

The Economic Impact of the Marshall University Forensic Science Center



A Report for Fiscal Year 2007

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Marshall University
Forensic Science Center
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Accredited Master of Science Degree Program



Technology-Driven Economic Development



Nationally-Recognized Training Programs



IMPACT OF THE MARSHALL UNIVERSITY FORENSIC SCIENCE CENTER

Executive Summary

The Marshall University Forensic Science Center (MUFSC) was established in 1994 to provide DNA testing and a graduate-level forensic science program to the state of West Virginia. Since then, MUFSC has grown into a multi-faceted organization providing education, training, DNA testing, and research. Through its programs, MUFSC has emerged as a powerful economic engine for the city of Huntington and the state of West Virginia. Fiscal year 2007 was one of MUFSC's most successful ever, with record class sizes, a host of training programs, new construction, and cutting-edge DNA initiatives.

While MUFSC is first and foremost a public service and educational organization, the objective of this study is to provide a reliable representation of MUFSC's economic impact on West Virginia and, specifically, the city of Huntington. Using financial values taken from MUFSC's records for fiscal year 2007 (July 1, 2007 to June 30, 2008) or reliable estimates, this study was able to evaluate the substantial economic contributions of MUFSC's programs.

Six areas were identified in which MUFSC provided a tangible economic contribution to West Virginia:

- MUFSC Payroll
- Graduate Degree Program
- Training Programs
- Operating Expenditures
- MAAFS Annual Meeting
- Recovered Indirect Cost

The results were impressive. In 2007, MUFSC employed twenty-eight full-time employees and delivered over **\$2.88 million** in direct economic impact to the state of West Virginia. This \$2.88 million generated an additional **\$1.61 million** in indirect spending from area businesses that benefitted from MUFSC's presence. **In total, MUFSC's impact for fiscal year 2007 was over \$4.5 million. In addition, MUFSC generated a 769% return on the state's investment.** The sections below will discuss each program in greater detail, but these numbers show that not only is MUFSC a vital resource to the law enforcement and academic communities, but its economic impact can be felt throughout the state of West Virginia.

A Distinguished, Well-Educated Workforce

Employing twenty-eight full-time staff and faculty, as well as several part-time employees, MUFSC creates critically-needed, high paying jobs within the community. Most of MUFSC's employees have achieved an advanced level of education, with over half completing or pursuing graduate degrees. Most have worked with MUFSC for many years, with eleven holding advanced technical positions requiring a Master of Science degree in forensic science. The impact of this well-educated, stable workforce on the local economy is substantial. MUFSC employees live in Huntington and the surrounding communities and spend a large portion of their paycheck here.

Approximate MUFSC Net Payroll: \$903,000

Accredited Master of Science Degree Program

One of MUFSC's most powerful engines for economic growth is its graduate degree program. The program recently graduated its second largest class and has become nationally-recognized within the forensic science community. Students receive classroom training in the basic and advanced principles of genetics, computer forensics, toxicology, and microscopy and participate in hands-on laboratory exercises at MUFSC's state-of-the-art laboratories.

As one of seven FEPAC-accredited programs in the country, MUFSC has received national acclaim and recently became site of the NIJ's Technical Assistance Program. Through this program, graduate students are specially trained to validate cutting-edge laboratory equipment. Students who complete this training spend their summer internships at crime laboratories and assist those labs in validating their own equipment. Additionally, MUFSC boasts a higher concentration of non-resident students when compared

to the rest of the University. This enables the graduate program to be more self-sufficient, relying more on student fees than state appropriations. Among the 2008 and 2009 graduating classes, 23 of 39 students were non-residents.

Gross Economic Contribution: \$351,000

Nationally-Recognized Training Programs

One of MUFSC's central missions is to provide training to law enforcement and forensic professionals on a national scale. To accomplish this goal, MUFSC has partnered with a number of state, local, and national organizations including: the West Virginia State Police, the Federal Bureau of Investigation (FBI), the West Virginia Foundation for Rape Information and Services (WV-FRIS), and Second Creek Technologies LLC. With these partners and its granting agency, the National Institute of Justice (NIJ), MUFSC has provided a wide range of training to over 750 participants. These trainees lodge in area hotels, dine at local restaurants, and shop at nearby merchants. Below are a description of some of MUFSC's nationally-recognized training programs and an evaluation of their economic impact.

FBI Laboratory Specialized Training Program

Through a memorandum of understanding with the FBI and a cooperative agreement with the NIJ, MUFSC is the proud host of crime scene investigation training through the FBI Laboratory Specialized Training Program. MUFSC-hosted sessions provide training in footwear impression analysis, latent print examination, and crime scene documentation. MUFSC hosted six training sessions during fiscal year 2007 and, through a competitive NIJ grant, will provide eleven more between 2008 and 2009. The NIJ provides funds for travel and lodging for all attendees. Last year, MUFSC hosted 95 law enforcement professionals and has hosted almost 200 over the life of the project.

Total Economic Contribution: \$73,000

President's DNA Initiative

As part of the President's DNA Initiative, MUFSC was chosen to provide training in advanced DNA technologies and laboratory automation. The program has been successful in drawing almost 300 participants to Huntington over the past four years. These regular training programs (courses are usually held at least once per month) feature both hands-on laboratory experience and classroom instruction. Since July 2007, MUFSC has hosted 93 trainees for advanced DNA and 22 for automation training.

Total Economic Contribution: \$104,000

NIJ Expert Systems Testbed Project

The NIJ Expert Systems Testbed (NEST) Project provides a valuable service to technical leaders and DNA analysts. Expert systems allow for the rapid analysis of DNA and are poised to dramatically reduce backlogs faced by state and local crime laboratories. As part of a cooperative agreement with the NIJ, MUFSC evaluated three commercially-available expert systems for use on single source samples and presented its finding through hands-on demonstrations to laboratory leaders. These two-day demos show off the features of each expert system and assist laboratory managers in choosing a system.

Total Economic Contribution: \$33,000

Sexual Assault Nurse Examiner's Training (SANE)

As part of its mission to provide socially-meaningful applications for forensic science, MUFSC has partnered with WV-FRIS to provide SANE training to over 180 West Virginia nurses since 2004. This training focuses on the unique needs of sexual assault victims by training registered nurses to collect forensic evidence and provide critical services. While training sessions traditionally occur at its Huntington campus, MUFSC recently funded its first pair of training sessions at the United Hospital Center in Clarksburg, West Virginia. Four training sessions are held annually, including two for adult SANE, and one each for pediatric and geriatric victims. Focusing on West Virginia nurses, SANE participants usually do not use air service in and out of Huntington, but do lodge at area hotels and dine at area restaurants.

Total Economic Contribution: \$57,000

MAAFS 2008 Annual Meeting

In 2008, Marshall became the first university to host an annual meeting of the Mid-Atlantic Association of Forensic Scientists (MAAFS). This five-day gathering brought forensic scientists from across the region to Huntington, where they poured thousands of dollars into the local economy. MUFSC was responsible for planning and executing all aspects of the meeting, which raised over \$70,000. The conference drew over 200 attendees, proving even a smaller city such as Huntington can provide the same amenities and inviting business climate as much larger cities like Washington, DC and Richmond, VA.

Total Economic Impact: \$132,000

MUFSC Operating Expenditures

MUFSC uses its revenue to support a number of programs, including its DNA laboratory, training programs, and academic program. These operating costs provide a boost to numerous in-state businesses.

Total Economic Impact: \$443,000

Recovered Indirect Costs

Many of MUFSC's programs are funded through federal grant programs. As a result, Marshall is able to claim 40% of the costs of these programs to cover facilities and administrative expenses. During fiscal year 2007, the University was able to recover over \$1 million in facilities and administrative costs from MUFSC's programs. These funds are split evenly among MUFSC, the Marshall University Research Corporation, the Joan C. Edwards School of Medicine, and the University to cover operational expenses. Since MUFSC's portion of this income was included in the operating expenditures above, they are excluded from this analysis to avoid double counting. Regardless, MUFSC contributes a substantial \$787,000 to the operation of the University.

Total Economic Impact: \$787,000

Summary

Category	Direct Impact	Indirect Impact	Total Impact
Staff Salaries	\$903,000.00	\$514,710	\$1,417,710
Operating Expenses	\$443,000	\$252,510	\$695,510
Student Enrollment	\$351,000	\$200,070	\$551,070
Training Programs	\$268,000	\$152,760	\$420,760
MAAFS 2008 Meeting	\$132,000	\$75,240	\$207,240
Distributed Indirect Cost	\$787,000	\$421,230	\$1,208,230
Total	\$2,884,000	\$1,616,520	\$4,500,520

MUFSC produces over \$2.8 million in annual direct economic stimulus for the state of West Virginia. This direct contribution to the local economy creates an indirect impact of over \$1.6 million. This occurs as local businesses who receive funds from MUFSC re-spend the money on payroll, supplies, and other items for their businesses. This study assumes that roughly 57% of MUFSC's contributions are re-spent in the state of West Virginia (MU Center for Business and Economic Research, 2006).

Total Economic Impact: \$4,500,520

Return on the State's Investment

During fiscal year 2007, the state of West Virginia made an investment of approximately \$585,000 to support MUFSC's operations. Of this total, \$417,000 was appropriated to the organization's CODIS laboratory and another \$168,000 was provided to its academic program. By comparing these contributions to MUFSC's economic impact, we can determine the state's return on investment (ROI), an impressive 769%. To put it another way, every dollar invested in MUFSC by the state returns \$7.69 in impact. If MUFSC's impact was broken down by its academic program and non-academic activities, we find the return on MUFSC's academic program is \$5.64 and the return on its non-academic projects was \$8.91. Each of these values illustrates that MUFSC is providing a substantial return to the state of West Virginia. This analysis does not include the tax income the state receives because of MUFSC's operations or the sales and hotel taxes paid by its visitors.

INTANGIBLE BENEFITS

It is difficult to accurately measure the economic impact of some of MUFSC's programs. But, regardless of the difficulty in attaching a financial value to them, they do have a real and important value to the community, both economically and from a public safety standpoint.

DNA Testing Laboratory

Through a unique partnership with the West Virginia State Police, MUFSC is the sole CODIS laboratory for the state of West Virginia. CODIS, part of a larger FBI initiative, is a database to which the DNA profiles of certain convicted offenders are uploaded. Once uploaded, these profiles can be searched against unidentified DNA samples found at other crime scenes. This program has greatly improved law enforcement's ability to prosecute the guilty and exonerate the innocent by aiding in over 46,000 investigations since its inception (Federal Bureau of Investigation, 2007). While it is difficult to put a value on the impact of CODIS, it is easy to see the many opportunities for cost savings it presents. Helping authorities apprehend suspects quickly can reduce the likelihood an offender would commit additional, potentially violent, crimes. While DNA evidence is no substitute for good detective work, using it as a tool can remove unnecessary strain from law enforcement and free up more resources for other cases.

MUFSC's DNA laboratory has several other initiatives aimed at supporting law enforcement and other community stakeholders. As part of an agreement with the South Carolina Lowcountry Regional Property Crimes Initiative, MUFSC provides DNA testing for property crime investigations. Violent crimes are often prioritized by law enforcement, leaving these property cases unsolved. Nationwide, property crimes cost the economy over \$17 billion (Federal Bureau of Investigation, 2007). Actively testing these samples will help reduce the heavy costs of these crimes.

Forensic casework is another important aspect of MUFSC's mission of providing assistance to law enforcement. By analyzing open forensic cases, MUFSC is doing its part to reduce substantial backlogs at crime laboratories. This allows crime laboratory personnel to focus on the analysis of new cases. MUFSC also performs DNA testing to answer questions of paternity for both law enforcement and private citizens. These tests facilitate the payment of child support by identifying the biological father and are an important tool in ensuring that immigration laws are followed.

Academic Program

There are more benefits to MUFSC's graduate program than simply the money its students spend in Huntington. Forensic scientists with graduate degrees are valued by crime laboratories and government

agencies from across the country. They improve the ability of law enforcement to respond to crime because of their high levels of hands-on training and advanced studies. Almost all of MUFSC's laboratory staff are graduates of the academic program and, according to the most recent alumni records, sixteen work for other entities within the state including: the WV State Police, the Office of the Chief Medical Examiner, and the Bureau of Alcohol, Tobacco, and Firearms. By providing West Virginia law enforcement with forensic scientists who have roots in the community, MUFSC is making it much easier to maintain fully-staffed forensic divisions while reducing high turnover and the resulting costs.

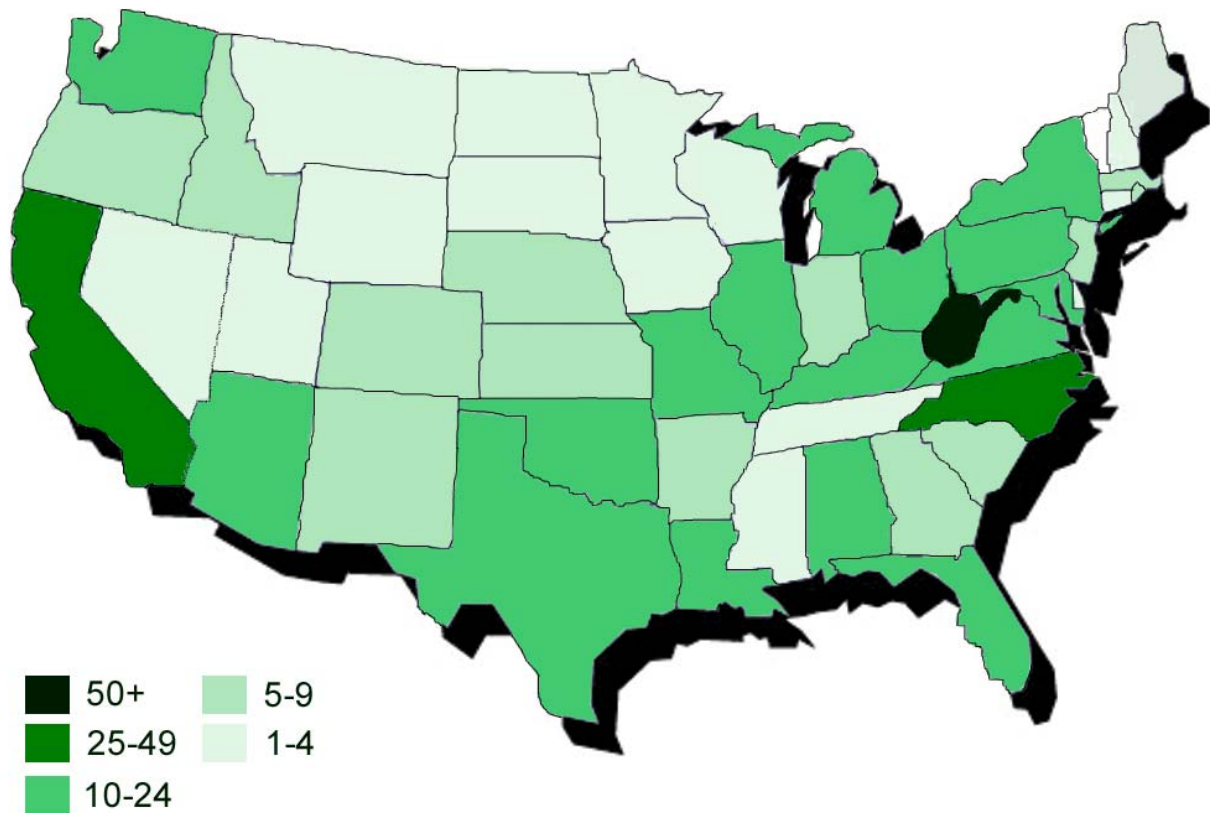
Computer Forensics

MUFSC prides itself on being on the cutting-edge of forensic science and no single technology has revolutionized society more than the personal computer. However, with the integration of information technology into our daily lives, criminal elements have begun to use this very technology to commit crimes. Through funding from the Bureau of Justice Assistance, MUFSC has developed the Marshall Information Security and Digital Evidence Initiative (MISDE) to assist law enforcement and the private sector in addressing computer crime. As part of this program, MISDE provides technical and financial support to two regional computer forensics laboratories operated by the West Virginia State Police. In 2006, MUFSC formed a partnership with Second Creek Technologies, an IT company that was recently recognized in Governor Joe Manchin's State of the State address as a model West Virginia business. This partnership allows for the unique sharing of assets between higher education and private industry. MISDE has also hosted numerous training programs related to computer forensics. Finally, MISDE performs validation on digital forensic software and equipment. All of these activities are designed to advance the field of forensic science and, as a result, reduce the strain crime can cause on a community.

Training Programs

The economic impact of MUFSC's training programs has already been discussed at length above; however, there are benefits that are more difficult to quantify. Training through the FBI, President's DNA Initiative, and NEST Project are all designed to improve the manner in which forensic professionals address crime. All can save the community significant resources either by providing a more efficient means of DNA analysis (expert systems and automation training) or by improving professional skills to ensure that valuable evidence is not lost (FBI CSI training). In addition to the economic benefit, MUFSC's training programs improve the reputation of Marshall University and West Virginia. MUFSC has hosted over 750 trainees from forty-nine states and has left a great many impressed by the fine facilities and amenities Huntington has to offer.

MUFSC Trainees by State



Construction

In April 2008, it was announced MUFSC would begin construction on a new, 16,000 square foot training and education annex. This new structure will include demonstration laboratories for DNA analysis, forensic chemistry, and microscopy along with three new classrooms to support MUFSC's training initiatives and academic program. Through support from the Huntington Area Development Council (HADCO), three laboratory facilities will be housed within the building and will serve as business incubators. MUFSC and HADCO will provide laboratory facilities and support services to early-stage technology-focused businesses to foster Huntington's economic development goals. The incubator's location within the Huntington-Ironton Empowerment Zone will provide additional benefits to incubated businesses including tax incentives and access to business loans.

The training and education annex (scheduled for completion in 2009) will mark the second major forensic construction project since 2003, a phenomenal growth pattern for any business. MUFSC's first expansion included 8,000 square feet of office and educational space and pumped over \$2 million into the local economy. Taking the cost of this structure and combining it with the estimated \$5.1 million spent on the training and education annex by the end of 2009, MUFSC will have infused approximately \$7.2 million into the local construction industry since 2003, resulting in a total impact of \$11.1 million.

Completed: 2004



Estimated Completion: Fall 2009



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