Chapter 2: Department of the Army

Overview

The Department of the Army includes the Army's active component; the two parts of its reserve component, the Army Reserve and the Army National Guard; and all federal civilians employed by the service. By number of military personnel, the Department of the Army is the biggest of the military departments. It also has the largest operation and support (O&S) budget. The Army does not have the largest total budget, however, because it receives significantly less funding to develop and acquire weapon systems than the other military departments do.

The Army is responsible for providing the bulk of U.S. ground combat forces. To that end, the service is organized primarily around brigade combat teams (BCTs)—large combined-arms formations that are designed to contain 4,000 to 4,700 soldiers apiece and include infantry, artillery, engineering, and other types of units.[1] The Army has 32 BCTs in the active component and 28 in the National Guard (there are none in the Army Reserve). It has no plans to change those numbers over the next five years (see Table 2-1). The vast majority of the Army's support units exist to support combat operations by BCTs, and the vast majority of the Army's administrative units exist to create, train, and maintain BCTs and their support units.[2]

The current organization of the Army into BCTs is a change from historical practice. Before the mid-2000s, when the service launched a "modularity" initiative, the Army was organized for nearly a century around divisions (which involved fewer but larger formations, with 12,000 to 18,000 soldiers apiece). During that period, units in Army divisions could be separated into ad hoc BCTs (typically, three BCTs per division), but those units were generally not organized to operate independently at any command level below the division. (For a description of the Army's command levels, see Box 2-1.) In the current structure, BCTs are permanently organized for independent operations, and division headquarters exist to provide command and control for operations that involve multiple BCTs.

The Army is distinct not only for the number of ground combat forces it can provide but also for the large number of armored vehicles in its inventory and for the wide array of support units it contains. Those support units include units with significant firepower, such as artillery brigades (which have missile launchers as well as traditional cannon artillery), aviation brigades (which have attack, reconnaissance, utility, or cargo helicopters), and other combat arms (such as Patriot missile launchers to defend against other missiles and aircraft). Army support units include many other types of specialized units, such as construction engineers, military intelligence, military police, and the Army's extensive logistics apparatus. Many of those types of units are responsible for supporting not just Army units in the field but all of the other services in a combat operation. For example, the Army is generally responsible for all theater logistics functions, port operations, and enemy prisoner-of-war detention operations.

Besides those combat and support units, the Army contains a number of smaller organizations that provide niche capabilities unrelated to BCTs. Two noteworthy examples are the Army's special-operations forces (units such as the 75th Ranger Regiment, the 160th Special Operations Aviation Regiment, and seven special-forces groups), and the Army's responsibility for operating the Ground-Based Midcourse Defense portion of the national missile defense system. (Both of those are discussed in Chapter 5.)

1. Formations, such as BCTs, that contain a mix of different types of units are referred to as combined arms. Such formations offer advantages over homogenous formations because the different types of units can complement one another and help offset the limitations of any single type of unit. Although all BCTs include a mix of unit types, it is customary to refer to them by their predominant type of combat unit.

2. As noted in Chapter 1, "support" can have a wide variety of meanings in the military, and whether a unit is generally considered a combat unit or a support unit does not mean that it always plays that role in a particular operation. For more details, see Box 1-1 on page 9.

Table 2-1.

Number of Major Combat Units in the Army, 2021 and 2025

	2021	2025
Armored Brigade Combat Teams		
Active component	12	12
National Guard	5	5
Stryker Brigade Combat Teams		
Active component	7	7
National Guard	2	2
Infantry Brigade Combat Teams		
Active component	13	13
National Guard	21	21
Total Brigade Combat Teams		
Active component	**32**	**32**
National Guard	**28**	**28**

Data source: Congressional Budget Office, using data from the Department of Defense's 2021 budget request.

Distribution of Army Personnel

Of the nearly 1 million military personnel serving in the active and reserve components of the Army, roughly half are in support units and a third are in combat units (see Table 2-2). The rest belong to units that perform various overhead functions, such as recruiting, training, and equipping combat units. The Army's reserve component is slightly larger than its active component, with 52 percent of the service's total personnel.

Since the 1970s, the Army has interpreted the Department of Defense's Total Force Policy—which involves treating a service's various components as a single force—by concentrating combat units in the active component and support units in the reserve component. Over the 2021–2025 period, the Army plans to have an average of 57 percent of its combat personnel in the active component and 71 percent of its support personnel in the reserve component. The practical effect of that distribution is that the Army has enough support units in its active component to conduct relatively small operations on its own, but larger combat operations usually require it to mobilize a significant number of reservists to provide support for the active-component combat units—as occurred during the occupation of Iraq. (For more discussion of the implications of that structure, see the special-topic entry about integration of the Army's active and reserve components on page 38.)

Command Levels and Units

The Army's combat units are organized in a recursive pattern: A unit at any command level contains two to five subordinate units of a similar type, plus additional supporting units. For example, an infantry *brigade* has two or three infantry battalions, a cavalry squadron, and a single battalion each of special troops, artillery, engineers, and logistics.[3] Similarly, an infantry *battalion* has three infantry companies, a heavy weapons company, and a headquarters company. That pattern is repeated at lower levels (a *company* consists of platoons, and *platoons* consist of squads or sections) and at higher levels (a *division* consists of brigade combat teams, and a *corps* consists of divisions), as detailed in Box 2-1. However, some command levels have different names depending on the type of unit; for instance, cavalry squadrons are at the same command level as infantry battalions.

This analysis treats supporting units as directly connected to combat units in a fixed relationship, but that treatment is an approximation that is valid only when discussing force planning. In actual operations, most support units are assigned to higher command levels, which give them specific missions. A BCT does not include the support units that the Congressional Budget Office attributes to it in this analysis—those units are division-, corps-, or theater-level assets that would be deployed to support the BCT and without which the BCT could not function. Furthermore, although the Army's plans involve maintaining a given set of units in the force structure, the commander of a specific operation can, and often does, tailor the mix of support units that are deployed to suit the circumstances of a particular theater of operations. For example, during the occupation of Iraq, the Army generally did not deploy artillery or air-defense units, although it had them in its force structure. Such units were considered unnecessary in that operation, and some were converted to perform roles deemed more useful during the occupation, such as protecting supply convoys.

Historically, ground combat units have been classified using weight-related terms, which reflect the weight of

3. Cavalry units are units that perform the same armed reconnaissance role once carried out by troops on horseback. Today, cavalry units are equipped with helicopters, tanks, armored fighting vehicles, or wheeled vehicles.

Box 2-1.

Command Levels of U.S. Ground Forces

The Army and Marine Corps are generally organized as hierarchies of units, with each type of unit commanded by a noncommissioned or commissioned officer of a specific rank. (Officers of other ranks play essential roles in those units but typically do not command them.) Those units are described here from smallest to largest:

Squad/Section: A squad is commanded by a sergeant and has 4 to 12 personnel. A section is a group of vehicles, generally two in number.

Platoon: A platoon is commanded by a second lieutenant and includes varying numbers of subordinate squads or sections. It has 16 to 50 personnel. Heavy platoons have four armored vehicles (such as tanks or infantry fighting vehicles, depending on the type of platoon).

Company/Troop/Battery: A company is commanded by a captain and includes two to five subordinate platoons (usually three or four). It has about 60 to 200 personnel. Heavy companies have 14 armored vehicles. Cavalry companies are called troops; artillery companies are called batteries.

Battalion/Squadron: A battalion is commanded by a lieutenant colonel and usually includes three to five combat companies and one support company. It has about 400 to 1,000 personnel. Heavy battalions have 58 armored vehicles. Cavalry battalions are called squadrons.

Brigade Combat Team/Support Brigade/Regiment/Group: A brigade is commanded by a colonel and is generally configured as either a brigade combat team (BCT) or a support brigade. A BCT has about 4,000 to 4,700 personnel, depending on whether it is an armored, Stryker, or infantry BCT. Cavalry brigades are called regiments; some types of support brigades are called groups. Marine Corps units at this level are also called regiments. (The term "Marine expeditionary brigade" refers to a task force, which is larger.)

Division: A division is commanded by a major general and includes two to five BCTs (usually four), an aviation brigade, an artillery brigade, an engineer brigade, and a logistics brigade. Divisions have about 12,000 to 16,000 personnel.

Corps: A corps is commanded by a lieutenant general and includes two to five divisions and numerous support brigades and commands. Corps have about 40,000 to 100,000 personnel. The Marine Corps does not have corps, although a Marine expeditionary force is similar in size and is also commanded by a lieutenant general.

Army: An army is the highest command level in a given theater of operations and typically has 100,000 to 300,000 personnel. It is an element of a joint command structure—the Army's component is commanded by a general. An operational theater is established to support one or more corps (usually two) and includes numerous support brigades and support commands. (The term "theater" is also used frequently, including in this primer, to refer to the area in which a military operation takes place.)

the units' equipment and their commensurate speed and ability to maneuver. For decades, the Army broadly classified its forces in that way: Armored and mechanized infantry units, which had the heaviest armored vehicles, were considered "heavy" forces, whereas infantry, air-assault, and airborne units, which had only a few or no armored vehicles, were considered "light" forces.

Today, the Army has three types of brigade combat teams, which are roughly analogous to heavy, medium, and light forces—armored BCTs have large numbers of the heaviest armored vehicles, Stryker BCTs have large numbers of lightly armored vehicles (called Stryker vehicles), and infantry BCTs have few armored vehicles.[4] The Army maintains a mix of BCTs so it can use the type of unit most appropriate for a given military operation.

A possible source of confusion when discussing Army units is that although combat units generally have a fixed set of subordinate units assigned to them, many support units do not have such a fixed composition. Instead, they are intended to have units assigned to them as the

4. For much of the 2000s, the Army formally called some brigade combat teams "heavy BCTs," but it has since renamed them "armored BCTs."

Table 2-2.

Average Distribution of the Department of the Army's Military Personnel, 2021 to 2025

Thousands of Personnel

	Active Component	Reserve Component	Total
Combat Units	210	154	363
Support Units	133	336	469
Overhead[a]	145	38	183
Total	**488**	**528**	**1,016**

Data source: Congressional Budget Office, using data from the Department of Defense's 2021 budget request.

a. "Overhead" refers to administrative units as well as to personnel not assigned to any unit.

need arises.[5] For example, a combat brigade typically has more than 4,000 personnel assigned to it, but a support brigade might have only about 100 personnel. That difference does not indicate a large variation in size between the two types of brigades; rather, it reflects the fact that the support brigade does not have permanently assigned subordinate units. (Support brigades are perhaps better thought of as brigade headquarters, which are company-size units of about 100 personnel that provide command and control for subordinate support units.) Thus, it is important to note whether a given Army unit includes or does not include subordinate units. Similarly, descriptions of the total number of brigades in the Army can be misleading because of differences between BCTs and other types of brigades.

Another possible source of confusion involves differing ways to count the number of personnel in a unit. The size and organization of Army units is based on an official template, the Army's Table of Organization and Equipment for that type of unit. However, actual Army units do not always conform to their template for a variety of reasons—they may not include all of the subordinate organizations, they may be manned at a higher or lower level than 100 percent, or they may be transitioning from one template to another. (In recent years, for example, the Army has transitioned many of its BCTs from an older template, with two subordinate maneuver battalions, to the current design with three subordinate maneuver battalions.) When discussing the size of BCTs, this report uses the personnel numbers in the Army's official templates. For the aforementioned reasons, those numbers sometimes differ from the personnel numbers shown in the tables in this report, which are five-year averages based on the plans underlying DoD's 2021 budget request.

5. That practice is most common for support units that perform logistics functions, such as transportation or maintenance. By contrast, units that support BCTs by providing artillery or aviation generally have a full set of subordinate units assigned to them.

Strengths and Limitations of Army Forces

Although each type of BCT has its own strengths and weaknesses, the Army's ground forces overall are exceptionally powerful combat units that are generally considered capable of defeating any conventional ground forces—such as other national armies—that they might be expected to fight. The United States has not suffered a serious defeat from other conventional ground forces since 1950, when the Chinese military intervened in the Korean War. Since then, the U.S. Army has consistently been able to overwhelm opponents who have attempted conventional operations against it. (Its record is less clear-cut in unconventional warfare, as discussed below.)

The use of ground forces is generally thought to represent a high level of military commitment for the United States. In the past, the U.S. military has typically been able to achieve more ambitious goals in conflicts that have involved large Army deployments than in conflicts in which the U.S. commitment was limited to air and naval strikes. Ground forces were considered essential to the defense of South Korea in the 1950s, the liberation of Kuwait in 1991, and the overthrow of the Iraqi and Afghan governments in the 2000s. Although U.S. efforts to defend South Vietnam in the 1960s and 1970s were ultimately unsuccessful, conventional operations by the North Vietnamese to conquer South Vietnam did not succeed until after U.S. ground forces withdrew from the theater. (For a discussion of those and other past military operations, see Appendix C.)

Army ground forces have had more difficulty, however, in achieving U.S. aims against adversaries who have employed unconventional methods of combat, such as guerrilla warfare. Notable examples of those difficulties include attempts to suppress Viet Cong and North Vietnamese army units during the Vietnam War, insurgents in Iraq, and the resurgent Taliban in Afghanistan. Because Army units generally performed well in direct combat, those adversaries often tried to avoid direct

combat and achieve their objectives through other means. Unconventional operations can be extremely long, and U.S. adversaries frequently achieve their goals by surviving as a viable force until the United States leaves the theater.

The Army has periodically tried to change its structure in ways that would make it more successful at fighting unconventional conflicts. Historically, those attempts have often included efforts to increase the size and capability of special forces (units that specialize in unconventional missions such as guerrilla warfare and counterinsurgency). The Army's special forces have tried to help U.S. allies train their own militaries to a higher level of capability or conduct their own counterinsurgency campaigns. Although special forces have had some success in such efforts, the United States has a limited ability to influence the governments of its allies. Moreover, as events in South Vietnam, Iraq, and Afghanistan demonstrate, some allies have difficulty defending themselves despite substantial long-term training and investment by the United States.

The future size and makeup of the Army will be affected by the types of conflicts and commitments that U.S. leaders expect to face as well as by the size of the defense budget. If the future security environment is dominated by scenarios that place more emphasis on naval and air forces—such as potential operations around Taiwan, the South China Sea, or the Strait of Hormuz at the mouth of the Persian Gulf—the need for Army ground forces may decline. (For a discussion of DoD's planning scenarios for those and other areas, see Appendix C.)

Conversely, the need for Army ground forces may increase if the United States has to contend with circumstances such as Russian aggression in the Baltic Sea nations of Estonia, Latvia, and Lithuania. Those countries are members of the North Atlantic Treaty Organization but were formerly part of the Soviet Union.

What This Chapter Covers

The rest of this chapter presents CBO's analysis of the following major elements of the Army's force structure (listed here with the percentage of the Department of the Army's O&S costs that they account for):

- Armored brigade combat teams (29 percent); see page 22.
- Stryker brigade combat teams (16 percent); see page 28.
- Infantry brigade combat teams (37 percent); see page 32.
- Other units and activities (18 percent), such as aviation brigades and special-operations forces; see page 36.

This chapter also examines three topics of special concern to the Department of the Army:

- The integration of the Army's active and reserve components; see page 38.
- The role of manning levels in units' readiness for deployment; see page 40.
- Deployment times and rotation ratios; see page 42.

Major Element of the Force Structure

Army Armored Brigade Combat Teams

	Total	Direct	Indirect	Overhead
		Active-Component Armored Brigade Combat Team		
Military Personnel per Unit	16,330	4,040	8,410	3,880
Annual Cost per Unit (Millions of 2021 dollars)	3,160	690	1,100	1,360
		National Guard Armored Brigade Combat Team		
Military Personnel per Unit	13,620	4,220	8,410	990
Annual Cost per Unit (Millions of 2021 dollars)	910	240	420	250

"Direct" personnel and costs are associated with a major combat unit, "indirect" personnel and costs are associated with units that support the major combat unit, and "overhead" personnel and costs are associated with the major combat unit's share of administrative or overhead activities. For more information, see Chapter 1. The numbers shown here are rounded to the nearest 10 personnel or $10 million; more detailed information is presented in Appendixes A and B.

Armored brigade combat teams (BCTs) are large tactical formations that operate fairly independently. They are designed to include about 4,300 personnel and are equipped with the heaviest and most powerful armored combat vehicles in the U.S. inventory: M1 Abrams series tanks, M2 Bradley series infantry vehicles/scout vehicles, M109 series self-propelled howitzers, and numerous M2- and M113-derived support vehicles. (See Figure 2-1 and the legend in Figure 2-2 on page 26 for the size and organization of an armored BCT.) Vehicles such as those—which run on tracks for off-road mobility and are heavily armored to protect against attack—are not assigned to all elements of an armored BCT. Each BCT also has several hundred wheeled vehicles that generally are not armored. Nevertheless, armored BCTs are, by a large margin, the most heavily armed and armored variety of U.S. ground forces.

Current and Planned Structure. The Army will field 12 armored BCTs in its active component and 5 in the National Guard in 2021, with no plans to change those numbers through 2025. In all, the armored BCTs in the active and reserve components—along with their supporting units and overhead—account for about 29 percent of the Army's operation and support funding.

Purpose and Limitations. Armored BCTs are descendants of the heavy divisions that were intended, during the Cold War, to defend Europe in the event of a large-scale attack by Soviet forces. Although in recent years the Army has not focused specifically on the ability to destroy opponents' armored vehicles, armored BCTs still have strong antiarmor capability, particularly when supplemented with Army helicopters and other U.S. airpower. Armored BCTs can also be used against lighter conventional forces that do not include heavy armored vehicles. However, because armored BCTs are far superior to lighter forces in terms of firepower, protection, and cross-country mobility, few adversaries are likely to willingly commit their lighter forces in open combat against armored BCTs. (In ground combat, light forces tend to be less mobile than heavy forces because they are intended to fight on foot and because the wheeled vehicles that transport them to the battlefield have less off-road capability than tracked armored vehicles do.)

The main drawback of armored BCTs is that they lose many of their combat advantages in complex terrain (such as forests, jungles, mountains, or urban areas) as well as in unconventional combat (such as guerrilla warfare). In such conditions, armored vehicles are more vulnerable to attack, have less ability to use their firepower, and cannot benefit from their tactical mobility. Although armored BCTs still have some advantages over lighter forces under those conditions, defense planners generally believe that the high costs of armored BCTs relative to those of lighter forces make them less well suited for such missions. In addition, in areas with poor infrastructure, armored BCTs may be less suitable for some operations because of their logistics demands (such as high fuel consumption) and related issues (such as the need for bridges that can support the weight of armored vehicles).

A frequent concern raised about armored BCTs is that their weight and extensive support requirements make them harder and slower to deploy to distant locations than light forces are. In many cases, however, that limitation does not significantly hinder an operation.

One reason is that although an armored BCT has much heavier equipment than, for example, an infantry BCT, the United States rarely deploys a single brigade of any type on its own, using air transport, to an unexpected location with great haste. Rather, a brigade is deployed as part of a full "force package" that typically includes a large number of support units, which diminishes the difference in equipment weight between heavy and light forces. Moreover, a deployment could involve many BCTs, which would overwhelm air-transport capabilities and make sea transport mandatory, and it could involve a location (such as the Korean Peninsula or the Persian Gulf) where the United States has stockpiled prepositioned equipment on land or onboard ships.

In addition, in many conflicts—such as the removal of Iraqi forces from Kuwait in 1991 (Operation Desert Storm) and the invasion of Iraq in 2003 (Operation Iraqi Freedom)—the United States had a long time to deploy forces, reducing the importance of deployment speed. (For a description of those and other past military operations, see Appendix C.) To the extent that U.S. planners are concerned about deployment speed, investments in stocks of prepositioned equipment and additional cargo ships can greatly reduce deployment times in most scenarios, without requiring the military to forgo the combat capabilities of heavy forces.[6]

Past and Planned Use. Armored BCTs evolved from Cold War–era armored divisions and mechanized infantry divisions, which were referred to as heavy divisions.[7] Their equipment and organization have historically been oriented toward high-intensity combat with conventional armored opponents, as was envisioned during the Cold War, when U.S. heavy forces were prepared to defend West Germany against massive Soviet armored assaults.

More recently, the United States relied extensively on heavy divisions during Operations Desert Storm and Iraqi Freedom, but it did not use any heavy forces in the invasion of Afghanistan in 2001 (Operation Enduring Freedom). In later counterinsurgency operations in Iraq and Afghanistan, that pattern was repeated: The United States employed large numbers of heavy BCTs in Iraq but none in Afghanistan. However, the heavy BCTs used in Iraq often operated in a modified configuration without their heavy vehicles, which made them better suited to counterinsurgency and urban operations—an example of the way the Army adapts its units to meet the needs of each operation.

In the 1990s, the Department of Defense's post–Cold War planning focused on the ability to fight two theater-size wars at the same, or nearly the same, time (see Appendix C). DoD generally assumed that each of those wars would require the equivalent of about 11 heavy brigades. (At the time, the Army used divisions as its basic units; it assumed that three heavy divisions and two armored cavalry regiments would be necessary for the combat phase of each war.) Subsequent planning was more flexible but envisioned that a similar number of combat brigades would be needed for a major conflict.

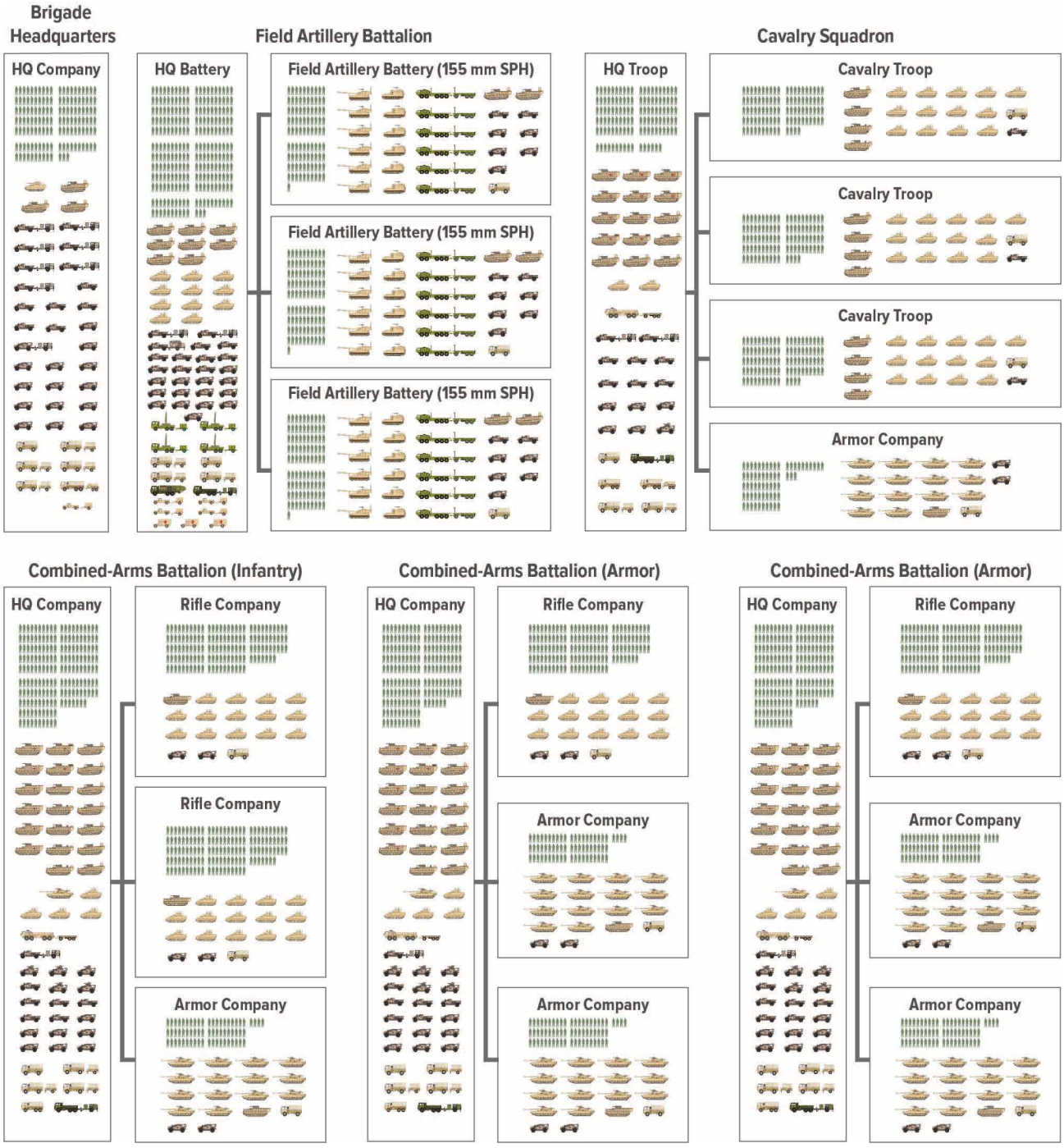
Currently, DoD describes scenarios involving Russia and China as its most challenging potential conflicts. In the case of Russian incursions into the Baltic states, armored BCTs would be the most important type of ground forces, as the Russian Federation has a large number of armored forces itself. But there are questions about how rapidly large numbers of armored BCTs could be deployed to that theater. By contrast, armored BCTs would be largely irrelevant in most scenarios involving the South China Sea or Taiwan. In practice, other than the Russian Federation, the United States currently has few, if any, potential opponents that can field enough modern armored forces to require the Army to use large numbers of armored BCTs against them in a conflict. In addition, the United States has other types of BCTs (Stryker and infantry) that would be capable of contributing in a conflict, although they do not have the same characteristics as an armored BCT.

6. For example, as DoD has become more concerned lately about a possible Russian attack on the Baltic nations, it has responded in part by creating stocks of prepositioned equipment in Eastern Europe and by rotating brigade-size forces through the region.

7. The Army sees substantial advantages in using armored units together with mechanized infantry units (infantry that are equipped with infantry fighting vehicles rather than with tanks). Thus, it combines the two types of units at all but the very lowest command levels. For a long time, such combined units were referred to generically as heavy forces. The Army recently changed their name from "heavy BCTs" to "armored BCTs," but those brigades have the same mixture of armored and mechanized infantry units as before.

Figure 2-1.

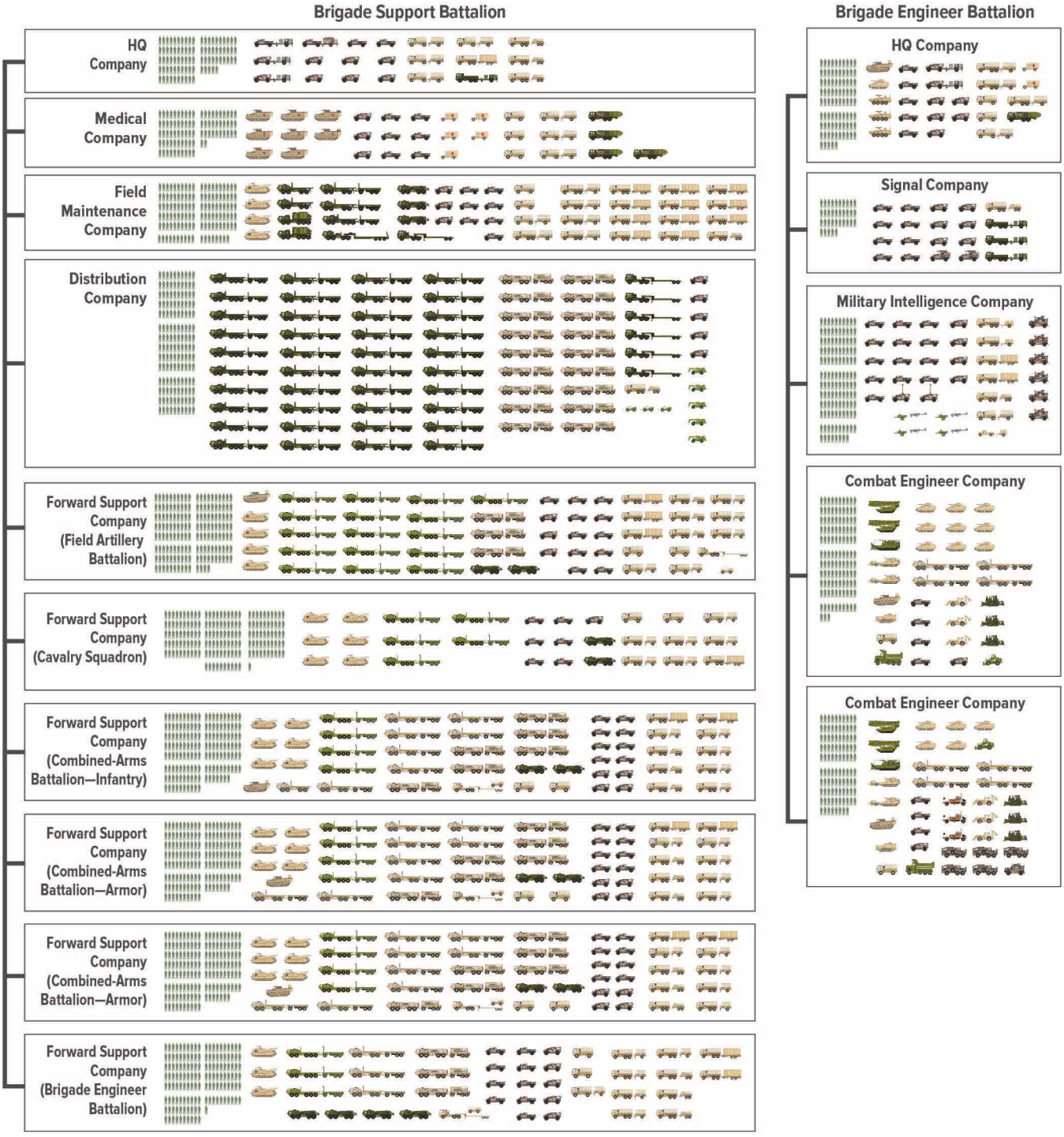
Units, Equipment, and Personnel in an Army Armored Brigade Combat Team



Continued

Figure 2-1. Continued

Units, Equipment, and Personnel in an Army Armored Brigade Combat Team



Data source: Congressional Budget Office, using data from the Department of Defense.

HQ = headquarters; mm = millimeters; SPH = self-propelled howitzer.

For a key to the icons in this figure, see Figure 2-2.

Figure 2-2.

Legend for Army Personnel and Equipment

Personnel


Ten Personnel

One Person

Armored Vehicles


M1A2 Abrams Main Battle Tank


M2/3 Bradley Fighting Vehicle/
M7 Bradley Fire Support Vehicle


M109A6 Paladin 155 mm Howitzer


M992A2 Ammunition Support Vehicle


M1283 Armored Multipurpose Vehicle (AMPV)
General Purpose Vehicle


M1284 AMPV Evacuation Vehicle


M1285 AMPV Treatment Vehicle


M1286 AMPV Command Vehicle


M1287 AMPV Mortar Carrier Vehicle


M88A1 Medium Recovery Vehicle/
M88A2 Improved Recovery Vehicle (Hercules)


XM1150 Assault Breacher Vehicle With Mine Plow


XM1150 Assault Breacher Vehicle With Blade


M9 Armored Combat Earth Mover (ACE)


M2/3 Bradley Engineer Vehicle With Trailer


M104 Wolverine Heavy Assault Bridge


M1126 Stryker Infantry Carrier


M1128 Mobile Gun System


M1129 Stryker Mortar Carrier Vehicle


M1130 Stryker Command Vehicle


M1131 Stryker Fire Support Vehicle


M1132 Stryker Engineer Support Vehicle


M1133 Stryker Medical Evacuation Vehicle


M1134 Stryker Antitank Guided Missile Vehicle


M1135 Stryker Nuclear Biological Chemical
Reconnaissance System

Light Trucks


M1279 Joint Light Tactical Vehicle (JLTV) Utility


M1279 JLTV Utility With Command System


M1279 JLTV Utility With Satellite Terminal


Secure, Mobile, Antijam, Reliable Tactical
Terminal (SMART-T)—M1279 JLTV


M1278 JLTV Heavy Gun Carrier


M1281 JLTV Close Combat Weapons Carrier


M1280 JLTV General Purpose


M1280 JLTV General Purpose
With Command System


M1280 JLTV General Purpose
With Satellite Terminal


AN/MLQ-40 Prophet Detecting Systems
Countermeasures—M1280 JLTV General Purpose


M1152A1 High Mobility Multipurpose Wheeled Vehicle
(HMMWV) With Trailer


M997 HMMWV Ambulance

Continued

Figure 2-2. Continued

Legend for Army Personnel and Equipment

Medium Trucks


M1078 Light Medium Tactical Vehicle


M1078 Light Medium Tactical Vehicle With M1095 Cargo Trailer


M1083 Medium Tactical Vehicle


M1083 Medium Tactical Vehicle With M1095 Cargo Trailer


M1083 Medium Tactical Vehicle With Kitchen or Tool Set Trailer


M1083 Medium Tactical Vehicle With Water Tank Trailer


M1083 Medium Tactical Vehicle With Generator or Welding Trailer


M1083 Medium Tactical Vehicle With Command System


M1083 Medium Tactical Vehicle With Chemical Biological Protective Shelter


M1148 Medium Tactical Vehicle With Load Handling System


M1092 Medium Tactical Vehicle With AN/TPQ-53 Counterfire Radar


M1088 Medium Tactical Vehicle Tractor With M172A1 Lowbed Semitrailer

Heavy Trucks


M1120 Heavy Expanded Mobility Tactical Truck Load Handling System


M1120 Heavy Expanded Mobility Tactical Truck Load Handling System With Trailer


M1120 Heavy Expanded Mobility Tactical Truck Load Handling System With Forward Repair System


M1074/M1075 Heavy Cargo Truck Palletized Load System Transport With Palletized Trailer


M1074 Palletized Load System Transport With Forward Repair System


M984A1 Heavy Expanded Mobility Tactical Truck Wrecker

M978 Heavy Expanded Mobility Tactical Truck Fuel Tanker With Fuel Trailer


M983/M985 Heavy Expanded Mobility Tactical Truck Tractor With Trailer


M983 Heavy Expanded Mobility Tactical Truck Light Equipment Transporter With Trailer


M1977 Common Bridge Transporter With Trailer

Other Equipment


M198 Towed 155 mm Howitzer
M119A1/A2 Towed 105 mm Howitzer


Rough Terrain Forklift


Interim High Mobility Engineer Excavator


All Terrain Lifter Articulated System (ATLAS) Forklift


Shadow Launch/Recovery Trailer and RQ-7 Shadow Tactical Unmanned Aerial System


Deployable Light Engineer Tractor (Deuce)


Multipurpose Loader


10-ton Dump Truck


T-5 Dozer


T-9 Medium Dozer


M1200 Armored Knight


Medium Mine Protected Vehicle


Mine Protected Clearance Vehicle


AN/MLQ-40 Prophet Detecting Systems Countermeasures—Mine Resistant Ambush Protected (MRAP)


Husky Vehicle Mounted Mine Detector


20-ton Dump Truck

Data source: Congressional Budget Office.

mm = millimeters.

Major Element of the Force Structure

Army Stryker Brigade Combat Teams

	Total	Direct	Indirect	Overhead
		Active-Component Stryker Brigade Combat Team		
Military Personnel per Unit	16,670	4,680	7,950	4,040
Annual Cost per Unit (Millions of 2021 dollars)	3,060	600	1,040	1,420
		National Guard Stryker Brigade Combat Team		
Military Personnel per Unit	13,350	4,430	7,950	970
Annual Cost per Unit (Millions of 2021 dollars)	850	200	400	250

"Direct" personnel and costs are associated with a major combat unit, "indirect" personnel and costs are associated with units that support the major combat unit, and "overhead" personnel and costs are associated with the major combat unit's share of administrative or overhead activities. For more information, see Chapter 1. The numbers shown here are rounded to the nearest 10 personnel or $10 million; more detailed information is presented in Appendixes A and B.

Like armored brigade combat teams (BCTs), Stryker BCTs are large tactical formations that can operate relatively independently. However, Stryker BCTs are designed to have about 200 more personnel than armored BCTs are designed to have (approximately 4,500), and they are equipped not with heavy, tracked armored vehicles but with medium-weight, wheeled armored vehicles of the Stryker family. (That general type of vehicle is sometimes called an armored personnel carrier.) Not all of the elements of a Stryker BCT are assigned Stryker vehicles; each BCT also has several hundred wheeled vehicles that generally are not armored. (See Figure 2-3 and the legend in Figure 2-2 on page 26 for the size and organization of a Stryker BCT.) Even so, Stryker BCTs provide the Army with more infantry in armored personnel carriers than any other type of brigade combat team.

Current and Planned Structure. The Army will field seven Stryker BCTs in the active component and two in the National Guard in 2021. In its 2021 budget request, it indicated no plans to change those numbers through 2025. Those Stryker BCTs—along with their supporting units and overhead—account for about 16 percent of the Army's operation and support (O&S) funding.

Purpose and Limitations. Stryker BCTs were created as part of a 1999 initiative to transform the Army into a more mobile and responsive force. The Stryker family of vehicles was intended to provide a medium-weight force that would be easier to deploy rapidly than heavy forces but that would have more combat power and ability to move around the battlefield than light forces. Plans at the time called for making Stryker vehicles small and light enough to fit on C-130 transport aircraft. However, combat experience in Iraq has led the Army to improve the armor of most of its vehicles, and Stryker vehicles have become much too heavy to be transported on C-130s.

Although the Stryker force was originally envisioned as capable of rapid deployment to conventional operations, it has proved helpful in fighting unconventional forces, such as those in Iraq and Afghanistan. Such operations require large numbers of infantry personnel and benefit when all of those personnel have access to armored transport vehicles—both traits that Stryker BCTs possess. Similarly, the infrastructure in Afghanistan is too poor for the tanks and fighting vehicles of armored BCTs to operate there, but the lighter-weight Stryker vehicles can operate in parts of that country.

The main limitation of Stryker BCTs is that they truly are middle-weight forces. They are not as light as infantry BCTs (described in the next section), which makes them difficult to deploy by air on short timelines. But they also are not as well armed and protected as armored BCTs, which means they would suffer in a confrontation with a modern conventional armored force. Those disadvantages might not be meaningful in the context of long-term operations against insurgents, but they could be significant in a future conflict against conventional forces. Furthermore, although they can cope with poor infrastructure better than armored BCTs can, Stryker BCTs still face some constraints when operating in areas with poor road networks, and they pose a fairly significant logistics burden.

The Army has, at times, decreased or increased the share of armored BCTs in its force relative to the shares of Stryker and infantry BCTs. When reducing the share of armored BCTs, the Army has often cited the cost of maintaining heavy forces as one of the reasons for such a shift. However, analysis that the Congressional Budget Office conducted for this report indicates that there is virtually no difference in operation and support costs between armored and Stryker BCTs. (The costs of acquiring Stryker vehicles and heavy armored vehicles can differ, however.) Although Stryker BCTs do not have a major O&S cost advantage over armored BCTs, their operational advantages in counterinsurgencies and areas with poor infrastructure may provide a sufficient rationale for the Army's shift.

Past and Planned Use. Stryker BCTs are a relatively new type of unit and have been employed in only two major operations: the occupations of Iraq and Afghanistan. The Marine Corps used wheeled light armored vehicles (known as LAVs), which are similar to Stryker vehicles, in a brigade-size formation during the invasion of Iraq in 2003, reportedly to good effect. And the Army has deployed Stryker brigades to Afghanistan, despite (or perhaps because of) the relatively poor infrastructure there. (For a discussion of those and other past military operations, see Appendix C.)

Stryker BCTs did not exist during most of the 1990s, when the Department of Defense's post–Cold War planning called for being able to fight two wars simultaneously (or nearly simultaneously). The Army's force of seven active-component Stryker BCTs and two National Guard Stryker BCTs appears likely to be capable of contributing in most conflicts: DoD envisions few scenarios in which infrastructure constraints are worse than those in Afghanistan, and few potential U.S. opponents other than the Russian Federation have enough armored forces to threaten the viability of the medium-weight Stryker BCTs (see Appendix C).

However, DoD currently describes scenarios involving Russia and China as its most challenging potential conflicts, and the particular strengths of Stryker BCTs would not be especially useful in those scenarios. Armored BCTs would probably be preferred for responding to Russian aggression against the Baltic states, and infantry BCTs would probably be preferred for responding to Chinese military action against Taiwan or other states on the South China Sea.

Figure 2-3.

Units, Equipment, and Personnel in an Army Stryker Brigade Combat Team

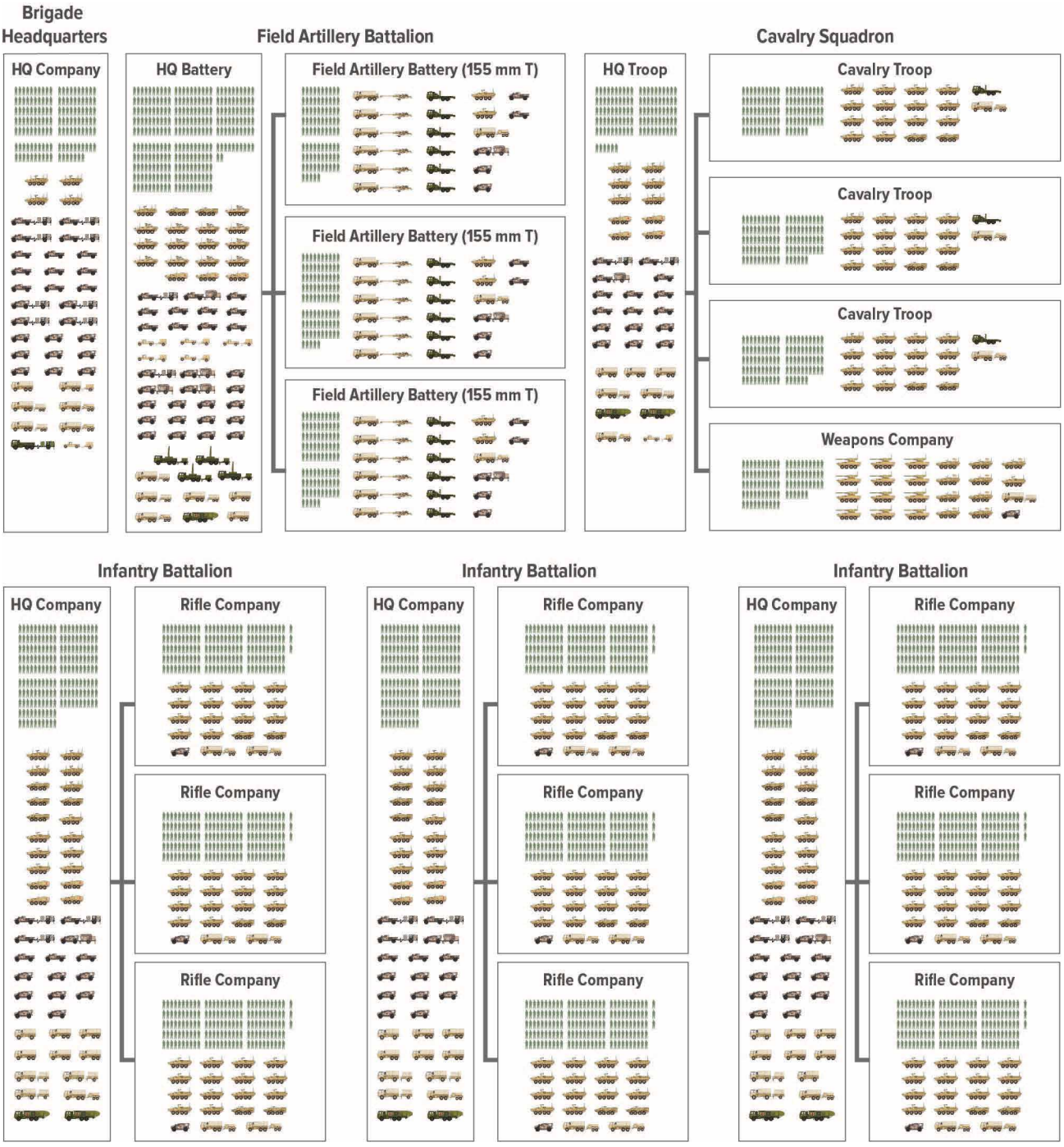


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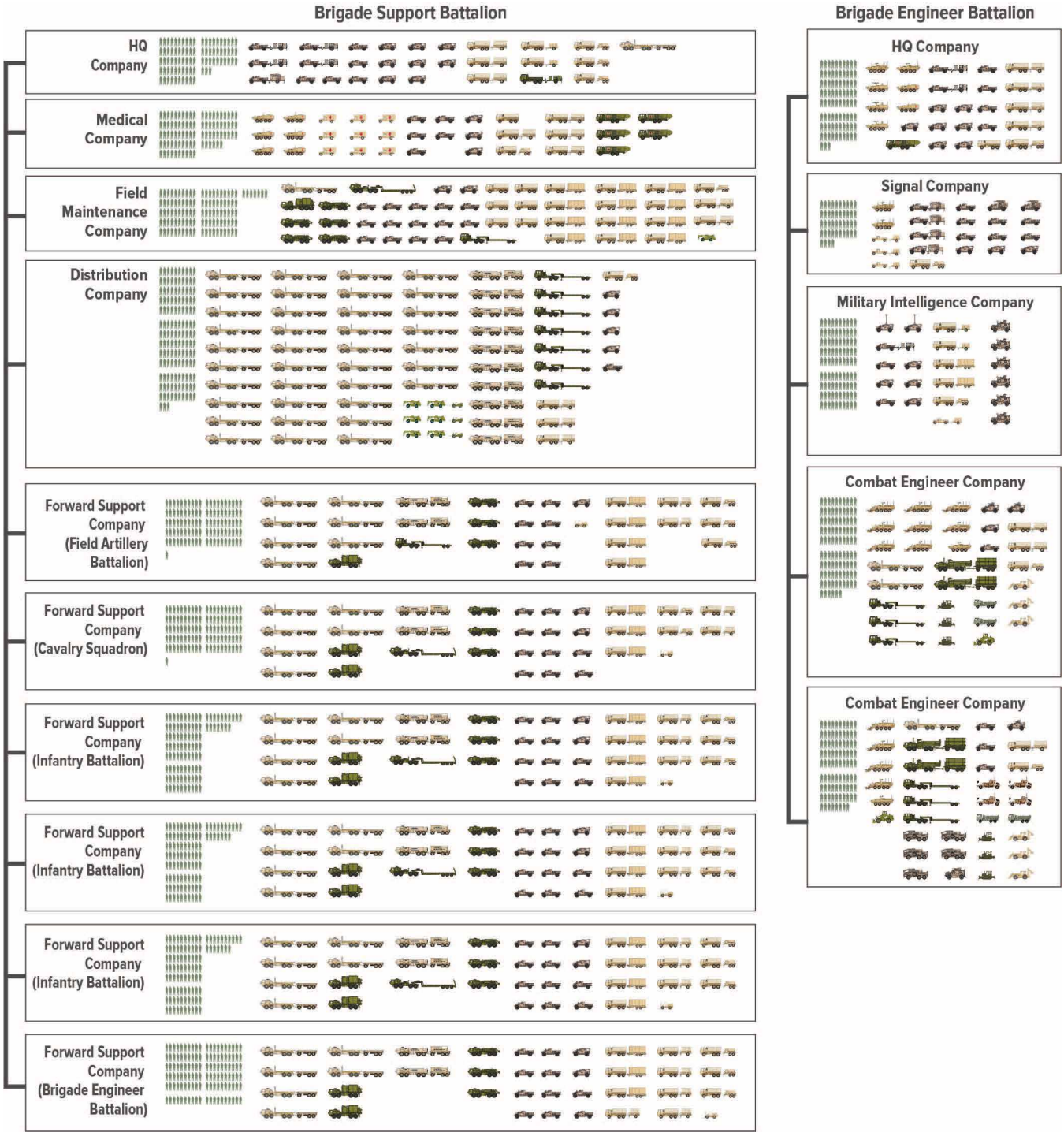
Figure 2-3. Continued

Units, Equipment, and Personnel in an Army Stryker Brigade Combat Team



Data source: Congressional Budget Office, using data from the Department of Defense.

HQ = headquarters; mm = millimeters; T = towed.

For a key to the icons in this figure, see Figure 2-2 on page 26.

Major Element of the Force Structure

Army Infantry Brigade Combat Teams

	Total	Direct	Indirect	Overhead
		Active-Component Infantry Brigade Combat Team		
Military Personnel per Unit	15,910	4,560[a]	7,490	3,860
Annual Cost per Unit (Millions of 2021 dollars)	2,920	580	980	1,360
		National Guard Infantry Brigade Combat Team		
Military Personnel per Unit	12,380	3,990[a]	7,490	900
Annual Cost per Unit (Millions of 2021 dollars)	780	170	380	230

"Direct" personnel and costs are associated with a major combat unit, "indirect" personnel and costs are associated with units that support the major combat unit, and "overhead" personnel and costs are associated with the major combat unit's share of administrative or overhead activities. For more information, see Chapter 1. The numbers shown here are rounded to the nearest 10 personnel or $10 million; more detailed information is presented in Appendixes A and B.

a. The number of direct personnel is smaller for a National Guard infantry BCT than for an active-component infantry BCT because the Guard BCTs are still making the transition from a structure that includes two infantry battalions to a structure that includes three infantry battalions.

Infantry brigade combat teams (BCTs)—also commonly called light BCTs—are relatively independent tactical formations that are designed to include approximately 4,300 personnel. Most of those personnel are expected to engage in combat on foot, although each infantry BCT also has several hundred wheeled, generally unarmored, vehicles assigned to it for transport. (See Figure 2-4 and the legend in Figure 2-2 on page 26 for the size and organization of an infantry BCT.) Unlike armored or Stryker BCTs, infantry BCTs come in some specialized variants. For example, airborne units (such as the brigades of the 82nd Airborne Division) are specially trained and equipped to drop by parachute from fixed-wing aircraft, and air-assault units (such as the brigades of the 101st Air Assault Division) are given special training and additional supporting helicopters to conduct assaults from rotary-wing aircraft. Because they have the least equipment weight, infantry BCTs are considered the easiest to deploy of all types of brigade combat teams.

Current and Planned Structure. Infantry brigade combat teams are the most numerous type of BCT. The Army will field 13 in its active component and 21 in the National Guard in 2021, with no plans to change those numbers through 2025. Together, infantry BCTs and their supporting units and overhead are responsible for about 37 percent of the Army's operation and support funding.

Purpose and Limitations. Infantry BCTs are a product of the Army's renewed focus in the 1980s on the concept of light infantry, in which troops fight entirely on foot, although with some motor transport available. Such forces are designed to be capable of deploying rapidly to distant locations. However, because they have no armored vehicles and few vehicle-mounted weapons, the Army's light forces lack the protection and combat power of heavy forces. Nevertheless, infantry BCTs have significant firepower, and they are capable of calling on the same array of support assets—such as artillery, attack helicopters, and air strikes—as any other type of BCT. In addition, infantry BCTs can often operate more effectively than armored forces in such difficult locations as cities, forests, or mountains, where they can derive substantial defensive benefits from the terrain. For those reasons, unless infantry BCTs are facing large armored forces in unfavorable terrain, they are considered suitable for a wide variety of operations.

The Army's different types of light forces are often grouped together in discussions of their utility in conflicts, but the specialized abilities of airborne and air-assault units are intended to provide important and unique capabilities. For example, both types of forces contribute to the Army's ability to conduct forcible-entry operations, which involve gaining access to enemy territory that cannot be reached from adjacent land areas. (The capability for such operations is discussed in Chapter 3 in a special-topic entry titled "Forcible-Entry Capability" on page 72.)

Although infantry BCTs are touted for their ability to deploy quickly, that characteristic may be less advantageous than it would seem at first glance. With support units excluded, an infantry BCT has roughly one-

quarter of the unit weight of an armored BCT, and all of its equipment can be transported by air. However, for a variety of reasons, that difference is likely to be valuable only in certain types of small operations. Support units for heavy and light forces are fairly similar in weight; though tanks require more logistical support than people do, the hundreds of wheeled vehicles in both armored and infantry BCTs require similar logistical support (compare Figure 2-1 on page 24 and Figure 2-4). Moreover, unless infantry BCTs are deployed without support (which is unlikely except for very short and low-risk missions), the need to deploy support units makes fully supported infantry BCTs only a little faster to deploy than heavier BCTs—and means that both types of units would probably require sea transport for any large operation. The Army is most likely to benefit from the light weight of infantry BCTs when deployment speed is more important than combat power (such as in some humanitarian interventions) or when the total force to be committed is fairly small (such as in the initial phase of the invasion of Afghanistan).

Past and Planned Use. Infantry BCTs evolved from the Army's various infantry, airborne, and air-assault divisions, all of which had substantial similarities in organization and equipment. After focusing for many years on trying to fully mechanize all nonairborne infantry units, the Army revived the light-infantry concept in the 1980s. Light units were seen as a cost-effective way to increase the size of U.S. ground forces, especially for scenarios other than defending against Soviet armored assaults.

The operation to remove Iraqi forces from Kuwait in 1991 and the invasion of Iraq in 2003 involved light forces (at the time, infantry divisions rather than BCTs) to only a limited extent. By contrast, the invasion of Afghanistan in 2001 depended entirely on light forces, including Marine Corps and special-forces units. That pattern recurred in subsequent counterinsurgency operations in Iraq and Afghanistan: The United States used limited numbers of infantry BCTs in Iraq but relied heavily on them in Afghanistan. (For a discussion of those and other past military operations, see Appendix C.) However, in those operations, infantry units were assigned more vehicles than usual for mobility, and they were given armored vehicles for protection against improvised explosive devices as the use of those devices became more common.

In the 1990s, the Department of Defense's post–Cold War planning focused on the ability to fight two theater-size wars at the same, or nearly the same, time (see Appendix C). DoD generally assumed that each of those wars would require the equivalent of about six light brigades. (At the time, the Army used divisions as its basic units; it assumed that two light divisions would be necessary for the combat phase of each war.) Subsequent planning was more flexible but envisioned that a similar number of combat brigades would be needed for a major conflict.

Currently, DoD describes scenarios involving Russia and China as its most challenging potential conflicts. In the case of Russian aggression against the Baltic states, armored BCTs would be the most important type of ground forces (as the Russian Federation has a large number of armored forces itself), but infantry and Stryker BCTs would be likely to supplement them. In the case of DoD's South China Sea and Taiwan planning scenarios, infantry BCTs would be the preferred type of Army major combat unit in some instances (where their ability to be deployed by air could be useful). The United States currently has few potential opponents other than the Russian Federation that can field large enough armored forces to make the use of infantry BCTs undesirable.

Figure 2-4.

Units, Equipment, and Personnel in an Army Infantry Brigade Combat Team

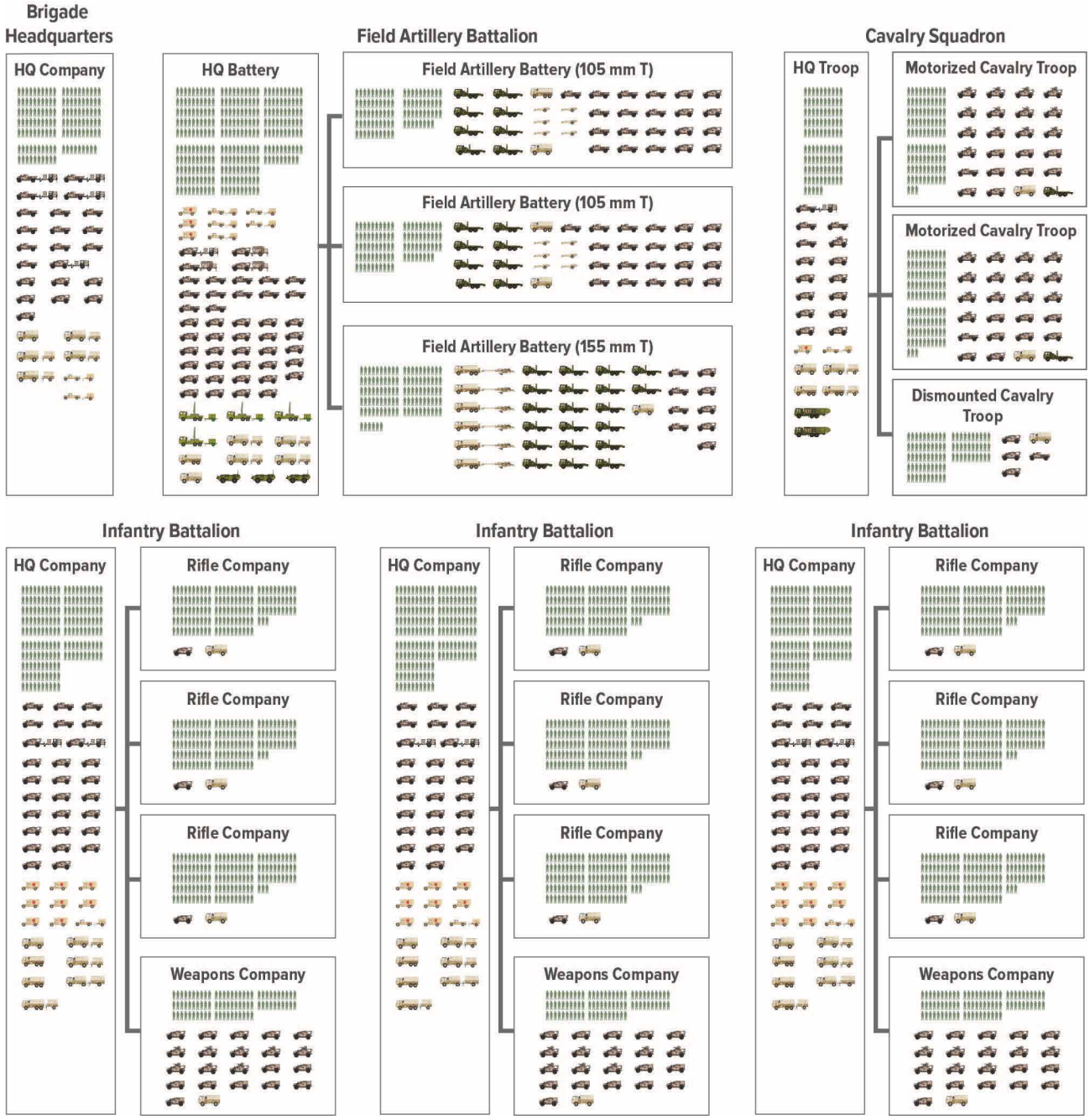


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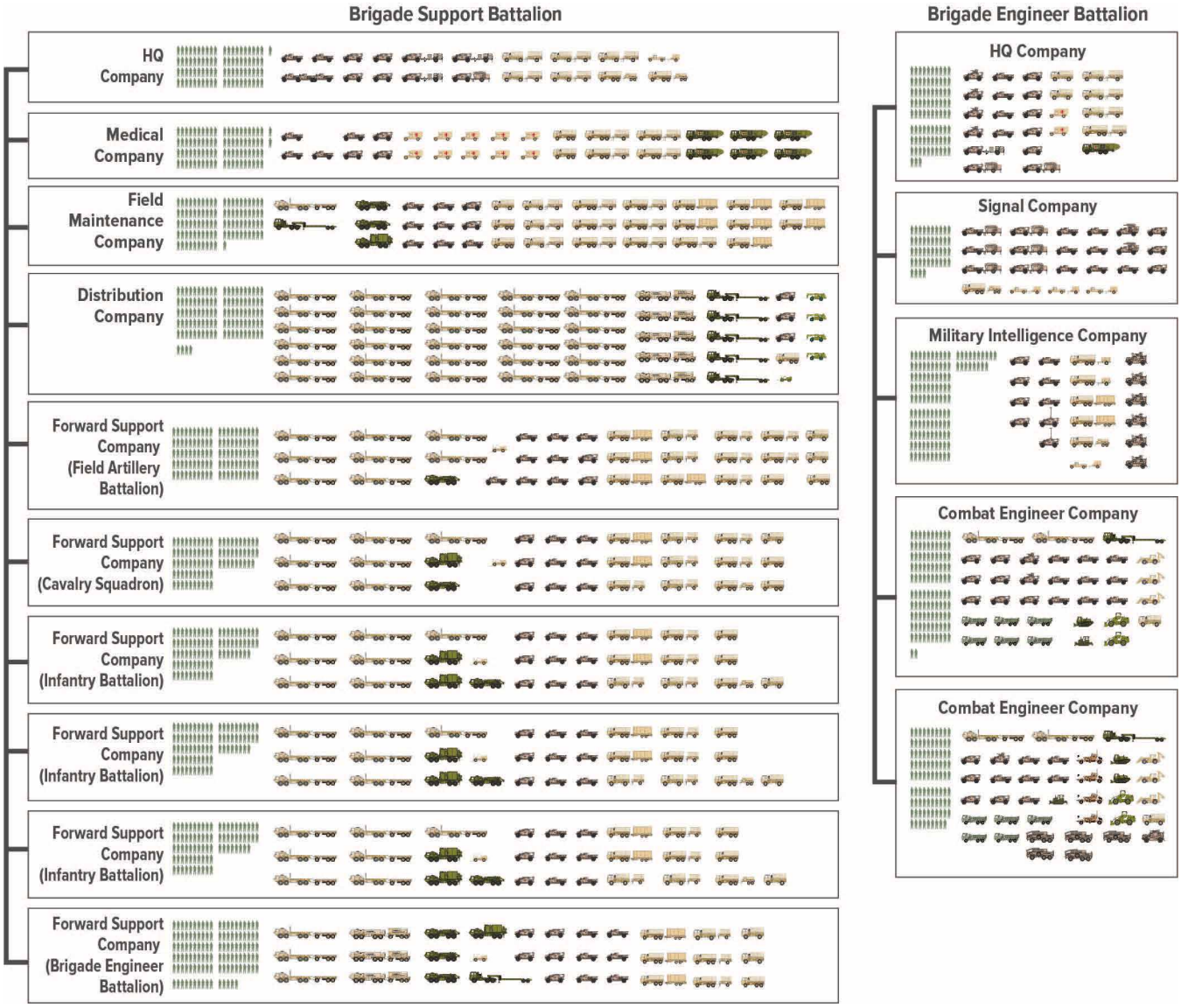
Figure 2-4. Continued

Units, Equipment, and Personnel in an Army Infantry Brigade Combat Team



Data source: Congressional Budget Office, using data from the Department of Defense.

HQ = headquarters; mm = millimeters; T = towed.

For a key to the icons in this figure, see Figure 2-2 on page 26.

Major Element of the Force Structure

Other Department of the Army Units and Activities

	Total	Direct	Indirect[a]	Overhead
		Active-Component Aviation Brigade		
Military Personnel per Unit	3,320	2,440	0	870
Annual Cost per Unit (Millions of 2021 dollars)	690	380	0	310
		Reserve-Component Aviation Brigade		
Military Personnel per Unit	2,310	2,150	0	170
Annual Cost per Unit (Millions of 2021 dollars)	210	170	0	40
		Army Special-Operations Forces		
Total Military Personnel	46,880	34,100	0	12,780
Total Annual Cost (Millions of 2021 dollars)	8,420	3,880	0	4,550
		Rest of the Army		
Total Military Personnel	13,640	10,090	0	3,560
Total Annual Cost (Millions of 2021 dollars)	4,440	3,180	0	1,260

"Direct" personnel and costs are associated with a major combat unit, "indirect" personnel and costs are associated with units that support the major combat unit, and "overhead" personnel and costs are associated with the major combat unit's share of administrative or overhead activities. For more information, see Chapter 1. The numbers shown here are rounded to the nearest 10 personnel or $10 million; more detailed information is presented in Appendixes A and B.

a. In the analytic framework used for this report, other units and activities are generally considered to not have any units supporting them and thus to not have any indirect personnel or costs.

Although the vast majority of Army units are connected with brigade combat teams (BCTs), the service has a small number of other units that are not directly linked to BCTs, such as helicopter units and various special-operations forces. Together, those units, along with their associated overhead, account for 18 percent of the Army's operation and support funding.

Aviation Brigades. Through World War II, the Army used various types of fixed-wing combat aircraft. After the war, however, the Air Force was spun off as a separate service from the Army. Since then, interservice agreements have prohibited the Army from using fixed-wing aircraft for combat (although it continues to use them for other purposes, such as reconnaissance and transport). Instead, the Army's aviation brigades rely on rotary-wing aircraft (helicopters).

In most respects, aviation brigades are similar to other types of supporting forces (as defined in this analysis), but they merit separate treatment because of their visibility and cost, the Army's occasional use of them as independent forces, and the ease of distinguishing them from other supporting forces. The Army will field 16 aviation brigades in its active component and 12 aviation brigades in the reserve component in 2021, with no plans to change those numbers through 2025.

The Army's aviation brigades provide important forms of support in almost all operations involving Army forces. Those brigades include attack helicopters (AH-64 Apaches to attack targets on the ground) and utility and cargo helicopters (UH-60 Blackhawks and CH-47 Chinooks to transport soldiers, equipment, and supplies). Until recently, the Army also fielded reconnaissance helicopters (OH-58 Kiowas to scout for enemy forces), but it has since retired them. For light-infantry forces operating in poor terrain with limited infrastructure—such as portions of Afghanistan—helicopter transportation is often the only practical method of deploying troops to and from combat operations.

The role of the Army's attack helicopters (and, to a lesser degree, its former reconnaissance helicopters) has been the subject of debate, however. Those aircraft had a mixed record in some combat operations, such as in Kosovo in 1999 and in the initial phases of Operation Iraqi Freedom in 2003. Some observers argue that the Army's attack helicopters are a relatively wasteful and duplicative means of providing close air support (attacks

by aircraft on hostile targets that are close to friendly ground forces or naval forces). In that view, close air support is better provided by more capable fixed-wing aircraft from the other services. Other observers maintain that unmanned aerial vehicles (discussed in Chapter 4 in the entry titled "Air Force Unmanned Aerial System Squadrons" on page 98) are well suited to take over the roles traditionally performed by attack and reconnaissance helicopters. Still other observers argue that the Army's attack helicopters have a number of unique advantages—such as the ability to fly at low speeds—that are useful for working closely with ground forces.

Adding fuel to the debate is the fact that the Army has had difficulty developing new reconnaissance helicopters; it canceled two attempts to develop a replacement for the former Kiowa fleet. The Army is currently pursuing a Future Attack Reconnaissance Aircraft program to develop a replacement for its reconnaissance and attack helicopters.

Aviation brigades are one of the most costly types of supporting forces in the Army, and helicopters are some of the most expensive weapon systems that the Army procures. Thus, any future developments that reduced the Army's use of attack and reconnaissance helicopters could yield substantial savings.

Special-Operations Forces. The Army's special-operations forces include the 75th Ranger Regiment, the 160th Special Operations Aviation Regiment, and seven special-forces groups. (The costs and personnel numbers shown in the table on page 36 are for the Army's special-operations forces as a whole rather than for individual units.) Those units—along with the special-operations forces of the other military services—are trained, equipped, and overseen by the Department of Defense's Special Operations Command (SOCOM). They focus on such missions as unconventional warfare, special reconnaissance, counterterrorism, or the training of foreign militaries. The forces overseen by SOCOM are discussed in more detail in Chapter 5, which deals with defensewide activities, in the entry titled "Special Operations" on page 109.

Rest of the Army. By the Congressional Budget Office's estimate, more than 13,000 military personnel and $4.4 billion a year are devoted to units and activities of the Army other than those described in this chapter. They include a variety of smaller organizations providing niche capabilities that are neither BCTs nor units organized to support BCTs. The largest example is the Army's operation of the Ground-Based Midcourse Defense portion of the national missile defense system. That system is the subject of a special-topic entry in Chapter 5 titled "Missile Defense" on page 116. Other examples include the Army's contributions to various joint commands and defensewide organizations, as well as some command-and-control functions.

Special Topic

Integration of the Army's Active and Reserve Components

Each U.S. military service has an active and a reserve component. But the nature and size of the Army's reserve component—as well as the way in which the Army integrates its active and reserve components—make the relationship among the active Army, the Army Reserve, and the Army National Guard a topic of special interest. Roughly two-thirds of the reserve-component personnel in the U.S. military are in the Army. Thus, in most cases, the Army's policies toward its reserve component have a greater effect on how heavily the Department of Defense employs reserve personnel than do the policies of any other service.

In a traditional reserve system, reserve units represent additional increments of force that can be used if forces in the active component prove insufficient. That was the approach that the Army took in earlier decades (and that the Marine Corps still largely takes today). However, since the end of the Vietnam War, the Army has concentrated its combat forces in the active component and concentrated the units that provide essential support for those combat forces in the reserve component. (The active component contains only 46 percent of the Army's total military personnel but 59 percent of the personnel in combat units. Likewise, the reserve component contains 54 percent of the Army's military personnel but 75 percent of the personnel in support units.)

That structure requires the Army to commit support units from the reserve component in order to deploy even modest numbers of combat units from the active component.[8] The need for reserve-component units to support active-component combat forces was the main reason that the Army activated large numbers of reservists during the occupation of Iraq, for example. (Combat units in the reserve component were also activated and deployed for the occupation, but in much smaller numbers than active-component combat units.) Another result of that heavy reliance on reserve support personnel is that the Army can maintain a much larger number of combat units in its active component, at lower cost, than it could if it were organized in a less integrated way.

The benefits and drawbacks of the Army's integrated structure have been the subject of numerous public debates and several Congressionally mandated commissions. Many of those debates have focused on intangible effects of that structure on reserve-component personnel or on the decisions of policymakers. However, some effects of that structure can be quantified.

If the Army stayed the same size but ceased having specialized active and reserve components and instead adopted a policy of supporting active-component combat units with active-component support units (and supporting reserve-component combat units with reserve-component support units), the active component would be able to support about 21 brigade combat teams (BCTs) rather than the current 30 BCTs. At the same time, the Army would be able to sustain 37 BCTs in the reserve component rather than the current 26.

If, instead of remaining the same size, the Army wanted to fully support its current 30 active-component BCTs with active-component support units rather than reserve-component support units, it would need to add at least 148,000 support personnel to the active component. And if the additional personnel had costs similar to those of current active-component Army personnel, the Department of Defense would require an additional $20 billion a year in operation and support funding.

The Army does not appear to be considering any dramatic changes to its current policies for integrating the active and reserve components (although smaller changes are frequently under consideration). However, the above examples show that any proposal to eliminate the active component's dependence on reserve-component support units would entail trade-offs—either by requiring a much larger active-component force or by requiring the Army to shift combat units from the active component to the reserve component.

The Marine Corps and the Navy seem unlikely, in the foreseeable future, to adopt a model similar to the Army's

8. The ratio of active- to reserve-component personnel varies for each type of support unit. For example, the Army has a fairly large complement of aviation brigades in the active component, so it does not necessarily have to activate reserve-component aviation brigades for smaller deployments. At the other end of the spectrum, support units that focus on civil affairs or psychological operations have historically been overwhelmingly concentrated in the reserve component (with few, if any, units in the active component), so the Army must activate reservists for any operation requiring such units.

integration of its active and reserve components. The Marine Corps' combat units deploy more frequently and routinely during peacetime than the Army's combat units do. That deployment schedule would make the Army's integrated model difficult for the Marine Corps to adopt unless DoD was willing to require frequent and routine peacetime mobilizations of reserve-component support units. The Navy is generally more constrained by the number of ships in its inventory than by the number of personnel it has. (The Air Force already uses a model in which its active and reserve components are even more deeply integrated and interdependent, in some respects, than the Army's are. For more detail, see the section in Chapter 4 titled "Distribution of Air Force and Space Force Personnel" on page 80.)

Special Topic

Manning Levels, Readiness, and Deployability of Units

Discussions of the size of the force structure, costs per unit, or the readiness of units for deployment are complicated by the fact that many units do not operate with the number of military personnel officially required to fill them.[9] Conceptually, all units in the U.S. military have a required number of personnel, and each service has a given force structure, which means that each service should theoretically have a set number of personnel it needs for its units. However, for various reasons, the Department of Defense frequently operates units with more or fewer personnel than they are designed for—a practice known as overmanning or undermanning.

Manning levels affect the number of units that a service can field from its total personnel, as well as the readiness and deployability of those units, especially in the Army and Marine Corps.[10] Thus, decisions about manning levels are closely tied to the cost and utility of any given force structure. Such decisions also mean that the number of personnel included in a given force structure could vary widely, so there is no single correct number for how many people a service theoretically requires.

In this report, estimates of funding and personnel per unit are based on the actual manning levels that DoD has planned for the future. In most cases, changes to DoD's decisions about manning levels would alter units' costs, generally in almost linear fashion: A force consisting of units with lower manning levels than required would cost less (and need fewer personnel) but would be less ready and deployable; the opposite would be true for a force consisting of units with higher manning levels than required.

Reasons for Overmanning or Undermanning Units. Assigning more people to a unit than required can be useful for a number of reasons. The most important is that when a unit is deployed, some fraction of its personnel will be unable to accompany the unit because of such issues as medical problems or impending separation from military service. If the unit is exactly at its required personnel level, the absence of those nondeployable personnel will leave the unit below full strength for its deployment. Overmanning nondeployed units provides a cushion of extra personnel, increasing the likelihood that they will be able to deploy with their full complement of required personnel. Experience suggests that units need a cushion of at least 10 percent of their required personnel in order to be realistically expected to deploy at full strength.

At some level, further overmanning would probably have diminishing returns, such that a force structure would be unlikely to benefit significantly from more personnel. In practice, however, the Army and Marine Corps do not appear to have neared that level at any point in recent years.

Undermanning units has its own advantages: reducing the cost of maintaining a given set of units or allowing a service to maintain more units with a given number of personnel than it could otherwise. However, undermanning makes it harder for a service to deploy combat units with their full complement of personnel. One possible use of undermanning that can avoid that problem involves what are known as cadre units. Such units are maintained with a small number of highly trained and experienced personnel but few junior personnel; when the need arises to expand the force, junior personnel can be added to the unit fairly rapidly (for instance, through a draft). That practice allows a service to increase its number of units much faster than it could if it created units from scratch. The Soviet Union used cadre units frequently, but the United States has historically preferred to have smaller numbers of readier units.

In the U.S. military, when undermanned units are required to deploy, they generally receive an infusion of personnel from other units to bring them up to their required numbers. Those transfers, referred to as cross-leveling, alleviate the short-term problem of an individual unit's being below required strength. But because the additional personnel must come from other units, cross-leveling is likely to leave nondeployed units even

9. Units generally have a "required" number of personnel (the number of people that the unit is theoretically designed for) and an "authorized" number of personnel (the number of people that the service has funded). The difference between those two numbers is usually small and fairly technical, so for this analysis, the Congressional Budget Office chose to focus on authorized numbers. For units that are not subject to deployment—primarily administrative organizations—personnel requirements are essentially dictated by the units' expected workloads.

10. Decisions about manning levels are less significant for the Navy and Air Force because the number of units they can field depends to a greater extent on the number of ships and aircraft they are able to purchase.

more short of personnel, causing a cascade of personnel shortages when the "donor" units in turn are required to deploy. (Integrating the transferred personnel into a new unit can also cause problems with that unit's cohesion and readiness.) For example, during the late 1990s and early 2000s, combat brigades in the Army National Guard were often kept at only 80 percent to 90 percent of their required strength. Cross-leveling led to exactly that problem when the Army began deploying large numbers of National Guard brigades to Iraq in 2005.

Effects of Manning Levels on Readiness and Deployability. Most units in the U.S. military receive periodic ratings of their readiness for deployment. Under DoD's assessment system, those ratings are based partly on the percentages of required personnel and equipment a unit has and on the training the unit has completed. Unit commanders have some leeway to adjust the ratings if they consider it necessary. Barring such adjustments, a unit must have a manning level of more than 90 percent to be considered fully ready for combat, and the more undermanned the unit is, the further it is considered from being ready.

Manning levels have a more direct connection with unit readiness than do other relevant factors, such as funding.[11] Any given force structure requires a specific number of personnel to allow each unit to achieve a manning level of more than 90 percent. If the number of personnel available to the force is smaller than that specific number, some units will fall below the 90 percent threshold and be considered less than fully ready. DoD and the individual services commonly give higher priority to some units, manning them at higher levels than a service's average and leaving other units at below-average levels. Such decisions change the distribution of personnel, but they do not change the average manning level overall.

A related characteristic used to describe units is deployability. Unlike a readiness rating, deployability is not a formal measure; rather, it refers to the real-world ease of actually deploying a unit to military operations. In general, a unit must be kept at more than 100 percent of its required manning level to be deployable, unless it receives an infusion of additional personnel.

Because the services have an incentive to overman units that are likely to be deployed, even a force that notionally has enough personnel to man all units at 100 percent may choose to overman deployable units and underman nondeployable ones (such as administrative organizations). The Army engaged in that practice during the 2000s, for example. Personnel are costly, so allocating them as scarce resources toward higher-priority uses and away from lower-priority uses can be a reasonable way to maximize the combat potential of a limited pool of people. However, such considerations mean that the readiness or manning of any given unit is not a reliable indicator of the readiness or manning of the whole force. A unit's manning level may reflect the priority that a service assigns to that unit more than it reflects the manning level of the entire service.

11. For a discussion of the relationship between readiness and funding, see Congressional Budget Office, *Linking the Readiness of the Armed Forces to DoD's Operation and Maintenance Spending* (attachment to a letter to the Honorable C.W. Bill Young, April 25, 2011), www.cbo.gov/publication/22105.

Special Topic

Deployment Times and Rotation Ratios

When making plans for units, the Department of Defense distinguishes between a unit at its home station (typically, its permanent base) and a unit deployed away from that station. Units can be deployed away from home for numerous reasons, such as training exercises. But the most significant types of deployment are those required to sustain U.S. forces overseas—either for military operations, such as the occupations of Iraq and Afghanistan, or for routine military presence in various parts of the world. The Navy and Marine Corps have a long-standing tradition of conducting routine peacetime deployments to provide presence overseas, whereas the Army and Air Force have not traditionally deployed units overseas during peacetime. (Military personnel stationed at some overseas bases, such as in Germany or Japan, are considered to be at their home station rather than on deployment.)

An important factor about current deployments is that DoD does not keep units away from their home station indefinitely. Instead, units return home periodically to limit the stress of deployments on personnel and their families, to repair and replace their equipment, to engage in training exercises, and so forth. Because of that policy, any long military operation or continuing overseas presence requires DoD to have other units available that it can deploy to replace returning units—a practice known as unit rotation. By contrast, in earlier conflicts, such as in Korea and Vietnam, the United States pursued a policy of individual rotation, in which ground and air units remained overseas indefinitely and individual personnel were cycled through them. DoD changed that practice because individual rotation was thought to lead to poor unit cohesion. With unit rotation, the need to alternate units between their home station and deployment means that the military's forces can be thought of as a pool of units, divided into deployed and nondeployed subsets.

Each military service has its own policies governing how long its units can be deployed and how long they should remain at their home station. Such policies result in a theoretical maximum number of units that can be sustained on extended deployments at any point in time while adhering to a service's policies. For example, the Army's official policy for most of the past decade has been for units in the active component to be deployed for up to one year and then spend at least two years at their home station between deployments. (The Army was not able to meet those goals during the occupation of Iraq.)[12] That policy implies that the Army can sustainably deploy one-third of its active-component force to extended operations overseas while the other two-thirds is at home—for a rotation ratio of home-station units to deployed units of 2 to 1.[13] Deploying a unit over several rotation cycles through a theater in excess of that rotation ratio is generally considered unsustainable, in part because it affects the desire of the unit's members to stay in the military.

Because of differences between types of units and the policies of the individual services, there is no single rotation ratio for all military forces. In general, the services expect units in the active component to be able to sustain more deployments than units in the reserve component. (In many cases, DoD prefers to minimize reserve-component deployments, if possible.)

When necessary, DoD can deploy more forces than suggested by rotation ratios, as it did for extended periods during the occupation of Iraq. Moreover, rotation ratios are the result of policy decisions and can be changed. Thus, in times of great military need, nothing prevents DoD from deploying as many units as are available for as long as necessary, as it did during World War II. However, the performance of units generally degrades over time when they are deployed, so such a decision can have drawbacks, which worsen as time goes on. But in an operation expected to be of limited duration (such as Operation Desert Storm in 1991), DoD can realistically deploy far more units than the sustainable level because it does not have to plan on sustaining the force involved in the operation indefinitely.

Given the need to have several units in the force to sustain a single deployed unit, if DoD has plans to keep large numbers of forces deployed overseas, those plans

12. The Army had a different standard for deploying reserve-component forces, which it also had trouble adhering to in Iraq.

13. Previously, DoD defined a rotation ratio as the ratio of the total number of units in the force to the number of units deployed. Thus, in the Army example, what is currently called a 2:1 ratio (two-thirds of the force at home station and one-third deployed) was previously called a 3:1 ratio (for every three units in the force, one was deployed).

will generally require larger forces than plans that only anticipate operations of a limited duration. For example, the Army grew to 45 active-component brigade combat teams (BCTs) and 28 National Guard BCTs in the mid- to late 2000s in order to sustain 20 deployed BCTs. (The 45 active-component BCTs provided 15 of the 20 deployed BCTs, and the 28 National Guard BCTs provided the other 5.) Currently, however, the need to sustain forces deployed overseas is not part of the Army's planning strategy, which has allowed the service to shrink to a force of 32 active-component BCTs and 28 National Guard BCTs (which would be sufficient to sustain about 16 deployed BCTs).