

Measuring the U.S. Space Economy

BEA Advisory Committee Meeting

Tina Highfill

May 13, 2022



Snapshot of presentation

Motivation for measuring the space economy

Overview of methodology

Space economy by industry estimates, 2012-2019

- Gross output and value added (nominal and real)
- Private employment and compensation

Other research and next steps

- Projects with other organizations
- FY23 budget initiative

Motivation for space economy statistics

1. Renewed interest in space

- High-profile space activities are transitioning from government to commercial actors
- Promoting commercial space activities is a priority for this administration and was for the last administration

SPACE

SpaceX launches another crew to space station during a record year

Elon Musk's company is flying increasingly on reused boosters and hitting a rapid launch cadence



By [Christian Davenport](#)

April 27, 2022 | Updated April 27, 2022 at 7:47 p.m. EDT

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- ## 2. Existing private industry reports of the “Space Economy” are often not specific to the U.S. and methodologies regularly change

Space economy methodology overview

Step 1: Identify space-related goods and services within BEA supply-use tables. This includes goods and services that:

1. Are used in space, or directly support those used in space
2. Require direct input from space to function, or directly support those that do
3. Are associated with studying space

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Make Table, Before Redefinitions, 2012 [Millions of Dollars] Bureau of Economic Analysis					
Industry / Commodity		Aircraft manufacturing	Aircraft engine and engine parts manufacturing	Other aircraft parts and auxiliary equipment manufacturing	Guided missile and space vehicle manufacturing
Code	Industry Description	336411	336412	336413	336414
336411	Aircraft manufacturing	100,972	154	3,526	873
336412	Aircraft engine and engine parts manufacturing	269	39,001	421	0
336413	Other aircraft parts and auxiliary equipment manufacturing	3,442	222	29,536	23
336414	Guided missile and space vehicle manufacturing	0			14,957

Source: BEA 2012 supply-use tables <https://www.bea.gov/industry/input-output-accounts-data>

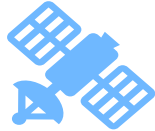





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Step 2: Isolate space-related economic activity, when necessary

Source data used to estimate space activity

U.S. Space Economy Components		Primary Data Sources	
Information	Telecommunications, broadcasting, software		Bureau of Labor Statistics (BLS) Occupational Employment Survey (OES); Federal Communications Commission (FCC); Securities and Exchange Commission (SEC); BEA supply-use tables
Manufacturing, Retail trade, and Wholesale trade	Space vehicles; space weapons; satellites; ground equipment; search, detection, navigation, and guidance systems (GPS/PNT equipment)		Economic Census product line data; BEA supply-use tables
Government	Military, civilian, federally funded research and development centers		Public budget documents; National Science Foundation (NSF) Survey of Federal Funds for Research and Development; BEA supply-use tables
Professional and business services	Research and development; engineering and technical services; computer systems design; geophysical surveying and mapping services		BLS OES; NSF Survey of Federal Funds for Research and Development; NSF Business Enterprise Research and Development Survey; BEA supply-use tables
Construction	Space facilities, observatories, planetariums		Census Value of Construction Put in Place (VIP); BEA supply-use tables
Other various services	Launch services, insurance, education, observatories, planetariums		National Center for Education Statistics Integrated Postsecondary Education Data System (IPEDS); Federal Aviation Administration; MITRE; Public documents; BEA supply-use tables

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Step 3: Use BEA supply-use tables to determine total space-related economic activity by industry

Space economy results overview

	Space Economy, 2019	Space Average Annual Growth Rate, 2012-2019 (%)
Gross output	\$195 billion	1.6
Real gross output chained (2012) dollars	\$194 billion	1.6
Value added	\$120 billion	2.0
Real value added chained (2012) dollars	\$126 billion	2.7

Space economy results overview

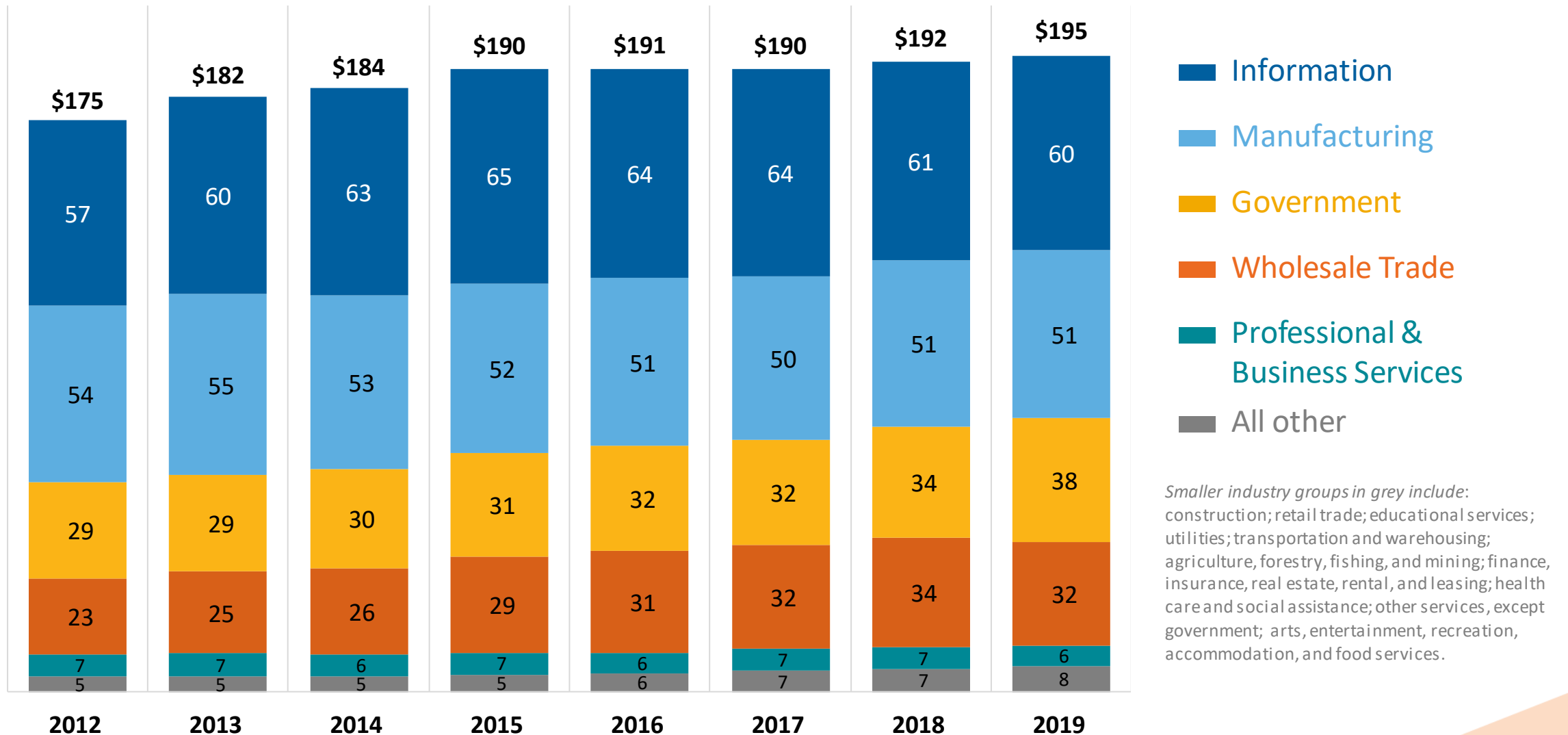
	Space Economy, 2019	Space Average Annual Growth Rate, 2012-2019 (%)	U.S. Average Annual Growth Rate, 2012-2019 (%)
Gross output	\$195 billion	1.6	3.7
Real gross output chained (2012) dollars	\$194 billion	1.6	2.3
Value added	\$120 billion	2.0	4.0
Real value added chained (2012) dollars	\$126 billion	2.7	2.3

Space economy results overview

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Real value added chained (2012) dollars	\$126 billion	2.7	2.3
Private employment	354,000	0.0	1.9
Private compensation	\$42 billion	0.8	4.6

Space economy gross output by industry, 2012-2019

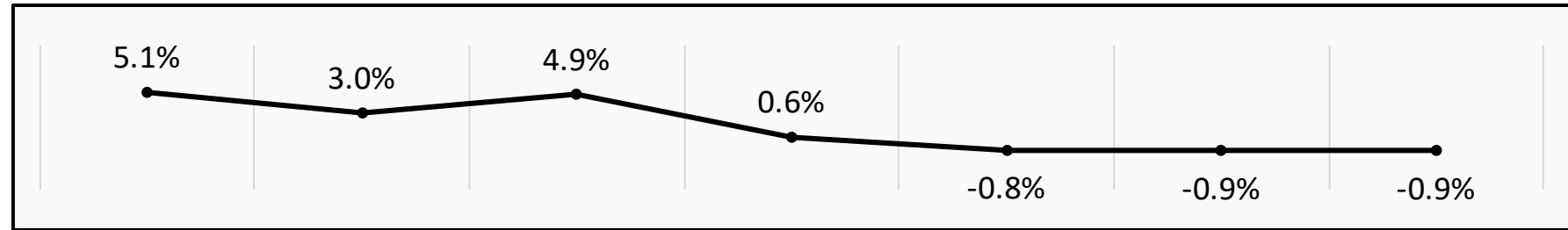
[Billions of dollars]



Space economy real gross output, 2012-2019

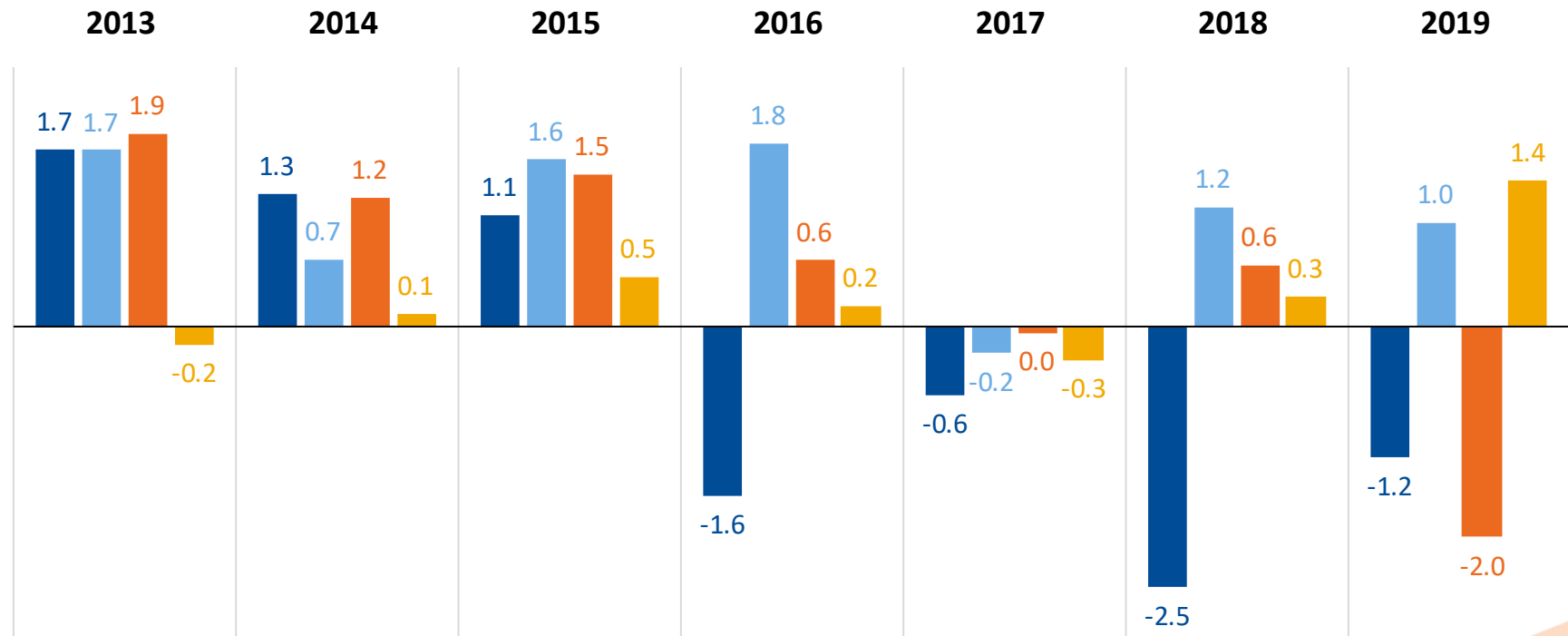
[Annual growth rates and industry contributions of chained (2012) dollars]

Annual overall space growth



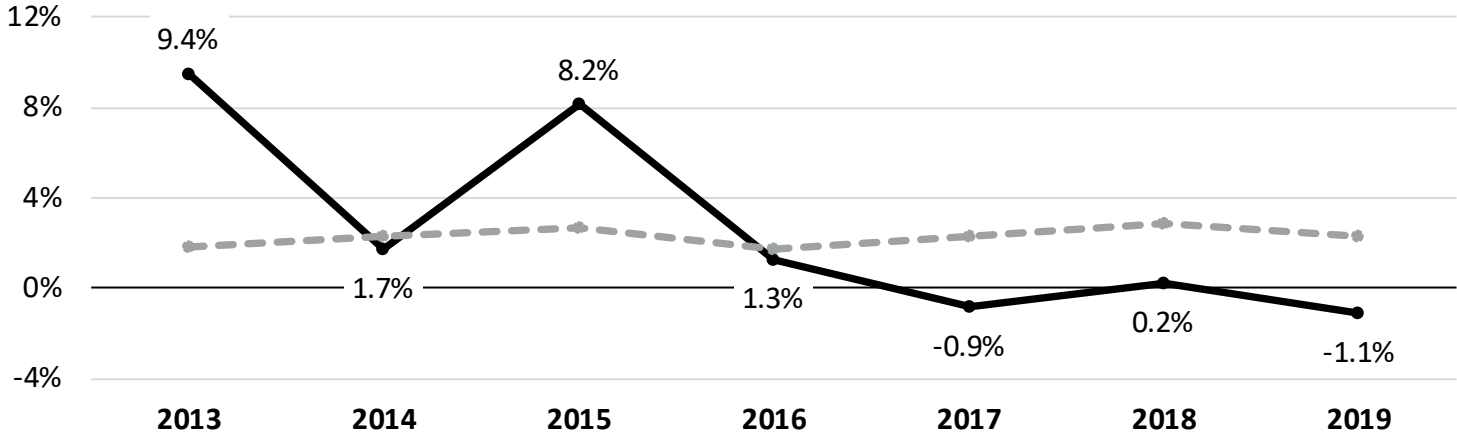
Contributions to growth (percentage points)

- Information
- Manufacturing
- Wholesale Trade
- Government



Space economy real value added, 2012-2019

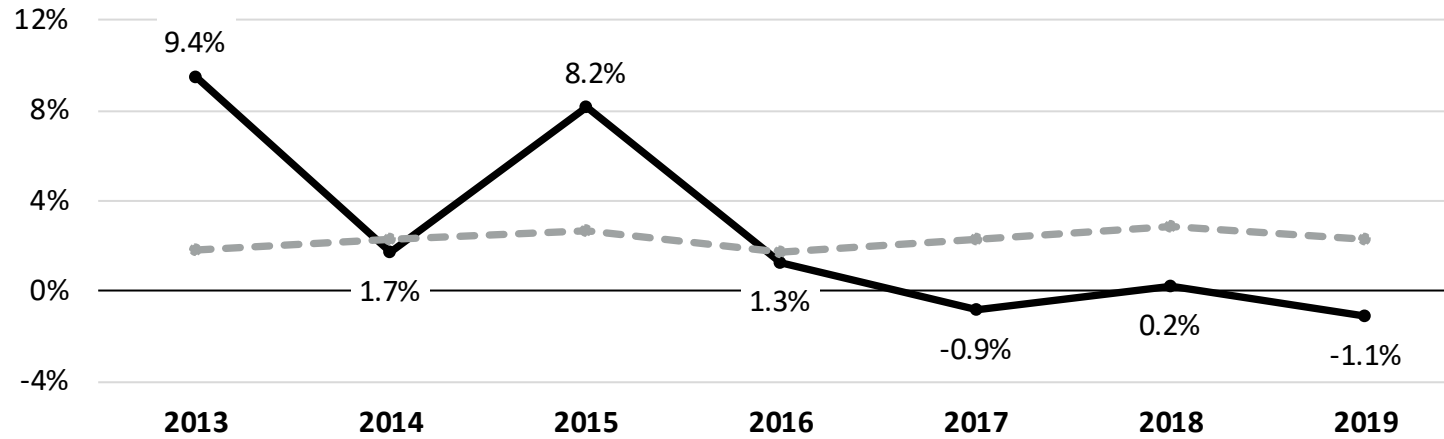
[Annual growth rates of chained (2012) dollars]



	AAGR
Real GDP (Space)	2.7%
Real GDP (U.S.)	2.3%

Space economy real value added, 2012-2019

[Annual growth rates of chained (2012) dollars]



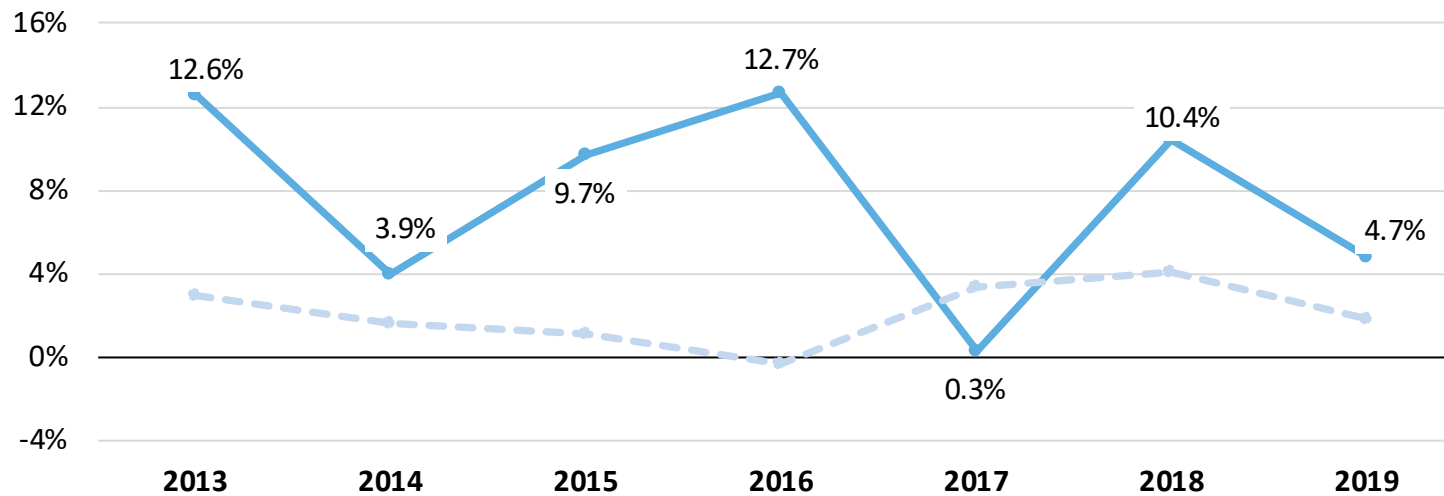
AAGR

—●— Real GDP (Space)

2.7%

- - -●- - Real GDP (U.S.)

2.3%



—●— Manufacturing (Space)

7.8%

- - -●- - Manufacturing (U.S.)

2.1%

Other research and next steps

Collaborations with U.S. and international organizations

- European Space Economy Satellite Account
- OECD's *Handbook on Measuring the Space Economy, 2nd Edition*
- "Estimating the United States Space Economy Using Input-Output Frameworks"
Space Policy (2022)

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FY23 budget initiative to update and expand estimates

- Additional detail and years
- Government employees and compensation
- Experimental price indexes for satellite manufacturing