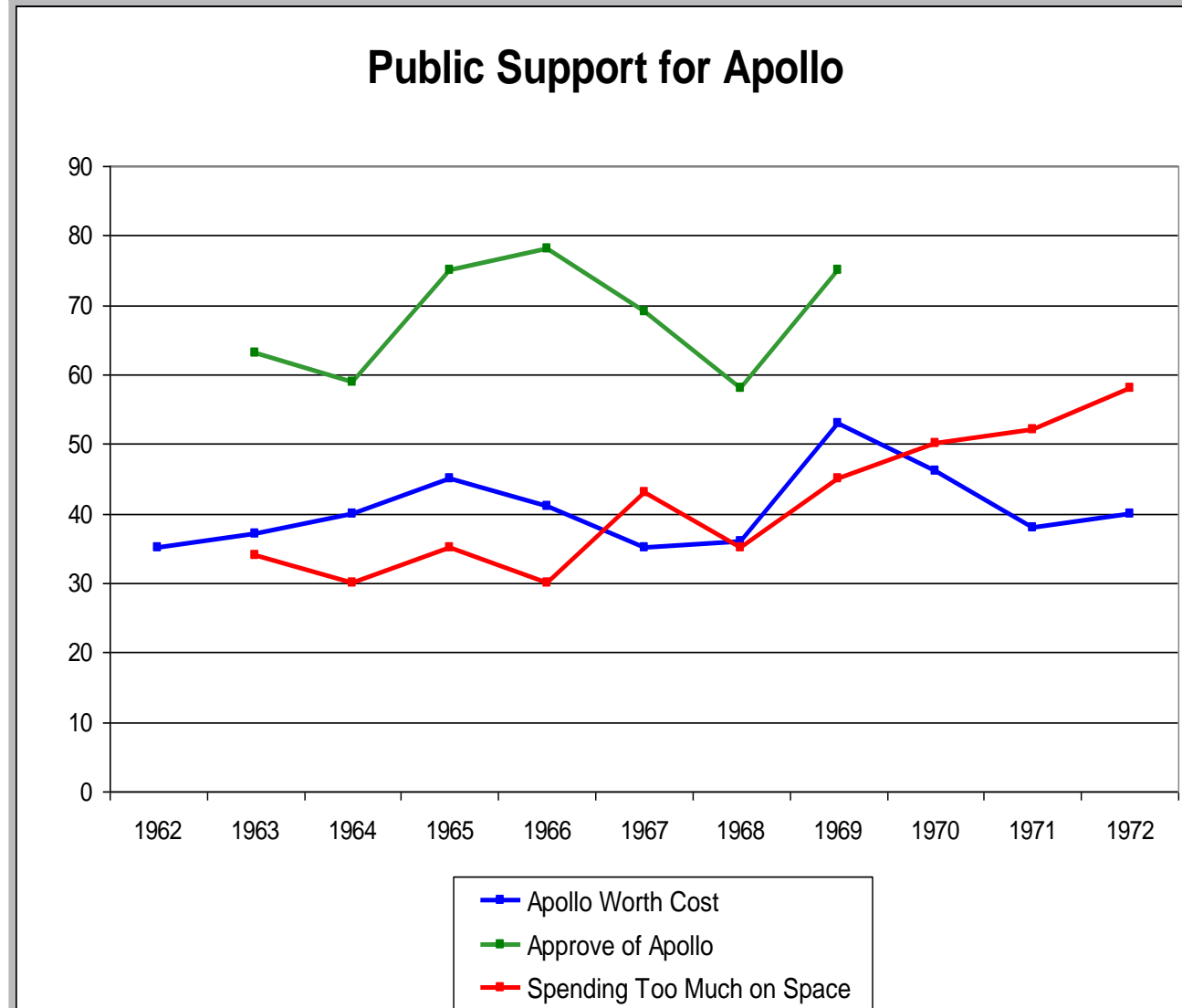
Americans did not send astronauts to the Moon with Project Apollo between 1969 and 1972 because everyone supported it.



Apollo, Budgets, and Public Support

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Whenever questions are asked about Apollo and its cost, the program received poor support. When divorced from costs, public quite supportive.

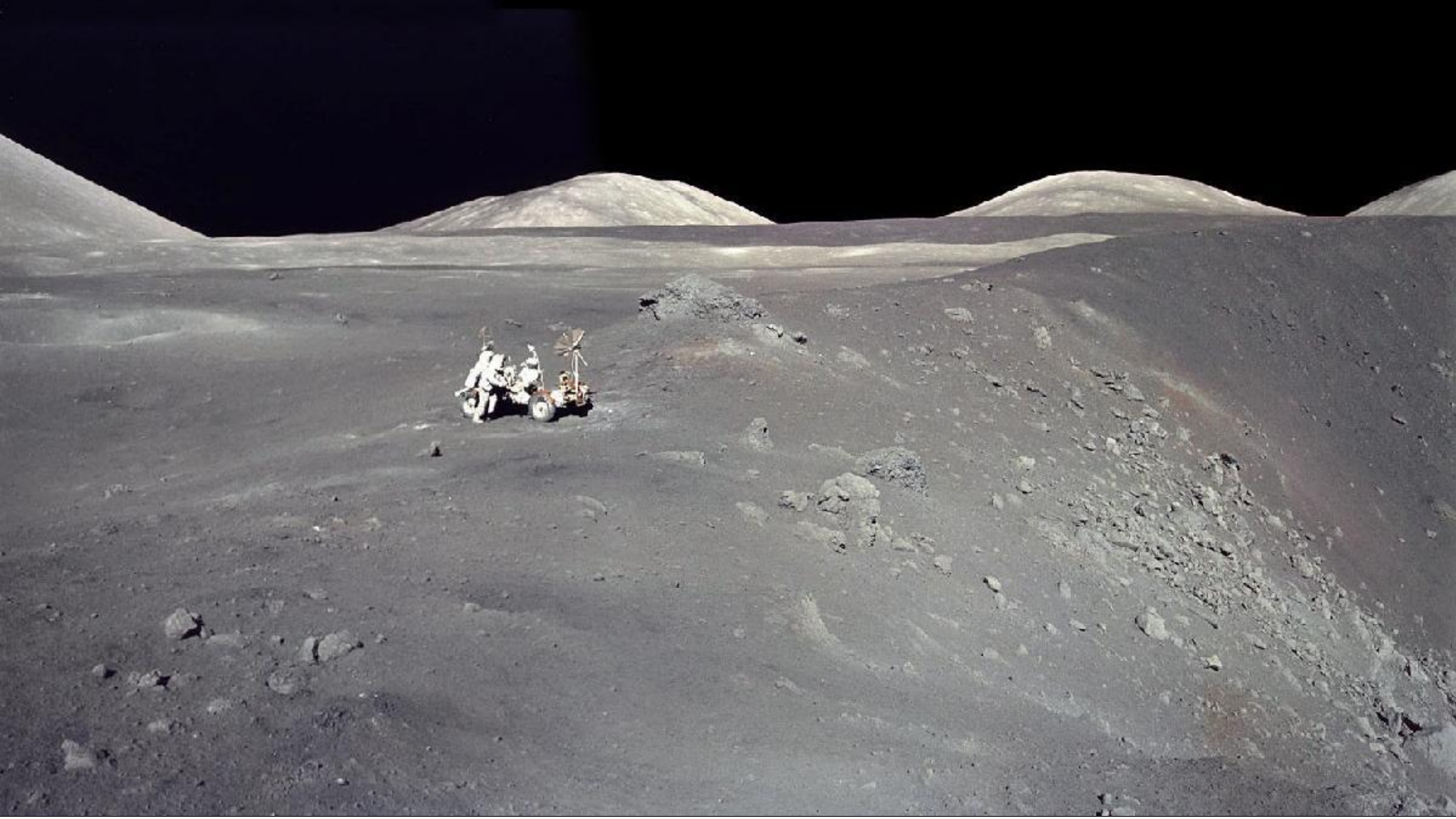


Tragedy Along the Way



- Apollo 1 capsule fire, January 27, 1967.
- Plugs out test of system in preparation for spring orbital mission.
- Pure oxygen environment pumped up to 15 psi.
- Gus Grissom, Ed White, and Roger Chaffee killed in matter of seconds.
- First instance of astronaut deaths in spacecraft.

“I thought you knew. I’ve been aboard on every flight.”



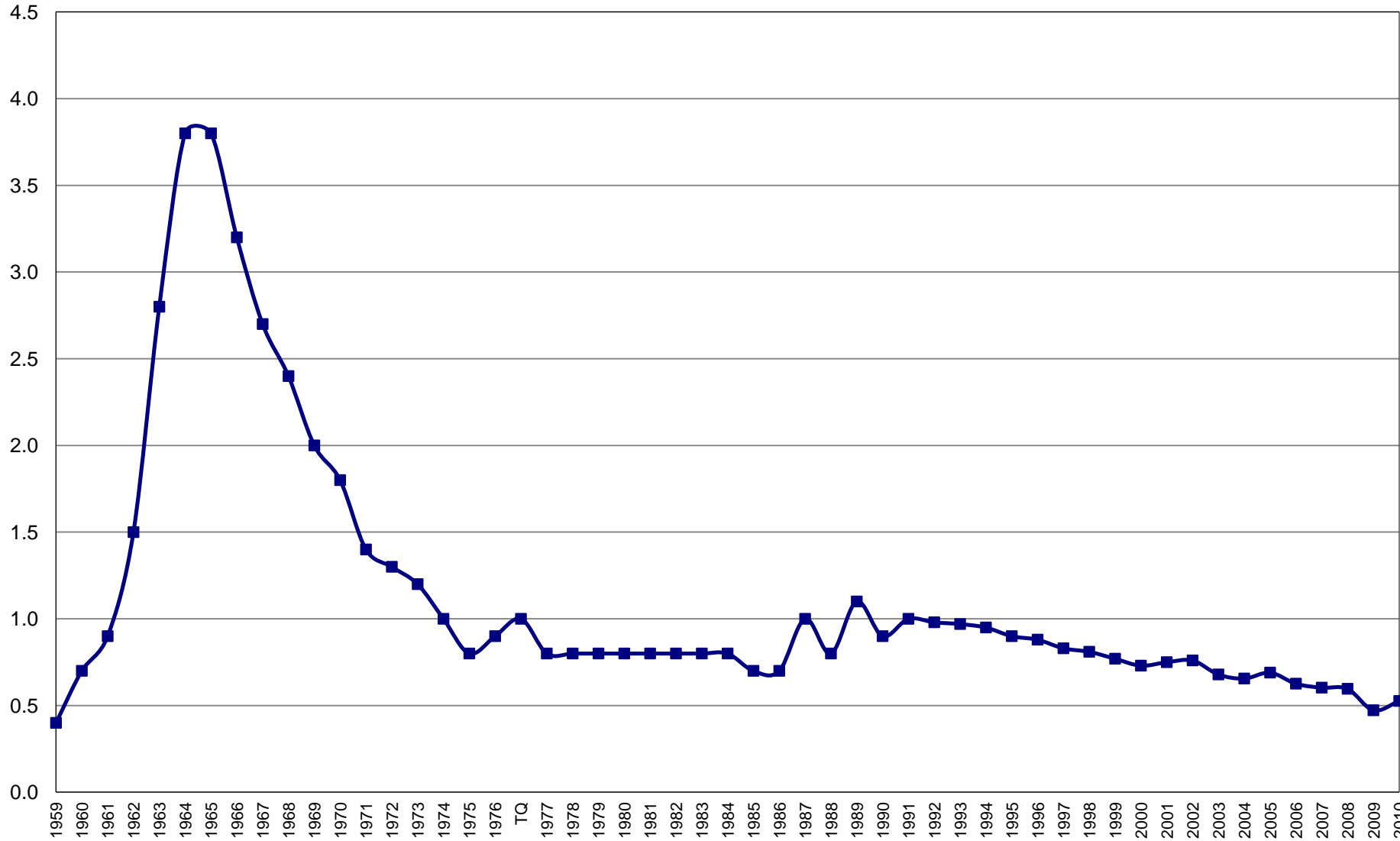
This image of Harrison Schmitt makes clear one reason Apollo was never followed with additional Moon landing efforts. Humanity found nothing there of value that they wished to exploit, as had happened repeatedly in previous terrestrial explorations.

Legacies of Apollo

- Strong belief that visionary presidential leadership would overcome all political challenges and ensure success.
- Faith in ability of presidents to dominate the political system persisted long after others had declared “imperial presidency” an illusion.
- All major human spaceflight initiatives predicated on this belief:
 - Space Shuttle Decision (1972).
 - National Aero-Space Plane (1983).
 - Space Station Decision (1984).
 - Space Exploration Initiative (1989).
 - Vision for Space Exploration (2004).



NASA Budget as Percentage of Federal Budget

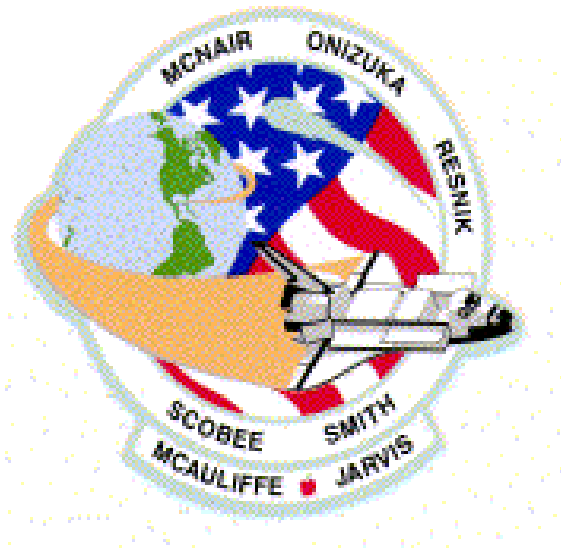


Space Shuttle: A Creature of Compromise

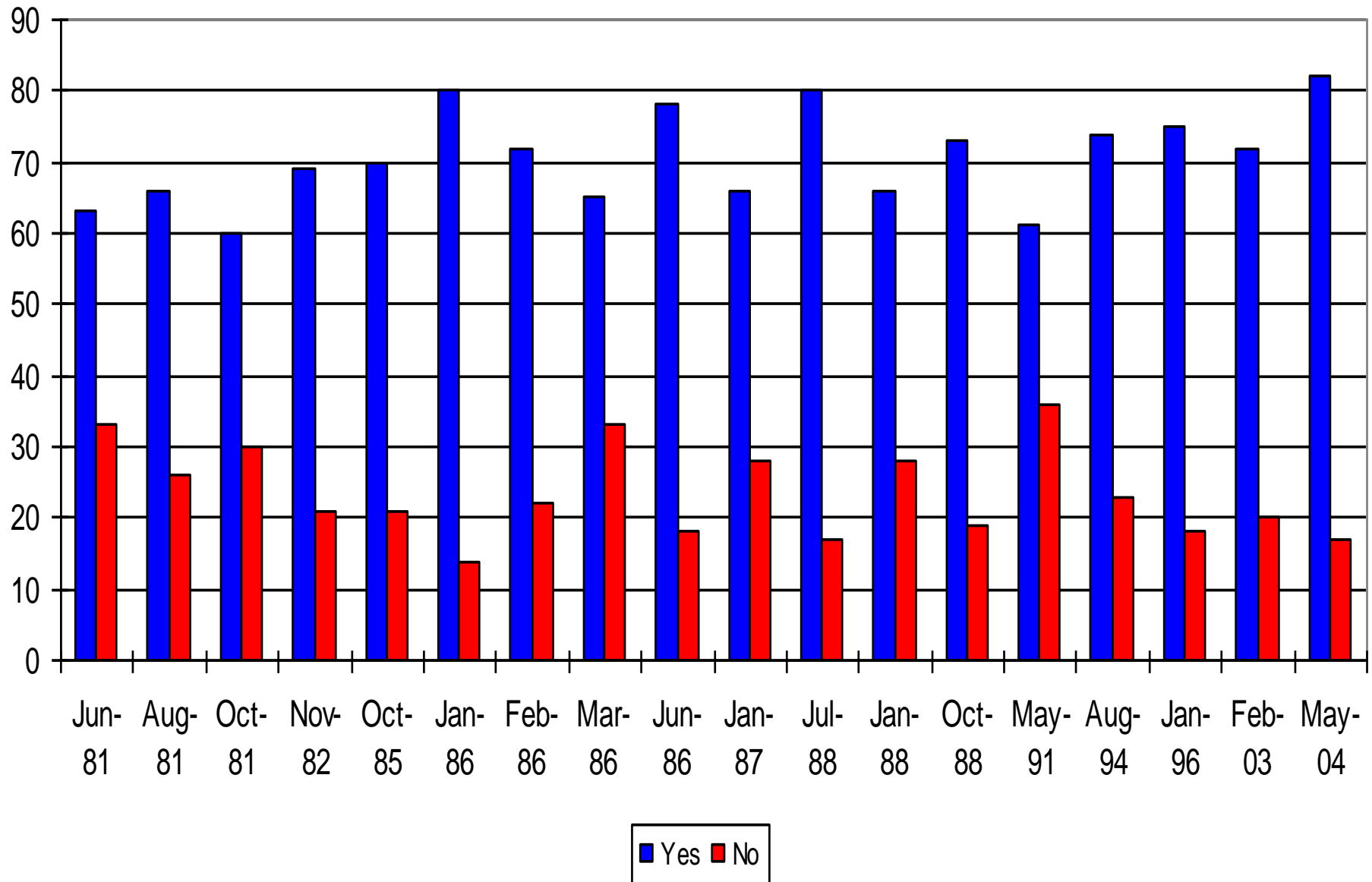
- Approved January 5, 1972, \$5.15B price tag.
- First flight April 12-14, 1981.
- Space Shuttle to provide routine, inexpensive, reliable, access to space.
- Civil/military carrier.
- Intended as next step in realizing vision of multi-planetary human presence.
- Viewed as “one-size-fits-all” space access vehicle.
- Was to position U.S. as central space access entity in world.



Tragedies: *Challenger* 1986 and *Columbia* 2003



IS THE SPACE SHUTTLE A GOOD INVESTMENT?



International Space Station

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Space Stations long viewed as necessary as base camps to anywhere else. Station concept approved in 1984; first elements launched in 1998. First crew went aboard ISS in 2000.

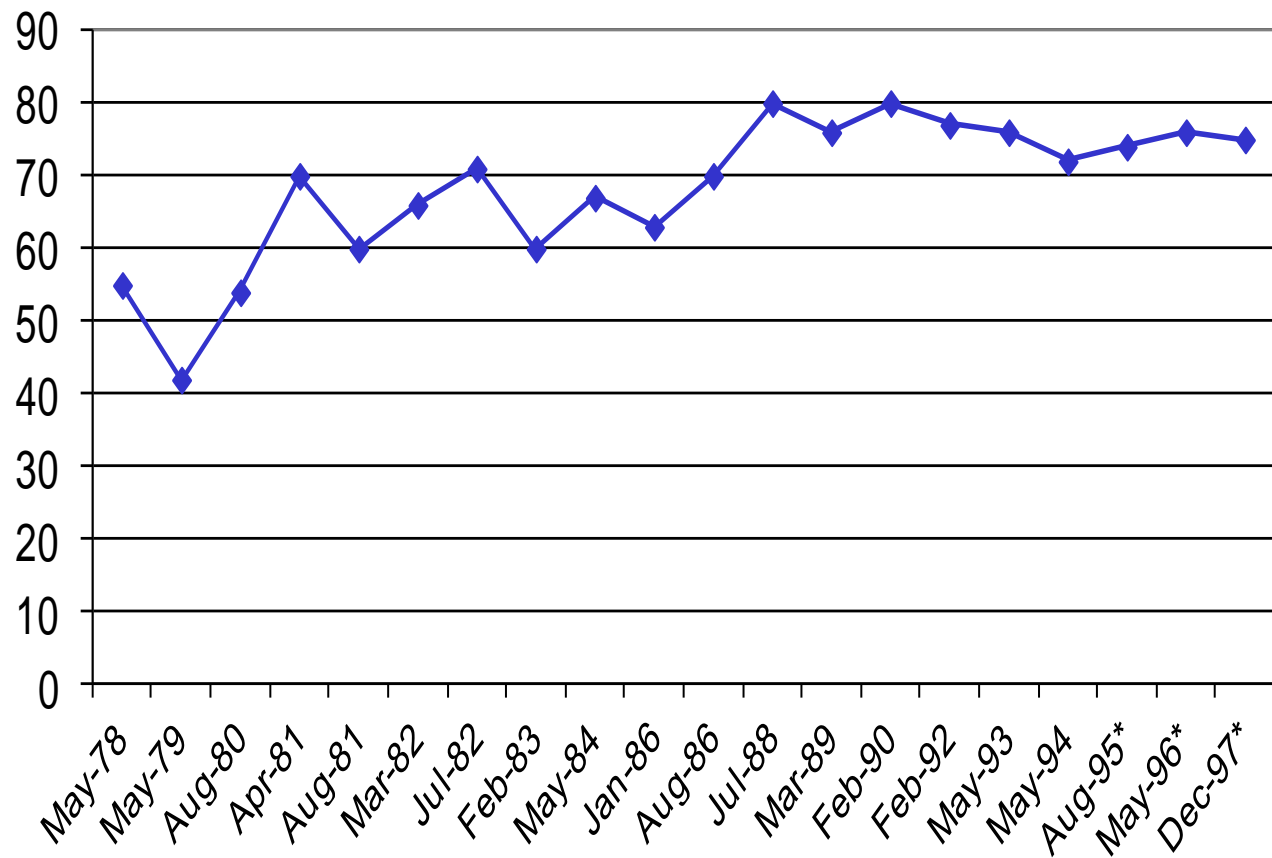


Positive Public Perceptions

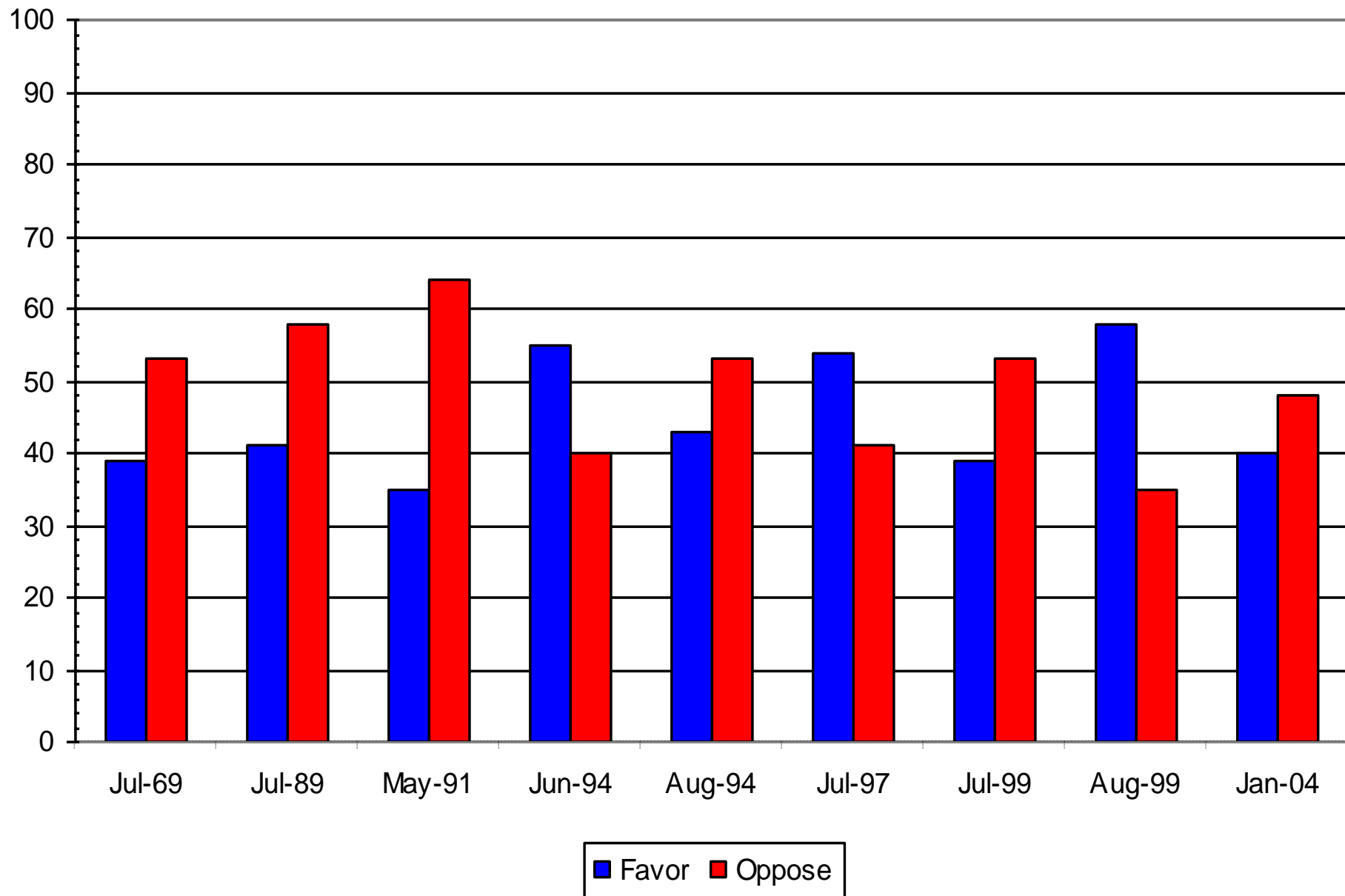
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While Americans may not know that much about NASA's efforts in space, they generally have a positive opinion of it. Over 70 percent say they have a favorable impression, compared to less than 20% who hold an unfavorable impression.

I APPROVE OF AMERICA'S CURRENT CIVILIAN SPACE PROGRAM



SHOULD THE GOVERNMENT FUND HUMAN TRIPS TO MARS?



Preferences for Spending Cuts in Various Areas

General Social Survey, 2010

Type of Government Spending	Propensity Toward Cuts*		
	Democrats	Republicans	Difference
Defense	65	38	+27
Space exploration	63	54	+9
Crime prevention	25	23	+2
Highways and bridges	33	33	0
Scientific research	33	38	-5
Parks and recreation	33	41	-8
Mass transit	29	37	-8
Drug addiction	24	32	-8
Alternative energy	18	26	-8
Social Security	22	31	-9
Education	12	22	-10
Foreign aid	70	80	-10
Problems of big cities	32	45	-13
Child care	22	37	-15
Environment	19	40	-21
Welfare	51	73	-22
Health care	19	43	-24
Improving condition of blacks	30	56	-26

* On 0-100 scale. 0 = increase spending; 50 = leave spending intact; 100 = cut spending.

Democrats and Republicans include independents who lean toward each party

Reconsidering Human Spaceflight Rationales

- Currently, no firm strategic imperative for human space exploration and development.
- As primary rationales: destiny, national prestige, technology spin-offs, science, and inspiring youth appear insufficient.
- Expansive views of economic development and species survival might become primary rationales of future.



“Someday I might travel to another planet, but I’m not sure why.”