

# The Promise of Wearable AI: Opportunities Across Emergency Response

ALEX AMBROSE | APRIL 2026

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Wearable AI improves safety and outcomes for both first responders and the public they serve. Broader adoption of wearable AI for the emergency services industry will protect the health of first responders, improve emergency response, and create safer communities.

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## KEY TAKEAWAYS

- Wearable AI combines AI technology with physical products such as eyeglasses, rings, watches, and helmets to give users hands-free access to AI's information processing and decision-making abilities.
- Wearable AI enables first responders, including law enforcement, firefighters, and emergency medical technicians, to make faster, more informed decisions without the distraction of screens.
- Wearables track vital signs, detect hazards, support coordination, and enhance accountability across the emergency services sector.
- Proper safeguards can ensure that wearable AI enhances emergency response without compromising the safety, privacy, or integrity of users or the public.
- To ensure that wearable AI is fully implemented across the emergency services ecosystem, Congress and state and local governments have a role in funding, researching, and scaling the technologies.

**CONTENTS**

- Key Takeaways..... 1
- Introduction..... 2
- Methodology ..... 3
- Background ..... 3
  - What Is Wearable AI? ..... 3
  - Wearable AI for Emergency Services ..... 4
- Findings..... 5
  - Law Enforcement..... 5
  - Firefighters..... 6
  - Emergency Medical Technicians and Emergency Health Care ..... 7
  - Additional Emergency Services..... 8
- Industry-Specific Barriers and Risks..... 9
  - Barriers..... 9
  - Risks ..... 11
- Policy Recommendations ..... 12
  - Increase Research Funding for Wearable AI in Emergency Services..... 12
  - Increase Funding for Emergency Services’ Training to Include Wearable AI..... 12
  - Ensure Strong Data Safety and Security Practices ..... 13
  - Encourage Interoperability Across Emergency Services Departments ..... 13
- Conclusion ..... 14
- Endnotes..... 15

**INTRODUCTION**

Artificial intelligence (AI) adoption has accelerated rapidly in recent years, most visibly through consumer-facing applications such as chatbots and such generative AI systems as ChatGPT, Gemini, and Claude. These technologies are reshaping how people work, communicate, and access information. Less visible but equally consequential is the emergence of wearable AI, which trains on spatial data—including depth, motion, object recognition, and environmental mapping—to interact with the physical world in real time. This shift raises new questions about the boundaries between human experience and digital augmentation, when wearable technology will inform the next phase of the Internet and the novel ways humans interact with technology. Companies such as Meta, Google, Amazon, and Samsung are betting big that wearables will usher in this new era.<sup>1</sup>

Wearable AI includes devices such as smart glasses, rings, and watches that collect and process real-time data about the wearer and their environment to make predictions and give insights to

enhance safety, productivity, and health.<sup>2</sup> Wearables may be equipped with sensors to measure heart rate, glucose levels, caloric intake, and sleep to allow users to track health markers in real time.<sup>3</sup> For example, smartwatches and rings for personal health tracking such as the Apple Watch and Oura Ring are increasingly popular for tracking workouts, sleep data, and other health markers. According to the National Institutes of Health, in 2023, almost one in three Americans used a wearable device to track their health and fitness.<sup>4</sup>

Emergency services demonstrate the value of wearable AI. In high-stakes environments such as firefighting, disaster relief, and law enforcement, wearable AI has the potential to improve safety, situational awareness, incident response, and decision-making. These tools can help save lives, protect responders, and improve coordination during crises.

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### **Few applications demonstrate the importance of developing the wearables industry more than in emergency services.**

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But for certain emergency services, especially law enforcement, the use of wearable AI also has potential risks, especially if deployed without appropriate limits and rules.<sup>5</sup> These risks have drawn criticism and concern—some valid and some overblown—from privacy and civil justice advocates and other stakeholders over the risk of police surveillance, misuse or abuse of police tech, bias, lack of transparency, cybersecurity breaches, lack of privacy of highly sensitive personal health information, and overall effectiveness of wearables.<sup>6</sup>

This report explores the potential of wearable AI across the emergency services industry, including police, firefighters, emergency medical technicians (EMTs), and other emergency services such as 911 operation and natural disaster response. It is the first in a series of reports on the promise of wearable AI across four key industries: emergency response, manufacturing, health care, and workforce development and skilled trades.

## **METHODOLOGY**

To formulate this report, ITIF first conducted qualitative background research. Then, we interviewed law enforcement personnel and emergency services researchers to gather firsthand information about the use of emerging technologies from those in the field. Finally, ITIF convened a roundtable with experts from industry, nonprofits, and professional associations to examine how the industry is adopting wearable AI technologies, gain practitioner perspectives, and inform the report's policy recommendations.

## **BACKGROUND**

### **What Is Wearable AI?**

Wearable AI combines AI technology with physical products—such as eyeglasses, rings, watches, and helmets—to give users hands-free access to AI's information processing and decision-making abilities. It uses an array of sensors to collect data from both users and their environment.<sup>7</sup> For example, most wearable AI contains cameras to track movement; sensors to measure vital signs such as heart rate, body temperature, respiration rate, and blood oxygen levels; global positioning systems (GPS) to track a user's location; and Wi-Fi or cellular connection to access the Internet.<sup>8</sup>

Machine learning (ML)—a branch of AI that enables systems to learn patterns from data without being explicitly programmed for each task—allows wearable devices to analyze sensor data, detect trends, and generate insights that can inform user decisions.<sup>9</sup> For example, a smartwatch knows when a user is taking a longer walk than normal and may ask if the user would like to log that activity as a workout. That smartwatch used ML—activity recognition specifically—to learn the difference between types of walk patterns and made a prediction that the user was engaging in exercise.<sup>10</sup> This is how wearable AI can detect anomalies in data that includes behavioral and environmental data points.

One of the most promising wearable AI technologies is smart glasses. Smart glasses—whether AI-enabled, augmented reality (AR), or both—collect data through a range of sensors. These typically include forward-facing cameras that capture motion and other environmental information; an inertial measurement unit that combines an accelerometer and gyroscope to track head movement and orientation; GPS; and microphones.<sup>11</sup> Together, these inputs allow wearable AI systems to process rich, real-world data derived directly from a user’s surroundings.

As extended reality (XR) expert Cathy Hackl explains: “Unlike traditional data pipelines, these devices let AI learn from direct interaction with the world around it, improving how it responds to real-world contexts and unpredictability.”<sup>12</sup> In other words, wearable AI interprets these gestures, movement, and environment context in real time.

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The main difference between AI and AR glasses is in how they present information. As one tech journalist explains: “AR glasses are basically an external display for the likes of your laptop, smartphone or gaming handheld. AI specs are more of a wearable window into LLMs like ChatGPT or Meta AI to help you get things done or answer questions about the world around you.”<sup>13</sup> AR glasses are designed to feel immersive, overlaying interactive 3D objects on the user’s view of the real world, similar to how Pokémon appear in real environments in Pokémon Go.<sup>14</sup> By contrast, AI glasses typically use a more limited heads-up display focused on utility rather than immersion. They are designed to assist with everyday tasks by providing glanceable information, notifications, and hands-free capabilities, such as conversation, photography, and video capture.<sup>15</sup>

## **Wearable AI for Emergency Services**

In critical environments such as emergency services, wearable AI enables first responders to make faster, safer decisions without diverting their attention to a screen. By allowing users to ask questions, record events, and receive contextual support hands-free, wearable AI helps keep focus on the situation at hand.<sup>16</sup> In addition to measuring users’ vital signs, wearable AI can detect environmental factors—such as hazardous gases, radiation levels, and extreme temperatures—that are crucial for first responders in crises. Depending on the use case, AI can then process this data to detect patterns and predict when certain scenarios might arise for future use, improving safety protocols and enhancing training for first responders—in addition to better predicting the likelihood of future emergencies.<sup>17</sup> Emergency services can then transfer all

this collected data to a central command center using Bluetooth, Wi-Fi, or cellular networks, enabling leadership to improve resources, assistance, and training.

## FINDINGS

Throughout the emergency services ecosystem, wearable AI shows promise in improving safety and outcomes for both first responders and the public they serve. Wearable AI technologies are transforming emergency services by providing real-time health monitoring, communication, navigation, and situational awareness, which can improve worker safety, decision-making, and operational efficiency. Across law enforcement, firefighters, EMTs, and other emergency responders, wearables help track vital signs, detect hazards, support coordination, and enhance accountability. Widespread adoption also raises challenges, including privacy concerns and data security risks that need proper research, funding, and training for the emergency services industry to increase adoption.

### Law Enforcement

Wearable technologies are ushering in a new era of real-time data collection, communication, access to resources and information, and enhanced officer and community safety. In return, widespread adoption of these technologies at all levels of law enforcement results in more crimes solved (and possibly prevented), more lives saved, greater safety for officers, and more efficient use of taxpayer dollars.<sup>18</sup>

Law enforcement uses smartwatches and rings to track officers' vital signs, including stress, heart rate, and physical exertion.<sup>19</sup> Tracking heart rate is important in the law enforcement context because there is a clear link between heart rate and cognitive performance in stressful situations. Elevated heart rate can sharpen focus, but too high of a surge can compromise fine motor skills.<sup>20</sup> Having this information through wearable AI is especially important for a field in which high-stress situations are common.<sup>21</sup> In addition, out in the field, officers may need to run, climb, carry heavy objects or people, and perform other physical activities.<sup>22</sup> Tracking physical exertion can improve worker safety and give officers tools to improve their health. Officers also typically face long hours, affecting sleep schedules.<sup>23</sup> Wearable AI's ability to track sleep can help officers monitor their sleep and ensure that they are getting sufficient rest.

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In addition to physical strain, the highly stressful situations law enforcement personnel often face may put their mental health at risk. The National Institute of Mental Health found that about half of American adults will experience at least one traumatic event in their lifetime.<sup>24</sup> By comparison, police officers experience about three traumatic events every six months.<sup>25</sup> This repeated exposure to traumatic events is linked to mental health conditions such as depression, substance abuse, and post-traumatic stress disorder (PTSD).<sup>26</sup>

Understanding both the physical and mental health of officers while on the job allows police departments to reduce on-the-job injuries and prevent burnout.<sup>27</sup> Wearable AI can help provide data points from biometric sensors to alert both officers and leadership of health risks, prompt

them to rest and take breaks, predict how they will respond to stressful situations, and offer advice on how to better respond to stress.

Wearable AI utilizes GPS to better track officers in the field, providing real-time navigation and improving communication between officers and their command. Smart glasses can also improve officers' interactions with the public by facilitating communication, for example, by offering real-time language translation. Glasses can also provide facial recognition, allowing law enforcement to find suspects, missing persons, or witnesses in a crowd.<sup>28</sup>

Body-worn cameras (BWCs) are another form of wearable AI that can help law enforcement better detect and solve crimes. One example of how BWCs utilize AI is speech-to-text transcriptions from audio, which computers analyze for specific keywords to flag interactions such as law enforcement using excessive force or threats to an officer. BWCs can also use AI to analyze facial expressions in video to flag reactions to certain situations, providing insight into how an officer reacts to stressful situations. Police departments can use these analyses for future training to teach others how to react positively or to point out problematic behaviors and how to improve moving forward.<sup>29</sup>

BWCs serve police officers themselves by protecting them from false accusations and providing behavioral analysis, while also protecting the public by providing a transparent record of interactions.<sup>30</sup> On top of increasing accountability, BWCs help document crimes, arrests, accidents, and other incidents and provide video evidence for investigation and prosecution.<sup>31</sup> Smart glasses are capable of capturing real-time photos and video of crimes, crime scenes, and evidence that can lead the police to suspects or victims.<sup>32</sup>

## **Firefighters**

Firefighting is among the most physically demanding and dangerous professions in public service. Active firefighters die from cardiac arrest at double the rate of law enforcement officers and four times the rate of other emergency responders.<sup>33</sup> Inside burning structures and wildfires, smoke can obscure vision, extreme heat stresses both equipment and personnel, structural instability creates risk of collapse, and extreme weather conditions can change within minutes.<sup>34</sup> In these environments, real-time information is critically important for decision-making, and wearable AI can play an important role in facilitating firefighters' response.

Firefighting environments present unique health threats.<sup>35</sup> Firefighters are generally the first to encounter hazardous chemicals during industrial emergencies, which can be inhaled, ingested, or absorbed through the skin. Prolonged exposure to these chemicals can be fatal.<sup>36</sup> The rise in lithium-ion energy storage facilities, warehouses with robotic technology, and electric scooters and vehicles raise new challenges for high-risk chemical fires.<sup>37</sup> Firefighters can utilize wearable AI equipped with various biometric sensors to detect toxic gases and temperature extremes and measure their oxygen levels. For example, a program by the Department of Homeland Security (DHS) is researching a wearable sensor that alerts firefighters to the presence of these chemicals.<sup>38</sup> In addition, the Defense Advanced Research Projects Agency and the National Urban Security Technology Laboratory at DHS are researching wearable radiation sensors that can help both EMTs with triage and firefighters who are exposed to dangerous chemicals.<sup>39</sup>

Firefighters use smartwatches and rings to monitor health markers such as heart rate, blood oxygen levels, and other vital signs to track health during high-stress situations, providing their

commanders with real-time data.<sup>40</sup> This information can alert both the commanders and firefighters themselves when their vital signs reach critical thresholds, facilitating rest and care. This can also keep commanders informed on the condition of their teams, enabling further interventions or additional support.<sup>41</sup> Like law enforcement personnel, firefighters also face long hours, which can lead to lack of proper sleep, and strenuous physical activity such as lifting heavy objects, people, and equipment.<sup>42</sup> Furthermore, the physiological response of firefighting activities can impact working memory and brain function.<sup>43</sup>

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Similar to law enforcement, firefighters wear BWCs to capture visual data from their environment, which they can use for both real-time and post-incident analyses.<sup>44</sup> For example, firefighting forward-looking infrared cameras use thermal imaging to help firefighters see through smoke and darkness, looking for heat signatures. This allows them to navigate more easily, make more accurate decisions, see structural details, and find victims faster.<sup>45</sup> In Scotland, the University of Edinburgh and the National Robotarium developed a smart helmet that combines data from thermal imaging cameras, radar, and other sensors mounted on standard-issue firefighter helmets.<sup>46</sup> These helmets allow firefighters to navigate low-visibility conditions more safely by giving them better situational awareness and reducing the time it takes to rescue victims.<sup>47</sup> Further iterations plan to add 3D mapping technology as well. Weight is particularly important for firefighters' gear, as standard-issue uniforms can collectively weigh over 110 pounds, limiting mobility and requiring any additional gear to be as light as possible.<sup>48</sup> These smart helmets add only around two pounds of weight.<sup>49</sup>

With GPS sensors, AI glasses can give real-time navigation to firefighters, providing them with safer alternate routes and redirecting them if they get lost.<sup>50</sup> AI glasses also enable real-time consultation with command centers and off-site experts, providing outside perspective during complex structural emergencies and real-time updates on changing conditions, so firefighters can better communicate with each other regarding building conditions or hazardous materials and chemicals.<sup>51</sup> They can also provide status updates regarding gear and equipment. In Singapore, for example, wearable AI glasses are helping firefighters inspect their gear and equipment for flaws and defects. This data goes to a centralized dashboard that provides status updates on the gear and insights for operational decisions.<sup>52</sup>

### **Emergency Medical Technicians and Emergency Health Care**

EMTs, paramedics, and other emergency medical services (EMS) personnel routinely face high physical and emotional strain, delivering health care in uncontrolled, critical situations. Unlike traditional clinical environments, emergency response settings are often marked by limited information and intense time pressure, with potential environmental hazards and rapidly changing conditions.<sup>53</sup> In these moments, timely, accurate information is essential for effective triage and treatment decisions, and wearable AI can play an important role in supporting situational awareness, patient monitoring, and coordinated response in the field.

Wearable AI can help triage patients quickly by gathering vital signs such as heart rate, respiratory rate, and oxygen saturation levels. These signs are crucial for understanding how quickly a patient is at risk of deteriorating.<sup>54</sup> Combining a patient’s historical health data with these present clinical observations has been shown to enhance predictive accuracy. According to the *International Journal of Medical Informatics*, “By compiling and processing these data types, AI-driven systems can form a more comprehensive profile of each patient, setting the stage for accurate risk categorization.”<sup>55</sup> Furthermore, AI systems can recognize more subtle patterns in patient data, such as respiratory distress, that can lead to more accurate prioritization in triage.<sup>56</sup>

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In addition to triage, wearable AI can provide hands-free video-enabled communication with remote emergency physicians and specialists, giving EMTs real-time guidance for complex procedures and advice during abnormal situations.<sup>57</sup> Video also enables EMTs to identify wounds more easily, especially infectious ones that pose a risk to them and others.<sup>58</sup> Similarly to other emergency services, wearable AI can also provide geolocation services for precise incident reporting and tracking of personnel, in addition to real-time language translation to speak with patients.

In addition to assisting patients, wearable AI can track the health of EMTs themselves, much like it can for other emergency service workers. Health care and EMS are highly stressful fields, with 46 percent of health-care workers reporting burnout in 2022.<sup>59</sup> The American Ambulance Association and National Association of Emergency Medical Technicians found that overall turnover among paramedics and EMTs ranges from 20 to 30 percent.<sup>60</sup> Like other emergency services personnel, these workers face long, highly variable work hours, often facing 24-hour shifts.<sup>61</sup> This can lead to injury, and EMS workers reported an injury rate of 27 percent in 2023.<sup>62</sup> Wearables present an opportunity for EMS workers to better track their sleep and other health markers to measure fatigue, reduce stress, and avoid injury.

An important consideration for EMTs and other EMS personnel is the privacy and security of highly sensitive health data. Laws such as the Health Insurance Portability and Accountability Act (HIPAA) require patient consent to disclose sensitive health information and give patients the right to understand that information and control its use.<sup>63</sup> Given that wearables rely on large amounts of data collection to work effectively, strong data protection safeguards are essential. Without robust protection, tools that collect or transmit real-time health, location, or video data could violate existing privacy law and expose patients and responders to privacy risks.

### **Additional Emergency Services**

In addition to law enforcement, firefighters, and EMTs, emergency services also include 911 dispatchers, natural disaster response, lifeguards, park rangers, and water rescue personnel. Though all these emergency services benefit from wearable AI’s vital sign tracking, geolocation services, and enhanced communication, there are some additional unique benefits.

Most smartwatches have device-initiated 911 calling capabilities to alert 911 dispatchers of emergencies.<sup>64</sup> Research suggests that, in 2026, one third of emergency calls will be made by

smart devices, which can help shorten response times by providing critical details such as location and type of incident faster than a voice conversation can.<sup>65</sup> At the same time, smart-device calls don't always provide all the details a 911 dispatcher needs to determine which emergency service to send, and some calls made by devices would be classified by a dispatcher as nonemergent because of false fall detections or children accidentally calling.<sup>66</sup> In addition, one National Emergency Number Association survey finds that 82 percent of centers are understaffed and struggling with retention.<sup>67</sup> Though the number of calls may increase, wearables also prevent health emergencies by providing early detection of irregular heartbeats and respiration and detecting falls. An American Heart Association study finds that patients who track their heart rate consistently with wearables are more likely to engage in symptom monitoring and report concerns over those who do not.<sup>68</sup>

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**911 dispatchers, natural disaster response, lifeguards, park rangers, and water rescue personnel all benefit from wearable AI's vital sign tracking, geolocation services, and enhanced communication.**

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While emergency calls are on the rise, so too are the frequency of natural disasters, making search and rescue teams and natural disaster response even more crucial.<sup>69</sup> Like other emergency services personnel, these responders face fatigue, rapidly changing environmental conditions, and dangerous terrain—challenges that wearable AI can help address through real-time health tracking, environmental monitoring, and triage support. Water rescuers and lifeguards can use wearables to improve communication and coordination, while heat, stress, and fatigue monitoring can help prevent injuries across land- and water-based operations, including search and rescue missions. For example, drowning detection systems can identify swimmers in distress through video analysis, including subtleties undetectable by human observers, and alert lifeguards to go to a certain area.<sup>70</sup>

## **INDUSTRY-SPECIFIC BARRIERS AND RISKS**

There are certain barriers that pervade the emergency services ecosystem, including variation in training between jurisdictions, especially among rural versus urban environments; red tape in adopting new technologies; specific uses necessary for emergency use potentially hindered by consumer-grade products; difficulties integrating new technologies into departments; and personnel retention and morale concerns. These barriers may cause friction in the wider adoption of wearable AI, with certain risks specific to the emergency services industry including data privacy, the legal liability present in sensitive health and crime scene data sharing, challenges in authentication of immersive technologies over 2D technologies, the high risk of cyberattacks, and community calls to ban certain use cases. These barriers and risks should help shape the policy conversation around the adoption and integration of wearable AI for this industry.

### **Barriers**

The total cost of responding to emergencies and natural disasters is rising, emphasizing the need for cost-cutting technologies.<sup>71</sup> At the same time, across all emergency services, many departments do not devote sufficient time and funding to training their officers on how to properly use emerging technologies such as wearable AI. Variations in training are largely dependent on location, with some jurisdictions lacking the financial, logistical, and knowledge to utilize these technologies.<sup>72</sup> While larger, urban police, fire, and health departments may

accommodate new technologies in their training, smaller departments in rural areas often struggle to do so.<sup>73</sup>

Location, size, and budgetary constraints limiting the adoption of emerging technologies mean that those living in rural areas have access to fewer disaster and emergency resources.<sup>74</sup> These constraints raise scalability concerns, as only richer, larger, and more urban districts may feasibly adopt wearable AI over rural, smaller, or poorer districts. Care deserts and ambulance deserts, areas where an ambulance station is over 25 minutes away, put further strain on rural communities, especially for communities heavily reliant on volunteer-run emergency services.<sup>75</sup>

Even if departments have the funding and willingness to adopt new technology, getting gear and equipment approved for official use involves navigating regulatory red tape. The National Fire Protection Association issues standards for firefighters' personal protective equipment, which includes personal alert safety systems such as wearable AI.<sup>76</sup> These standards ensure that gear does not contain restricted substances or per- and polyfluoroalkyl substances (long-lasting chemicals slow to break down); are tested for high heat and rated for explosion environments; can be easily cleaned; are durable; and perform consistently.<sup>77</sup> Consumer products on the market today do not face these same requirements. Similarly, medical products face difficult and overly complex regulations to ensure that products are safe.<sup>78</sup> Individual department and city policies decide whether to adopt a technology for official use, and consumer products may be more difficult to get approved.<sup>79</sup>

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**Funding concerns, recruitment and retention struggles, and difficulty integrating new technologies into pre-existing workstreams are barriers to adoption specific to the emergency response industry. These barriers are among the ever-rising costs of responding to emergencies more broadly, and the rate of natural disasters is only increasing.**

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In addition, across all emergency services, there is often a lack of personnel and low morale.<sup>80</sup> In a 2024 International Association of Chiefs of Police survey, 70 percent of respondents reported that recruitment is more difficult now than it was five years ago, with 65 percent reporting reduced services due to lack of staff.<sup>81</sup> In the United States, about 60 percent of EMS report insufficient staffing to meet 911 call demands.<sup>82</sup> Many EMTs leave EMS after one year or less for other health-care fields.<sup>83</sup> According to the National Volunteer Fire Council, 65 percent of U.S. firefighters are volunteers.<sup>84</sup> In New York, for example, since the 1990s, there has been a 32 percent decrease in volunteer rates, but a 29 percent increase in emergency calls.<sup>85</sup> Burnout and low morale are prevalent, and understaffed emergency services lead to delayed response times, and therefore put more lives at risk.<sup>86</sup>

Integrating new technologies into current systems is challenging for emergency services already strapped for personnel and funding. Unfortunately, according to the American Hospital Association, in 2022, over half of hospitals closed out the year operating at a loss, while many hospitals spent much of 2023 struggling to break even. Therefore, hospitals are “diverting dollars from their reserves to maintain access to care,” which “has required tradeoffs that have limited many hospitals and health systems from investing in updated infrastructure, new medical technology and equipment, and other clinical needs,” according to the American Hospital

Association.<sup>87</sup> In other words, integrating new technologies such as wearables may be financially infeasible for many of these institutions.

Impact on agencies and individual workers is also a factor. A survey of urban and rural firefighters finds that 64 percent believe technology improves their job satisfaction, while a second study of law enforcement reveals that 87 percent believe AI is improving public safety.<sup>88</sup> While new technologies typically improve efficiency, some can actually reduce agency efficiency, especially if a technology helps agency chiefs but adds more responsibilities or time-consuming activities on the officers.<sup>89</sup> This internal resistance to both change and the adoption of new technologies can impact adoption.<sup>90</sup>

## Risks

Public safety agencies handle a range of sensitive data that requires careful protocols to protect privacy. For example, geolocation data collected from emergency service personnel and evidence stored on law enforcement devices is subject to the same security vulnerabilities as other categories of sensitive data. But unauthorized access to this information could affect active operations by exposing deployment patterns, investigative methods and materials, or personnel details, making strong data governance and access controls an important consideration for public safety agencies.<sup>91</sup>

In addition to external threats to sensitive data, many emergency services personnel do not want their employers to have access to their health information because they worry it might compromise their involvement in certain emergencies or daily work environments.<sup>92</sup> In addition, using personal devices for work purposes exposes these personnel to potential legal liability in some jurisdictions should certain recordings, audio, or data be needed in court.<sup>93</sup> Critics of automated decision-making also express concerns over legal liability if AI makes decisions that end up causing harm or costing lives.<sup>94</sup>

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Similarly, due to the sensitive nature of the emergency services field, proper authentication is crucial to ensure that only authorized users can access sensitive information or restricted services. One challenge with the shift to wearable technology is that the methods that work well for authenticating users in 2D digital spaces are more difficult to implement with immersive technologies because current authentication methods are made for mobile or web-based technologies, not immersive ones, making security challenges even more complex than those associated with other technologies.<sup>95</sup>

Lastly, hospitals and health-care institutions are designated as being high risk for cyberattacks, according to the Department of Health and Human Services, which results in privacy violations, reputational damage, and technical challenges, in addition to liability concerns.<sup>96</sup> With greater adoption of wearable AI adding more devices connected to these networks, this larger attack surface creates more potential opportunities for cyberattacks.

For law enforcement, common criticisms opposing police use of technology highlight the potential for unauthorized surveillance, misuse or abuse, racial or other bias, cybersecurity

concerns, lack of transparency, and a need to evaluate police tech’s effectiveness relative to costs. While some of these concerns are legitimate, many are not. For example, some civil liberties groups and policymakers suggest banning facial recognition capabilities of BWCs.<sup>97</sup> But banning this promising set of technologies would cut law enforcement and the general public off from the many substantial benefits of these technologies. Moreover, it would eliminate opportunities to use technology to address police violence, bias, and accountability.<sup>98</sup>

Taken together, these risks underscore the need for anonymization and security safeguards to ensure that wearable AI enhances emergency response without compromising the safety, privacy, or integrity of those who rely on it. However, though the massive amount of potentially sensitive data requires careful safeguards, addressing privacy is not unique to these technologies and therefore does not pose an insurmountable barrier to innovation or adoption.

## **POLICY RECOMMENDATIONS**

To ensure that wearable AI is fully actualized across the emergency services ecosystem, Congress and state and local governments have a role in funding, researching, and scaling the technologies. At the same time, they should also balance the barriers and risks that could hinder their wide-scale adoption.

### **Increase Research Funding for Wearable AI in Emergency Services**

Congress should increase funding for research for wearable AI technologies in emergency services. Researchers should study how wearables can be adapted and employed to meet the durability, reliability, and infrastructure demands of emergency services, especially because of the niche use cases present in emergency services and the need for an expanded evidence base that supports wide-scale adoption.<sup>99</sup> DHS’s National Urban Security Technology Laboratory is one program that is well-placed for this research, as it aims to test and evaluate new technologies to ensure that they are safe and durable for emergency responders.<sup>100</sup> This research should also ensure proper evaluation on the effectiveness of wearable AI systems once integrated.

### **Increase Funding for Emergency Services Training to Include Wearable AI**

Congress and state governments should fully fund grant programs for emergency services training, ensure that these programs include the most up-to-date and emerging technologies, and emphasize the utility of wellness programs for employee retention and job satisfaction.<sup>101</sup>

The Staffing for Adequate Fire and Emergency Response grant and the Assistance to Firefighters Grants, funded by DHS and the Federal Emergency Management Agency (FEMA), provide funding directly to local fire departments to help maintain trained, available firefighters.<sup>102</sup> These grants ensure that communities have enough firefighters to meet industry minimum standards and provide 24-hour service—but many fire departments, especially volunteer departments, find the grant language and process to be excessively difficult to navigate.<sup>103</sup> Congress required the Government Accountability Office in 2024 to audit the grant program and submit a report by June 2027 to better understand the “barriers that prevent fire departments from accessing Federal funds.”<sup>104</sup> According to the Congressional Research Service, “Congress has typically enacted appropriations for these programs below the levels authorized.”<sup>105</sup>

Law enforcement has many similar programs, typically funded through the Department of Justice, such as the Office of Community Oriented Policing Service’s Office of Technology and

Equipment Program Invitational Solicitation, which aims to improve police-community relations in part through better access to technology.<sup>106</sup> There are also state-level grants, such as Virginia's Office of First Responder Wellness Grant Program, which focuses on providing funding for several emergency services personnel's wellness through new technologies.<sup>107</sup>

In addition, the U.S. Fire Administration and FEMA, as well as state training academies, have training programs such as the National Fire Academy, the Center for Domestic Preparedness, and the National Domestic Preparedness Consortium that include technical training and practical exercises but should also expand training to include wearable AI technologies.<sup>108</sup> Cuts in federal funding to DHS have halted many of these training programs—and those cuts should be reversed.<sup>109</sup>

### **Ensure Strong Data Safety and Security Practices**

Congress should pass comprehensive federal data privacy legislation that sets consistent privacy and security requirements for collecting, storing, and sharing personal information, including sensitive personal information not covered by existing sectoral privacy laws.

Federal government agencies should tie federal funding for wearable AI to cybersecurity requirements and include guidelines wearable AI must follow in order for emergency services departments to procure that technology with federal funds. These guidelines should help departments avoid procuring technology that may be vulnerable to attack and can draw on existing National Institute of Standards and Technology (NIST) guidance.

Meanwhile, because policing is primarily a state and local responsibility, state lawmakers should regulate police data collection, including by limiting the amount of time police departments can retain data, with exceptions for data that is potential evidence of a crime, which police may need to retain for long periods of time. Regulations should also only allow the collection of sensitive data for specific purposes related to solving or responding to crime, while the collection of nonsensitive or anonymous data should have fewer restrictions. These regulations should also include transparency requirements for police departments that would give individuals insight into how police use the collected data, how long they store that data, and how they protect it.

Emergency services departments should establish rules that officers can only use technology for authorized purposes, require basic cyber hygiene training for all personnel and additional cyber training for personnel that directly interface with technology, and require system updates as necessary to ensure that systems are secure. To ensure that only authorized emergency services personnel can access sensitive data, these institutions should require usable security features on devices such as passwords and authentication methods that are intuitive and unintrusive. Making sure that platforms are easy to use and also safe and secure is important for the handling of sensitive data coupled with the operational demand for efficient technology.<sup>110</sup>

### **Encourage Interoperability Across Emergency Services Departments**

At all levels of government, emergency services departments should emphasize the interoperability of their systems especially for integrating wearable AI. Even though responding to an emergency may require police officers, firefighters, and EMTs on the scene, because these departments all have their own forms of internal communication, response can sometimes be siloed and communication among departments constrained and incompatible with each other.<sup>111</sup> As a potential solution, the U.S. Fire Administration is leading an effort to launch an

interoperable fire information and analytics system: the National Emergency Response Information System (NERIS).<sup>112</sup> NERIS is a secure, cloud-based data infrastructure that can better empower communication between federal, state, and local responders and better anticipate future risks.<sup>113</sup> Interoperability allows emergency services to more easily transfer information and communicate among departments. The Infrastructure Investment and Jobs Act of 2021 funded DHS’s Science and Technology’s Critical Infrastructure Security & Resilience Research Program, which is conducting research on applying successful three- or four-alarm fires and medical emergencies’ interoperability programs run in New Hampshire and Vermont.<sup>114</sup> Other jurisdictions could apply this standard, and Congress should ensure funding for programs that encourage interoperability, especially through wearable AI systems.

## CONCLUSION

As emergency services continue to embrace wearable AI, its promise to enhance safety and decision-making calls for further funding to address existing barriers and robust safeguards for privacy, transparency, and other potential risks. Thoughtful governance, clear use limitations, and strong data protections are critical to ensure that these technologies serve both first responders and the public interest. Embracing emerging technologies such as wearable AI will improve the health and safety of both the general public and those that keep the general public safe.

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