

Nascent Market Area

Human Factors

Overall: Human Factors is an area that is still evolving within the DoD and DHS. It is expected to be a strong market area in future years, with cross-cutting application across many technology platforms in addition to informing how our government will undertake intelligence activities and prepare for the battlefield.

Definition: The DoD's new interest in Human Factors (Mapping the "Human Terrain") is in understanding the social, cultural, and behavioral aspects of potential enemies in order to detect threats, as well as the ability of the warfighter to adapt to and communicate with other cultures and societies through the assistance of rapid training methods and translation technology. The DHS's Human Factors Division is focused on social/behavioral threat analysis, personal identification systems (such as biometric sensors), traditional human/systems integration and human performance, and modeling and simulation of human behavior to predict threats.

Underscoring the utility and effectiveness of employing human factors analysis on the battlefield, Colonel Martin Schweitzer, former Commander of the 82nd Airborne Division's 4th Brigade Combat Team at Fort Bragg, testified before Congress in June 2008 regarding Human Terrain Teams and their impact on current operations in Iraq and Afghanistan. The objective of these teams, according to Colonel Schweitzer, is to discern "soft power" means of achieving desired effects. A highly successful "graduate" of the North Carolina Defense & Security Technology Accelerator, K3 Enterprises was founded in 2005 and is a Fayetteville-based small business providing support to these Army Human Terrain Teams with training and in-theater support.

Critical skills and education required by companies engaged in this market include computer science, information technology, electrical and mechanical engineering, anthropology, biology, sociology, political science, international relations, behavioral science, psychology, linguistics, instructional design, and education.

Growth Potential: Human Factors is a nascent industry with a new focus for research funding—most notably through DoD's establishment in 2008 of the Human Social Culture Behavior Modeling Program (HSCB), the MINERVA Research Initiative administered by the Army Research Office in Research Triangle Park, and as seen through several recent solicitations issued by the Intelligence Advanced Research Projects Activity. As one industry representative stated during an interview for this study, "It is the right time and right place for human factors work in North Carolina."

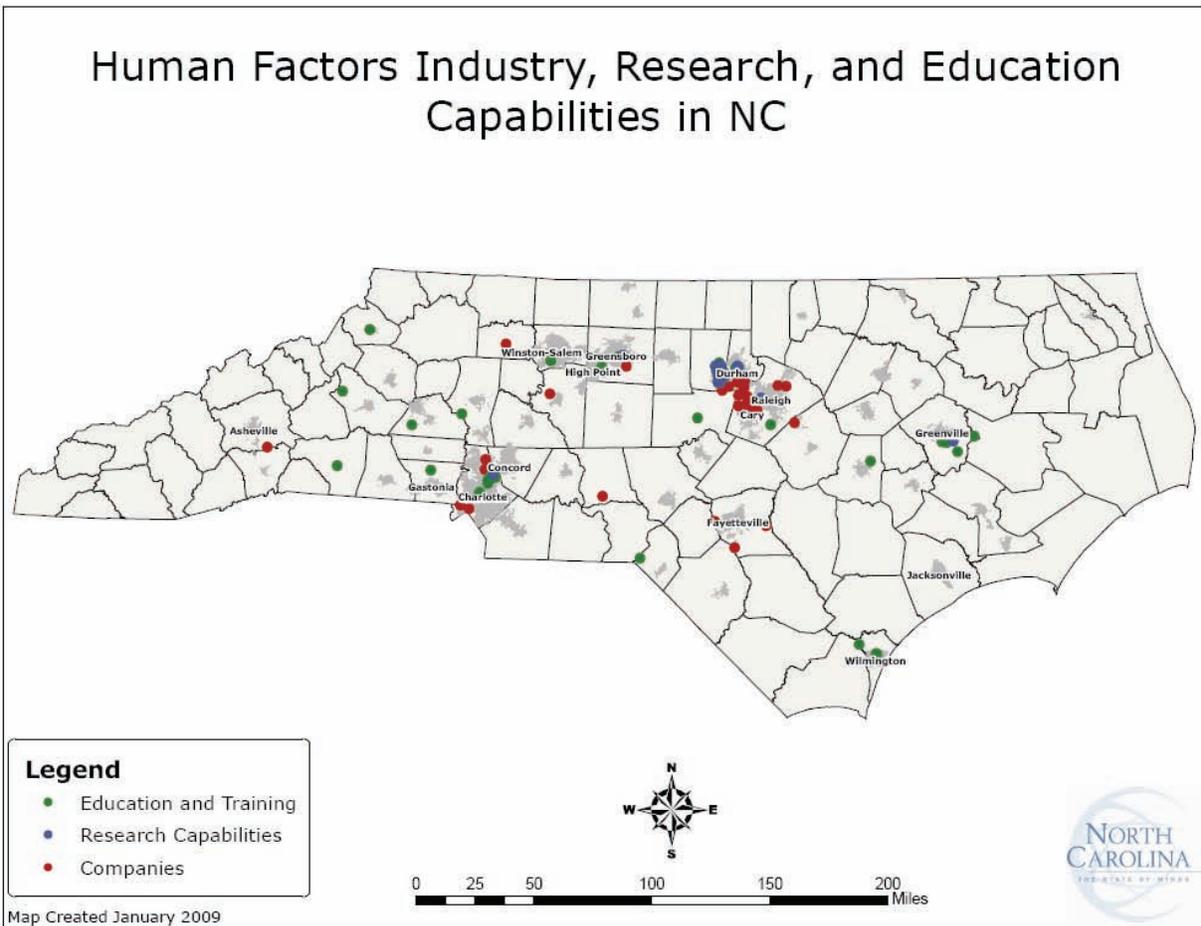
Underscoring the cross-cutting nature of Human Factors research and application, the HSCB program is vertically integrated across three categories of Research, Development, Test, and Evaluation funding: Applied Research, Advanced Technology Development, and Advanced Component Development & Prototypes. It addresses military capability needs centered on modeling for Irregular Warfare and Security, Stability, Transition, and Reconstruction Operations and on using computational models to support operations analysis, intelligence analysis, training and joint experimentation.

Business and Industry Capacity: This market area spans the spectrum from innovative social sciences research to the development and application of new technologies—areas where North Carolina has strong competitive advantages within academia and industry. RTI identified at least five core industries that comprise the Human Factors market area, and recommended two critical industries for initial supply chain analysis in North Carolina: Scientific Research and Development Services; and Computer Terminals and Other Computer Peripheral Equipment Manufacturing. As of 2007, North Carolina had approximately 35,000 people working across these five core industries.

Given the strength of the state's computer and information technology sector, coupled with the establishment of the Institute for Homeland Security Solutions ("IHSS") and the state's virtual simulation and gaming sector, North Carolina has strong advantages in developing this growing market area.

Snapshot: Human Factors Industry Cluster Analysis

Core Industry	Employment (2007)	Empl. Growth (since 1992)	Avg. Annual Wage (2007)	Value Added LQ (2006)	Employment LQ (2007)
Computer Terminals and Other Computer Peripheral Equipment Manufacturing	12,733	-24%	\$111,540	1.36	6.99
Scientific Research and Development Services	17,597	127%	\$88,868	0.92	1.00



Note: Companies mapped using the following NAICS codes and are indicative of capacity: **541720:** Research and Development in the Social Sciences and Humanities; **334119:** Other Computer Peripheral Equipment Manufacturing.

The core industries that support this market area are highly compensated and growing in North Carolina. Examples include Computer Terminals and Other Computer Peripheral Equipment Manufacturing, with a location concentration nearly seven times the national average and an average annual salary of \$112,000; and Scientific Research and Development Services, whose North Carolina growth, as noted earlier, has far outpaced national growth and has an average salary of roughly \$89,000.

Established by the Foundation, RTI, Duke University and UNC-CH; IHSS is partnered with the Human Factors and Behavioral Sciences Division of the DHS to conduct research to improve our understanding and analysis of homeland security threats. On the other end of the spectrum from social sciences research, this market area is supported by North Carolina's vibrant information technology industry and niche strengths in gaming/simulation. The opportunity exists to develop targeted research programs in partnership with technology companies in order to pursue not only DoD and DHS contracts, but also intelligence opportunities.

The opportunity exists to develop targeted research programs in partnership with technology companies in order to pursue not only DoD and DHS contracts, but also intelligence opportunities.

The proximity of the Special Operations Forces community at Fort Bragg and Camp Lejeune, which have a focus on training and education in areas related to Human Factors in order to more effectively carry out their mission, offers a potential opportunity for North Carolina-based industry and academia to partner on future requirements.

Higher Education Capacity: North Carolina has strong higher education capabilities to support this market area, particularly with respect to social sciences research and area studies. Eight institutions are home to diverse degree programs such as International Studies, Linguistics programs, Bioinformatics and GIS training programs, which produce skills valued in Human Factors work. For example, East Carolina University recently introduced a certificate program in Global Understanding, focused on developing students' ability to elicit change in a culturally-divergent, global community. Centers actively working with DoD and DHS include the Center of Excellence for Battlefield Capability Enhancement and the Center for Human-Centric Command & Control Decision Making—both located at NC A&T SU; and, as discussed above, the IHSS. North Carolina Central University operates the Institute for Homeland Security & Workforce Development, which educates students about issues related to terrorism and criminal justice. UNC-CH is recognized nationally for the strength and diversity of its area studies programs and centers, which have an important role in supporting Human Factors.

Fayetteville Technical Community College operates the Advanced Visualization and Interactive Design Center that is unique for North Carolina and a strong asset that has the potential to serve Human Factors-related applications, in addition to many of the other technology areas under this study. Under this program, students acquire the skills of a simulation-modeling technician, receiving hands-on training and experience in interactive 3-D modeling and simulation, computer-aided design and development, geographic-information systems, and simulation and gaming programming.