



**2019-2020 National Environmental Health Science
and Protection Accreditation Council (EHAC)
Undergraduate Programs Outcome Assessment Report**

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I. Introduction

This report details analysis of the data provided by former undergraduates of programs seeking reaccreditation during the 2019-2020 academic year and their supervisors.

II. Background

EHAC Undergraduate Requirements Section VI. Reporting Obligations of Accredited and Pre-accredited Programs Part D. Program Outcomes Assessment Survey states that:

“At the time of reaccreditation, the institution shall survey program graduates and employers via the Council’s outcome assessment tool. All graduates since the last accreditation shall be in the pool of those to be surveyed. The completed tools shall be gathered by the institution and forwarded to the Executive Director of the Council six months prior to the annual meeting of the Council. The Council will supply a summary of the information gathered to all accredited programs on an annual basis.

The purpose of this survey is to determine the adequacy of the accreditation process to the needs of the professional practice of environmental health. The information gathered by an institution through the outcome assessment process will not be used as part of the evaluation review for reaccreditation purposes for a given institution. The Council will use the compiled information from all institutions undergoing reaccreditation to evaluate and consider changes to the requirements of accreditation.”

The outcome assessment tool consists of two surveys conducted via [surveymonkey.com](https://www.surveymonkey.com), one for current employees and the other for their supervisors. It is distributed to the reaccreditation candidate Program Directors for distribution to former students. The graduates then provide the survey link to their supervisors for survey completion.

III. Survey context and Summary

EHAC’s core mission is to accredit Environmental Health (EH) Programs that provide a scientifically rigorous and practical based education, which prepares graduates to enter the EH field “work force ready” and prepared to problem solve using critical thinking skills acquired during their university education. Toward this end, EHAC is continuously identifying strengths and weaknesses related to graduates successfully entering and progressing in the EH field of their choice. Survey responses from both graduates employed in the EH field (employees) and their supervisors assist EHAC in assessing and adapting Undergraduate Requirements and Graduate Guidelines for accreditation to the ever-evolving arena of Environmental Health.

Questions for both employees and their supervisors focus on assessing the adequacy and effectiveness of an employee’s knowledge, skills and abilities related to their EH job, with employees conducting self-assessments and supervisors evaluating their current employees.

The following report provides a graphic representation of the results of the surveys with employees presented first, followed by their supervisors.

Table 1 presents the five EHAC accredited undergraduate degree programs going through the 2019-2020 reaccreditation process, the number of employee responses and their dates of graduation, and supervisor responses. There were 35 total undergraduate respondents to the survey. Twenty-seven respondents are currently employed in EH related professions and are the focus of this report. Ten supervisors of EH employees responded to the survey.

Table 1. 2019-2020 Outcome Assessment Respondents

Re-accreditation Applicants	Next Accreditation Review	Initial Accreditation Year	Graduating Classes Reflected	Number of Employee Respondents	Number of Supervisor Respondents
California State University – Northridge	2020	1973	2014, 2015, 2016, 2018, 2019	8	2
East Central University	2020	1975			
Missouri Southern State University	2020	1996	2014, 2015, 2016, 2017, 2018, 2019	14	6
Old Dominion University	2020	1983	2013, 2015, 2016, 2018, 2019	6	1
West Chester University	2020	2008	2018, 2019	7	1
Totals				35	10
Respondents Employed in Environmental Health Field				27	

IV. Employee Survey Results

A. Employee Skills

Listed below are core competencies in EH programs. Respondents were asked to choose the option that most closely describes their skill level.

Charts 1-3 present employee self-assessments of general job skills, interpersonal office skills and skills related to interpreting data. Overwhelmingly, employees rated themselves

either very or most proficient among these categories. A few employees reported challenges in the areas of:

- Speaking and Technical Writing Skills;
- Leadership Skills;
- Time Management;
- Project Planning and Management;
- Conducting a Statistical Analysis and Interpreting Data; and
- Applying Research Methods for Solving Problems.

Employees rated themselves most highly in the EH Specialty areas of Risk Management, Assessment and Communication, while more variability in skill level was reported for epidemiology and toxicology (Chart 4).

Chart 1.

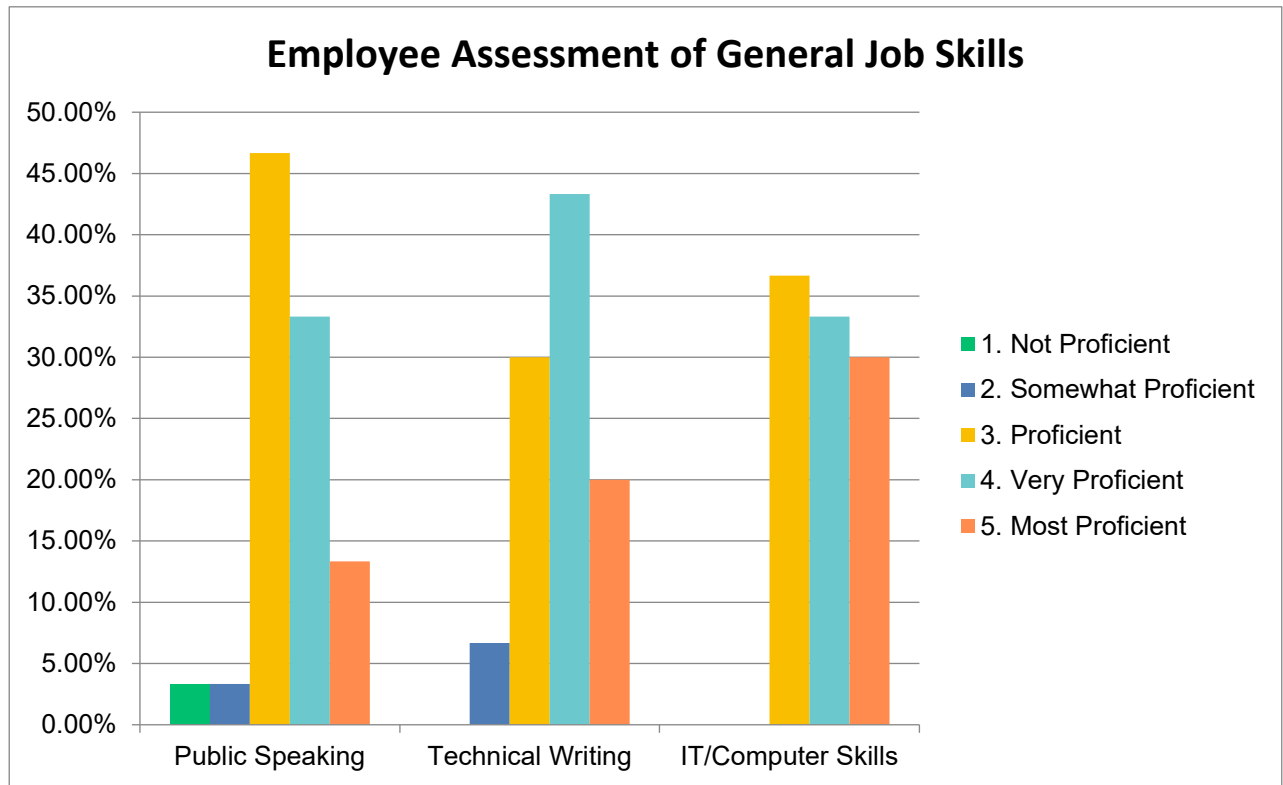


Chart 2.

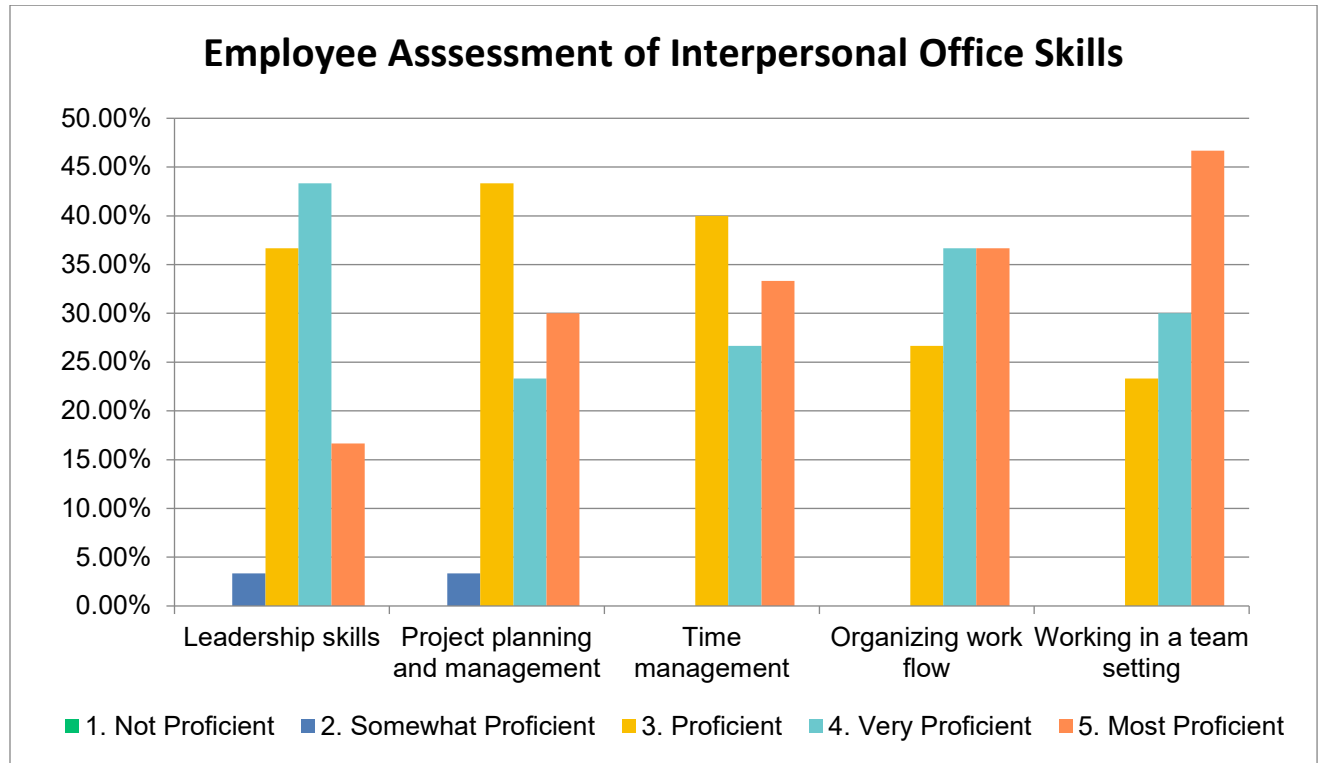


Chart 3.

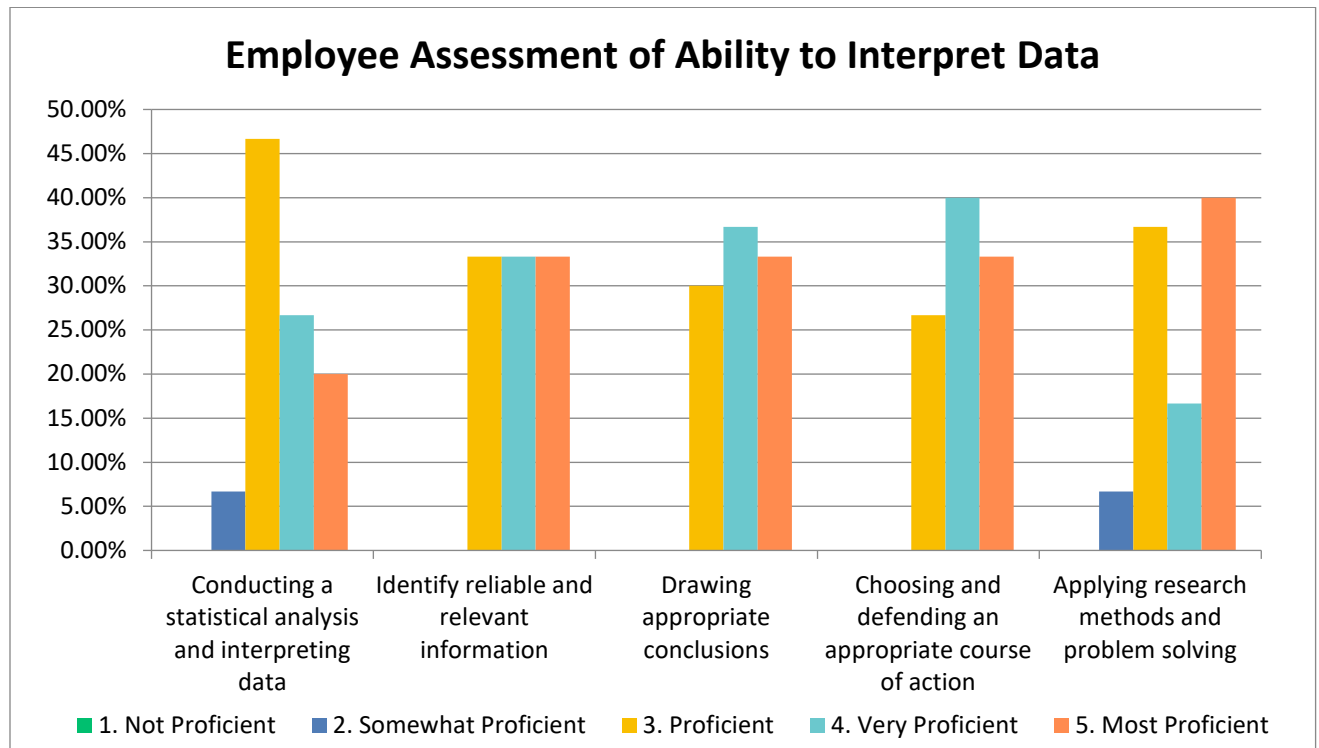
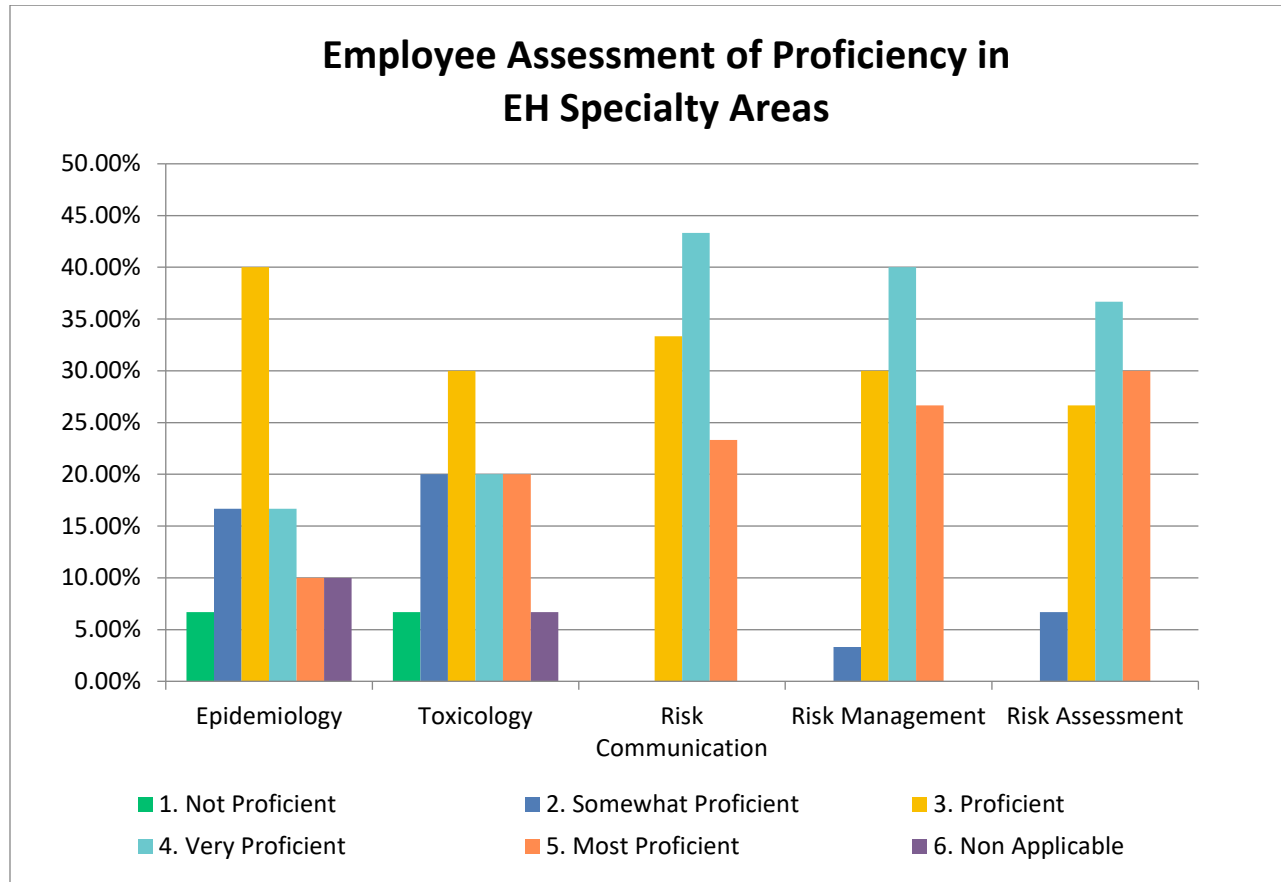


Chart 4.



B. Course Relevance

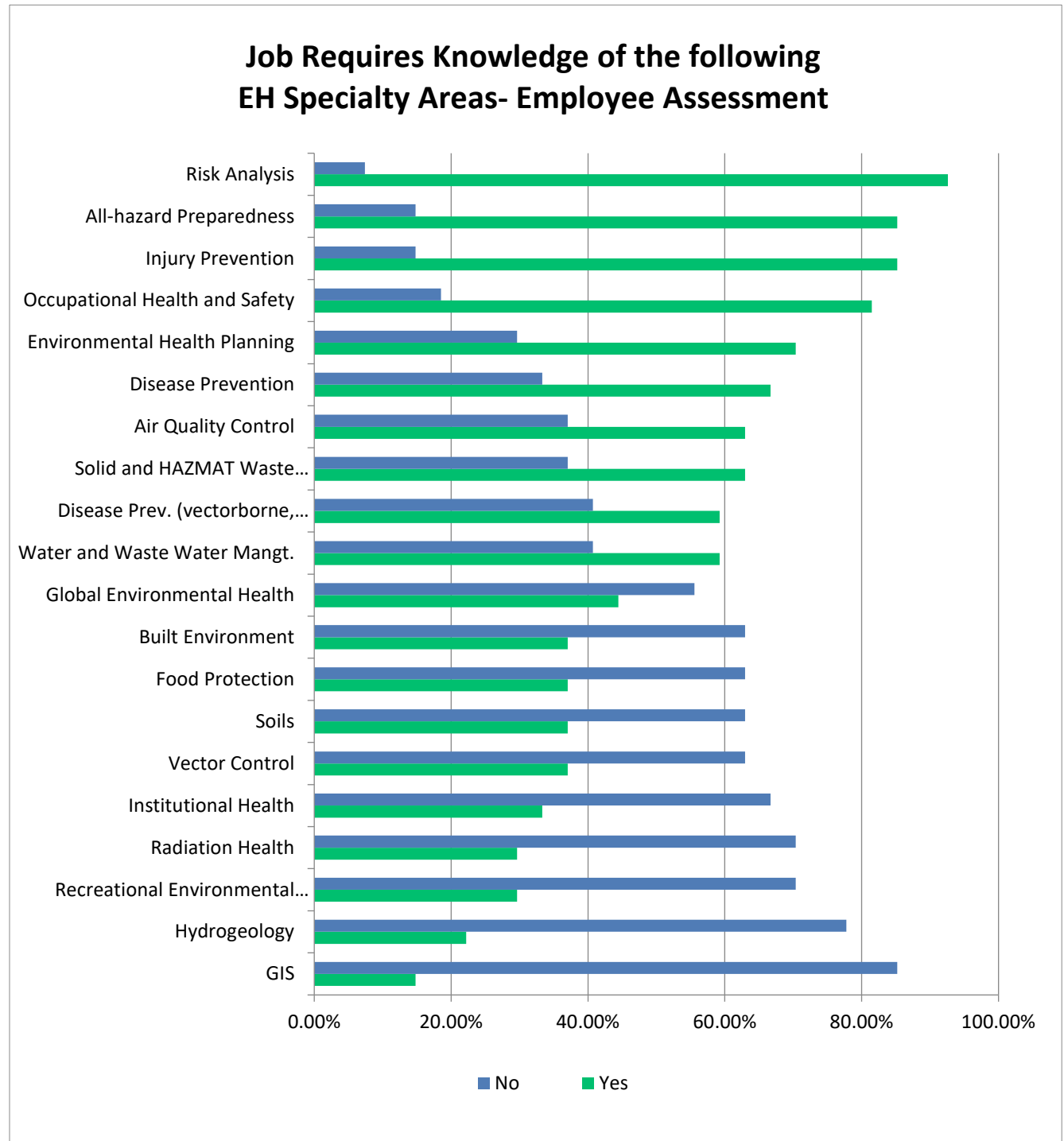
Employee respondents were asked to answer yes or no if their job requires knowledge in the following areas (Chart 5). The EH specialty areas cited as necessary by at least 50% of employees included:

- Air Quality Control
- All Hazard Preparedness;
- Disease Prevention (e.g. vectorborne, zoonotic, etc.);
- Environmental Health Planning;
- Injury Prevention;
- Occupational Health and Safety;
- Risk Analysis;
- Solid and Hazardous Material and Waste Management; and
- Water and Wastewater Treatment.

Knowledge was less necessary and cited by less than 30% of survey respondents in the following EH Specialty areas:

- Geographic Information Systems (least necessary);
- Hydrogeology;
- Recreational Environmental Health;
- Radiation Health.

Chart 5.



C. Specialty Area Program Preparation

Employee respondents were asked to answer yes or no if they were well-prepared in the following EH specialty areas by their undergraduate programs. Chart 6 presents responses, with more than 50% of employees reporting they were well prepared for more than half of the EH specialty areas provided in the survey. Specialty areas scoring the highest in employee preparedness included:

- Disease Prevention (e.g. vectorborne, zoonotic, etc.);
- Disease Prevention;
- Occupational Health and Safety;
- Injury Prevention;
- Food Protection;
- Vector control
- All-hazard Preparedness
- Solid and HAZMAT Waste Management;
- Environmental Health Planning;
- Water and Wastewater Management;
- Institutional Health;
- Air Quality Control;
- Risk Analysis; and
- Built Environment.

Specialty EH areas showing the highest percent of employees that were least prepared include:

- Geographical Information Systems (GIS);
- Built Environment;
- Radiation Health;
- Recreational EH; and
- Soils.

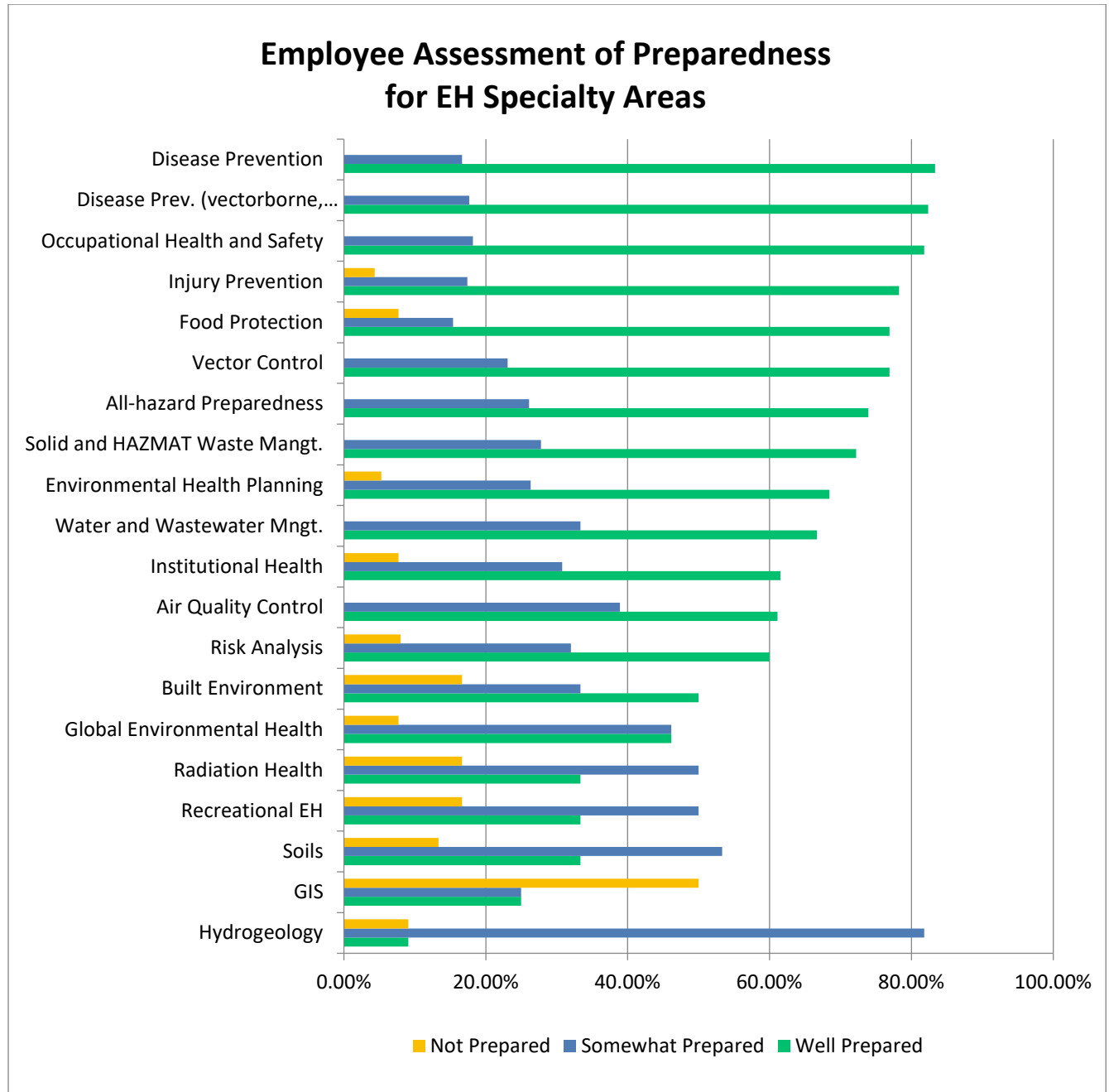
These EH specialty areas coincide with those knowledge areas reportedly *not* required by the employee's job.

Other Specialty Areas that are relevant and suggested by employees include:

- Industrial Hygiene
- Biosafety and Sustainability
- Ergonomics was mentioned by two respondents;
- Grant Writing;
- Emergency Management;
- DOT Requirements;
- Pipe Labeling for a Manufacturing Environment;

- Spill Prevention Control & Countermeasures;
- Stormwater Monitoring;
- Environmental law & Policy;
- Knowledge of Facilities (infrastructure and Maintenance of Equipment);
- Laser Safety; and
- Stormwater management and permitting; For both Air and Wastewater include in the course agenda topics on identifying what standard applies to different businesses based on their NAICS code and how to use the CFR to find out which parameters to test for. For Water - teach how to determine if you are in SNC "significant non-compliance" refer to 40 CFR 403; For Air - teach how to calculate Potential to Emit. Identify which pieces of equipment/chemical operations are regulated emissions sources and which are considered significant activity and insignificant activity. Know the difference between an operating permit and a construction approval and an expedited construction approval. Teach how to fill out emission unit equipment description forms and emission control equipment description forms. Understand the different ways to measure emissions, actual (by instruments), and material balance equations; under Risk Management and Emergency Planning, include examples on how to determine applicable written plans, such as, Spill Pollution Control Countermeasure 40 CFR 112.

Chart 6.



D. Employee Workplace Data

Chart 7 presents job sectors for employees of the six schools surveyed. As previously mentioned, 27 respondents are currently employed in the Environmental Health field. More than 40% of the employees are employed by private companies or corporations. Local or federal government agencies provide employment opportunities for just over a quarter of respondents. The remainder are employed at consulting firms, at non-profit organizations or they are teaching.

Chart 8 shows the distribution of those employees who are employed by local, state or the federal government. Almost 50% of respondents work at an agency other than the U.S. Public Health Service, US EPA, CDC or ATSDR. These “other” government agencies included:

- The Chicksaw Nation;
- US Indian Environmental Department;
- State Department of Agriculture and Consumer Services; and
- Department of Mental Health.

Chart 9 presents EH areas of employment for respondents. About half respondents have found employment within the manufacturing and food protection sectors. However, 45% of employees listed “other” employment sectors including:

- Grants Management;
- Construction;
- Smoke impact assessments, mold and moisture and exposure monitoring;
- Industrial Hygiene;
- Environmental restoration and mitigation;
- Environmental Testing;
- Safety;
- Generalist;
- Health Education and Emergency Planning;
- Occupational Health and Safety; and
- Food, Pools, Body Art.

Just over thirty-five percent of employees report making \$40 to \$50,000 per year as shown in Chart 10, while just over 60% of employee salaries range from less than \$20,000 to greater than \$70,000 per year (Chart 10).

Chart 7.

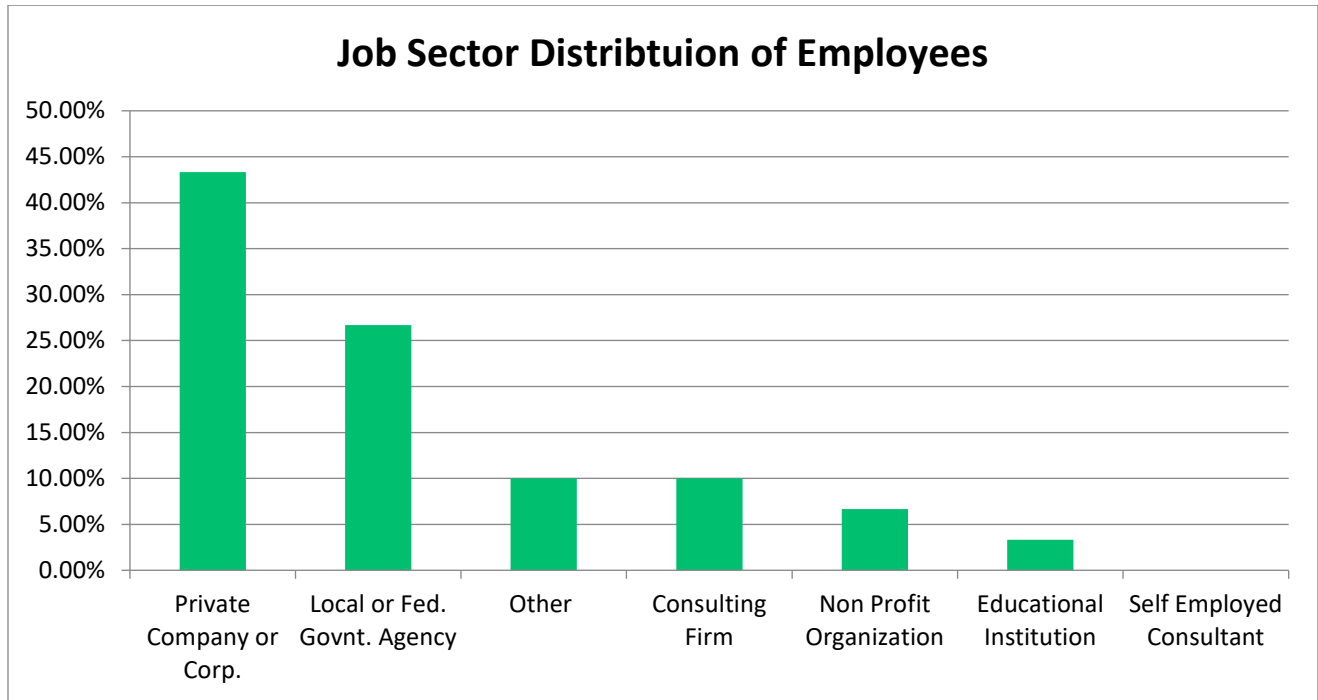


Chart 8.

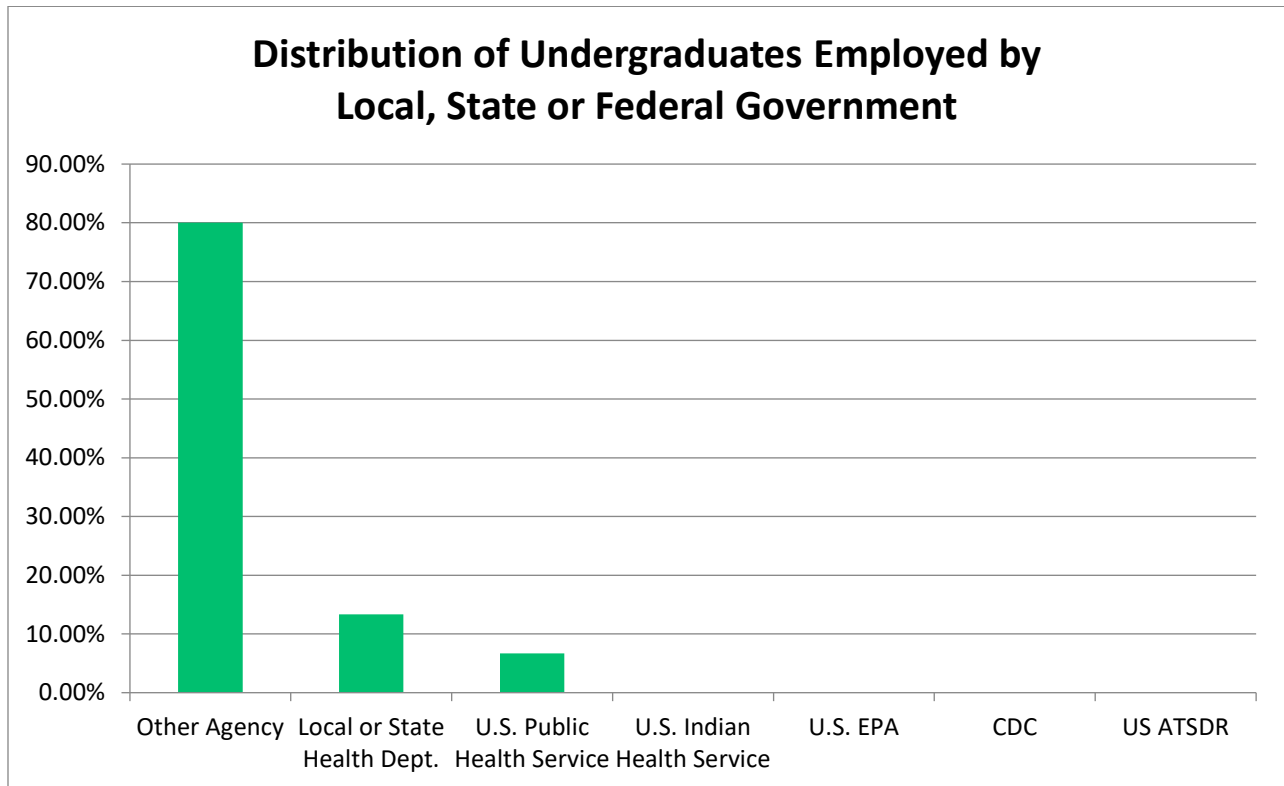


Chart 9.

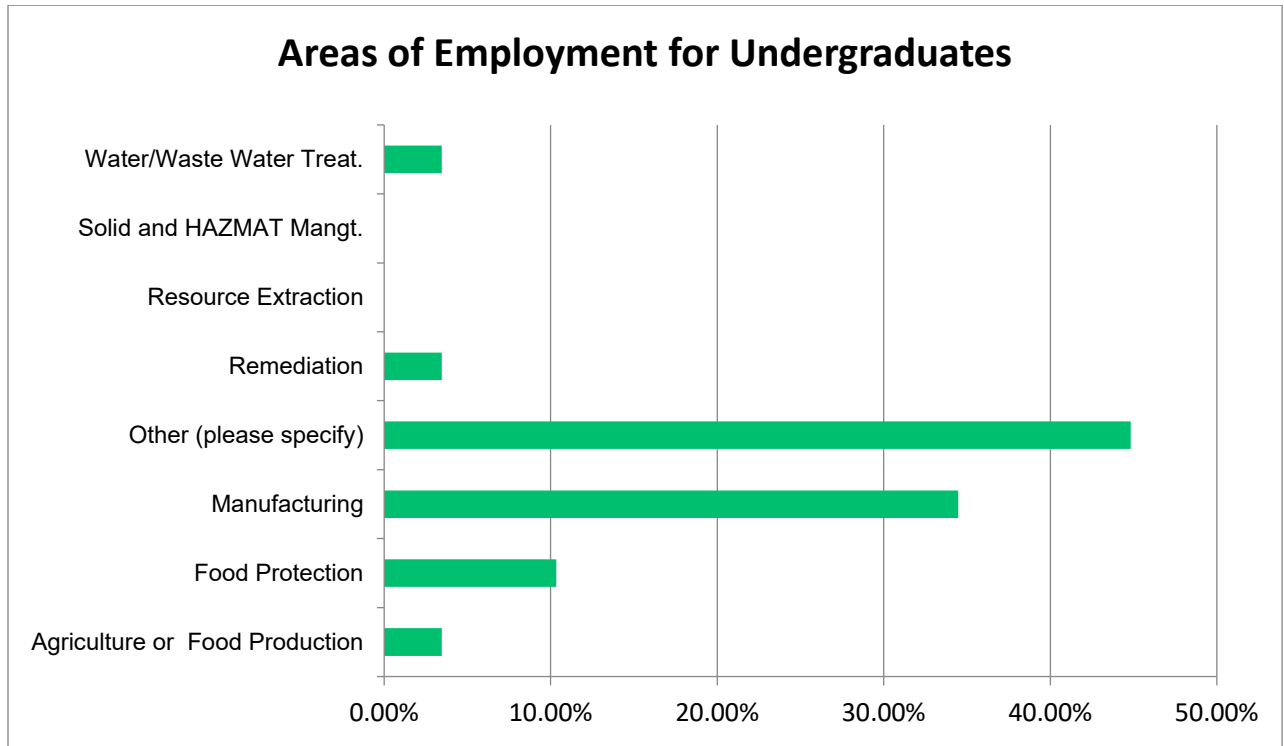
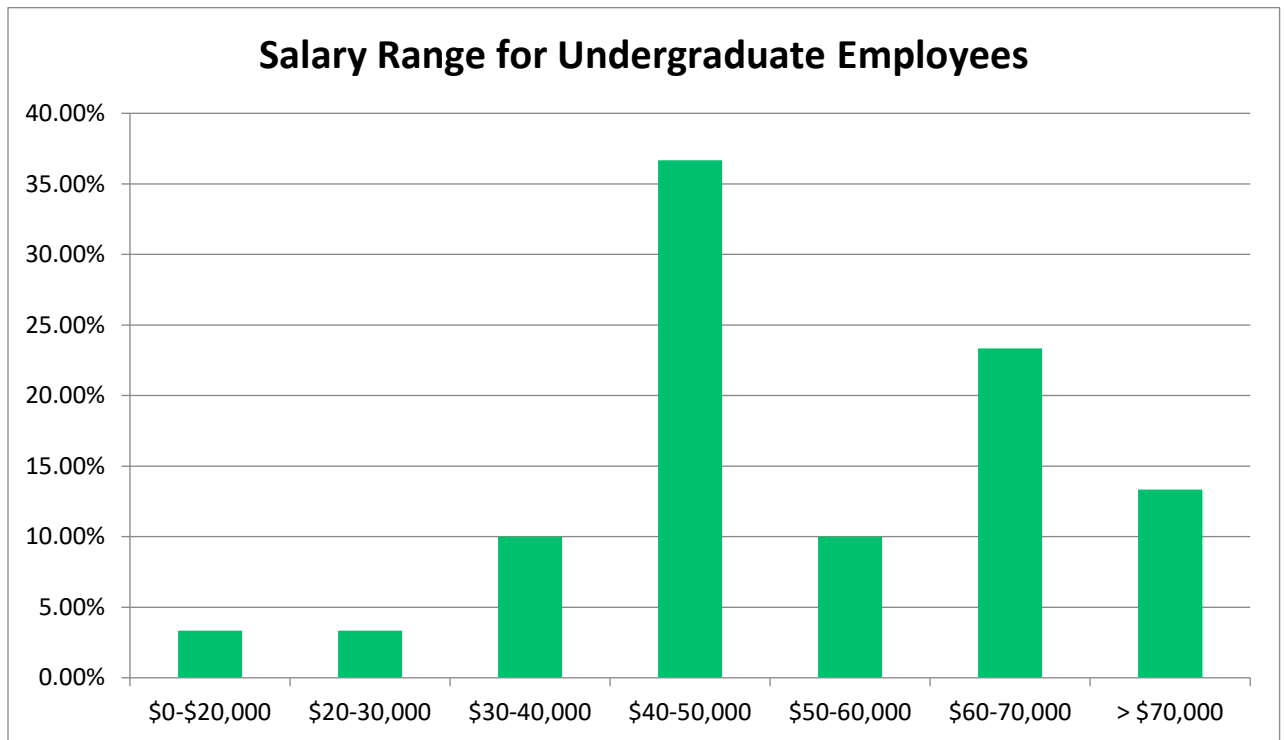


Chart 10.



E. Employee Data on Continuing Education and Professional Development

Table 2. below details the types of degrees completed by employees after earning an Undergraduate degree in Environmental Health:

Table 2. Post Undergraduate Education

Number of Employees that have Completed Post-Baccalaureate Degrees	Types of Degrees Awarded
2	Master of Science in Occupational Health and Safety and Master of Science in Community Health
1 – in progress	Master of Science in Environmental Health and Safety Management

F. Professional Recognition

The following were listed as professional awards received by 10 respondents (Table 3):

Table 3. Awards Received

CEHA SW Chapter President’s Outstanding Operator Relations award Outstanding Customer Service Award
Six Sigma Green Belt Certification Qualified Industrial Stormwater Practitioner
Associate Safety Professional , OSHA 10
2019 VDACS Food Safety Inspector of the Year, 2018 and 2019 Acknowledgement of Extraordinary Contribution, 2018 Employee Recognition for Providing Exceptional Customer Service; Demonstrating True Teamwork; and Providing Quality Service to VDACS Customers
Environmental Health Graduate Success Story Recipient, 2019 Chesapeake Bay Landscape Professional, 2017-recent

G. Credentials Achieved

The following were listed as credentials earned by 15 respondents (Table 4):

Table 4. Credentials Earned

Associate Safety Professional (ASP)	1
Certified Environmental Health (CEHS)	1
Certified Pool operator	2
Certified Professional-Food Safety (CP-FS)	1
Chesapeake Bay Landscape Professional Level 1 exam	1
Confined space	1
Ergonomics	1
Hazardous Waste Operations and Emergency Response (HAZWOPER)	3
Incident Command Certification (ICS)	1
Lead risk assessor	1

Occupational Safety and Health Administration (OSHA) 10 Hr. General Industry	1
Occupational Safety and Health Administration (OSHA) 30 Hour	1
Occupational Safety and Health Administration (OSHA) 510 Process Safety Management (PSM)	1
Process safety management	1
Registered Environmental Health Specialist	3
Registered Environmental Health Specialist by the State of California Department of Public Health	1
Safe Kids Certified Passenger Safety Technician	1
ServSafe Certified Food Manager (Instructor/Proctor)	1
Six Sigma Green Belt Certification Industrial Stormwater Practitioner – Licensed through the Regional Water Qualified Control Board	1
State of Missouri, Certified Environmental Health Specialist, (CEHS). Institute Safety Health Management, Associate Safety Health Manager (ASHM) OSHA 511, General Industry Standards Osha 510, Construction Industry Standards	1

V. Supervisor Survey Results

Supervisors of employees from 2019-2020 reaccrediting programs were asked to assess the skills and preparedness of their employees. Ten supervisors responded to the survey and their responses are presented below along with information related to their job sector and primary areas of work.

A. Supervisor Employment

Charts 11 and 12 present data related to the area of supervisor employment. Supervisors working for local or federal government agencies and those working for private corporations responded to the survey. Supervisors at local or state health departments represented the majority of respondents.

Chart 13 shows data similar to those of employees, with manufacturing and the food protection categories at the top of the employment area list behind the “Other” category. Supervisors heavily used the “other” category for job area descriptions and these areas included:

- Recreation Health;
- Public Swimming Pools;
- Industrial Hygiene;
- WIC;
- Public Health Nursing;
- Emergency Planning; and
- Pharmaceutical Industry.

Chart 11.

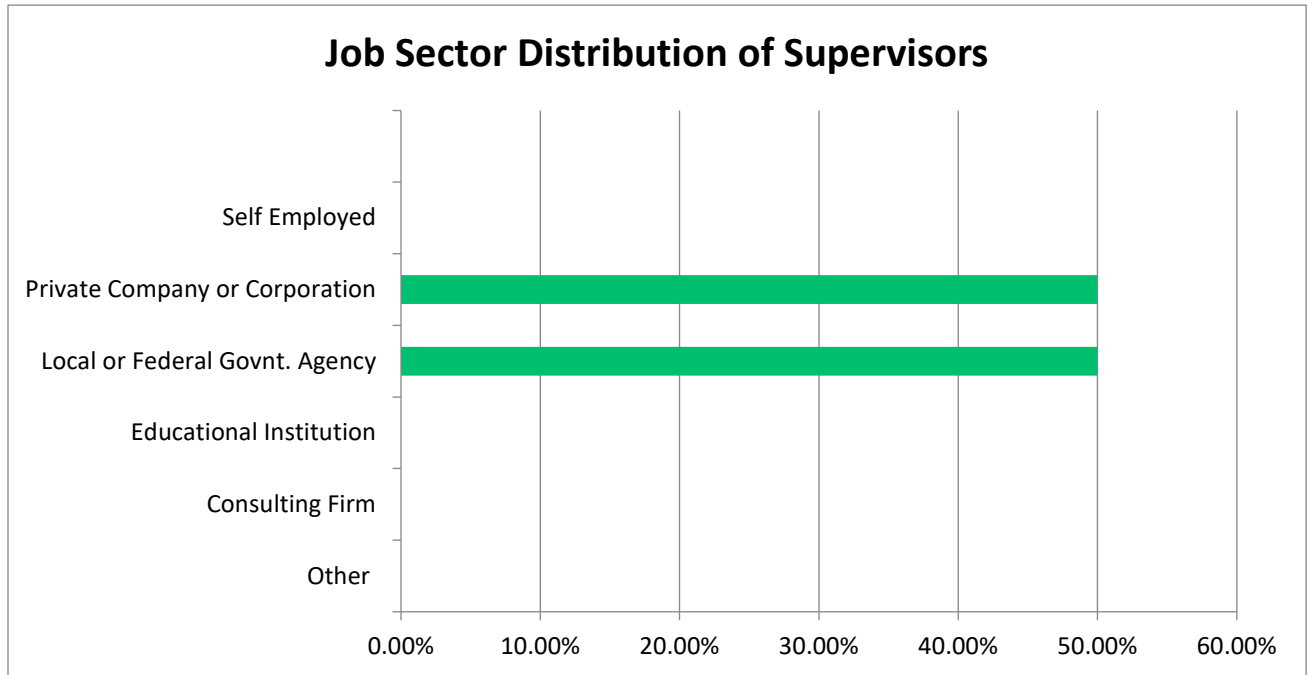


Chart 12.

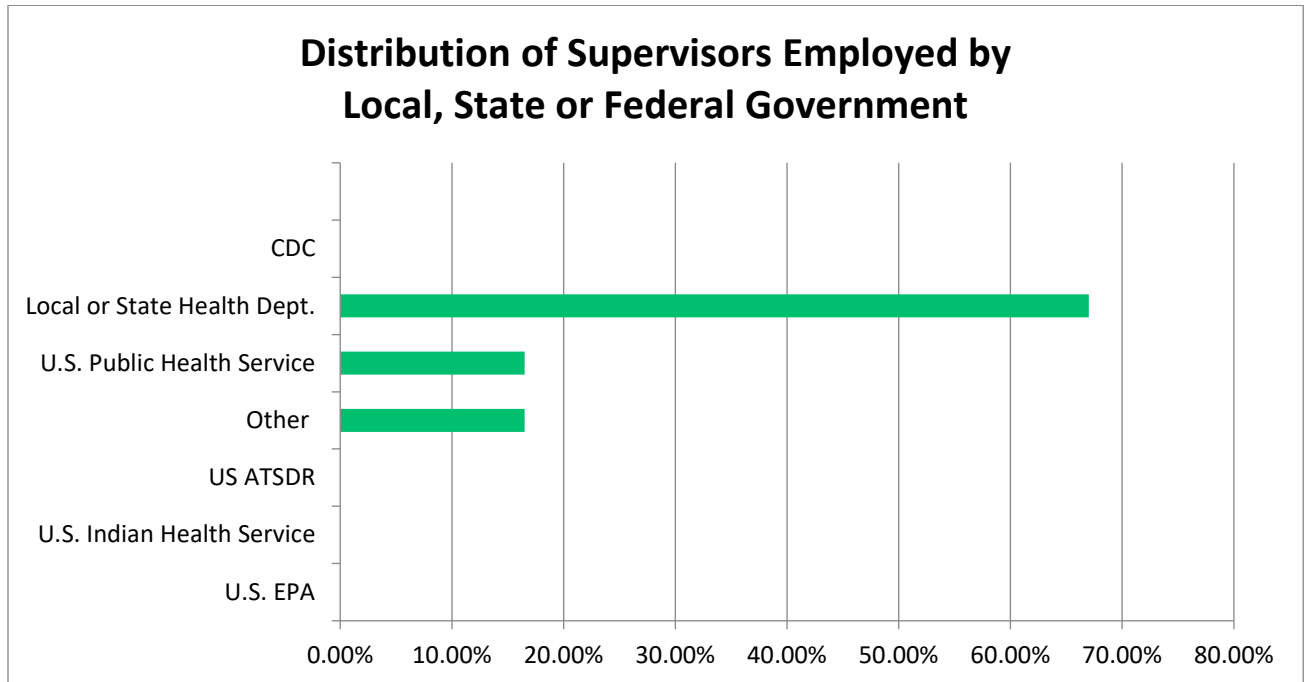
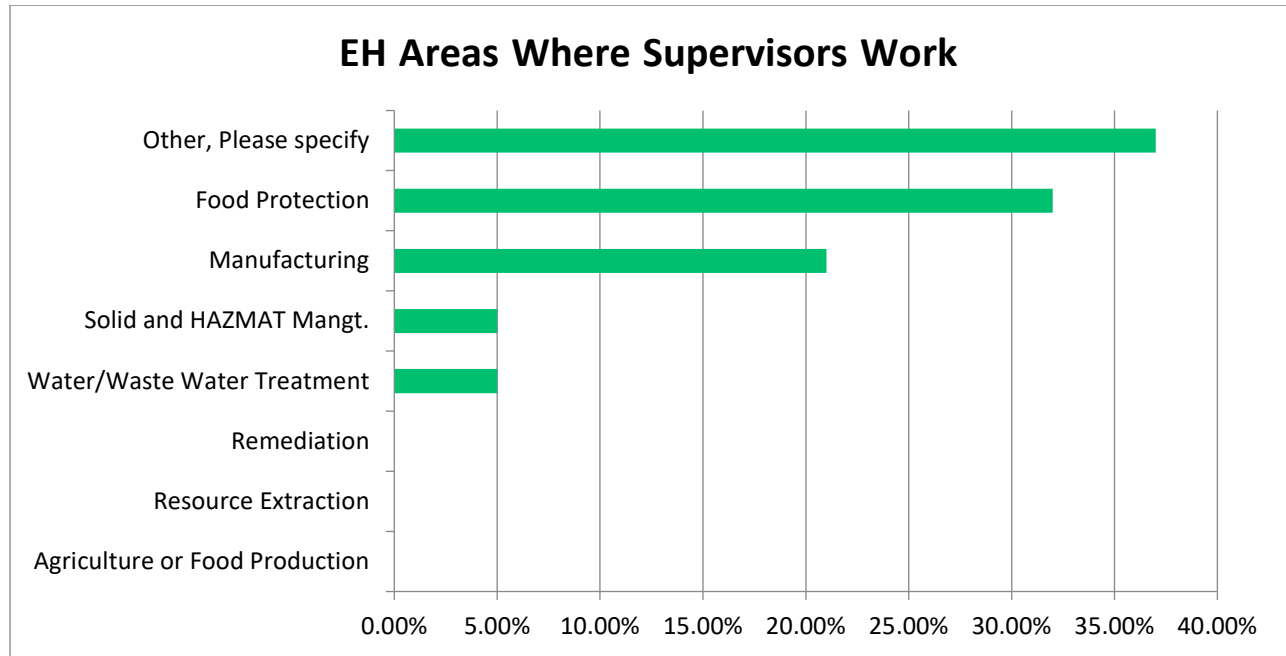


Chart 13.



B. Supervisor Rating of Employee Skills

Ten supervisors responded to questions regarding the skill levels of employees. Charts 14-16 present supervisor estimates of employee acumen related to job skills, interpersonal skills, skills related to interpreting data, as well as employee proficiency in EH specialty areas.

Supervisors reported high proficiency levels related to IT/Computer skills and technical writing, with public speaking skills showing a larger variety in employee proficiency levels (Chart 14). Interpersonal skills and skills related to interpreting and reporting data were generally rated “proficient” or higher by supervisors (Charts 15 and 16), with some challenges cited for the leadership category.

Where applicable, supervisors reported strong skills in EH Specialty Areas, including Risk Assessment, Communication and Management, followed by Epidemiology and Toxicology respectively (Chart 17).

Chart 14.

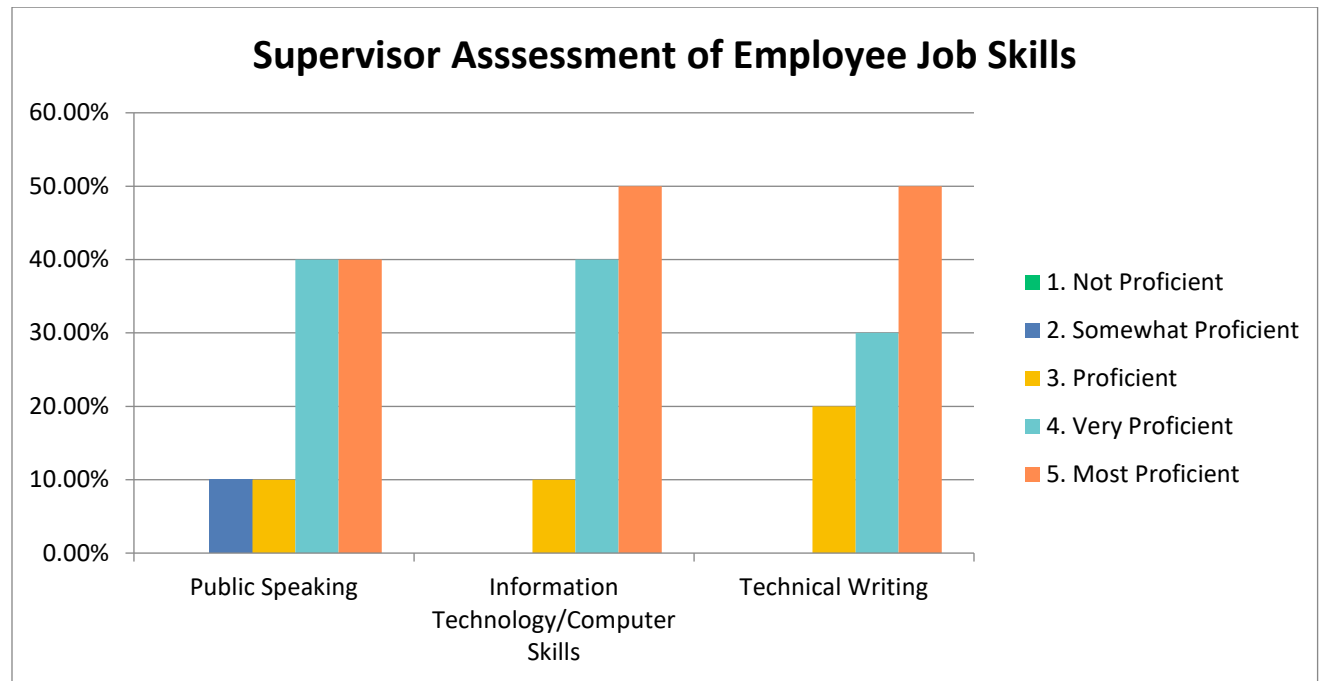


Chart 15.

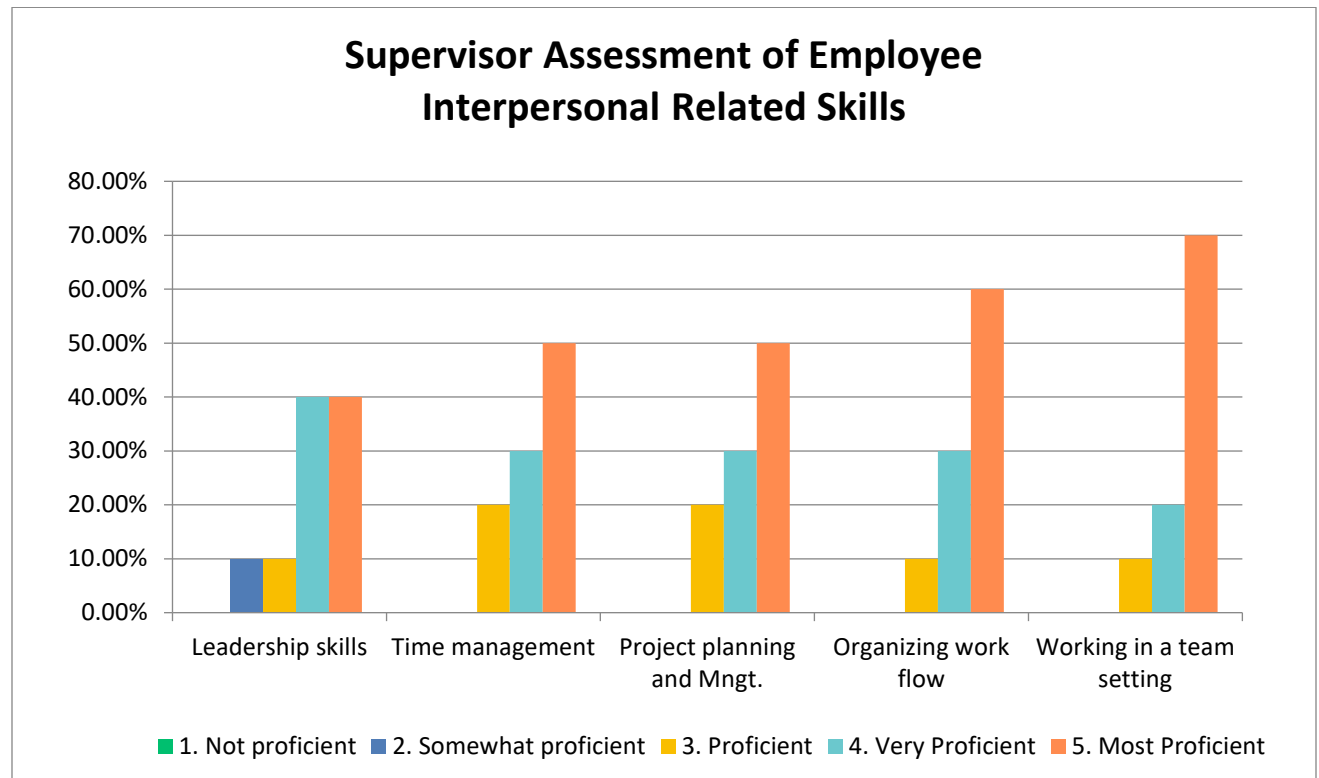


Chart 16.

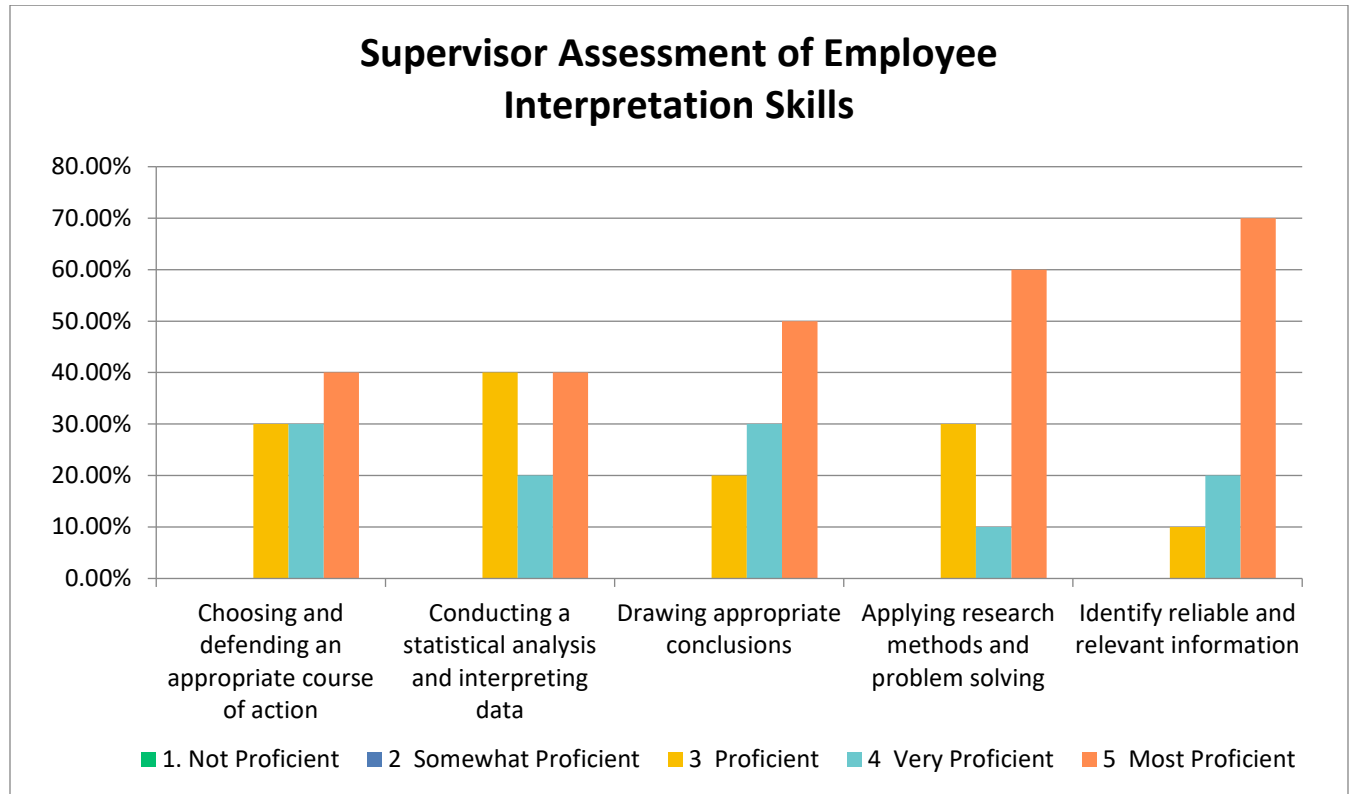
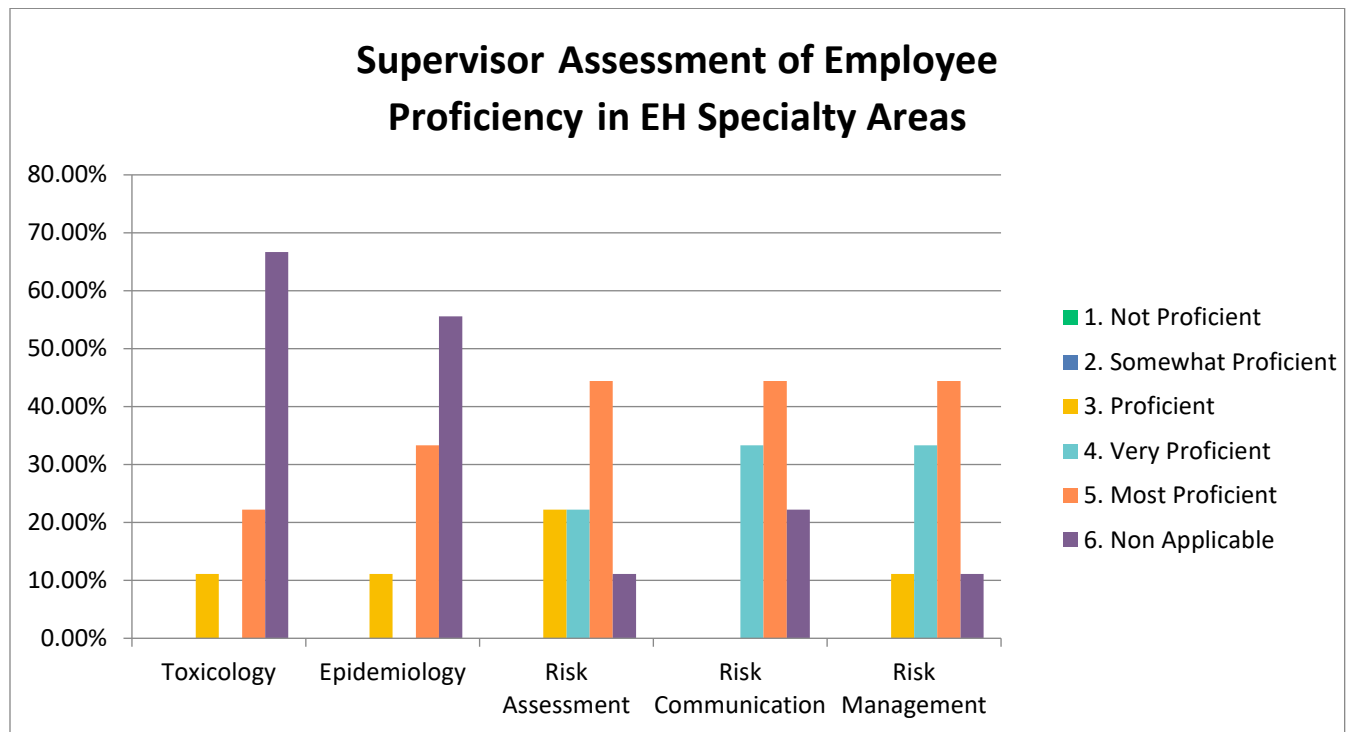


Chart 17.



C. Specialty Area Requirements of Jobs

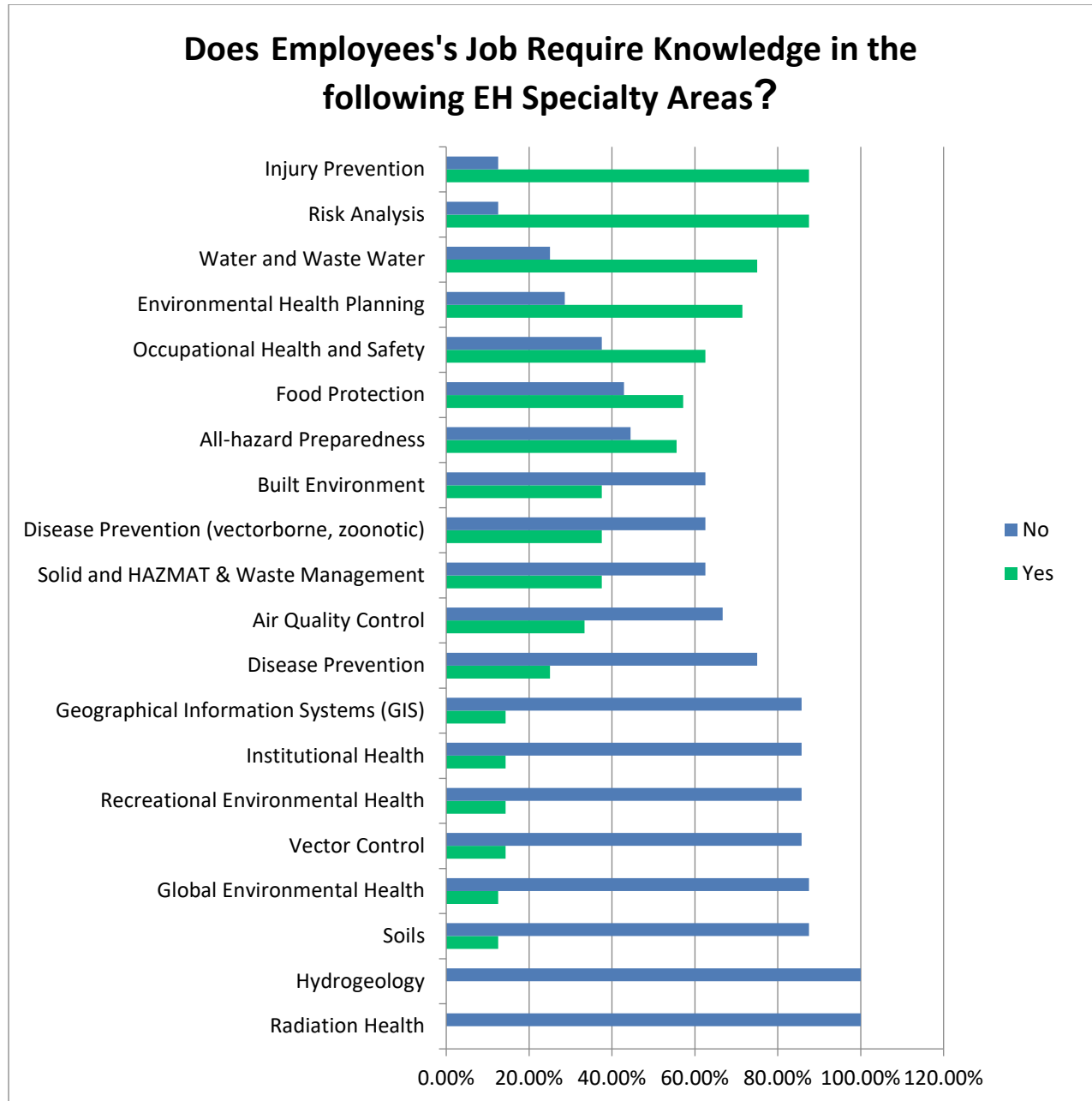
Supervisors were asked to answer yes or no if the employee's job requires knowledge in the following core competencies. Chart 18 shows that fifty percent or more supervisors cited the following required knowledge areas for their employees (required knowledge areas also cited by employees are starred):

- Injury Prevention*;
- Risk Analysis*;
- Water and Wastewater Management*;
- Environmental Health Planning*;
- Occupational Health and Safety*;
- Food protection*; and
- All Hazard Preparedness*.

Specialty EH areas that supervisors reported as *not* requiring employee knowledge included (unrequired knowledge areas also cited by employees are starred):

- Radiation Health*;
- Hydrogeology*;
- Soils
- Global Environmental Health;
- Vector Control;
- Reactional Environmental Health*;
- Institutional Health
- Geographical Information Systems (GIS)*
- Disease Prevention;
- Disease Prevention (Vectorborne; Zoonotic); and
- Built Environment.

Chart 18.



D. Program Preparation

Supervisors were asked to answer yes or no if employees were well-prepared in the following specialty areas. All supervisors rated employees as "somewhat" or "well prepared" with the exception of the Built Environmental category (Chart 19). EH specialty areas scoring 100% preparedness include (areas of required EH knowledge coinciding with employee job preparation rankings are starred):

- All-hazard Preparedness*;
- Disease Prevention;
- Disease Prevention (vectorborne, zoonotic);
- Environmental Health Planning*;
- Food Protection*;
- GIS;
- Global Environmental Health;
- Institutional Health;
- Occupational Health and Safety*;
- Recreational Environmental Health;
- Risk Analysis*;
- Soils; and
- Vector Control.

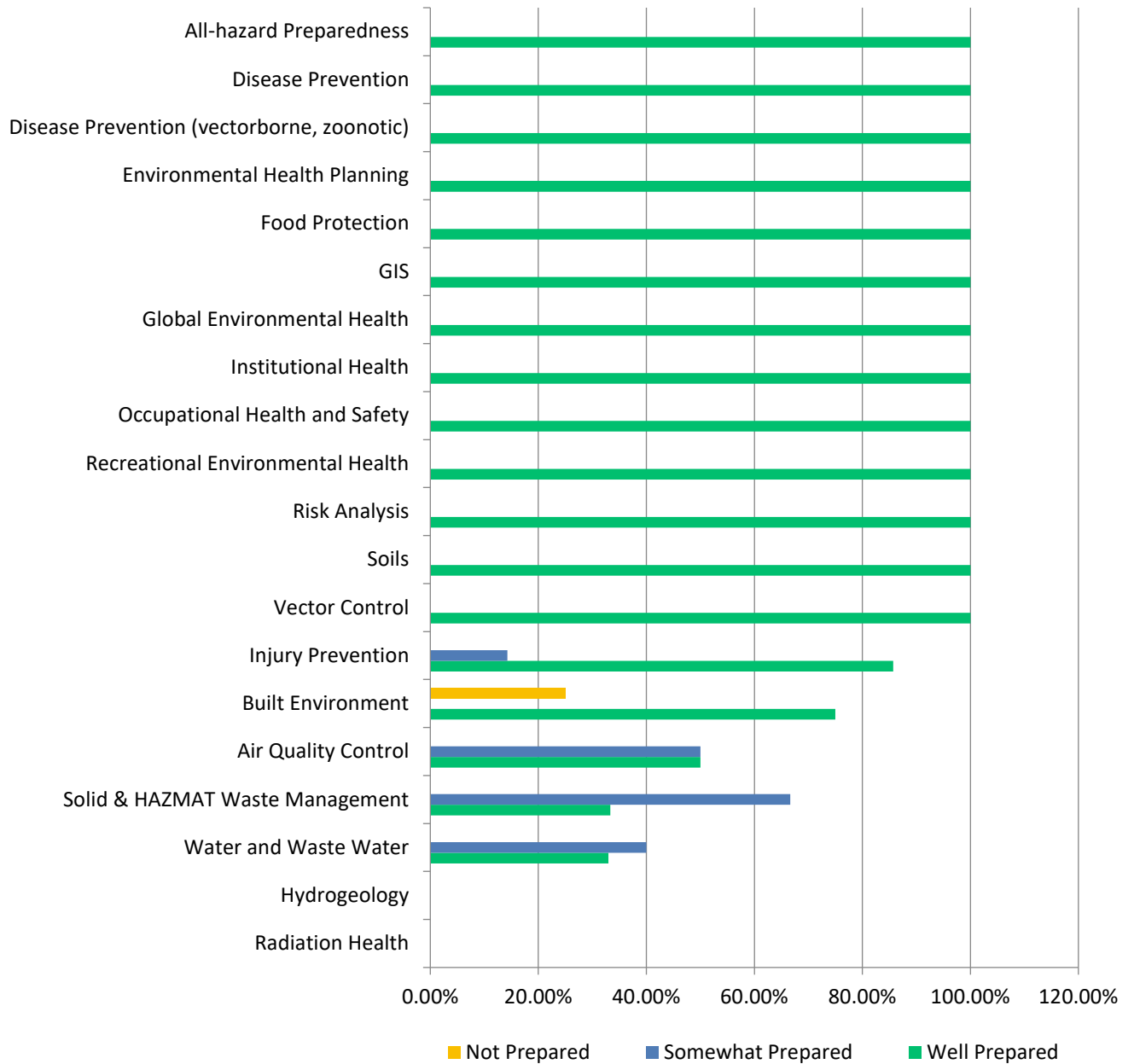
Specialty EH areas for which the highest percent of employees that were less prepared according to supervisors included:

- Built Environmental;
- Solid & HAZMAT Waste Management;
- Air Quality Control; and
- Injury Prevention.

Like the employer ratings previously discussed and with exception of Injury Prevention, the EH specialty areas where employees were least prepared coincide with those knowledge areas reportedly *less* required by the employee's job.

Chart 19.

Supervisor Assessment of Undergraduate Preparedness in Selected EH Specialty Areas



E. Additional Specialty Areas Knowledge needed

Four of 10 supervisor respondents indicated the following specific “other” specialty areas as necessary for their jobs (Table 6).

Table 6. “Other” Necessary Specialty Areas suggested by Supervisors

Ability to interpret and apply laws and regulations
Laboratory safety. Employee has taken to that very well and understands the risks.
Lodging, Recreational Waters, and Child Care inspections.
Plan Review and construction inspection skills

VI. Narrative and Discussion

EHAC accredits EH academic programs in order to create a cadre of educational institutions that produce EH employees who are well prepared academically and have the fundamental and practical skills to successfully enter and thrive in the EH field. EHAC’s primary mission is to enhance the education and training of students in EH science and protection by ensuring that students receive premium quality education and training from an EHAC accredited institution of higher education.

A. EH Specialty Area Preparedness

The aggregation of supervisor and employee assessments regarding preparedness shows employees are graduating with an overall favorable preparedness level for their current jobs (Charts 20 and 21). The majority of all supervisor ratings of employee preparedness fell within the “somewhat” to “well” prepared categories, with similar self-ratings by former students. Highest levels of preparedness were reported by 50% or more employees and supervisors include the following specialty areas:

- Air Quality Control;
- Institutional Health
- Environmental Health Planning;
- All-hazard Preparedness;
- Vector Control;
- Food Protection;
- Injury Prevention;
- Occupational Health and Safety;
- Disease Prevention (vectorborne, zoonotic); and
- Disease Prevention.

While Supervisor utilized the “somewhat” prepared category more heavily than employees, the two groups found general agreement in the following EH specialty areas (Charts 20 and 21).

- Air Quality Control;
- Solid and HAZMAT Waste Management;
- Water and Wastewater Management; and
- Injury Prevention.

Chart 20.

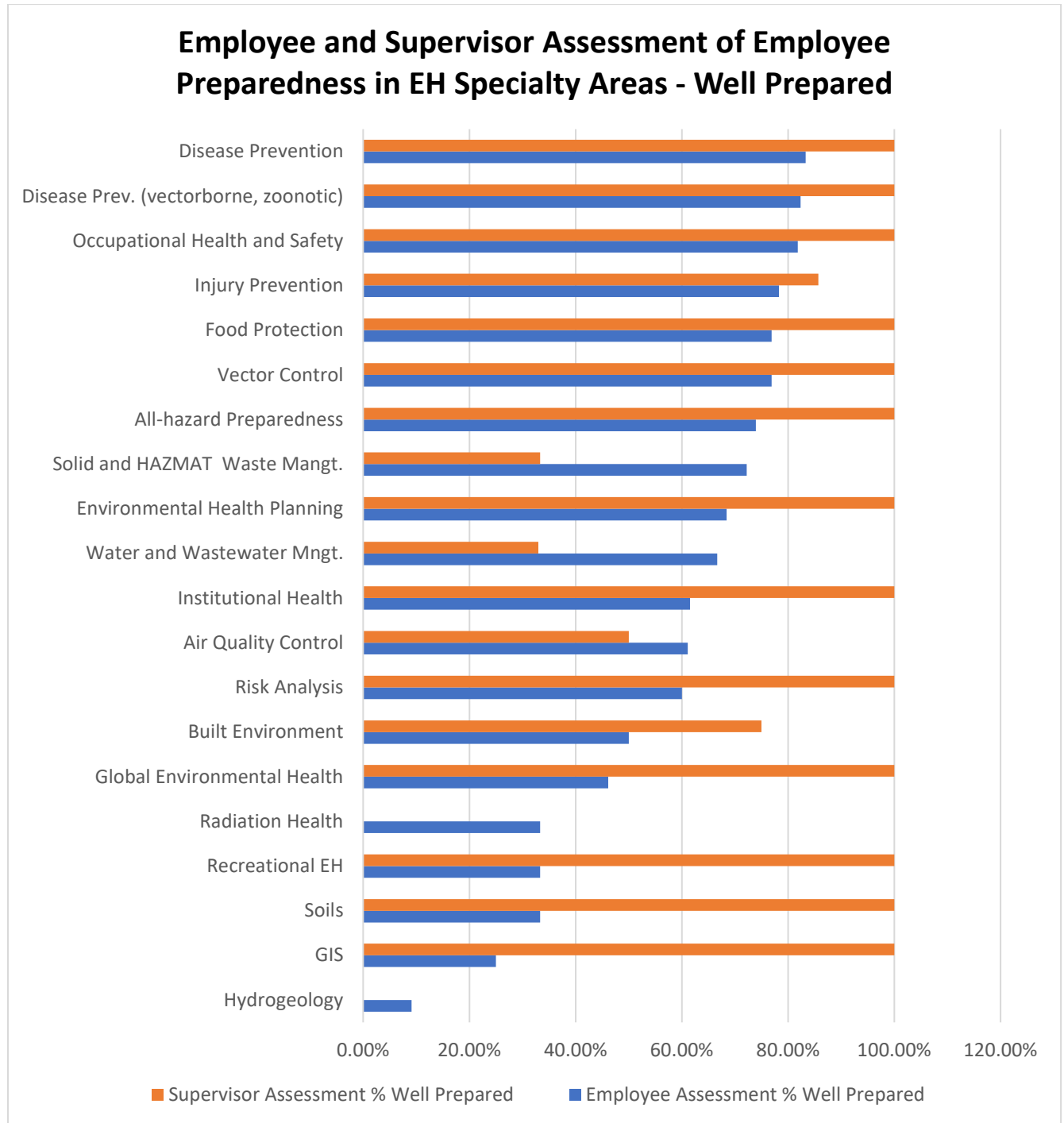
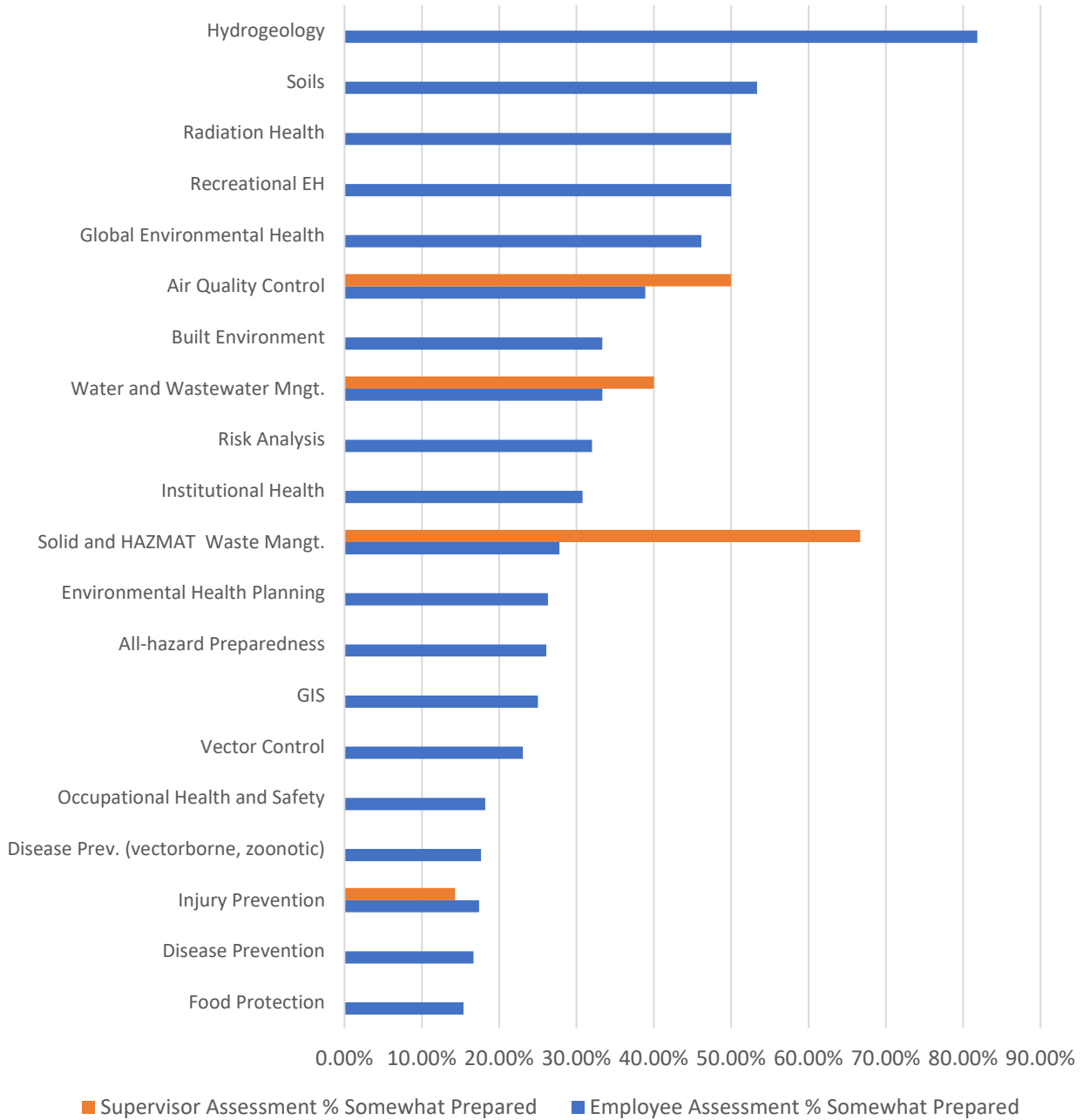


Chart 21.

Employee and Supervisor Assessment of Employee Preparedness in EH Specialty Areas - Somewhat Prepared



B. Job Skills Assessments

Chart 22 (Most Proficient) shows similar satisfaction levels of both employees and supervisors regarding employee skill levels in different EH job skills areas. Supervisors tended to rate employee skill a bit higher than the employees themselves. There was closest agreement on the following skills:

- Working in a Team Setting;
- Applying Research Methods and Problem Solving; and
- Organizing Workflows.

Supervisors and employees found agreement in the following EH specialty areas, which were given a rating of “Very Proficient” (Chart 23):

- Leadership Skills;
- Technical Writing;
- Choosing and Defending an Appropriate Plan of Action;
- Organizing workflow;
- Drawing appropriate conclusions;
- IT/Computer Skills;
- Public Speaking; and
- Time Management.

Chart 22.

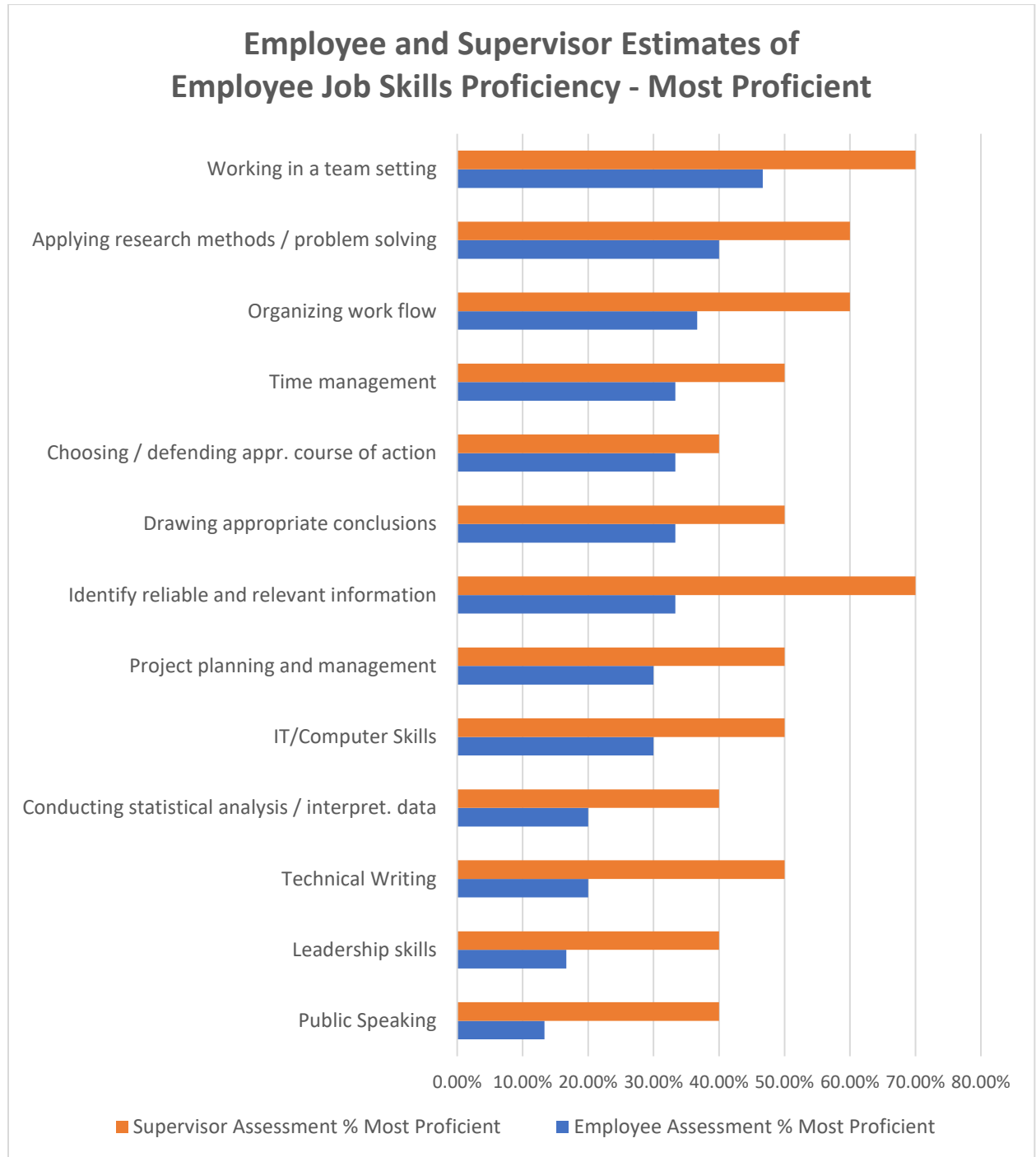
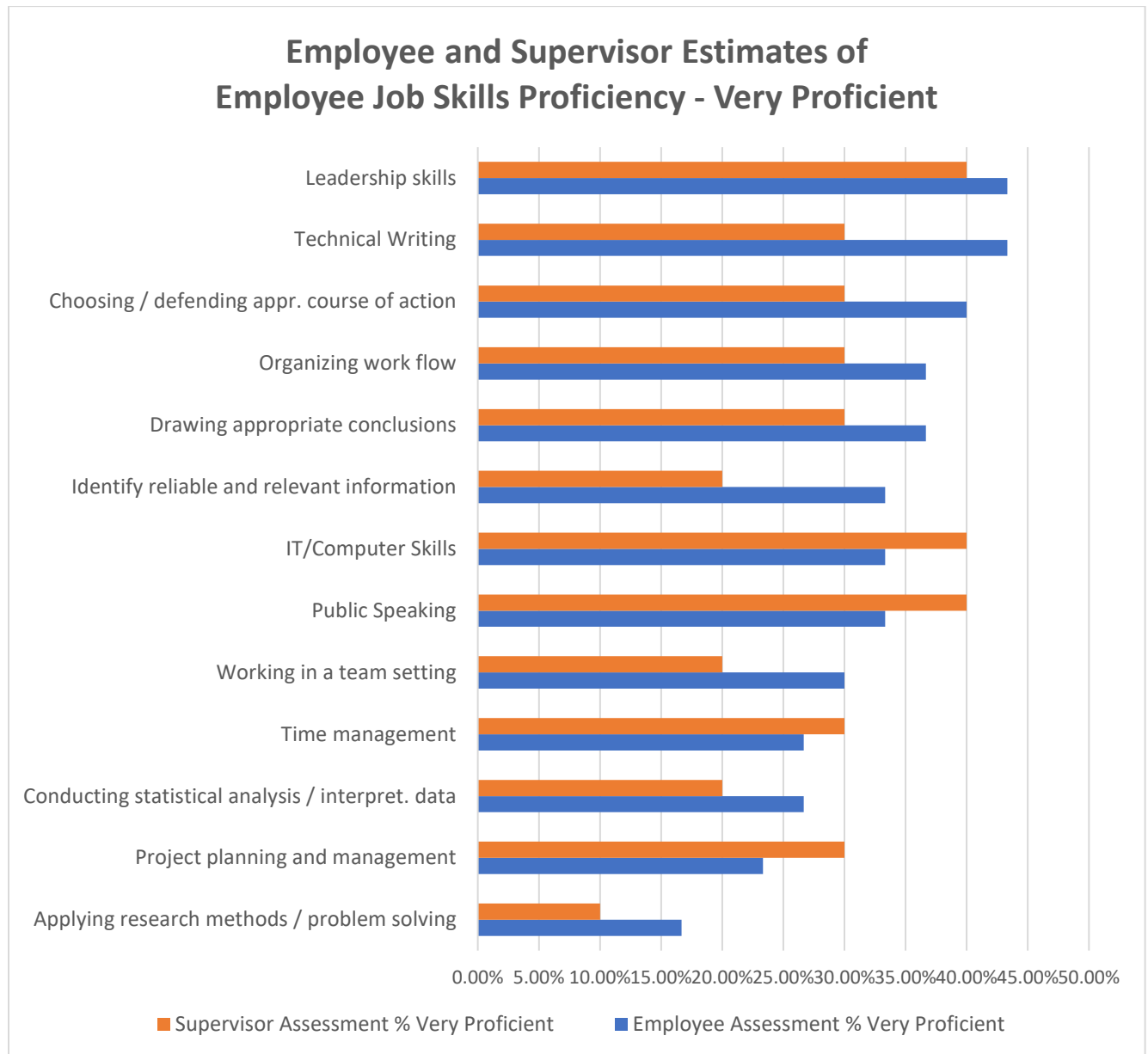


Chart 23.



C. Proficiency Levels in EH Specialty Areas

Lastly, employee and supervisor ratings of employee proficiency levels in EH specialty areas found similarities, as well. Non applicable specialty areas are mirrored by Employee and supervisor estimates. Generally, Supervisors found employees “Most Proficient “ in EH Specialty Areas while employees rate themselves as “Very Proficient” for the most part (Charts 24 and 25). Supervisors and employees found high levels of proficiency in risk Communication, Management and Assessment with similar and slightly lower assessment levels for Epidemiology and Toxicology.

Chart 24.

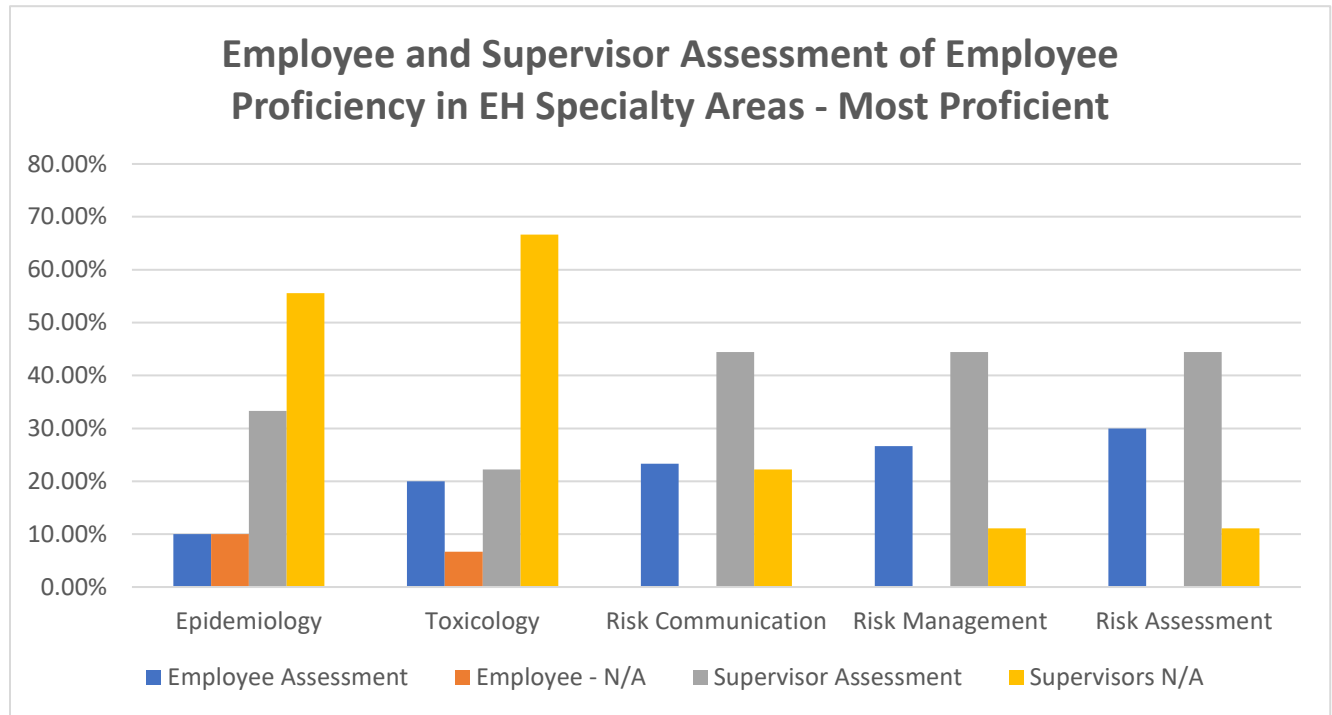


Chart 25.

