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Artificial Intelligence (AI): Implications for Size and Composition of the U.S. Armed Forces

Overview

The U.S. Armed Forces have been adopting artificial intelligence (AI) to analyze data, support decisionmaking, and improve military and administrative processes, including logistics, intelligence analysis, maintenance, planning, and personnel management. Senior military leaders have characterized AI as a means to improve speed, effectiveness, and decisionmaking rather than as a replacement for human judgment.

Congress exercises oversight of military personnel through end strength authorizations (i.e., maximum size of the Armed Forces), appropriations, and legislation governing military personnel systems. As AI-enabled technologies expand across defense processes, Congress may examine how these systems could influence the size and structure of the Armed Forces and the composition of the broader Department of Defense (DOD) workforce, including civilian employees, and contractors. (DOD is “using a secondary Department of War designation,” under Executive Order 14347.) AI adoption may alter force size requirements, how work is performed, and the skills required to perform it.

AI in the Military Context

In DOD usage, AI generally refers to software systems that analyze large datasets, recognize patterns, generate predictions, or automate routine tasks. In many cases, these systems rely on machine-learning or data-driven software tools that assist in decision-support processes. Uses include predictive maintenance, intelligence data analysis, planning support, and personnel skill-matching. DOD strategy documents emphasize that AI systems are designed to support personnel rather than replace them and that decisionmaking responsibility is to remain with military leaders and authorized personnel.

DOD-Wide Organization and Strategy

In December 2021, the Deputy Secretary of Defense established the Chief Digital and Artificial Intelligence Officer (CDAO) to integrate and scale data, analytics, and AI efforts across the department. The CDAO is to serve as the principal advisor to the Secretary of Defense on these matters and is responsible for accelerating AI adoption across military and business functions. Congress has previously examined the creation and role of the CDAO, including how it aligns with existing defense organizations.

The office of the CDAO consolidates functions previously performed by several organizations, including the Joint Artificial Intelligence Center (JAIC), the Defense Digital Service, and elements of the department’s Chief Data Officer organization.

DOD has issued several strategies guiding AI adoption, including the DOD Data Strategy (2020) and the *Data, Analytics, and Artificial Intelligence Adoption Strategy* (2023). In addition, the *Responsible Artificial Intelligence Strategy and Implementation Pathway* (2022) describes DOD plans to “ensure” AI systems are ethical, reliable, and subject to appropriate human oversight. Collectively, these strategies suggest that DOD expects AI adoption to be broad, sustained, and integrated into both operational and institutional aspects of the Armed Forces.

DOD budget documents indicate continued departmental investment in AI-related capabilities. For example, the FY2027 President’s budget request included \$58.5 billion for AI-related investments intended to support AI-enabled warfare and broader departmental innovation.

Statutory Framework

Congress has enacted several provisions relating to DOD’s implementation of AI and the identification, recruitment, training, and management of military and civilian personnel with AI-related skills. For example, Section 226 of the FY2022 National Defense Authorization Act (NDAA; P.L. 117-81) required DOD to review applications of AI and digital technology across departmental platforms, processes, and operations and to establish performance objectives and metrics. The law directed DOD to assess AI-related skill gaps and qualifications for civilian and military personnel and to establish recruiting, training, and talent-management metrics.

In the FY2022 NDAA (P.L. 117-81, §909), Congress also addressed talent management by requiring DOD to identify, recruit, and manage digital talent, including personnel with AI-related skills. These provisions include responsibilities for a chief digital recruiting officer and DOD’s Chief Human Capital Officer in defining AI workforce roles, assessing workforce requirements, and developing qualification and training programs.

These statutory provisions suggest that congressional oversight of AI extends beyond technology adoption to include workforce management, personnel systems, and long-term talent development.

Implications for Military Personnel Management

DOD generally frames AI as a tool to improve efficiency and effectiveness. Efficiency gains reduce the time or labor required to perform routine tasks, while effectiveness gains improve the quality of military operations and decisionmaking.

From an efficiency perspective, some AI tools are used to automate or streamline repetitive functions, such as data processing, information sorting, and administrative analysis. These tools may reduce workloads in certain headquarters, logistics, and support organizations, potentially allowing them to operate with fewer personnel. Such efficiency gains may affect institutional and operational functions, although some administrative and support activities may be more readily automated than combat-related functions.

From an effectiveness perspective, many AI applications are designed to enhance decisionmaking by integrating large volumes of data, identifying patterns, and providing predictive insights to augment human judgment. For example, DOD may use AI predictive maintenance for platforms and systems to help forecast equipment failures. AI adoption may also increase demand for personnel with technical proficiency, data literacy, and analytical skills to employ, interpret, and oversee AI-enabled systems across the defense enterprise.

Implications for Force Size

CRS has not identified any DOD statements indicating an intention for AI adoption to reduce overall military end strength. Nonetheless, AI may influence force size over time. If AI-enabled tools reduce the time required to perform certain tasks, organizations may adjust how work is distributed among personnel or how functions are organized. In some cases, time saved through automation may be redirected toward training or operational tasks.

In some cases, AI-enabled capabilities may also generate new operational requirements, such as increased demand for cyber defense, data management, or algorithm monitoring personnel. At the same time, new requirements for AI governance, cybersecurity, and technical support may offset reductions elsewhere. As a result, AI adoption may lead to localized workforce adjustments rather than immediate or force-wide changes in end strength.

Implications for Force Composition

Even if total end strength remains unchanged, AI adoption may affect the composition of the defense workforce. DOD and military services strategies emphasize growing demand for data, analytics, software, and digital literacy, which may increase the need for personnel with these technical skills. AI adoption may also influence curriculum requirements for professional military education for operators and those involved in the acquisition of AI-enabled systems.

Competition with the private sector for AI-related skills may further affect the balance among uniformed personnel, civilian employees, and contractors. DOD strategies and workforce discussions have noted competition with the private sector for AI-related skills, which may influence the balance among uniformed personnel, civilian employees, and contractors. While contractor support may provide short-term capacity, disproportionate reliance on contractors could raise questions about institutional knowledge retention, operational continuity, and the performance of inherently governmental functions.

Implementation of the department's Responsible Artificial Intelligence framework and related autonomy policies may require dedicated personnel to conduct testing, evaluation, verification, validation, monitoring, and governance activities throughout the AI life cycle. DOD's framework and other policy guidance (e.g., DOD Directive 3000.09), establish requirements relating to reliability, safety, human oversight, and operational testing for certain AI-enabled and autonomous systems. These requirements may increase demand for personnel with expertise in AI governance, systems testing, cybersecurity, data management, and operational evaluation.

Potential Considerations for Congress

As discussed above, some provisions to enhance AI oversight and to shape how DOD develops and manages its AI-enabled workforce have been enacted in the 119th Congress. Other legislation in the 119th Congress has directed the exploration of AI integration in a broad range of military tasks, from calculating Basic Allowance for Housing to supporting logistics planning and tracking. Congress may also consider the following oversight issues:

Talent Management and Workforce Structure

- How does DOD plan to recruit, train, and retain personnel with AI-related skills, particularly if there is competition with the private sector?
- To what extent are military personnel management systems sufficiently adaptable to AI-driven changes in occupational specialties, career pathways, and professional military education? If additional flexibility is needed, how might Congress support and oversee such changes?
- What balance does DOD intend to maintain among uniformed personnel, civilian employees, and contractors for AI development, integration, and sustainment functions?

Implementation and Resources

- What resources and authorities are required to implement DOD's Responsible Artificial Intelligence framework in accordance with congressional intent, including testing, validation, monitoring, and oversight across the AI life cycle?
- Does DOD have sufficient infrastructure, cybersecurity, and data governance capacity to support its planned AI adoption? What additional resources might be needed?

Metrics and Accountability

- How is DOD measuring AI's impact on workforce requirements and productivity across operational, institutional, and headquarters organizations? How is that information shaping DOD's efforts to manage its AI-focused workforce?

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