Appendix:
Military Capabilities and Corresponding Modernization Programs

As mentioned in the Methodology, this *Index* measures the capability of the U.S. military based on the current state of its combat equipment. Four factors are key to this assessment: the age of key platforms relative to their expected life span, whether the required capability is being met by legacy or modern equipment, the scope of replacement programs relative to the operational requirement, and the overall health and stability of modernization programs. This appendix presents each of the services' principal combat platforms and corresponding modernization programs, scoring them in each of the four factors.

ARMY SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Main Battle Tank

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
M1A1/2 Abrams Inventory: **775/1,609** Fleet age: **27/6.5** Date: **1980** The Abrams is the main battle tank used by the Army in its armored brigade combat teams (BCTs). The Abrams went through a remanufacture program to extend its life to 2045.	4	4	None		

Infantry Fighting Vehicle

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
M2 Bradley Inventory: **6,547** Fleet age: **12** Date: **1981** The Bradley is a tracked infantry fighting vehicle (IFV) meant to transport infantry and provide covering fire. The Bradley complements the Abrams tank in armored BCTs. Originally intended to be replaced by the Ground Combat Vehicle (now canceled), the Bradley underwent a remanufacture program to extend the life of the platform. The Army plans to keep the Bradley in service until 2045.	4	1	Ground Combat Vehicle (GCV) was canceled. Concept design contracts were awarded in May 2015 for a Future Fighting Vehicle.		

Armored Fighting Vehicle

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
Stryker Inventory: **3,892** Fleet age: **11** Date: **2002** The Stryker is a wheeled armored fighting vehicle that makes up the Stryker BCTs. The program was considered an interim vehicle to serve until the arrival of the Future Combat System (FCS), but that program was cancelled due to technology and cost hurdles. The Stryker is undergoing modifications to receive a double-v hull (DVH) to increase survivability. The Stryker is expected to remain in service for 30 years.	4	3	None		

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

ARMY SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Armored Personnel Carrier

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
M113 Armored Personnel Carrier Inventory: **3,000** Fleet age: **18** Date: **1960** The M113 is a tracked APC that plays a supporting role for armored BCTs and infantry BCTs. The APC was also to be replaced by the GCV. Plans are to use the platforms to 2045.	4	1	**Armored Multi-Purpose Vehicle (AMPV)** Timeline: **2018–2035** The AMPV will be adapted from an existing vehicle design which allowed the program to bypass the technology development phase. The FY 2018 President's budget requests funding for the initial procurement of 107 vehicles. IOC is not expected until 2022.	2	5

PROCUREMENT
2,897

SPENDING *($ millions)*
$552 $13,375

Light Wheeled Vehicle

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
HMMWV Inventory: **150,000** Fleet age: **9.5** Date: **1985** The HMMWV is a light wheeled vehicle used to transport troops under some level of protection. The expected life span of the HMMWV is 15 years. Some HMMWVs will be replaced by the Joint Light Tactical Vehicle (JLTV).	2	1	**Joint Light Tactical Vehicle (JLTV)** Timeline: **2015–2035** Currently in development, the JLTV is a vehicle program meant to replace some of the HMMWVs and improve reliability and survivability of vehicles. So far the program has experienced a one-year delay due to changes in vehicle requirements. This is a joint program with USMC. Low rate initial production was awarded to a single contractor in August 2015.	1	4

PROCUREMENT
2,690 46,409

SPENDING *($ millions)*
$1,965 $23,311

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

ARMY SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Attack Helicopter

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
AH-64 A-D Apache Inventory: **450** Fleet age: **16** Date: **1984** The Apache is an attack helicopter that makes up the Army Combat Aviation Brigades. There are currently two variants, the AH-64A and AH-64D. The AH-64A is being retired. AH-64D makes up the 82 percent of the inventory and entered service in 1998. The expected life cycle is about 20 years.	1	2	**AH-64E Reman** Timeline: **2010–2024** The AH-64E Reman is a program to remanufacture old Apache helicopters into the more advanced AH-64E version. The AH-64E will have more modern and interoperable systems and be able to carry modern munitions. The overwhelming majority of AH-64Es will be from remanufacture. **PROCUREMENT** 287 347 **SPENDING** *($ millions)* $6,580 $8,017	2	4
AH-64E Inventory: **146** Fleet age: **3** Date: **2013** The AH-64E variant of the Apache is a remanufactured version with substantial upgrades in powerplant, avionics, communications, and weapons capabilities. The expected life cycle is about 20 years.	5		**AH-64E New Build** Timeline: **2013–2028** The AH-64E New Build pays for the production of new Apaches. The program is meant to modernize and sustain the current Apache inventory. The AH-64E will have more modern and interoperable systems and be able to carry modern munitions. Very few AH-64Es are being built compared with the remanufactured variant. **PROCUREMENT** 37 26 **SPENDING** *($ millions)* $539 $1,984	2	4

Medium Lift

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
UH-60A Black Hawk Inventory: **802** Fleet age: **24** Date: **1979** The Black Hawk UH-60A is a medium-lift utility helicopter. The expected life span is about 25 years. This variant of the Black Hawk is now being replaced by the newer UH-60M variant.	1	3	**UH-60M Black Hawk** Timeline: **2005–2030** Currently in production, the purchases of the UH-60Ms are intended to modernize and replace current Black Hawk inventories. The newer M variant will improve the Black Hawk's range and lift by upgrading the rotor blades, engine, and computers. **PROCUREMENT** 873 494 **SPENDING** *($ millions)* $15,844 $10,817	5	4
UH/HH-60M Black Hawk Inventory: **700** Fleet age: **9** Date: **2006** The Black Hawk UH-60M is a medium-lift utility helicopter that is a follow-on to the UH-60A. As the UH-60A is retired, the M variant will be the main medium-lift rotorcraft used by the Army. Expected to remain in service until 2030.	4				

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

ARMY SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Heavy Lift

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
CH-47D Chinook Inventory: **75** Fleet age: **27** Date: **1962** The Chinook is a heavy-lift helicopter. It has an expected life cycle of 20 years. The CH-47Ds were originally upgraded from earlier variants of the CH-47s.	1	5	**CH-47F** Timeline: **2003–2018** Currently in production, CH-47F program is intended to keep the fleet of heavy-lift rotorcraft healthy as older variants of the CH-47 are retired. The program includes both remanufactured and new builds of CH-47s. The F variant has engine and airframe upgrades to lower the maintenance requirements. Total procurement numbers include the MH-47G configuration for U.S. Special Operations Command (67 total). **PROCUREMENT** 534 / 9 **SPENDING** *($ millions)* $14,528 / $132	5	4
CH-47F Chinook Inventory: **360** Fleet age: **4.4** Date: **2001** CH-47F is "a remanufactured version of the CH-47D with a new digital cockpit and modified airframe to reduce vibrations." It also includes a common aviation architecture cockpit and advanced cargo-handling capabilities. The expected life span is 35 years.	5				

Intelligence, Surveillance, and Reconnaissance (ISR)

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
MQ-1C Gray Eagle Inventory: **105** Fleet age: **3** Date: **2009** The Gray Eagle is a medium-altitude long-endurance (MALE) UAV used to conduct ISR missions. The use of MALE UAVs is a new capability for the Army. The Gray Eagle is currently in production.	5	5	**MQ-1C Gray Eagle** Timeline: **2010–2016** The MQ-1C UAV provides Army reconnaissance, surveillance, and target acquisition capabilities. The army increased its acquistion objective of the MQ-1C from 167 to 204 in 2017. **PROCUREMENT** 193 / 11 **SPENDING** *($ millions)* $5,506 / $207	5	4

SOURCE: Heritage Foundation research using data from government documents and websites. See also Dakota L. Wood, ed., *2017 Index of U.S. Military Strength* (Washington, DC: The Heritage Foundation, 2017), http://index.heritage.org/militarystrength/..

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

NAVY SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Aircraft Carrier

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
***Nimitz*-Class Aircraft Carrier (CVN-68)** Inventory: **10** Fleet age: **26.5** Date: **1975** The expected life of the *Nimitz*-class nuclear aircraft carrier is 50 years. The class will start retiring in the mid-2020s and will be replaced by the *Ford*-class carriers.	3	1	***Ford*-Class Aircraft Carrier (CVN-78)** Timeline: **2008–2018** Currently in production, the *Ford*-class will replace the current *Nimitz*-class aircraft carriers. After a year-long delay, the first ship of its class was commissioned on July 22, 2017. The *Ford*-class will increase aircraft sorties by 25 percent, require a crew of several hundred fewer sailors, and be able to handle more advanced weapon systems. **PROCUREMENT** 2 1 **SPENDING** *($ millions)* $28,516 $17,219	1	2
***Ford*-Class Aircraft Carrier (CVN-21)** Inventory: **1** Fleet age: **0.2** Date: **2017** The expected life of the *Ford*-class nuclear aircraft carrier is 50 years.	5				

Large Surface Combatant

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
***Ticonderoga*-Class Cruiser (CG-47)** Inventory: **22** Fleet age: **27.1** Date: **1983** The *Ticonderoga*-class guided missile cruiser has a life expectancy of 35 years. There are plans to lay up half of the cruiser fleet to modernize it and extend its life into the 2030s. Two cruisers began modernization in FY 2015. There are no replacements currently planned.	2	4	***Zumwalt*-Class Destroyer (DDG-1000)** Timeline: **2007–2009** The DDG-1000 was designed to be a new-generation destroyer capable of handling more advanced weapon systems with modern gun systems and a hull design aimed to reduce radar detectability. The DDG-1000 program was intended to produce a total of 32 ships, but this number has been reduced to 3, essentially ending the acquisition program. The first DDG-1000 was commissioned in October 2016. **PROCUREMENT** 3 **SPENDING** *($ millions)* $21,859 $955	1	1
***Zumwalt*-Class Destroyer** Inventory: **1** Fleet age: **1** Date: **2016**	5				
***Arleigh Burke*-Class Destroyer (DDG-51)** Inventory: **64** Fleet age: **15.6** Date: **1991** The *Arleigh Burke*-class guided missile destroyer is the only operating class of large surface combatant currently in production. The DDG-51 has a 35-year life expectancy.	3		***Arleigh Burke*-Class Destroyer (DDG-51)** Timeline: **1985–2022** The DDG-51 has been procured since 1985, but was restarted in FY 2013 to make up for the reduction in DDG-1000 acquisitions. Future DDG-51s will be upgraded to a Flight III design, which will include the Advanced Missile Defense Radar (AMDR), a more capable missile defense radar. The DDG-51 will make up the bulk of the Navy's large surface combatant requirement of 88. **PROCUREMENT** 77 9 **SPENDING** *($ millions)* $87,180 $23,951	4	4

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

NAVY SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Small Surface Combatant

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
Littoral Combat Ship (LCS) Inventory: **9** Fleet age: **3.5** Date: **2008** The Littoral Combat Ship includes two classes: the *Independence*-class and the *Freedom*-class, both of which are in the early phases of production. The ship is expected to have a service life of 25 years. The LCS is designed to meet multiple missions and make up the entirety of the small surface combatant requirement. LCS 7 was commissioned in October 2016.	5	2	**Littoral Combat Ship (LCS)** Timeline: **2009–2025** The LCS program is in the early stages of production. The LCS is intended to fulfill the mine countermeasure, antisubmarine warfare, and surface warfare roles for the Navy. It will be the only small surface combatant in the fleet once the Navy's frigates and MCM ships retire in the coming years. The program is facing controversy due to cost growth, development issues, and requirements issues for survivability and strike. A modified LCS classified as a frigate was announced to fill out the remaining 20-ship small surface combatant requirement in late 2014. **PROCUREMENT** 28 12 **SPENDING** *($ millions)* $20,319 $8,665	2	1
***Avenger*-Class Mine Counter Measure (MCM-1)** Inventory: **11** Fleet age: **25.2** Date: **1987** Designed for mine sweeping and hunting/killing, 11 of the 14 *Avenger*-class ships built are still active. The class has a 30-year life span. The remaining MCMs are expected to be decommissioned throughout the 2020s. There is no replacement in production for this class of ship, but the Navy plans to fill its mine countermeasure role with the LCS.	1				

SSGN Cruise Missile Submarine

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
***Ohio*-Class (SSGN-726)** Inventory: **4** Fleet age: **32.2** Date: **1981** Rather than retiring the four oldest *Ohio*-class ballistic missile submarines early, the Navy converted them to SSGN-726 guided missile submarines, equipping them with conventional Tomahawk cruise missiles rather than Trident ballistic missiles tipped with nuclear warheads. The SSGNs provide the Navy with a large stealthy strike capability. The conversion began in 2002 and was completed in 2007. Since the conversion, they are expected to be retired in the late 2020s. The Navy has no planned replacement for the SSGNs once they retire.	2	1	None		

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

NAVY SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Attack Submarines

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
***Seawolf*-Class (SSN-21)** Inventory: **3** Fleet age: **17.2** Date: **1997** Larger and equipped with more torpedo tubes than the U.S. Navy's other current nuclear-powered attack submarines, the class was canceled after three submarines were purchased due to budget constraints in the 1990s. The *Seawolf*-class submarines are expected to be retired in 14 years. Meant to replace the *Los Angeles*-class, the *Seawolf* has been replaced by the *Virginia*-class attack submarine.	3	2	***Virginia*-Class (SSN-774)** Timeline: **1998–TBD** The *Virginia*-class is on a production schedule of two per year. The program has been mostly successful. However, the current program of record purchases 33 total submarines, which is not enough to replace the decommissioning *Los Angeles*-class submarines and will create a shortfall in attack submarines. There are reportedly plans to restructure the program to increase the number of submarines in the SSN-774 class to 48. **PROCUREMENT** 26 22 **SPENDING** *($ millions)* $78,687 $85,636	5	4
***Los Angeles*-Class (SSN-688)** Inventory: **35** Fleet age: **27.5** Date: **1976** The *Los Angeles*-class comprises the largest portion of the Navy's attack submarine fleet. The class has a 30 year service life. Of the 62 built, 25 have been decommissioned and one was converted into a moored training ship. The last *Los Angeles*-class submarine is expected to retire in the late 2020s. The *Virginia*-class is replacing this submarine class.	1				
***Virginia*-Class (SSN-774)** Inventory: **13** Fleet age: **6.8** Date: **2004** The *Virginia*-class is the U.S. Navy's next-generation attack submarine. The life expectancy of the *Virginia*-class is 33 years. The *Virginia*-class is in production and will replace the *Los Angeles*-class and *Seawolf*-class attack submarines as they are decommissioned.	4				

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

NAVY SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

SSBN Ballistic Missile Submarine

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
***Ohio*-Class (SSBN)** Inventory: **14** Fleet age: **26.7** Date: **1984** The SSBN *Ohio*-class is one of the three legs of the U.S. military's nuclear triad. The *Ohio*-class's expected service life is 42 years. The *Ohio*-class fleet will begin retiring in 2027 at an estimated rate of one submarine per year until 2039. The Navy plans to replace the *Ohio*-class with the SSBN(X) or next-generation "Ohio replacement program."	2	1	***Columbia*-Class (SSBN-X)** Inventory: **14** Fleet age: **26.7** Date: **1984** In January 2017, the SSBN *Columbia*-class was designated a major defense acquisition program. This also marks the entry of the program into the engineering and manufacturing development phase. The ships will begin construction in FY 2021. **PROCUREMENT** 12		

Amphibious Warfare Ship

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
***Wasp*-Class Amphibious Assault Ship (LHD-1)** Inventory: **8** Fleet age: **20.4** Date: **1989** The *Wasp*-class is the Navy's current amphibious landing helicopter deck, meant to replace the *Tarawa*-class LHA. This ship has a 35-year life span. This class is no longer in production and will be replaced by the new *America*-class.	3	1	***America*-class (LHA-6)** Timeline: **2007–2017** The *America*-class is in production with two LHA-6s already procured. There has been significant cost growth in this program resulting in a Nunn–McCurdy cost breach. The program is also experiencing a 19-month delay because of design problems. One problem was caused by the level of heat from the F-35B STOVL's exhaust. The LHA-7 will follow designs from the LHA-6; FY 2017 funded the procurement of the third and final *America*-Class LHA. **PROCUREMENT** 3 **SPENDING** *($ millions)* $9,037 $2,014	1	1
***America*-Class Amphibious Assault Ship (LHA-6)** Inventory: **1** Fleet age: **2.9** Date: **2014** The *America*-class, the Navy's new class of large-deck amphibious assault ships, is meant to replace the retiring *Wasp*-class LHDs. The lead ship was delivered in April 2014. The *America*-class is designed to accommodate the Marine Corps' F-35Bs.	5				

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

Amphibious Warfare Ship

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
San Antonio-Class Amphibious Transport Dock (LPD-17) Inventory: **10** Fleet age: **6.6** Date: **2006** The *San Antonio*-class is the replacement for the *Austin*-class LPD and makes up most of the LPD inventory. The LPDs have well decks that allow the USMC to transfer the vehicles and supplies carried by the ship to the shore via landing craft. The LPD can also carry 4 CH-46s or 2 MV-22s. The class has a 40-year life expectancy.	5	3	**_San Antonio_-Class Amphibious Transport Dock (LPD-17)** Timeline: **1996–2016** The LPD-17s are replacements for the *San Antonio-class* LPDs. All 13 LPD-17s have been procured. **PROCUREMENT** 13 **SPENDING** *($ millions)* $22,451 $103	5	4
Whidbey Island-Class Dock Landing Ship (LSD-41) Inventory: **8** Fleet age: **28.6** Date: **1985** The *Whidbey Island*-class is a dock landing ship, which transports Marine Corps units, equipment, and supplies for amphibious operations through use of its large stowage and well decks. The *Whidbey Island*-class and *Harpers Ferry*-class ships are to be replaced by the LX(R) program, which is in early developmental stages.	3				
Harpers Ferry-Class Dock Landing Ships (LSD-49) Inventory: **4** Fleet age: **21.3** Date: **1995** A follow-on to the *Whidbey Island*-class, the *Harpers Ferry*-class LSDs have a larger well deck with more space for vehicle stowage and landing craft. Like the *Whidbey Island*-class, these ships should remain in service until 2038. The *Whidbey Island*-class and *Harpers Ferry*-class ships are planned to be replaced by the LX(R) program, which is in early developmental stages.	3		N/A—LX(R) not yet a Major Defense Acquisition Program (MDAP)		

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

NAVY SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Airborne Early Warning

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
E-2C Hawkeye Inventory: **51** Fleet age: **31** Date: **1964** The E-2C Hawkeye is a battle management and airborne early warning aircraft. While still operational, the E-2C is nearing the end of its service life and is being replaced by the E-2D Advanced Hawkeye. The E-2C fleet received a series of upgrades to mechanical and computer systems around the year 2000.	1	2	**E-2D Advanced Hawkeye** Timeline: **2009–2024** Meant to replace the E-2C, the E-2D Hawkeye is in production. The original plan was to purchase five per year until 2023. DOD plans to make up for the cut in FY 2017 by purchasing six units. **PROCUREMENT** 46 / 29 **SPENDING** *($ millions)* $13,926 / $8,081	5	4
E-2D Advanced Hawkeye Inventory: **25** Fleet age: **3.5** Date: **2013** A more advanced version of the E-2C, the E-2D provides improved battle management capabilities. The program recently started production.	5				

Electronic Attack Aircraft

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
EA-18G Growler Inventory: **117** Fleet age: **4** Date: **2010** The EA-18G electronic warfare aircraft replaced the legacy EA-6B Prowlers. The platform is still in production and is relatively new.	5	5	**EA-18G Growler** Timeline: **2006–2016** The EA-18G Growler has been in production for several years, with few current acquisition problems. The program total of 160 is an increase from previous years, which estimated the Navy would purchase 88. All 160 have been procured. **PROCUREMENT** 160 **SPENDING** *($ millions)* $14,861 / $517	5	4

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

NAVY SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Fighter/Attack Aircraft

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
F/A-18 A-D Hornet Inventory: **230** Fleet age: **25.5** Date: **1983** The F/A-18 is the Navy's older carrier-based fighter and strike attack aircraft. The Navy has been trying to extend the life of the later variants (C-D) from 6,000 flight hours to potentially 10,000. However, some are being retired and eventually will be replaced by the F/A-18 E/F Super Hornet and F-35C variant.	1	3	**F-35C Joint Strike Fighter** Timeline: **2009–2033** The F-35C is the Navy's variant of the Joint Strike Fighter. The Joint Strike Fighter faced many issues during its developmental stages, including engine problems, software development delays, cost overruns incurring a Nunn–McCurdy breach, and structural problems. The F-35C variant was always scheduled to be the last one to reach initial operational capability (IOC). Like the other variants, the IOC date was pushed back three years from March 2015 to late 2018. **PROCUREMENT** 65 195 **SPENDING** *($ millions)* $122,580 $283,901	1	1
F/A-18 E/F Super Hornet Inventory: **561** Fleet age: **14** Date: **2001** The F/A-18 E/F Super Hornet is a newer, more capable version of the Hornet. The Navy is aiming to have a combination of Super Hornets and F-35Cs make up their carrier-based strike capability. The F/A-18 E-F has an expected service life of 20 years.	2				

NOTES: The total program dollar value reflects the full F–35 joint program, including engine procurement. The Navy is also procuring 67 F-35Cs for the Marine Corps. Age of fleet is calculated from date of commissioning to January 2016.
SOURCE: Heritage Foundation research using data from government documents and websites. See also Dakota L. Wood, ed., *2017 Index of U.S. Military Strength* (Washington, DC: The Heritage Foundation, 2017), http://index.heritage.org/militarystrength/.

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

Strategic Bomber

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
B–52 Inventory: **58** Fleet age: **53.7** Date: **1955** The B-52, the oldest of the bombers, can provide global strike capabilities with conventional or nuclear payloads, although it largely has made up the core of the strategic bomber force. The aircraft entered service in 1955 and was in production until 1962.	1		The B-21 is intended to replace the Air Force bomber fleet. The program is not yet a major defense acquisition program.		
B–1 Inventory: **61** Fleet age: **29** Date: **1986** The B-1, originally designed to carry nuclear weapons, was reconfigured for conventional weapons in the early 1990s. The program entered service in 1986 and completed production in 1988. The B-1B will remain in service until 2040.	3	1			
B–2 Inventory: **20** Fleet age: **22.1** Date: **1997** The B-2 bomber provides the USAF with global strike capabilities. It can carry both nuclear and conventional payloads. Initially deployed in 1997, the aircraft communication modules are being upgraded. It is expected to remain in service until 2058.	4				

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

AIR FORCE SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Ground Attack Aircraft

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
A-10 Thunderbolt II Inventory: **143** Fleet age: **34** Date: **1977** The A-10 is the only USAF platform designed primarily for close air support and does so with a variety of conventional munitions. The USAF has proposed retiring the aircraft earlier than the planned 2028 date for budget reasons.	2	1	**F-35A** Timeline: **2007–2038** The F-35A is the Air Force variant of the Joint Strike Fighter program, a multirole fixed-wing aircraft. It is currently in early stages of production. The program has faced many issues including a Nunn–McCurdy cost breach during development, grounding due to engine problems, and software development problems. The F-35A achieved IOC on August 2, 2016. **PROCUREMENT** 178 1,585 **SPENDING** *($ millions)* $122,580 $283,901	5	1
F-16 Inventory: **570** Fleet age: **26** Date: **1978** The F-16 is a multirole aircraft that was built between 1976 and 1999. It has received various upgrade blocks over that time. The aircraft was expected to last about 30 years.	1	1			
F-35A Inventory: **123** Fleet age: **2** Date: **2016** See Ground Attack Modernization Program entry. The USAF has received a small portion of a projected 1,763 total aircraft for the program.	5				

Fighter Aircraft

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
F-15 Inventory: **313** Fleet age: **28.7** Date: **1979** The F-15 is a legacy fighter that performs air superiority missions. It is no longer in production. The newer F-15E Strike Eagle variant is to operate until 2025 to supplement the F-22.	1	2	None		
F-22 Inventory: **166** Fleet age: **8.9** Date: **2005** The F-22 is the preeminent air superiority fighter aircraft. The stealth aircraft completed production in 2009 after a dramatic cut of its overall order from 750 to 187. It is currently being modified.	5				

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

AIR FORCE SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Tanker

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
KC-10 Inventory: **59** Fleet age: **31.6** Date: **1981** An aerial refueling tanker supporting the USAF's Mobility and Lift mission, the KC-10 was deployed in 1981. The aircraft was purchased to increase the number of tankers available, which the Air Force posited did not meet current requirements. The aircraft is no longer in production, but is planned to remain in inventory until 2040.	3	1	**KC-46** Timeline: **2015–2027** The KC-46 is meant to replace the KC-135. The program entered low rate initial production in August 2016 after having been delayed by a year due to "design changes and late parts." This is a top program for the Air Force and has an aggressive development and test schedule that may be problematic. **PROCUREMENT** 38 141 **SPENDING** *($ millions)* $12,970 $31,505	1	3
KC-135 Inventory: **155** Fleet age: **55** Date: **1956** The KC-135 supports the mobility and lift mission by providing the joint force aerial refueling capability. The KC-135 makes up the bulk of the aerial refueling capability. The aircraft was initially deployed in 1956, completing production in 1965. The aircraft has undergone several modifications, mainly engine upgrades to improve reliability. It is expected to be in service until 2040, but excessive usage has created many reliability issues due to problems from wear and tear, such as corrosion and fuel bladder leaks.	2				

Heavy Lift

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
C-5 Inventory: **36** Fleet age: **36.5** Date: **1970** The C-5 is the USAF's largest mobility and lift aircraft, enabling it to transport a greater amount of cargo (270,000 pounds) compared with other transport aircraft. Originally deployed in 1970, the aircraft has undergone three modification cycles. The latest started in 2009 to upgrade the platform to a C-5M. The modification program is currently ongoing. The aircraft will remain in service until the 2030s.	2	2	**C-5 RERP** Timeline: **2008–2014** This program is modernizing the C-5 to improve "reliability, maintainability, and availability." The C-5 is having its engine replaced with the new F138. The new engine experienced several issues that are in the process of being mitigated. **PROCUREMENT** 52 **SPENDING** *($ millions)* $6,936 $6.8	3	4

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

AIR FORCE SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Heavy Lift

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
C–17 Inventory: **162** Fleet age: **13** Date: **1993** The C-17 is a large fixed-wing transport aircraft in support of USAF's mobility and lift mission. The aircraft can lift 170,900 pounds and land on short runways. The aircraft entered service in 1995. The program was expanded from 120 aircraft to 223 aircraft. The procurement program for the C-17 was recently completed. The aircraft was originally planned to last 30 years, but more frequent usage may shorten that life span.	3	5	None		

Medium Lift

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
C–130 H/J Inventory: **13/85** Fleet age: **23.9** Date: **1956** The family of C-130 aircraft supports the USAF's tactical mobility and lift capability. Unlike the other transport aircraft, the C-130s can land on rough dirt strips. It can carry about 42,000 pounds and is expected to last 25 years.	1	5	**C–130J** Timeline: **1994–2023** The program provides the Air Force with an upgraded medium-lift capability. The C-130J can lift over 40,000 pounds of cargo. The frame supports various other types of aircraft, such as the USMC tanker KC-130J. There are few issues with the current acquisition of C-130Js. **PROCUREMENT** 154 / 15 **SPENDING** *($ millions)* $12,620 / $3,184	4	3

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

AIR FORCE SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Intelligence, Surveillance, and Reconnaissance (ISR)

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
RQ-4 Global Hawk Inventory: **36** Fleet age: **6** Date: **2011** The RQ-4 is a unmanned aerial vehicle (UAV) that supports the USAF's ISR mission. Unlike the MQ-1 or MQ-9, the RQ-4 is a high-altitude, long-endurance (HALE) UAV, which in addition to higher altitude has a longer range than medium-altitude, long-endurance (MALE) UAVs. Originally deployed in 2011, the new Block 40 version is being procured. The life expectancy of the Global Hawk is 20 years.	4		**RQ-4** Timeline: **2002–2012** This program consists of Block 20, 30, and 40 RQ-4 UAVs. This program had a Nunn–McCurdy breach in 2010. The DOD proposed ending investment in the RQ-4 Block 30, but was rejected by Congress. The program procured 45 platforms, a reduction from 63. **PROCUREMENT** 45 **SPENDING** *($ millions)* $9,129	4	1
MQ-1 Predator Inventory: **110** Fleet age: **9.4** Date: **2005** The MQ-1 Predator is a MALE UAV that supports the USAF's ISR mission. The MQ-1 is being replaced by the newer MQ-9. The expected life span of the MQ-1 is 20 years.	3		**MQ-9** Timeline: **2002–2017** The MQ-9 is in production. It has experienced delays due to manufacturing and testing problems. The Air Force completed acquisition of 347 aircraft with procurement of 24 aircraft in FY 2017. **PROCUREMENT** 347 **SPENDING** *($ millions)* $8,661 $4,262	5	3
MQ-9 A/B Inventory: **225** Fleet age: **6** Date: **2007** The MQ-9 Reaper is the replacement for the MQ-1 Predator to fulfill the USAF's ISR mission. The UAV is in production.	4	3			
RC-135 Rivet Joint Inventory: **22** Fleet age: **53** Date: **1964** The RC-135 is a manned ISR aircraft. It was originally fielded in 1964. The Air Force plans to keep the system in service until 2018.	1		None		
U-2 Inventory: **27** Fleet age: **33.6** Date: **1956** Initially deployed in 1956, this manned ISR aircraft can operate at high altitudes and long ranges. The U-2 has undergone a series of modification programs since 1967 to extend the life of the aircraft.	2				

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

AIR FORCE SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Command and Control

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
E-3 AWACS Inventory: **31** Fleet age: **38** Date: **1978** The E-3 is an airborne warning and control system (AWACS) that provides USAF with command and control and battle management capabilities. The aircraft entered service in 1978. No longer in production, the current inventory is undergoing modifications to upgrade computing systems. The fleet is currently intended to remain in service until 2025.	1	2	None		
E-8 JSTARS Inventory: **16** Fleet age: **15.7** Date: **1997** The E-8 is a newer command and control aircraft that provides battle management and C4ISR capabilities, mainly by providing ground surveillance to various air and ground commanders in theater. The aircraft first entered service in 1997 and is not currently in production. The Air Force plans to retire the JSTARs in the early 2030s.	3				

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

AIR FORCE SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Space Superiority

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
Global Positioning System (GPS) Inventory: **32** Fleet age: **22** Date: **1990** GPS satellites are part of USAF's air and space superiority mission and provide the joint force with navigation data. The GPS constellation was completed in 1995. It is currently being updated by the follow-on GPS III. These satellites have an average lifespan of 7.5 years, although the newest Block IIF has a 12–year life span.	1	3	**GPS III** Timeline: **2012–2014** GPS III is a more advanced GPS satellite to replace the legacy systems. It was expected to start launches in 2016. However, as a result of technical issues during development, the first launch is now expected to take place no earlier than 2018.. **PROCUREMENT** 8 **SPENDING** *($ millions)* $4,789 $650	5	3
Spaced-Based Infrared System (SBIRS) Inventory: **2** Fleet age: **n/a** Date: **2010** The SBIRS satellite system, part of air and space superiority mission, provides early missile warning for missile defense and battlespace awareness purposes.	5	3	**SBIRS High** Timeline: **2009–2013** The SBIRS High constellation is a multipurpose program that will fulfill the requirements not only of ballistic missile defense, but also of other general defense needs, such as space surveillance and battlefield awareness. The program is in production and struggling with recurring cost overruns. The program should be completed by 2019. **PROCUREMENT** 4 **SPENDING** *($ millions)* $2,153 $1,305	5	2

NOTE: The total program dollar value reflects the full F–35 joint program, including engine procurement.
SOURCE: Heritage Foundation research using data from government documents and websites. See also Dakota L. Wood, ed., *2017 Index of U.S. Military Strength* (Washington, DC: The Heritage Foundation, 2017), http://index.heritage.org/militarystrength/.

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

MARINE CORPS SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Main Battle Tank

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
M1A1 Abrams Inventory: **447** Fleet age: **27** Date: **1989** The M1A1 Abrams Main Battle Tank provides the Marine Corps with heavy-armor direct fire capabilities. It is expected to remain in service beyond 2028.	2	1	None		

Light Wheeled Vehicle

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
HMMWV Inventory: **17,000** Fleet age: **9.5** Date: **1985** The HMMWV is a light wheeled vehicle used to transport troops with some measure of protection against light arms, blast, and fragmentation. The expected life span of the HMMWV is 15 years. Some HMMWVs will be replaced by the Joint Light Tactical Vehicle (JLTV).	2	1	**Joint Light Tactical Vehicle (JLTV)** Timeline: **2015–2022** Currently in development, the JLTV is a vehicle program meant to replace some of the HMMWVs and improve reliability, survivability, and strategic and operational transportability. So far the program has experienced a one-year delay due to changes in vehicle requirements. This is a joint program with Army. The Marine Corps has indicated that it will likely increase its total acquisition objective in the future. **PROCUREMENT** 323 5,177 **SPENDING** *($ millions)* $1,965 $23,311	1	4

NOTE: JLTV spending figures reflect the full joint program spending.

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

MARINE CORPS SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Amphibious Assault Vehicle

PLATFORM	Age Score	Capability Score
AAV-7A1 Inventory: **1,311** Fleet age: **40** Date: **1972** The Amphibious Assault Vehicle transports troops and cargo from ship to shore. The AAV-7 has been through a service life extension to extend the expected life to 42 years.	1	1
LAV-25 Inventory: **252** Fleet age: **26** Date: **1983** The LAV is a wheeled light armor vehicle with modest amphibious capability used for armored reconnaissance and highly mobile fire support. It has undergone several service life extensions to expand its life span to 42 years and will be in service until 2035.	2	1

MODERNIZATION PROGRAM	Size Score	Health Score
Amphibious Combat Vehicle (ACV) Timeline: **n/a** The Amphibious Combat Vehicle is now a major defense acquisition program. The ACV is intended to replace the aging AAV. The program is expected to reach Milestone C in 2018. The president's FY 2018 budget request supports initial procurement of 26 vehicles.	2	n/a

PROCUREMENT
694

SPENDING *($ millions)*
$465 $1,452

Attack Helicopters

PLATFORM	Age Score	Capability Score
AH-1W Cobra Inventory: **109** Fleet age: **25.3** Date: **1986** The Super Cobra is an attack helicopter that provides the Marines with close air support and armed reconnaissance. The Super Cobra will remain in service until 2021, when it will be replaced with the AH-1Z.	1	2
AH-1Z Viper Inventory: **52** Fleet age: **3.9** Date: **2010** The AH-1Z Viper is the follow on to the AH-1W Cobra attack helicopter. The Viper will have greater speed, payload, and range, as well as a more advanced cockpit. It is expected that the AH-1Z will fully replace the AH-1W Cobra in 2021. The expected operational life span of the Viper is 30 years.	5	

MODERNIZATION PROGRAM	Size Score	Health Score
AH-1Z Timeline: **2004–2020** The new AH-1Z Viper program is part of a larger modification program to the H-1 platform. The new H-1 rotorcraft will have upgraded avionics, rotor blades, transmissions, landing gear, and structural modifications to enhance speed, maneuverability, and payload. The AH-1Z started out as a remanufacture program, but that was later changed to a New Build program because of concerns over existing airframes. While costs have increased, the program has not met the APB breach threshold.	5	3

PROCUREMENT
119 70

SPENDING *($ millions)*
$10,655 $1,417

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

Airborne Electronic Attack Aircraft/ Ground Attack Aircraft

PLATFORM	Age Score	Capability Score
EA-6B Inventory: **18** Fleet age: **29** Date: **1971** The Prowler provides the USMC with an electronic warfare capability. It will be retired in 2019 and will be replaced by the F-35B.	1	1
AV-8B Inventory: **131** Fleet age: **20.2** Date: **1985** The Harrier is a vertical/short takeoff and landing aircraft designed to fly from LHA/LHDs. It provides strike and reconnaissance capabilities. The aircraft will be retired around 2024.	2	
F-35B Inventory: **43** Fleet age: **2.6** Date: **2015** The F-35B is the Marine Corps' short takeoff and vertical landing variant meant to replace the AV-8B Harrier. Despite some development problems, the F-35B achieved IOC in July 2015.	5	
F/A-18 A-D Inventory: **251** Fleet age: **25** Date: **1978** Many aircraft in the F/A-18 fleet have logged about 8,000 hours compared with the originally intended 6,000. The fleet life has been extended until 2030. This is necessary to bridge the gap to when the F-35Bs and F-35Cs are available.	2	

MODERNIZATION PROGRAM	Size Score	Health Score
F-35B/C Timeline: **2008–2033** The Corps is purchasing 353 F-35Bs and 67 F-35Cs. The F-35B is the USMC version of the Joint Strike Fighter program. It is meant to replace the AV-8B Harrier, completing transition by 2030. The Joint Strike Fighter has had many development issues, including a Nunn–McCurdy cost breach and major development issues. The F-35B in particular has had software development problems and engine problems that led to grounding. The Marine Corps announced IOC of its second F-35B squadron in June 2016. The F-35C will not reach IOC until 2018. **PROCUREMENT** 107 313 **SPENDING** *($ millions)* $122,580 $283,901	3	1

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service

MARINE CORPS SCORES

1 2 3 4 5
Weakest ⟷ Strongest

Procurement and Spending ■ Through FY 2017 ■ Pending

Medium Lift

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
MV-22 Inventory: **250** Fleet age: **5.2** Date: **2007** The Osprey is a vertical takeoff and landing tiltrotor platform designed to support expeditionary assault, cargo lift, and raid operations. The program is still in production. The program life expectancy of the MV-22 is 23 years.	4	5	**MV-22B** Timeline: **1997–2031** The Osprey is in production, and the platform is meeting performance requirements. The modernization program is not facing any serious issues. Procurement figures include 48 Navy MV-22s and 50 of the carrier variant CV-22s.	4	3

PROCUREMENT

SPENDING *($ millions)*

Heavy Lift

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
CH-53E Super Stallion Inventory: **146** Fleet age: **27.9** Date: **1981** The CH-53E is a heavy-lift rotorcraft. The aircraft will be replaced by the CH-53K, which will have a greater lift capacity. The program life of the CH-53E is 41 years.	2	1	**CH-53K** Timeline: **2017–2028** The program is in development. It is meant to replace the CH-53E and provide increased range, survivability, and payload. The program still has not fully developed the critical technology necessary. The program experienced delays and cost growth.	5	3

PROCUREMENT

SPENDING *($ millions)*

Tanker

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
KC-130J Inventory: **48** Fleet age: **9.2** Date: **2004** The KC-130J is both a tanker and transport aircraft. It can transport troops, provide imagery reconnaissance, and perform tactical aerial refueling. This platform is currently in production. The airframe is expected to last 38 years.	4	5	**KC-130J** Timeline: **1997–2028** The KC-130J is both a tanker and transport aircraft. The procurement program for the KC-130J is not facing acquisition problems, but experienced decreased procurement quantities in FY 2014 and FY 2015.	4	3

PROCUREMENT

SPENDING *($ millions)*

NOTES: The total program dollar value reflects the full F–35 joint program, including engine procurement. As part of the F–35 program, the Navy is purchasing 67 F-35Cs for the U.S. Marine Corps, which are included here. The MV-22B program also includes some costs from the U.S. Air Force procurement. The AH–1Z costs include costs of UH–1 procurement.
SOURCE: Heritage Foundation research using data from government documents and websites. See also Dakota L. Wood, ed., *2017 Index of U.S. Military Strength* (Washington, DC: The Heritage Foundation, 2017), http://index.heritage.org/militarystrength/.

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service