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Introduction

The Human Factors and Ergonomics Society (HFES) Guide to Federal Outreach & Advocacy was prepared to encourage HFES members to actively and effectively participate in the public policy process. With the help of members, HFES advocates for issues that are important to human factors and ergonomics (HF/E)—including the consideration of HF/E in transportation, defense, and health information technology systems, among others—by interacting with Congress, federal agencies, and other nongovernmental organizations throughout the scientific, engineering, and behavioral sciences communities. This guide is intended to assist in member advocacy and outreach efforts and to serve as a resource for understanding the processes, the players, and the opportunities of the legislative and regulatory processes.

HFES looks to its member volunteers to help the society make progress for HF/E through outreach and advocacy to federal policy makers. Member participation and direct contact with Congress and federal agencies, as constituents, experts, researchers, practitioners, and academics, is a vital component of that effort. By making the decision to advocate, you are effecting change for the betterment of HF/E on the national level. Members of Congress and federal officials receive their most valuable and influential information when they have the opportunity to hear from informed and active constituents. HFES and the HF/E community are grateful for your time and efforts.

The sections that follow are meant to provide further insight into:

- HFES’s advocacy efforts
- Opportunities and resources for members to advocate
- Congress and the legislative process
- Federal agencies and the regulatory process
- Opportunities and methods for engaging in advocacy activities

This guide was produced by Lewis-Burke Associates LLC on behalf of the Human Factors and Ergonomics Society (HFES). Lewis-Burke is a leading federal government relations firm in Washington, DC that assists HFES with the implementation of its public policy goals, which includes advocacy for human factors and ergonomics research and policy with Congress and outreach to federal agencies. More about Lewis-Burke can be found at www.Lewis-Burke.com.
HFES Advocacy and Outreach

In late 2012, HFES initiated a new investment in government relations to ensure that the interests of the HF/E research community are represented in federal science and funding debates. This investment includes external government relations support by Lewis-Burke Associates LLC, a full-service Washington, DC-based lobbying and consulting firm specializing in advocacy for the public policy scientific organizations. This external service complements individual efforts of the broader scientific community and coalitions when action is needed on shared priorities. The purpose of the overall initiative is to:

• Expand interactions with the federal government to advocate for, protect the integrity of, and provide rational and valuable scientific evidence for human factors and ergonomics public policy;
• Raise the profile of the HFES membership and make the value of human factors and ergonomics research more widely known; and
• Allow HFES and its members to become sought-after experts by federal policy makers, government decision makers, and federal funders of research.

Why advocate for HF/E?
The HF/E research community has important stories to tell with real world impacts, and you, as a constituent and expert in the field, can demonstrate why your work and broader HF/E research is important to everyday life. Additionally, HF/E is not well understood on Capitol Hill. Given that many Members of Congress turn over every two years and staff change frequently, constant education about HF/E is not only recommended, it’s necessary. Federal agencies could improve their understanding of HF/E, as well. While HF/E is already well-embedded at some federal agencies, it is not standard practice across the government.

In challenging political and economic times, budget constraints, even for issues like science that generally have bipartisan support, everything becomes vulnerable. Advocacy makes sure the HF/E community’s voice is heard as tough funding decisions are made.

How does HFES advocacy and outreach work?
First, Lewis-Burke provides HFES within an ongoing presence in Washington, DC. The firm represents HFES in meetings with policy makers and makes sure the HF/E community has a constant presence with Congress and federal agencies. Having a strong, consistent voice in Washington allows HFES to be able to respond quickly when action is needed.

Second, HFES and Lewis-Burke engage with other scientific organizations and participate in coalitions with likeminded organizations whenever broad support for science policy and funding is needed. We also engage with our partners when added support for HFES priorities is needed.

Third, HFES advocacy depends on its members—the experts in the field—to educate Members of Congress, federal officials, and staff. Individual member participation enhances HFES’s visibility on the national stage, opening the door for regular communication with federal policy and decision makers.
With whom does HFES engage in advocacy and outreach efforts?
HFES engages with Members of Congress and their staff, the White House, federal agency leaders and program officers, the broader HF/E community, likeminded scientific and research organizations, and the public.

What is the difference between advocacy and lobbying?
Advocacy is defined as the political process by which an individual or group seeks to influence public policy. Advocacy can take many forms, including in-person meetings, letter writing campaigns, general education, etc. Anyone can advocate for what they care about.

Lobbying is a form of advocacy that is strictly regulated in the United States. The Lobbying Disclosure Act defines "Lobbyist" as: Any individual who is either employed or retained by a client for financial or other compensation; whose services include more than one lobbying contact; and whose lobbying activities constitute 20 percent or more of his or her services’ time on behalf of that client during any three-month period. As an HFES member advocating for the interests of the HF/E community you will never trigger the federal requirements governing registered lobbyist.
Understanding Congress and the Policy Development Process

Congressional Basics

The U.S. Congress is the branch of the Federal Government that is primarily responsible for making laws, overseeing finances, and declaring war. It is composed of two chambers: the House of Representatives and the Senate. The 113th Congress took office on January 3, 2013, and will serve until January 3, 2015 when the 114th Congress convenes.

U.S. Senate
The Senate has 100 members, with two Senators representing each state. Senators serve six-year staggered terms without defined term limits. The Senate has certain powers the House does not have, such as approving treaties and confirming the appointments of cabinet secretaries and federal judges.

The Vice President of the United States presides over the Senate with the President pro tempore, who is selected by the chamber and performs the Vice President’s duties in his absence. Each party is represented on the Senate floor by the majority and minority leaders. Leaders are chosen by their respective parties at the beginning of each new Congress. The primary responsibilities of the leaders include managing their party’s legislative agenda and keeping Members informed on pending issues. The leaders are assisted by their party’s whip. A meeting of the party members to discuss various pressing issues is called a caucus. Caucuses can also refer to informal groups of Members who share a common policy interest, such as the Congressional General Aviation Caucus or the Congressional Medical Technology Caucus.

U.S. House of Representatives
The House of Representatives has 435 Members who serve two-year terms without defined term limits. The number of Members from each state is based on population with every state guaranteed at least one Representative. Additionally, a Resident Commissioner represents Puerto Rico and serves a four-year term, and five non-voting delegates represent American Samoa, the District of Columbia, Guam, Puerto Rico, the Northern Mariana Islands, and the U.S. Virgin Islands. The House has certain powers the Senate does not have, such as the ability to choose the President in the event of an electoral tie. Also, the House introduces all bills pertaining to financial measures, such as taxation and government spending.

The Speaker of the House presides over the chamber, but he/she can choose any Representative to perform his/her duties in his absence. The structure of party leadership is essentially the same as in the Senate, as each party is primarily represented by the majority or minority leaders, who are chosen by members of the party. Also like the Senate, leaders are assisted by party whips and hold caucuses to discuss matters of common interest or concern.

For further information on congressional history, individual members, and committees, please visit http://www.house.gov and http://www.senate.gov.
Congressional Committees

Congressional committees develop, debate, and approve legislation prior to vote on final passage. Most Members serve on multiple committees and subcommittees.

House committees that have jurisdiction over policy areas relevant to HFES include:

- **Appropriations**: The Committee on Appropriations is responsible for passing legislation each year that allocates federal funding to government agencies, departments, and programs.
- **Energy and Commerce**: The Committee on Energy and Commerce is the authorizing and oversight committee for the Department of Health and Human Services (HHS), the Department of Transportation (DOT), and the Food and Drug Administration (FDA), among other agencies.
- **Armed Services**: The Committee on Armed Services has jurisdiction over the Department of Defense (DOD); defense policy, including defense basic, applied, and advanced research; acquisition; and industrial base policy.
- **Science, Space, and Technology**: The Committee on Science, Space, and Technology has jurisdiction over research and development for topic areas in energy, astronautics, and civil aviation, as well as science and technology policy broadly.
- **Transportation and Infrastructure**: The Committee on Transportation and Infrastructure has jurisdiction over all modes of transportation and national infrastructure, and oversees DOT and the Federal Aviation Administration (FAA).

Senate committees that have jurisdiction over policy areas relevant to HFES include:

- **Appropriations**: The Committee on Appropriations is responsible for passing legislation each year that allocates federal funding to government agencies, departments, and programs.
- **Health, Education, Labor, and Pensions (HELP)**: The HELP Committee oversees HHS, including FDA and the Agency for Healthcare Research and Quality (AHRQ), the Department of Labor, and the Department of Education.
- **Armed Services**: The Committee on Armed Services has jurisdiction over common defense and military research and development, as well as oversees DOD and each branch of the military.
- **Commerce, Science, and Transportation**: The Senate Committee on Commerce, Science, and Transportation has jurisdiction over science, engineering, and technology research and development and policy, as well as oversees DOT, FAA, the National Science Foundation, the National Aeronautics and Space Administration, and the Department of Commerce.
- **Environment and Public Works**: The Senate Committee on Environment and Public Works has jurisdiction over construction and maintenance of highways; environmental research and development; flood control and improvements of rivers and harbors; public works, bridges, and dams; and regional economic development, among others.

The specific jurisdictions of each of these committees are described in the following pages.
House Committees

House Committee on Appropriations
Website: http://appropriations.house.gov/

The House Committee on Appropriations is responsible for passing legislation each year that allocates federal funding to government agencies, departments, and programs. Each of the 12 subcommittees is responsible for crafting the bill for which it has jurisdiction. These subcommittees review the President's annual budget request, hear testimony from government officials and public witnesses, and draft the spending plans for the coming fiscal year. The Committee is also responsible for supplemental spending bills, which are sometimes needed in the middle of a fiscal year to compensate for emergency expenses, such as natural disasters.

The subcommittees that fund federal programs of interest to HFES are:
- Commerce, Justice, and Science
- Defense
- Labor, Health and Human Services, and Education
- Transportation and Housing and Urban Development

House Committee on Energy and Commerce
Website: http://energycommerce.house.gov/

The House Committee on Energy and Commerce has jurisdiction over health and health facilities (except health care supported by payroll deductions), biomedical research and development, telecommunications, consumer protection, food and drug safety, energy policy, and interstate and foreign trade. Specifically, this Committee oversees the Departments of Health and Human Services, Energy, Commerce, and Transportation, as well as the Environmental Protection Agency, the Federal Trade Commission, the Food and Drug Administration, and the Federal Communications Commission. This is an authorizing committee.

The six subcommittees include:
- Commerce, Manufacturing, and Trade
- Communications and Technology
- Energy and Power
- Environment and the Economy
- Health
- Oversight and Investigations

House Committee on Armed Services
Website: http://armedservices.house.gov/

The House Committee on Armed Services has jurisdiction over the Department of Defense; defense policy, including defense basic, applied, and advanced research; acquisition; and industrial base policy. It is an authorizing committee that also has jurisdiction over each branch of the military and the Department of Energy nonproliferation programs.

The Committee on Armed Services subcommittees include:
• Tactical Air and Land Forces
• Military Personnel
• Oversight and Investigations
• Readiness
• Sea Power and Projection Forces
• Strategic Forces
• Intelligence, Emerging Threats, and Capabilities

House Committee on Science, Space, and Technology
Website: http://science.house.gov/

The House Committee on Science, Space, and Technology has jurisdiction over the National Aeronautics and Space Administration, the National Science Foundation, the National Institute of Standards and Technology, and the National Oceanic and Atmospheric Administration. Policy areas include: scientific research and development including energy, astronautics, and civil aviation; standardization of weights and measures and the metric system; marine research; and commercialization of energy technology. This is an authorizing committee.

The Committee on Science, Space, and Technology has six subcommittees:
• Energy
• Oversight
• Research
• Space
• Technology
• Environment

The Subcommittees on Research, Space, and Technology are of particular relevance to HFES and HF/E research.

House Committee on Transportation and Infrastructure
Website: http://transportation.house.gov/

The House Committee on Transportation and Infrastructure oversees the Department of Transportation, the Federal Aviation Administration, the U.S. Coast Guard, Amtrak, the Environmental Protection Agency, the Federal Emergency Management Agency, the General Services Administration, and the Army Corps of Engineers. The Committee has jurisdiction over all modes of transportation including aviation, mass transit, and railroads, as well as national infrastructure, including: water and waste management, flood damage reduction, and disaster preparedness and response. This is an authorizing committee.

The six subcommittees include:
• Aviation
• Coast Guard and Maritime Transportation
• Economic Development, Public Buildings, and Emergency Management
• Highways and Transit
• Railroads, Pipelines, and Hazardous Materials
• Water Resources and Environment
Senate Committees

Senate Committee on Appropriations
Website: http://appropriations.senate.gov/

The Senate Committee on Appropriations is responsible for passing legislation each year that allocates federal funding to government agencies, departments, and programs. Another task of the Committee is to draft supplemental spending bills, which are sometimes necessary during the middle of the fiscal year to address the costs for emergency expenses, such as natural disasters.

The Committee includes 12 subcommittees that operate under separate jurisdictions. Each subcommittee is responsible for crafting legislation that will distribute funds to the government agencies, departments, and programs within their jurisdictions. Additional responsibilities of each subcommittee include reviewing budget requests made by the President, holding hearings in which government officials and public witnesses testify, and drafting the expenditure plans for the next fiscal year.

The subcommittees that fund federal programs of interest to HFES include:
- Commerce, Justice, and Science
- Defense
- Labor, Health and Human Services, and Education
- Transportation, Housing, and Urban Development

Senate Committee on Health, Education, Labor, and Pensions (HELP)
Website: http://help.senate.gov/

The Senate HELP Committee has broad jurisdiction, including aging, agricultural colleges, arts and humanities, biomedical research and development, child labor, education, health, individuals with disabilities, labor, labor standards and labor statistics, mediation and arbitration of labor disputes, occupational safety and health, private pension plans, public health, public welfare, student loans, and wages and hours of labor, among other issues. The Committee oversees the Department of Health and Human Services, including the Food and Drug Administration and the Agency for Healthcare Research and Quality, and the Departments of Education and Labor. This is an authorizing committee.

The three subcommittees include:
- Children and Families
- Employment and Workplace Safety
- Primary Health and Aging.

Senate Committee on Armed Services
Website: http://www.armed-services.senate.gov/

The Senate Committee on Armed Services has jurisdiction over military research and development, common defense policy, strategic and critical materials for common defense, and aeronautical and space activities associated with weapons systems and military operations, among others. The Committee oversees the Department of the Defense, the Department of the Army, the Department of the Navy, and the Department of the Air Force. This is an authorizing committee.
The six subcommittees include:

- Airland
- Emerging Threats and Capabilities
- Personnel
- Readiness and Management Support
- Seapower
- Strategic Forces

**Senate Committee on Commerce, Science, and Transportation**  
Website: [http://www.commerce.senate.gov/](http://www.commerce.senate.gov/)

The Senate Committee on Commerce, Science, and Transportation has jurisdiction over science, engineering, and technology research and development and policy, as well as a variety of issues including communications, highways, aviation, rail, shipping, transportation security, the Coast Guard, disasters, space, product safety, and competitiveness, among others. The Committee oversees the Departments of Transportation and Commerce, as well as the Federal Aviation Administration, the National Science Foundation, and the National Aeronautics and Space Administration, among other agencies. This is an authorizing committee.

The seven subcommittees include:

- Aviation Operations, Safety, and Security
- Communications, Technology, and the Internet
- Competitiveness, Innovation, and Export Promotion
- Consumer Protection, Product Safety, and Insurance
- Oceans, Atmosphere, Fisheries, and Coast Guard
- Science and Space
- Surface Transportation and Merchant Marine Infrastructure, Safety, and Security

**Senate Committee on Environment and Public Works**  
Website: [http://www.epw.senate.gov/](http://www.epw.senate.gov/)

The Senate Committee on Environment and Public Works has jurisdiction over construction and maintenance of highways; environmental research and development; flood control and improvements of rivers and harbors; public works, bridges, and dams; and regional economic development, among others. The Committee oversees the Environmental Protection Agency and the Department of Transportation, among others. This is an authorizing committee.

The six subcommittees include:

- Clean Air and Nuclear Safety
- Green Jobs and the New Economy
- Oversight
- Superfund, Toxics, and Environmental Health
- Transportation and Infrastructure
- Water and Wildlife
Legislative Process

As an advocate, it is important to have a general understanding of the legislative process to determine the best time to engage with policymakers. However, it is not necessary to be an expert on Congress and the legislative process in order to interact with your elected officials.

When a Member of Congress introduces a bill on either the House or Senate floor, they become that bill’s sponsor. After a bill is introduced, it is assigned a number beginning with “H.R.” if it originated in the House (e.g. H.R. 1106) or “S.” if it was introduced in the Senate (e.g. S. 584). The bill is then printed and referred to an appropriate committee by the Speaker of the House, the presiding officer in the Senate, or by the House or Senate parliamentarian.

The committee studies the bill, conducts hearings with expert testimony, makes necessary changes, and discusses its chances to pass. Each committee has jurisdiction over a particular subject, such as Agriculture or Foreign Affairs. The bill can be analyzed by the committee as a whole or referred to a subcommittee, which specifically focuses on a subset of areas under the committee’s purview. The committee or subcommittee may hold hearings and call upon individuals and organizations with a strong interest or expertise in the policy area under review. Witnesses share testimonies with the Members of Congress supporting or opposing the proposed legislation. A bill can die if the committee either fails to act or votes against recommending it to the House or Senate floors.

If a bill makes it out of committee, it can go to the floor where it can be debated, amended, and voted on. Sometimes bills don’t make it to the floor. The decision as to if or when a bill reaches the floor is determined by the Speaker and the Majority Leader in the House and the Majority Leader in the Senate. In the House, there are very specific rules that determine the conditions and amount of time allocated for general debate, and amendments must be relevant to the bill. The Senate does not have rules limiting debate. The lack of restrictions can lead to a filibuster, in which a bill is purposefully stalled through measures such as unnecessary debate. The Senate can end a filibuster by invoking “cloture,” which requires a two-thirds vote to enact. Also, the Senate does not have any rules regulating the relevance of proposed amendments. Sometimes bills are passed as amendments to completely unrelated bills.

To pass in the House, the bill needs a simple majority or 218 votes, and in the Senate, the bill needs 51 votes to pass with the Vice President casting the deciding vote in the event of a 50-50 tie. If the bill passes, it is then referred to the other chamber to be voted on. If either chamber does not pass the bill, it dies, and if both chambers pass the same legislation, it goes to the President. Usually, the House and Senate pass different versions of the same legislation and it is referred to the Conference Committee, which is typically composed of the senior Members of the committees in either chamber that originally considered the legislation. The Conference Committee works to resolve any differences with each chamber’s version of the legislation and generates a single, compromised bill that is referred back to each house for approval.

If the bill passes both chambers, it is sent to the President who has three options: (1) he can sign the bill, turning it into a law; (2) he could veto the bill and send it back to Congress with a note of his reasons (the chamber where the bill originated can override the veto with a two-thirds vote. If it is overridden in both chambers, it becomes a law); or (3) he could not sign it and if Congress is in session, the bill becomes a law after ten days; if Congress adjourns before ten days has expired and the President still hasn’t signed the bill, it is a “pocket veto” and the bill is dead.
How a Member of Congress Decides How to Vote

Members of Congress are influenced by their personal opinions and backgrounds, staff, constituents, colleagues, interest groups, the President and the Executive Branch, party leadership, and the media. Deciding how to vote requires a personal and a political calculation. Members of Congress must weigh the issue and bill with the anticipated consequence of the vote.

Many Members of Congress consider constituents’ opinions the strongest influence in deciding how to vote. As their electorate, constituents determine the political future of each candidate, and a highly publicized vote against the majority can sway the electorate to a new candidate come election season.

As an expert in the HF/E community and a constituent, your voice is especially powerful. By engaging in advocacy and meeting with your Member of Congress or staff, you have the opportunity to educate and inform, influencing how a Member may vote. Additionally, when advocating for a broad topic or specific piece of legislation, consider all of your audiences. While more likely you will meet with staff than the Member, remember staff are positioned to advise and inform their bosses directly. Speak as if you are communicating with the Member directly. Similarly, when meeting with one Member of Congress or office staff, consider the impact they might have on their colleagues. Members and staff regularly communicate to share information informally, as well as formally through committees, caucuses, and delegations.

Implementing Legislation at Federal Agencies

A bill passed by Congress and enacted into law provides an outline or framework for implementation. It is up to the appropriate Executive Branch agency, which is either specified by Congress through the law or delegated by the President, to interpret each law and develop and implement regulations supporting the law’s intent. Regulations explain how laws will be applied, and they ensure uniform applications of laws and guide respective agencies’ activities, functions, and operations.

When an agency receives a law to implement, it must follow an open public process to issue the regulation. Generally the agency formulates proposed regulations by gathering information informally through conversations with interested organizations and individual experts. Proposed rules are then publicized and opened up to rule-making proceedings. Rule-making proceedings allow the public, experts, and other interested parties to testify at public hearings and submit comments on the proposals in a structured, formal setting. Comment periods usually last between 30 and 60 days, but can be extended.

Following the open process, the agency then crafts the final rule based on the comments and testimony, rule-making record, scientific data, expert opinions, and facts gathered throughout the pre-rule and proposed rule stages. The agency must demonstrate the final rule will solve the identified problem or accomplish the specific goal, as well as compare the final rule to alternatives in terms of cost and benefit effectiveness. The President also has the opportunity to review the rule prior to its implementation and integration into the Code of Federal Regulations.
Timing of Advocacy Activities

Advocacy activities can target a specific piece of legislation or regulation or more generally be used to educate policy makers on a given topic. Despite what you are advocating for, it is important to consider what might be the best time to engage. For example, some events in Congress are cyclical, such as the annual appropriations process, which starts with the President submitting his budget request for all federal programs and agencies to Congress in early February. The President’s budget request outlines his agenda for the upcoming fiscal year and initiates the Congressional appropriations process. The House and Senate Committees on Appropriations’ respective subcommittees debate the proposed bills introduced in each chamber. Appropriations hearings usually begin in March or closely following the release of the President’s budget request, and each committee seeks to pass their appropriations bills before the annual August recess; however, recently votes have occurred in the fall. HFES members are encouraged to participate in the appropriations advocacy process at both the Congressional and Executive Branch levels to ensure HF/E is included in the budget request and appropriations bills. Executive agencies participate in drafting the President’s Request. By reaching out to program officers and budget staff, the HF/E community can encourage the inclusion of HF/E at the program and agency levels.

Advocacy activities are most effective if they are timed to coincide with individual office deliberation or committee consideration of bills. It is important to participate in the deliberation process because advocacy efforts too early on, especially written correspondence, may be forgotten or lack significant impact.

The purpose of HFES’s investment in advocacy is to inform the HF/E community on how and when to act, especially when relevant legislations surfaces unexpectedly or action occurs quickly. HFES does its best to spread the word to membership to share action alerts, deadlines, submission instructions, and opportunities to participate in the advocacy process.

Example of Opportunities to Influence

Annual Appropriations Process

- **President’s Budget Release**
  - Write letters or call your Members to advocate for adoption of or changes to President’s budget request.
- **Hearings in Congress**
  - Participate in advocacy meetings on Capitol Hill.
- **Floor Debates**
  - Ask Members to sign letters or support an amendment.
- **House and Senate Negotiate**
  - Write letters or call your Members to ask for support of outcomes.
- **President Signs into Law**
  - Thank your Members for their hard work and support.
- **Federal Agencies Receive Money**
  - You apply for a grant/contract.
Communicating with Congress

There are many different ways to advocate, including by not limited to:

- *In-person meetings in Washington, DC or in your district*
- *Letters, emails and phone calls* – These are most useful when immediate action is needed on a piece of legislation
- *Written or in-person testimony as part of a Congressional hearing* – This is a method of advocacy used to get on record regarding a specific topic and/or to serve as an expert resource to inform a policy

In this section we explain the basics of communicating with elected officials through a variety of different means and also describe how to craft messages that will resonate with your audience.

**Identifying your Member of Congress**

Before engaging in advocacy you will have to identify who are your House Representative and Senators. This easily accomplished by going online to [www.house.gov](http://www.house.gov) to find your House Representative and [www.senate.gov](http://www.senate.gov) to find your Senators. The House and Senate websites provide tools to search for Members of Congress by name, state, or zip code. The search will generate a link to the Member’s website where you will find even more information to help inform your advocacy activities.

When identifying your House Representative you can search according to your home and/or work addresses, as sometimes your home and workplace may be represented by different House members. You can potentially reach more House members this way; don’t feel as though you are limited to engaging with only the Representative who represents your home town.

**Crafting a Message**

Once you have identified the Representatives and Senators with whom you would like to engage, the next step is developing a message that will resonate with them. First consider why you are looking to engage: Are you responding to a HFES call to action? Are you supporting or opposing specific legislation? Or are you advocating for a specific program or funding level?

Regardless of your reason for meeting, your message should also include an “ask” of some kind, which can be as specific as urging support for a bill or funding for a program, or as simple as asking the office to utilize your expertise as a resource in the future.

Your message should also highlight the broader impacts of your research by describing how your work is related to real problems. Relate the message to the Member’s district or state when possible and try to articulate what would be lost if the work of the HF/E community did not exist.

The most effective messages are succinct and on topic. You should stay within your own expertise, but try to avoid technical jargon or acronyms. It also helps to anticipate questions and have concise answers ready.
Consider the differences between writing a scientific paper and crafting a concise advocacy message:

**Structure of a Scientific Paper**
- Title
- Abstract
- Introduction
- Methods
- Results (news)
- Discussion
- Acknowledgements
- Citations

**Structure of your Message**
- Most Newsworthy
- Important Details
- Other General Info

As illustrated above, the information of interest to a policy maker tends to be the most newsworthy (i.e. what is the take-away, or why should I care?). While they care about the evidence to back it up, as an expert they tend to trust that what you are telling them is backed up by evidence. Instead, they care most about what the information means for them and their constituents; boil it down.

For further assistance with crafting a message that articulates the value of HF/E and the role of HFES, see the document in the appendix called, *Introduction to the Human Factors and Ergonomics Society (HFES) and the field of Human Factors and Ergonomics (HF/E)*. This document provides a layman’s explanation of the field and highlights a number of success stories illustrating the importance of HF/E.

**In-Person Meetings with Members of Congress and Staff**

Once you have identified your elected officials, there are some basic steps to follow for securing and participating in an in-person meeting, either in Washington or in your home district. There are generally two different periods in the Congressional calendar: days when Congress is in session and therefore considering legislation, holding hearings, and taking votes; and recess periods when Members of Congress are back home in their districts engaging with constituents. Advocacy can occur during both periods. Your message and meeting goals will determine the best option. For example, if you want to meet with your Congressman to talk about funding for a specific program at the Department of Defense in the FY 2014 appropriations bills, an in-person meeting in Washington would likely be most effective. If you are more interested in discussing a local issue or educating them about HF/E, you can accomplish that during a meeting in your local district. Educational meetings can also occur in Washington, but it is not always necessary to make the trip for that purpose.

**Requesting a Meeting**

Once you have identified whether you would like to schedule a meeting in Washington or in your home district, the next step is to call the office phone number (which you can find on the office’s website) and state you are a constituent interested in scheduling a meeting.
• If you are planning a meeting in Washington, ask to meet with the staff person who handles scientific issues.
• If you are planning a meeting in a district office, request to meet with the Congressperson or the district director.

Many staff members in the district offices handle constituent case work and work on issues specific to the district; whereas, staff in Washington handle broader legislative issues and national policy. If the Congressperson is unavailable to meet, staff meetings are appropriate and beneficial as staff are knowledgeable about the issues and the Members’ positions. To request a meeting, ask for the appropriate staffer’s email address to follow up with an email meeting request or go ahead and request the meeting over the phone.

When requesting the meeting, either by email or phone, be sure to include the following information:

• Who you are and your affiliation. Also state that you are a member of the Human Factors and Ergonomics Society.
• Explain why you would like to meet (e.g. to talk about HFES and the importance of HF/E research to the local economy).
• Clearly state your availability or preferred time to meet; provide multiple days and times if possible.
• Include your contact information for follow up.

See the figure below for a sample email meeting request.
Preparing for the Meeting
While you don’t need to be an expert on the Member of Congress with whom you are meeting or their staff, you should familiarize yourself with some basic information, such as their background, current events, what committees they serve on, any notable legislation they have introduced or supported, how they have voted on issues you care about, and whether they lead or serve on any caucuses of interest. Members’ websites include their biographies, committee assignments, press releases, background on the Member’s home state or district, and areas of interest.

Websites also provide contact information for the Washington, DC and state or district offices, as well as constituent resources, such as information on visiting Washington, DC; and other constituent resources.

You will also want to craft your concise message before getting to your meeting. Use the process discussed above to organize your thoughts and prepare a message to use in your meeting.

Conducting the Congressional Meeting
Meetings are generally brief, ranging from five to 20 minutes with Members of Congress, especially in Washington, DC. If you are meeting with staff, plan on a meeting as short as 15 minutes or as long as an hour, but don’t assume you will have a full hour. It will be important to stick to your message and articulate your ask early, as you never know when the meeting will end abruptly.

A typical constituent meeting can go as follows:

1. Thank the staffer or Member for taking the time to meet with you.
2. Introduce yourself, exchange business cards, and provide any materials you brought for the meeting, such as a one pager about your research.
3. Describe your affiliation, its mission, your role, and why you are meeting with them today. For example, you can say, “I am here today because I am very concerned about federal support for scientific research. Let me tell you how human factors and ergonomics research has helped address major societal challenges.”
4. State your “ask.” For example, “We need your support for sustained research funding in FY 2014.”
5. At this point, the Member or staff may ask you questions. If not, offer to answer any questions they may have and offer to keep in touch.
6. End your meeting the way you started it – by saying thank you.

<table>
<thead>
<tr>
<th>DOs</th>
<th>DON'Ts</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Do be courteous to everyone.</td>
<td>• Don’t prolong the meeting if it would seem forced to do so.</td>
</tr>
<tr>
<td>• Do be on time.</td>
<td>• Don’t be surprised or discouraged if the staffers you meet appear young.</td>
</tr>
<tr>
<td>• Do be a good listener.</td>
<td>• Don’t be surprised if you are kept waiting when you arrive.</td>
</tr>
<tr>
<td>• Do offer specifics when discussing legislation (e.g. “support [specific bill name]”).</td>
<td>• Don’t be surprised if you meet in a hallway or other multipurpose space.</td>
</tr>
<tr>
<td>• Do offer to provide further information after the meeting.</td>
<td>• Don’t use technical jargon.</td>
</tr>
<tr>
<td></td>
<td>• Don’t bring gifts for the Member or staff.</td>
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</tbody>
</table>
Following Up
Ongoing and regular communication with your elected officials is a preferred outcome of a meeting. Immediately following your meeting, be sure to send a thank you email and include in it any follow up information you promised. Your thank you note can also include an invitation for the Member or the staffer to visit your institution or lab to see your work firsthand. This will help them gain a better appreciation for HF/E and the usefulness of federal funding for research and development.

Find ways to keep in touch. If the Member or staffer expressed interest in learning of future developments in your work, forward them a press release or a positive news story on a recent scientific finding or breakthrough. Find a way to keep them interested in HF/E.

Finally, report back to HFES with any feedback from your meeting. Lewis-Burke is here to assist with follow up and would be happy to meet with any office you found to be particularly helpful or interested in learning more about HFES’s activities.

Success Can Take Many Forms
It is important to remember that success can take many forms. Not every meeting will be a homerun. Sometimes just having the opportunity to teach an office about HF/E is a win.

Examples of successful meetings include, but are not limited to the following:

- A staffer may take the meeting, listen to your message, and thank you for coming.
- Another staffer may be slightly more engaged – they may listen to your message, but not commit to taking any action on your “ask.”
- Another staffer may listen to your message, ask questions, and request additional information so that they can make an informed decision.
- And the best case scenario would be if the staffer listens to your message, says they will take action on your “ask,” and requests to stay in touch on a regular basis. Don’t be discouraged if your meetings don’t go like this. Advocacy is a long term, consistent effort.

Writing a Letter or an Email
Correspondence by mail and email are popular options for communicating with Members of Congress. Each day congressional offices receive hundreds of letters and emails. Email is preferred over regular postal mail as mail must be screened at an off-site location, delaying its arrival to Capitol Hill by more than a week.

When writing to your elected officials, use the same tools as those used to craft your message for a meeting. Messages should be written clearly and concisely; state why this issue is of importance and how you would like the Member of Congress to act. Also include some of your personal background as an expert in the field and any pertinent information about your organization and HFES. Specify whether you would like return correspondence and provide the appropriate contact information.

Keep in mind constituent letters and emails are most effective when sent to coincide with a vote, hearing, or other event. Messages that are direct, informative, based in fact, and relate to the Member’s district or state are most effective. Member websites include mailing and email information.
Making a Telephone Call

When preparing to make a telephone call, craft your message clearly and concisely. Similar to a meeting and a letter, your message should include an “ask” and explain why it is important to you as a constituent and member of the HF/E community. The difference of a phone call is that you have less time to make your case than if you were meeting in person or writing a letter. It is always helpful to write out a short script of what you would like to say. Keep it brief.

When calling, you may ask to speak with the Representative or Senator directly, though you will likely be passed off to a staff member. Therefore, you may choose to be connected with the staff member who handles scientific issues. If they are not available, you will be asked if you would like to leave a message. Staff members answering the phones generally cover a variety of issues; so be prepared with a clear message, ask, and facts. You can also ask to leave a message on the appropriate staff voicemail or leave a message and request a return call. Be prepared to provide your address and telephone number.

In addition to using the House and Senate websites to obtain your Senators’ and Representative’s office phone numbers, you can call the U.S. Capitol Switchboard at (202) 224-3121 and provide your legislator’s name and request to be connected with the office.
Resources

Web Resources

**Capitol Hearings:** The Capitol Hearings website provides links to committee pages, a schedule of hearings, and search tools to find webcasts and testimony from past hearings. [http://www.capitolhearings.org/](http://www.capitolhearings.org/)

**Congressional Biographical Directory:** The Congressional Biographical Directory provides biographical information, as well as a photograph of each Member of Congress when searched by name, party affiliation, position, state, and years served in Congress. [http://bioguide.congress.gov/biosearch/biosearch.asp](http://bioguide.congress.gov/biosearch/biosearch.asp)

**Congressional Budget Office (CBO):** The Congressional Budget Office (CBO) produces independent, nonpartisan budgetary and economic analyses to assist in the Congressional budget process. [http://www.cbo.gov/](http://www.cbo.gov/)


**Government Printing Office (GPO):** The Government Printing Office (GPO) allows the public to search for bills, public laws, committee reports, the Congressional Record, presidential materials, federal regulations, and judicial resources. [http://www.gpo.gov](http://www.gpo.gov)

**THOMAS:** THOMAS is resource of the Library of Congress to search legislation and the status of bills introduced in the House and Senate, as well as committee reports and the Congressional Record. [http://thomas.loc.gov/](http://thomas.loc.gov/)

**U.S. House Committees:** The main U.S. House Committees website provides links to each committee page. [http://www.house.gov/committees/](http://www.house.gov/committees/)

**U.S. Senate Committees:** The main U.S. Senate Committees website provides links to each committee page, as well as offers resources to search hearing testimony and schedules. [http://www.senate.gov/pagelayout/committees/d_three_sections_with_teasers/committees_home.htm](http://www.senate.gov/pagelayout/committees/d_three_sections_with_teasers/committees_home.htm)

**The White House:** The White House website provides information on the Executive Branch agenda, recent events, laws, and initiatives. [http://www.whitehouse.gov/](http://www.whitehouse.gov/)
Federal Agencies of Interest to HFES

[This is not an exhaustive list]

Agency for Healthcare Research and Quality
http://www.ahrq.gov/

Centers for Disease Control and Prevention
http://www.cdc.gov/

Department of Commerce
http://www.commerce.gov/

Department of Defense
http://www.defense.gov/

Department of Health and Human Services
http://www.hhs.gov/

Department of Labor
http://www.dol.gov/

Department of Transportation
http://www.dot.gov

Federal Aviation Administration
http://www.faa.gov/

Food and Drug Administration
http://www.fda.gov/

National Aeronautics and Space Administration
http://www.nasa.gov/

National Institute for Occupational Safety and Health
http://www.cdc.gov/niosh/

National Institute of Standards and Technology
http://www.nist.gov/

National Science Foundation
http://www.nsf.gov/

Occupational Safety and Health Administration
https://www.osha.gov/
Glossary of Terms

Amendment
A motion offered to change the text of a bill or of another amendment. There are three types of amendments: motions to strike, to insert, or to strike and insert. Amendments to the bill are termed “first degree,” whereas amendments to an amendment are “second degree.”

Appropriations Bill
Provides the legal authority needed to spend or obligate U.S. Treasury funds. Twelve annual appropriations bills fund the entire federal government. These 12 bills must be enacted prior to the start of a new fiscal year, designated as October 1. Failure to meet this deadline causes the need for temporary, short-term funding or results in a shutdown of government operations.

Authorization Bill
Provides the legal authority to create or carry out a federal program. In general, federal programs must be authorized before they receive funding, though some exceptions are made. For instance, the Higher Education Act is an authorization bill that authorizes every postsecondary program within the U.S. Department of Education.

Bill
A legislative proposal that becomes a law if it passes both the House and Senate and if it receives presidential approval. Bills are denoted as “H.R.” in the House and as “S.” in the Senate (e.g., H.R. 5 or S. 123).

Briefing
An informational session led by an independent interest group designed to give staffers background information about their issues.

Caucus
An informal group of members sharing an interest in the same policy issues. Examples include the Addiction, Treatment, and Recovery Caucus; the Congressional Mental Health Caucus; the Congressional Black Caucus; and the Congressional Social Work Caucus.

Chair
Leader of a congressional committee. Chairs are always members of the majority party and often are those with seniority; their powers include the ability to schedule hearings and allocate the committee budget.

Committee/Subcommittee
A legislative suborganization in that handles a specific duty (rather than the general duties of Congress).

Committee Report
A committee’s written statement about a piece of legislation. It shows recommendations for action and implementation, as well as amendments and enforcement language.

Conference
A formal meeting or series of meetings between House and Senate members. The purpose of a conference is to reconcile the differences between the House and Senate versions of a bill.

Conference Committee
An ad hoc committee appointed by the House and Senate to resolve disagreement over a given bill and to reconcile those differences in legislation, which has passed each chamber.

Continuing Resolution
Continues funding for a program if the fiscal year ends without a new appropriation in place. A "CR" often provides temporary funding at current levels.

Discretionary Spending
Set by annual appropriation levels made by decision of Congress. This spending is optional, in contrast to entitlement programs (such as Medicare/Medicaid) for which funding is mandatory.

**Filibuster**
An extended debate in the Senate that has the effect of preventing or prolonging a vote. Senate rules contain no motion to force a vote. A vote occurs only after debate ends.

**Fiscal Year**
The federal fiscal year (FY) runs from October 1 to September 30. For example, FY 2013 starts on October 1, 2012 and terminates on September 30, 2013.

**Floor**
The chamber in the Capitol where members assemble to debate and vote. Members are said to be “on the floor” when they assemble and “to have the floor” when they speak.

**Hearing**
A formal meeting of a committee or subcommittee to review legislation or explore a topic. Hearings may also be called to investigate a matter or conduct oversight of existing programs. Witnesses are called to deliver testimony and answer questions in all types of hearings.

**H.R.**
Stands for House of Representatives and designates a bill that has been introduced in the House (e.g. H.R. 1100). It becomes law if passed by both the House and Senate and approved by the president.

**Joint Committee**
A committee consisting of members of the House and Senate.

**Mandatory Spending**
Funds not controlled by annual decision of Congress. These funds are automatically obligated by virtue of previously enacted laws (e.g. Social Security or Medicare).

**Markup**
The meeting of a committee held to review the text of a bill before reporting it out. Committee members offer and vote on proposed changes to the bill's language, known as amendments. Most markups end with a vote to send the new version of the bill to the floor for final approval.

**Public Law (P.L.)**
Designated by the number of the Congress and the order in which a bill is enacted. For example, P.L. 106-10 is the 10th law enacted during the 106th Congress.

**Ranking Member**
Highest rank on a committee on the minority side; serves as counterpart to the chair.

**Recess**
Congressional breaks over several days such as holiday periods, which are approved by vote.

**S.**
Stands for Senate and designates a bill that has been introduced in the Senate (e.g. S. 910). Bills become law if passed by both houses of Congress and approved by the president.

**U.S. Code**
The compilation of all current federal laws, arranged under 50 subject titles. The code, or U.S.C., is revised about every 6 years.

**Veto**
The power to prevent legislation or action proposed by others, exercised by the president.
## Common Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<th>Description</th>
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<tbody>
<tr>
<td>AHRQ</td>
<td>Agency for Healthcare Research and Quality, HHS</td>
<td>HHS</td>
<td>U.S. Department of Health and Human Services</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
<td>LHOB</td>
<td>Longworth House Office Building</td>
</tr>
<tr>
<td>CBO</td>
<td>Congressional Budget Office</td>
<td>LOC</td>
<td>Library of Congress</td>
</tr>
<tr>
<td>CHOB</td>
<td>Cannon House Office Building</td>
<td>NASA</td>
<td>National Aeronautics and Space Administration</td>
</tr>
<tr>
<td>CR</td>
<td>Continuing Resolution</td>
<td>NIOSH</td>
<td>National Institute of Occupational Safety and Health</td>
</tr>
<tr>
<td>DOC</td>
<td>U.S. Department of Commerce</td>
<td>NIST</td>
<td>National Institute for Standards and Technology</td>
</tr>
<tr>
<td>DOD</td>
<td>U.S. Department of Defense</td>
<td>NSF</td>
<td>National Science Foundation</td>
</tr>
<tr>
<td>DOL</td>
<td>U.S. Department of Labor</td>
<td>OMB</td>
<td>Office of Management and Budget</td>
</tr>
<tr>
<td>DOT</td>
<td>U.S. Department of Transportation</td>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>FAA</td>
<td>Federal Aviation Administration</td>
<td>RHOB</td>
<td>Rayburn House Office Building</td>
</tr>
<tr>
<td>FDA</td>
<td>Food and Drug Administration (HHS)</td>
<td>SD</td>
<td>Dirksen Senate Office Building</td>
</tr>
<tr>
<td>GAO</td>
<td>Government Accountability Office</td>
<td>SH</td>
<td>Hart Senate Office Building</td>
</tr>
<tr>
<td>GPO</td>
<td>Government Printing Office</td>
<td>SR</td>
<td>Russell Senate Office Building</td>
</tr>
<tr>
<td>GSA</td>
<td>General Services Administration</td>
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</table>
Navigating Capitol Hill

U.S. CAPITOL COMPLEX

1. Russell Senate Office Building
2. Dirksen Senate Office Building
3. Hart Senate Office Building
4. U.S. Supreme Court
7. Cannon House Office Building
8. Longworth House Office Building
9. Rayburn House Office Building
10. Ford House Office Building
11. U.S. Botanic Garden & the National Garden

*The former visitor center, now known as Capitol Visitor Center, is located on East Capitol Street.*
House of Representatives Office Buildings

The Capitol complex includes three major office buildings for the House of Representatives. These are some of the buildings in which you will be conducting your Capitol Hill meetings. Sometimes meeting itineraries will have a considerable break between meetings. There are a few places listed below where it is possible to rest and get a bite to eat between meetings if time suffices.

Cannon House Office Building

- South of the Capitol bounded by Independence Avenue, First Street, New Jersey Avenue, and C Street S.E. Main entrance at the corner of Independence Avenue and New Jersey Avenue S.E.

- The underground tunnel to connect to the Longworth House Office Building is on the basement (B) level of this building.

- There is a carry-out restaurant on the lower level of this building.

Longworth House Office Building

- South of the Capitol on a site bounded by Independence Avenue, New Jersey Avenue, South Capitol Street, and C Street S.E. Main entrance on Independence Avenue.

- The underground tunnels to connect to the Cannon and Rayburn Buildings are accessible on the basement (B) level of the Longworth Building.

- There is a food court located in the basement (B) of this building.

Rayburn House Office Building

- Southwest of the Capitol on a site bounded by Independence Avenue, South Capitol Street, First Street, and C Street S.W. Main entrance on Independence Avenue.

- The underground tunnel to access the Longworth Building is accessible via the basement (B) level of this building.

- There is a cafeteria in the basement (B) of this building.
Senate Office Buildings

The Capitol complex includes three major office buildings for the Senate. These are some of the buildings in which you will be conducting your Capitol Hill meetings. Sometimes meeting itineraries will have a considerable break between meetings. There are a few places listed below where it is possible to rest and get a bite to eat between meetings if time suffices.

Russell Senate Office Building

• Northeast of the Capitol on a site bounded by Constitution Avenue, First Street, Delaware Avenue, and C Street N.E. Main entrance near intersection of Delaware Avenue and Constitution Avenue.

• The underground tunnel to connect to the Dirksen Senate Office Building is on the basement level of Russell.

• There is a café in the basement (B) of this building.

Dirksen Senate Office Building

• Northeast of the Capitol, adjoining the Hart Senate Office Building on a site bounded by Constitution Avenue, Second Street, First Street, and C Street N.E. Main entrance at intersection of First Street and C Street N.E.

• Dirksen connects to the Russell Senate Office Building on the basement (B) level and connects to the Hart Senate Office Building on each floor by the stairs.

• There is a cafeteria in the basement (B) of this building.

Hart Senate Office Building

• Northeast of the Capitol, adjoining the Dirksen Senate Office Building on a site bounded by Constitution Avenue, Second Street, First Street, and C Street N.E. Main entrance at Second Street.

• Hart and Dirksen adjoin via stairs on each floor.

• There is a café located in the Dirksen/Hart Ground Floor Connecting Corridor.
Congressional Office Building Security

Before entry into any one of the congressional office buildings, all visitors are screened by a magnetometer, and all items that visitors bring inside the building are screened by an X-ray device. Your assistance is needed to help expedite the security screening process. Please refrain from bringing items larger than a purse or briefcase. Laptops may need to be removed from any case during the X-ray process. Shoes do not need to be removed, but jackets should. Picture ID is not required.

Prohibited items* include:

- Weapons and explosives
- Aerosol and non-aerosol sprays (prescriptions for medical needs are permitted)
- Any liquid, including water
- Food or beverages of any kind
- Cans and bottles
- Bags larger than 14" wide x 13" high x 4" deep
- Knives, razors, and box cutters
- Mace and pepper spray
- Gift-wrapped items

*Please note that exceptions can be made if a prohibited item is determined to be necessary to serve "child care, medical, or other special needs."
Appendix

Introduction to the Human Factors and Ergonomics Society (HFES) and the field of Human Factors and Ergonomics (HF/E)

For over 50 years, the U.S. federal government has funded scientists and engineers to explore and better understand the relationship between humans, technology, and the environment. Originally stemming from urgent needs to improve the performance of humans using complex systems such as aircraft during World War II, the field of human factors and ergonomics (HF/E) works to develop safe, effective, and practical human use of technology, particularly in challenging settings. HF/E does this by developing scientific approaches for understanding this complex interface, also known as “human-systems integration.” Today, HF/E is applied to fields as diverse as transportation, architecture, environmental design, consumer products, electronics/computers, energy systems, medical devices, manufacturing, office automation, organizational design and management, aging, farming, health, sports and recreation, oil field operations, mining, forensics, and education.

With increasing reliance by federal agencies and the private sector on technology-aided decision-making, HF/E is vital to effectively achieving our national objectives. Federal research for HF/E is embedded in agency missions, most prominently at the Department of Defense, the Federal Aviation Administration, the Department of Labor, the National Aeronautics and Space Administration, and the Food and Drug Administration. But the field also contributes to advancing fundamental scientific understanding of the interface between human decision-making, engineering, design, technology, and the world around us through research funded by the National Science Foundation and the National Institutes of Health. The reach of HF/E is profound, touching nearly all aspects of human life from the health care sector, to the ways we travel, to the hand-held devices we use every day.

The Human Factors and Ergonomics Society (HFES) is a multidisciplinary professional association with 4,500 individual members worldwide, including psychologists and other scientists, engineers, and designers, all with a common interest in creating safe and effective products, equipment, and systems that maximize and are adapted to human capabilities.

P.O. Box 1369, Santa Monica, CA 90403-1369, USA
310/394-1811 • Fax 310/394-2410
Email: info@hfes.org Web site: http://www.hfes.org
**Human Factors and Ergonomics Success Stories**

The examples below are provided by members of the Human Factors and Ergonomics Society (HFES), and demonstrate significant improvements due to the application of our science to the design of products and systems.

1. Federal Aviation Administration human factors research personnel participated in the evaluation of a proposed program of standardized training for pilots flying Mitsubishi MU-2 turbo-prop airplanes. Implementation of this program subsequently reduced the accident rate by 80%. \(^1\)

2. The County of Monterey in California launched a new ergonomics program that has saved an average of $16.56 in workers’ compensation and lost work time costs for every $1 invested over a 3-year period, leading to more than $8.3 million dollars of savings in projected claims costs. \(^2\)

3. Based on human factors expertise and research, the National Highway Traffic Safety Administration, U.S. Department of Transportation, developed and evaluated the center high-mounted brake light. This rear light, now required on all autos and light trucks, reduces rear-end crash injury and deaths by an average of 7% per year. \(^3\)

4. Based on human factors expertise and research, the Federal Highway Administration, U.S. Department of Transportation, found that implementing high-intensity activated crosswalks reduced total crashes by 29% and pedestrian-vehicle crashes by 69%. Also showing positive effects for pedestrian and bicycle safety were the implementation of shared-lane markings for bicycles and transverse markings for crosswalks. \(^4\)

5. Based on the science of human factors and ergonomics, Honeywell developed and implemented a company-wide ergonomics program that led to $2 million in both direct and indirect cost savings, including zero repetitive-strain, musculoskeletal injuries and a 24% improvement in worker productivity. \(^5\)

6. At the George Wahlen VA Medical Center, human factors engineers reduced central-line blood stream infections, which have a 20% mortality rate, by creating a kit based on human factors design principles. This resulted in a reduction in incidents from 0.9/month to zero/month. \(^6\)

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1. Federal Aviation Administration: [http://www.faa.gov/aircraft/air_cert/design_approvals/small_airplanes/cos/mu2_foia/media/MU-2%20Final%20Dec%202010%202%2005%20with%20errata.pdf](http://www.faa.gov/aircraft/air_cert/design_approvals/small_airplanes/cos/mu2_foia/media/MU-2%20Final%20Dec%202010%202%2005%20with%20errata.pdf)


