THE ECONOMIC IMPACT

of

PRAIRIE VIEW A&M UNIVERSITY

PRAIRIE VIEW
A&M UNIVERSITY

MESSAGE FROM THE PRESIDENT

Dr. Tomikia P. LeGrande

The impact of Prairie View A&M University extends far beyond our three campus locations. As this recent economic study demonstrates, PVAMU is a cornerstone of economic vitality across Waller County, the Greater Houston Area, and the entire State of Texas. In 2023 alone, the University contributed $1.2 billion to Texas's economy, supported more than 7,100 jobs statewide, and generated nearly half a billion dollars in labor income.

Every dollar invested in PVAMU yields significant returns—more than double across Texas—and drives sustained growth and opportunity in our communities. The degrees we award empower graduates to contribute over $4.5 billion in lifetime earnings to Texas and nearly $3 billion beyond our state's borders, strengthening the nation's workforce and competitiveness.

These results affirm what many already recognize: Prairie View A&M University is not only an academic institution of distinction but also a critical economic engine for our community, our state, and our nation.

Excellence Lives Here

MESSAGE FROM THE VICE PRESIDENT FOR RESEARCH AND INNOVATION

Dr. Magesh Rajan

We are pleased to share with you the newly completed Economic Impact Report for Prairie View A&M University, reflecting data from Fiscal Year 2023. This report provides a comprehensive assessment of PVAMU's contributions to economic activity, job creation, and workforce development across Waller County, the Greater Houston Area, and the State of Texas.

As Vice President for Research and Innovation, I am proud to highlight that these outcomes are a direct result of our institution's strategic growth and commitment to excellence. In recent years, PVAMU has earned two transformative designations:

- Recognition as a Carnegie-classified R2: Doctoral University – High Research Activity, and
- The prestigious Innovation and Economic Prosperity (IEP) designation by the Association of Public and Land-grant Universities (APLU).

These designations affirm our expanding research enterprise and our commitment to regional economic engagement.

Key highlights from the 2023 report include:

- A total economic impact of $1.2 billion across Texas.
- Over 7,150 full-time jobs supported statewide, including 5,433 in the Greater Houston Area and 2,197 in Waller County.
- Nearly $483 million in total labor income generated.
- $4.58 billion in lifetime earnings expected from PVAMU's 2023–2024 graduates residing in Texas.
- A return on investment of $2.23 statewide for every dollar spent by the university.

These findings reaffirm PVAMU's role not only as an academic institution but also as a vital driver of economic development, research innovation, and upward mobility in the region and the state.

Thank you to all who partner with us in this ongoing mission. We invite you to review the attached report and look forward to continued collaboration as we advance the goals of our Journey to Eminence 2035 strategic plan.

THE ECONOMIC IMPACT

of PRAIRIE VIEW A&M UNIVERSITY

on Waller County,
the Houston-The Woodlands-Sugar Land MSA,
and the State of Texas [1]

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[1] This study was conducted at the request of Dr. Magesh Rajan Vice President for Research and Innovation and Sponsored Programs. A team of economists, all faculty members in the department of economics, College of Business, completed the study under the guidance of Dr. Munir Quddus, Endowed Professor of Economics and former Dean. The COB is pleased to present this study as part of our continuing effort to recognize the substantial benefits the taxpayers of Texas derive from their investment in this historic and unique institution of higher learning. We thank Vice President Dr. Rajan for financial support, and the Comptroller's Office, Office of Institutional Research, and others on campus for providing our team with relevant data and information. This study uses both primary and secondary data on student enrollment, spending, budget and financials from a variety of sources. The data collected is from FY 2023, but more generally from the 2023-2024 timeframe. We take full responsibility for the results and the analysis presented in this report.

FOR ANY QUESTIONS RELATED TO THIS STUDY please contact Dr. Erick Kitenge, emkitenge@pvamu.edu

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PVAMU CONTRIBUTED TO ECONOMIC ACTIVITIES

$1.2 billion
in Texas

$935.8 million
in the Greater Houston Area

$381.9 million
in Waller County

- 2023

PVAMU AWARDED 1,715 DEGREES

Collectively, these degree recipients, now active economic agents, will earn over

$341.46 million in Waller County

$2.68 billion in the Greater Houston Area

$4.58 billion in Texas

$539.64 million in other states

- Academic year 2023-24

EXECUTIVE SUMMARY

This study estimates the impact of Prairie View A&M University (PVAMU), a 148-year old institution of higher learning supported by the State of Texas, to economic activities (incomes, output, and employment) in Waller County, The Greater Houston Area, and The state of Texas for 2023. Our findings can be summarized as follows:

PVAMU FACILITATED THE CREATION OF JOBS AND LABOR INCOME

7,151 in Texas —
generating approximately **$482.7 million**

5,433 in the Greater Houston Area —
generating approximately **$363.2 million**

2,197 in the Waller County —
generating approximately **$154.6 million**

- 2023

EVERY DOLLAR INVESTED BY PVAMU AND ITS AFFILIATES GENERATES SIGNIFICANT RETURNS IN THE LOCAL ECONOMIES

$1.38
in Waller County

$2.09
in the Greater Houston Area

$2.23
across Texas

1 INTRODUCTION

In the heart of Texas, the city of Houston and its surrounding regions have experienced remarkable economic growth over the past decade, driven in part by the presence of major educational institutions like Prairie View A&M University (PVAMU). This storied and dynamic institution of higher learning, a cornerstone of Waller County and a key player in the Houston metropolitan area is not just an educational institution, but an economic powerhouse. Its operations, student spending, and research activities generate hundreds of millions of dollars in economic activity annually, supporting thousands of jobs and contributing to the region's prosperity. This study provides a comprehensive assessment of PVAMU's economic impact, offering data-driven insights that can inform policy decisions and highlight the University's vital role in sustaining and growing the Texas economy.

Measuring the total economic impact of a university on a defined study area is a complex endeavor. This impact encompasses multiple dimensions, including short-term and long-term benefits and tangible and intangible effects. Short-term tangible benefits refer to changes in overall economic activity resulting from university-related expenditures, such as spending by students, faculty, and visitors, as well as institutional operations. Long-term intangible benefits, on the other hand, reflect the broader positive influences of universities, such as enhancements to human capital, improvements in labor productivity, technology transfer, business development support, increased lifetime earnings of graduates, and other social externalities that are challenging to quantify. This study comprehensively assesses Prairie View A&M University's (PVAMU) economic impact in 2023 on Waller County, the greater Houston area, and the state of Texas.

At the state level, PVAMU contributed **$1.2 billion** to economic activities, supported **7,151 jobs,** and generated **$482.7 million** in labor income.

This study reveals Prairie View A&M University (PVAMU) as a significant economic driver across multiple levels in Texas. At the state level, PVAMU contributed $1.2 billion to economic activities, supported 7,151 jobs, and generated $482.7 million in labor income. In the Greater Houston Area, the University's economic impact reached $935.8 million, creating 5,433 jobs and $363.2 million in labor income. Locally, PVAMU added $381.9 million to Waller County's economy, facilitated 2,197 jobs, and contributed $154.6 million in labor income. Beyond these immediate impacts, the institution awarded 1,715 college degrees in the 2023-24 academic year, with graduates projected to collectively earn $341.46 million in Waller County, $2.68 billion in the Greater Houston Area, $4.58 billion in Texas, and $539.64 million in other states over their lifetimes. These findings underscore PVAMU's multifaceted role as an economic engine, not only through direct spending and job creation but also by enhancing the long-term earning potential of its graduates, thereby fostering sustained economic growth across local, regional, and state economies.

This study employs the latest version of IMPLAN software, a widely used tool for economic impact analysis. IMPLAN's input-output modeling framework, combined with built-in multipliers, allows for a detailed assessment of how university-related expenditures—such as faculty salaries, student spending, and visitor expenditures—ripple through the local, regional, and state economies. The methodology also incorporates faculty, staff, and students' surveys to capture localized spending patterns, ensuring greater accuracy in the estimates. By analyzing both short-term economic activities and long-term benefits, such as increased lifetime earnings for graduates, the study attempts to provide a holistic view of PVAMU's economic contributions.

The data used in this study were obtained from various sources, including Texas A&M System Analytics, the Texas Comptroller's Office, PVAMU's Office of Institutional Research, and the PVAMU Fact Book. Financial data on university expenditures, faculty salaries collected from the office of CFO, were supplemented by survey data collected directly from faculty, staff, and students. This combination of administrative records and primary survey data ensures a robust and comprehensive dataset, enabling precise estimates of PVAMU's economic impact. Additionally, the study incorporates data on construction spending and visitor expenditures.

The literature on the economic impact of universities highlights the complexity of measuring such impacts, particularly the distinction between short-term tangible and long-term intangible benefits. Early studies, such as those by Caffrey and Issacs (1971), focused on short-term economic impacts using linear cash flow models, while more recent research, such as Stokes and Coomes (1998), has employed sophisticated input-output models to capture multiplier effects. Studies like those conducted by the University of Colorado and the University of Massachusetts have demonstrated the significant economic contributions of universities at the state level. In contrast, regional and local studies, such as those by Southern Illinois University and Tarleton State University, have highlighted the importance of universities in smaller communities. The Thurgood Marshall Scholarship Fund (2001) and Appleseed, Inc. have further expanded this literature by examining the economic impacts of Historically Black Colleges and Universities (HBCUs) and other institutions, respectively. These studies collectively underscore the multifaceted role of universities as drivers of economic growth, human capital development, and community well-being.

As an **R2-classified institution** with aspirations to attain R1 status, PVAMU requires increased funding to advance its research capabilities and expand its impact.

This study is significant as it aligns with Prairie View A&M University's (PVAMU) mission to achieve excellence and relevance in teaching, research, and service. As an R2-classified institution with aspirations to attain R1 status, PVAMU requires increased funding to advance its research capabilities and expand its impact. This study underscores the return on investment for multiple donors by providing a comprehensive, multi-level assessment of PVAMU's economic impact using the most recent data available. By examining both short-term and long-term impacts, the study provides valuable insights for policymakers, university administrators, and community stakeholders, demonstrating PVAMU's vital role in driving economic growth. This research supports PVAMU's mission to invest in programs and services that foster self-sufficiency and professional competence among its graduates, further solidifying its position as an institution of the first class.

The remainder of this document is structured as follows. The next section elaborates on the existing literature, followed by a detailed discussion of the methodology used in the study, including the IMPLAN modeling framework and the data collection process. Subsequently, we present the key findings, organized by geographic level (local, regional, and state) and by category of economic impact (direct spending, employment, and long-term benefits). We then discuss the qualitative contributions of PVAMU, such as its research and outreach activities, which, though challenging to quantify, are critical to understanding the University's broader societal impact. Finally, we conclude with a summary of the findings and their implications for policy and practice.

2 LITERATURE REVIEW

In this section, we review existing studies on the economic impact of universities, highlighting key methodologies, findings, and gaps in the research.

Among the early impact studies, Caffrey and Issacs (1971) made a seminal contribution to the impact study literature. Commissioned by the American Council of Education, this study estimated the short-term economic impacts of universities on their local economies. Using linear cash flow formulas and multipliers, their models estimated the economic benefits to three groups within the local economy -- local businesses, local government, and local individuals. The more recent impact studies have used more sophisticated input-output models, which are reviewed in Stokes and Coomes (1998). Among other significant impact studies, Elliot et al. (1988) discuss how the focus of impact studies can be expanded from measuring only the short-term spending impacts to include the long-term economic impact of universities on local development.

Jafri et al. (2004) provided a good summary of many short-term impact studies of that era conducted by universities. For example, the University of Colorado and the University of Massachusetts conducted studies estimating the economic effects at the state level. In contrast, Southern Illinois University and the University of Waterloo studies had a more regional focus, and the Texas A&M University-Corpus Christi, Sam Houston State University, and Tarleton State University studies had a more local focus. Using social accounting matrix models, these studies derived several measures of multipliers, which are summarized below:

TABLE 1 Summary of Multipliers from Several Impact Studies, 1995-2004

	TOTAL OUTPUT MULTIPLIER	EMPLOYMENT MULTIPLIER	VALUE ADDED MULTIPLIER
University of Colorado (state level)	1.90	1.80	
University of Massachusetts (state level)	2.40	1.98	
Southern Illinois University (36 county region)	2.00		
SIU-Carbondale (19 county region)	1.78		
SIU-Edwardsville (14 county region)	1.75		
University of Waterloo (region only)			0.84
University of Waterloo (entire province)			1.46
University of Waterloo (region only)		1.34	
University of Waterloo (entire province)		1.65	
Texas A&M - Corpus Christi (local level)	2.75		
Sam Houston State University (local level)	1.70		
Tarleton State University (local level)	1.48		
Tarleton State University (state level)	1.70		

Source: Jafri et al. (2004)

The Thurgood Marshall Scholarship Fund (TMSF) published a comprehensive overview of the economic impacts of 42 public HBCUs that are members of the fund (Thurgood Marshall Scholarship Fund, 2001). The TMSF study reported only the direct spending associated with the HBCUs. However, the multiplier effects of direct spending (the re-spending and induced effects) and the total economic impact of individual institutions on their host communities were not reported. Based on the estimated direct spending, the study concluded: "Through buying and spending together, the students and the universities are a significant portion of the economic activity of the host communities. The impact is greatest felt in the more rural communities. However, the greatest spending is in the metropolitan communities."

Another group that conducted research to assess the economic impact of colleges and universities is Appleseed, Inc. Since 1993, this group has assisted a variety of for-profit firms, non-profit organizations, and academic institutions with strategic planning, program development, and economic research. To determine the direct and indirect impact of educational institutions, they utilize the IMPLAN modeling system. Appleseed's publications using IMPLAN data include a lengthy analysis of Tulane University's growing economic impact on the greater New Orleans area (June 2015) and a focused study of Harvard University's significant impact on economic activity in Boston (January 2009). In 2015, Appleseed published an analysis of Johns Hopkins University's impact on Baltimore and the state of Maryland. In 2012, Appleseed released a study of Brown University's economic impact on Providence and the state of Rhode Island. Both universities are major employers and purchasers of goods and services in their states. Additionally, they attract thousands of students while employing large shares of their states' full-time workforce.

The Appleseed (2015) study revealed that Johns Hopkins University's multiplied impact on the state of Maryland's economic output was $9.1 billion. This figure reflects the University's spending, as well as employees, students, affiliates, vendors, and contractors. This economic output is also responsible for generating nearly 40,000 full-time jobs in the state. The Brown study was an update from their 2005 publication. Appleseed (2012) emphasized Brown University's role as a major private employer in the state and how University spending contributed to Rhode Island's post-recession economy recovery. Based on the direct, indirect, and induced effects of the University's spending on payroll, purchasing, and Construction in fiscal year 2011, the University contributed to more than $725 million in Rhode Island economic output and 7,800 full-time jobs. When factoring in student, faculty, and visitor spending, the University's contribution to economic statewide production rises to $834 million, and full-time jobs increase to 8,909.

In recent years, EMSI, now part of Lightcast, has been called upon for its expertise in economic impact modeling, including in Texas. For example, a Lightcast study for Tarleton State University—using the fiscal year 2020–21 data and released in December 2022—demonstrated that Tarleton's impact translates into nearly $2 billion in statewide benefits. Similarly, Texas A&M University partnered with Lightcast on a series of economic impact reports: one based on FY2018–19 data published in 2020, another using FY2019–20 data from 2021, and the most recent study employing FY2021–22 data released in 2023, which also detailed the high return on investment from its Health Science Center. A study conducted for Lone Star College, published in mid 2024, found that the college adds nearly $3 billion annually to the regional economy. These specific studies exemplify how Lightcast's detailed analyses, similar to the capabilities of IMPLAN software, capture both the direct spending effects and the broader multiplier impacts that higher education institutions have on local and state economies.

Two relatively recent research reports on Historically Black Colleges and Universities (HBCUs) national impact include estimates of the economic impact of individual HBCUs, including Prairie View A&M University. In the first of these reports, Humphreys (2017) estimated the short-term economic impacts of 100 HBCUs, including PVAMU, on their regional economies for 2014. The impact estimates are based on IMPLAN regional input-output models of each HBCU's regional economy and data collected from the National Center for Education Statistics

Integrated Postsecondary Education Data System (IPEDS) and the Bureau of Labor Statistics Consumer Expenditure Survey, among other sources. The study estimates four economic impact indicators-total output, total value added, total labor income, and total employment. The key findings of this study are summarized below.

- The collective initial spending of all HBCUs in their host communities totaled $10.3 billion in 2014.
- All HBCUs' combined total economic impact was $14.8 billion (70 percent of this total is the initial impact, while the remaining 30 percent is the multiplier effect).
- The collective labor-income impact of all HBCUs was $7.3 billion.
- The combined employment impact of all HBCUs was 134,090 jobs.

Humphreys (2017) reports the following short-term economic impacts of PVAMU on the Greater Houston Region (Houston-Baytown Metropolitan Statistical Area) in 2014.

TABLE 2 External Estimates of the Economic Impact of PVAMU, from Humphreys (2017)

	INITIAL SPENDING (Million)	OUTPUT IMPACT (Million)	VALUE-ADDED IMPACT (Million)	LABOR INCOME IMPACT (Million)	EMPLOYMENT IMPACT
Wages, salaries, benefits	$82.2	$183.1	$142.7	$116.8	1,863
Other institutional spending	$82.0	$95.5	$55.9	$36.7	587
Student spending	$101.8	$124.1	$69.1	$37.3	728
TOTAL IMPACT	**$266.1**	**$402.8**	**$267.7**	**$190.8**	**3,178**

A second national research report that includes the economic impact of Prairie View A&M University is the 2024 UNCF HBCU Economic Impact Report, *Transforming Futures: The Economic Engines of HBCUs* (McClendon et al, 2024). This report provides a comprehensive analysis of historically Black colleges and universities' national economic contributions while offering detailed, institution-specific data through its interactive online tools. For instance, the report's companion study on Prairie View A&M University—titled *Transforming Futures: The Economic Engine of Prairie View A&M University*—uses data from 2021 to estimate that Prairie View A&M University generates a total economic impact of $612.6 million for its local and regional economies. This impact is achieved through the direct spending by the University on faculty, employees, academic programs, and student-related expenditures, which in turn produces a multiplier effect of $1.55 for every dollar spent. Additionally, the report estimates that Prairie View A&M University is responsible for creating 4,305 jobs (with 1,270 on-campus and 3,035 off-campus), meaning that each on-campus job spurs the creation of an additional 2.4 off-campus jobs, or equivalently, each $1 million spent results in 11 jobs. The report also highlights the long-term benefits for its graduates, noting that the 1,756 graduates from 2021 can expect total lifetime earnings of $5.1 billion—63% higher than if they had not earned their college credentials—with an individual graduate realizing an average additional income of approximately $1,126,016 over a full working life.

This present study improves upon the Humphreys (2017) and McClendon et al. (2024) studies in important ways: first, the present study estimates the short-term economic impact of PVAMU at three levels - the local, regional, and state level; second, the present study uses more recent available statistics (Fiscal Year 2023 data on the PVAMU budget, and more recent data on faculty, student, and visitor spending); third, the present study relies upon a more accurate local measure of faculty, staff, and student spending (relying upon surveys of PV faculty, staff and students) than Humphreys' study (which applies national average student spending estimates to PVAMU); and finally, the present study includes the impact of construction spending and visitor spending related to PVAMU, types of spending omitted in the Humphreys and UNCF studies.

3 METHODOLOGY AND DATA SOURCES

3.1. METHODOLOGY

3.1.1. Estimation of Short-Term Economic Impact

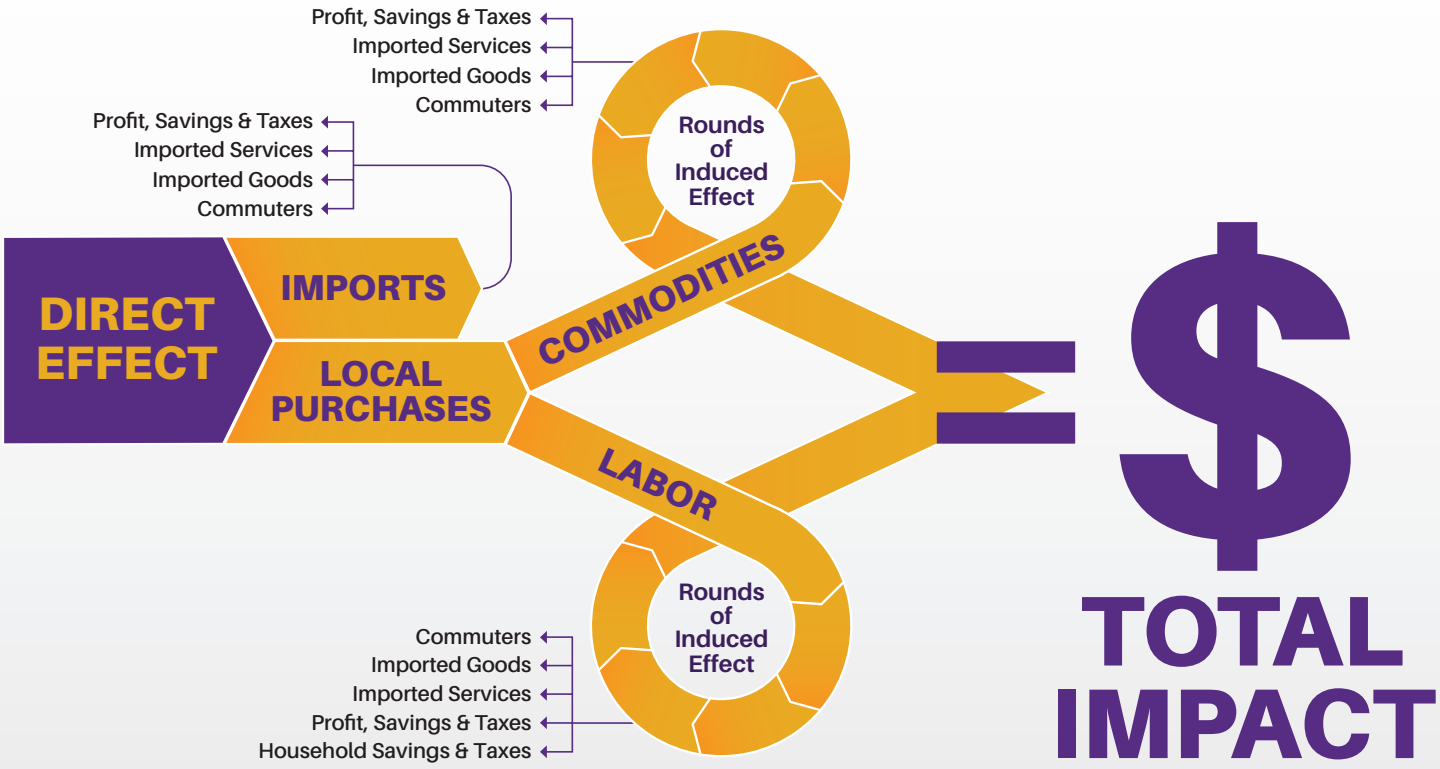
The Impact Analysis and Planning (IMPLAN) software is used to estimate the economic impact of Prairie View A&M University (PVAMU). The analysis is conducted for Waller County, the Greater Houston Area, and the entire state of Texas. IMPLAN employs Input-Output analysis, which generates multipliers to illustrate how an economic event in one sector influences other sectors, as depicted in Figure 1. Input-output analysis pioneered by Wassily Leontief and Richard Stone in the 1930s is widely used for economic modeling. While the Bureau of Economic Analysis produces national Input-Output accounts, it does not provide sub-national data. As a result, IMPLAN, developed and maintained by MIG Inc., has become the standard tool for economic impact analysis, enabling detailed studies even at the county level. As shown in Figure 1, an economic agent's consumption of goods and services—representing direct effects—generates revenue for other agents, primarily firms. These firms then use their revenue to purchase inputs, creating indirect effects or to compensate labor, leading to induced effects through employee spending. The total economic impact is the sum of direct, indirect, and induced effects, capturing the full chain of economic activity initiated by the original spending.

Thus, IMPLAN captures three types of economic effects: direct, indirect, and induced. This study's direct effects represent the initial changes in employment, labor income, value added, and output within industries that supply goods and services to PVAMU for its operations. Indirect effects reflect the ripple effects of these direct impacts, such as when businesses supply PVAMU or spend money by students and visitors on items like hotels, gas, and restaurants, which generate additional economic activity. These effects are measured in terms of employment (jobs created), labor income (including self-employed income and employee wages, salaries, and benefits), and output and value added (the total value of goods and services produced). Finally, induced effects capture the broader economic changes driven by household spending from income earned directly and indirectly impacted sectors. Together, these effects provide a comprehensive understanding of PVAMU's economic influence. This study assesses the economic impact of PVAMU through the following channels:

- Capital expenditures (e.g., Construction)
- Operational expenditures
- Employees' compensation
- On-campus and off-campus students' expenditures
- The potential increase in household income associated with PVAMU graduates

FIGURE 1:

Input-Output Model



Source: IMPLAN

3.1.2. Estimation of lifetime earnings for PVAMU 2023-2024 graduates

To assess the economic impact of PVAMU through this channel, we follow Sharma, Diaby, and Harfst (2011) and estimate the long-term contribution of the 2023-2024 PVAMU graduates. Therefore, we adopt the Synthetic Work-Life Earnings (SWE) framework, utilizing projections originally developed by Julian and Kominski (2011) and available through the US Census Bureau, to estimate the lifetime earnings of PVAMU graduates. These projections have been adjusted to account for inflation, evolving economic conditions, and socio-demographic dynamics, ensuring they reflect current realities. The SWE framework provides a robust basis for comparing individuals' lifetime earnings with different educational attainment levels. Specifically, the gap between the SWE of PVAMU graduates—holding bachelor's, master's, or doctoral degrees—and those with only a high school diploma represents the incremental lifetime earnings attributable to their PVAMU degree. This approach quantifies the economic value of higher education and underscores the long-term financial benefits that PVAMU graduates contribute to the economy through their enhanced earning potential.

3.2. DATA SOURCES AND DESCRIPTION

The economic impact of Prairie View A&M University (PVAMU) is analyzed across three geographic levels: Waller County, the Greater Houston Area, and the state of Texas. The data, sourced from the Texas A&M University System Analytics, PVAMU Fact Book, Alumni Office, Office of Institutional Research, Comptroller's Office, Human Resources Office, and direct surveys of faculty, staff, and students, provide a comprehensive view of PVAMU's contributions. Student spending patterns derived from surveys were used to estimate annual expenditures, offering a detailed understanding of the University's economic influence.

TABLE 3 PVAMU Economic Impact Channels (2023)

CHANNELS	WALLER COUNTY		GREATER HOUSTON AREA		TEXAS	
Employees' Wages and Salaries	$116,162,511	42.05%	$121,062,511	27.04%	$121,062,511	22.06%
Other Institutional Spending, Including Construction	$75,198,831	27.22%	$135,557,095	30.28%	$179,167,888	32.64%
- Constructions	$43,469,617	15.73%	$44,149,955	9.86%	$44,149,955	8.04%
Undergraduate Spending	$69,918,612	25.31%	$146,092,493	32.63%	$190,054,692	34.63%
Graduate & Professional Student Spending	$3,567,650	1.29%	$27,213,094	6.08%	$33,039,605	6.02%
Visitors Spending	$11,414,525	4.13%	$17,735,299	3.96%	$25,559,169	4.66%
TOTAL	**$276,262,130**	**100%**	**$447,660,492**	**100%**	**$548,883,865**	**100%**

TABLE 3 highlights the relative contributions of each economic impact channel. In Waller County, employee wages and salaries make up the largest share at 42.05%, emphasizing the role of salaries as major economic impact generator. Institutional spending, including Construction, follows at 27.22%, with Construction alone accounting for 15.73%, reflecting significant investments in infrastructure. Undergraduate student spending represents 25.31%, showcasing their substantial contribution to the University's economic impact. In contrast, graduate and professional student spending is relatively modest at 1.29%. Visitor spending contributes 4.13%. In the Greater Houston Area, the distribution shifts slightly, with institutional spending, including Construction, becoming the largest contributor at 30.28%, followed closely by undergraduate spending at 32.63%. Employee wages and salaries, while still significant, decrease to 27.04%, reflecting the broader economic base of the region. Graduate and professional student spending rises to 6.08%, indicating their growing potential to contribute to the university's economic impact in a larger metropolitan context. Visitor spending remains steady at 3.96%, maintaining its role as a supplementary economic driver.

At the state level, undergraduate spending is the most significant contributor at 34.63%, followed by institutional spending at 32.64%. Employee wages and salaries account for 22.06%, reflecting the dilution of direct employment impacts across a larger economy. Graduate and professional student spending increases to 6.02%, while visitor spending rises to 4.66%. These percentages reveal the key drivers of PVAMU's economic impact, with undergraduate spending and institutional investments being the most critical factors, particularly at the state level. At the same time, employee wages dominate locally in Waller County.

TABLE 4 PVAMU Degree Awarded (2023-2024)

	2023-2024		UNDERGRADUATE		MASTERS		DOCTORATE	
COLLEGES	#	%	#	%	#	%	#	%
Ag and food & Nat Res	92	5.36%	85	6.28%	7	2.15%	0	0.00%
Architecture	86	5.01%	51	3.77%	35	10.74%	0	0.00%
Arts & Sciences	406	23.67%	349	25.79%	56	17.18%	1	2.78%
Business	271	15.80%	206	15.23%	58	17.79%	7	19.44%
Education	107	6.24%	13	0.96%	83	25.46%	11	30.56%
Engineering	222	12.94%	165	12.20%	50	15.34%	7	19.44%
Juvenile Justice	121	7.06%	90	6.65%	24	7.36%	7	19.44%
Juvenile Justice & Psych	2	0.12%	2	0.15%	0	0.00%	0	0.00%
Nursing	98	5.71%	90	6.65%	5	1.53%	3	8.33%
Public and Allied Health	260	15.16%	252	18.63%	8	2.45%	0	0.00%
Undergraduate studies	50	2.92%	50	3.70%	0	0.00%	0	0.00%
TOTAL	1715	100%	1353	100%	326	100%	36	100%

TABLE 4 provides a detailed breakdown of degrees awarded across various colleges for the academic year 2023-2024. It categorizes the degrees into three levels: Undergraduate, Masters, and Doctorate, and includes both the number of degrees awarded and their respective percentages within each category. The colleges listed range from Agriculture and Food & Natural Resources to Public and Allied Health, with 1,715 degrees awarded across all colleges. The data reveals that the College of Arts & Sciences awarded the highest number of degrees (406), constituting 23.67% of the total degrees. This college also led in undergraduate degrees (349, 25.79%) and contributed significantly to master's degrees (56, 17.18%) and doctorates (1, 2.78%). Other notable contributors include the College of Business, which awarded 271 degrees (15.80% of the total), and the College of Engineering, with 222 degrees (12.94%). The distribution of degrees across different levels of study highlights varying trends among colleges. For instance, the College of Education awarded a relatively small number of undergraduate degrees (13, 0.96%) but had a significant proportion of master's degrees (83, 25.46%) and doctorates (11, 30.56%). Similarly, the College of Juvenile Justice awarded a substantial number of undergraduate degrees (90, 6.65%) and a notable proportion of doctorates (7, 19.44%).

4 RESULTS

4.1. SHORT-TERM IMPACT[3]

4.1.1. Economic Impact of PVAMU in Waller County

The economic impact of Prairie View A&M University (PVAMU) on Waller County is substantial, encompassing direct, indirect, and induced effects. The direct benefit, which includes initial spending by the University, its employees, students, and visitors, was estimated at $276.26 million for FY2023. This direct impact is broken down into several components: $116.16 million from faculty and staff wages and salaries, $75.20 million from other institutional spending (including Construction), $69.92 million from undergraduate student spending, $3.57 million from graduate and professional student spending, and $11.42 million from visitor spending. These direct expenditures form the foundation of PVAMU's economic contribution, supporting local businesses and services while generating employment opportunities.

TABLE 5 Economic Impact of PVAMU in Waller County (FY2023)

CHANNELS	INITIAL SPENDING (Million)	TOTAL OUTPUT IMPACT (Million)	VALUE-ADDED IMPACT (Million)	LABOR INCOME IMPACT (Million)	EMPLOYMENT IMPACT (#)	M. E. OF EVERY DOLLAR
Employees' Wages and Salaries	$116.16	$120.23	$119.34	$0.94	1,285	$1.03
Other Institutional Spending, Including Construction	$75.20	$143.18	$54.29	$30.45	688	$1.90
Undergraduate Spending	$69.92	$97.33	$14.91	$5.79	182	$1.39
Graduate & Professional Student Spending	$3.57	$5.03	$0.76	$0.31	9	$1.41
Visitors Spending	$11.41	$16.11	$2.44	$0.99	32	$1.41
TOTAL	**$276.26**	**$381.87**	**$191.75**	**$38.48**	**2,197**	**$1.38**

M.E. denotes the Multiplier Effect and is computed as the ratio of Total Output over Initial spending.

However, the total economic benefit to Waller County extends beyond direct spending to include secondary effects, such as indirect and induced impacts. Indirect impacts arise from the University's spending on goods and services, which stimulates other businesses in the supply chain. In contrast, induced impacts result from the spending of wages by employees and others who benefit from university-related activities. These secondary benefits add $105.61 million to the total economic impact, bringing the overall benefit to $381.88 million. This multiplier effect demonstrates how initial spending circulates through the local economy, creating additional value and income. For example, every dollar spent by the University and its affiliates generates an average total output impact of $1.38, as shown by the multiplier effect (M.E.) in Table 5, which reflects an ROI of about 38% in Waller County for every dollar spent by PVAMU and its affiliates (e.g., students, visitors, and employees).

Employment is another critical aspect of PVAMU's economic impact. The University directly and indirectly supports 2,197 full-time jobs in Waller County. Of these, 1,285 jobs are directly linked to PVAMU and its employees' spending, while 912 jobs are generated indirectly through university-related activities. This employment benefit underscores the University's role as a major employer and economic driver in the region.

[3] The economic impact estimates for previous years are reported in the Appendix.

4.1.2. Economic Impact of PVAMU in the Greater Houston Area

The economic impact of Prairie View A&M University (PVAMU) on the Greater Houston Area is significant, reflecting its role as a major economic driver in the region. The direct benefit of PVAMU to the Greater Houston Area economy was estimated at $447.66 million for FY2023. This direct impact is composed of several key components: $121.06 million from faculty and staff wages and salaries, $135.56 million from other institutional spending (including Construction), $146.09 million from undergraduate student spending, $27.21 million from graduate and professional student spending, and $17.74 million from visitor spending. These direct expenditures highlight the University's substantial contribution to the local economy, supporting businesses, services, and employment across the region. The spending by students and visitors, in particular, underscores the University's ability to attract and retain individuals who contribute to the economic vitality of the Greater Houston Area.

TABLE 6 Economic Impact of PVAMU in the Greater Houston Area (FY2023)

CHANNELS	INITIAL SPENDING (Million)	TOTAL OUTPUT IMPACT (Million)	VALUE-ADDED IMPACT (Million)	LABOR INCOME IMPACT (Million)	EMPLOYMENT IMPACT (#)	M. E. OF EVERY DOLLAR
Employees' Wages and Salaries	$121.06	$281.11	$219.61	$25.91	2,286	$2.32
Other Institutional Spending, Including Construction	$135.56	$355.62	$174.06	$131.05	1,736	$2.62
Undergraduate Spending	$146.09	$228.74	$114.10	$65.21	1,079	$1.57
Graduate & Professional Student Spending	$27.21	$42.60	$21.25	$12.13	201	$1.57
Visitors Spending	$17.74	$27.72	$13.85	$7.89	130	$1.56
TOTAL	**$447.66**	**$935.80**	**$542.85**	**$242.19**	**5,433**	**$2.09**

M.E. denotes the Multiplier Effect and is computed as the ratio of Total Output over Initial spending.

The total economic benefit of PVAMU to the Greater Houston Area extends far beyond direct spending. When accounting for secondary effects—indirect and induced impacts—the total economic benefit rises to $935.80 million. Indirect impacts result from the University's spending on goods and services, which stimulates other businesses in the supply chain. Induced impacts arise from the spending of wages by employees and others who benefit from university-related activities. These secondary benefits add $488.14 million to the total economic impact, demonstrating the multiplier effect of PVAMU's regional presence. For example, every dollar spent by the University and its affiliates generates an average total output impact of $2.09, as shown by the multiplier effect (M.E.) in Table 6. This multiplier effect (ROI=109%) is strong in the Greater Houston Area, reflecting the region's interconnected and dynamic economy.

Employment is another critical dimension of PVAMU's economic impact. The University directly and indirectly supports 5,433 full-time jobs in the Greater Houston Area. Of these, 2,286 jobs are directly linked to PVAMU and its employees' spending, while 3,147 jobs are generated indirectly through university-related activities. This employment benefit highlights the University's role as a major employer and economic catalyst in the region.

4.1.3. Economic Impact of PVAMU in Texas

The economic impact of Prairie View A&M University (PVAMU) on the state of Texas is profound, reflecting its role as a significant contributor to the state's economy. The direct benefit of PVAMU to the Texas economy was estimated at $548.88 million for FY2023. This direct impact is composed of several key components: $121.06 million from faculty and staff wages and salaries, $179.17 million from other institutional spending (including Construction), $190.06 million from undergraduate student spending, $33.04 million from graduate and professional student spending, and $25.56 million from visitor spending. These direct expenditures highlight the University's substantial contribution to the state's economy, supporting businesses, services, and employment across Texas.

TABLE 7 Economic Impact of PVAMU in Texas (FY2023)

CHANNELS	INITIAL SPENDING (Million)	TOTAL OUTPUT IMPACT (Million)	VALUE-ADDED IMPACT (Million)	LABOR INCOME IMPACT (Million)	EMPLOYMENT IMPACT (#)	M. E. OF EVERY DOLLAR
Employees' Wages and Salaries	$121.06	$302.66	$227.60	$59.12	2,442	$2.50
Other Institutional Spending, Including Construction	$179.17	$492.71	$243.23	$179.11	2,609	$2.75
Undergraduate Spending	$190.05	$326.89	$162.77	$92.76	1,599	$1.72
Graduate & Professional Student Spending	$33.04	$56.76	$27.32	$17.32	277	$1.72
Visitors Spending	$25.56	$43.82	$21.39	$13.33	224	$1.71
TOTAL	**$548.88**	**$1,222.85**	**$682.30**	**$361.63**	**7,151**	**$2.23**

M.E. denotes the Multiplier Effect and is computed as the ratio of Total Output over Initial spending.

The total economic benefit of PVAMU to Texas extends far beyond direct spending. When accounting for secondary effects—indirect and induced impacts—the total economic benefit rises to $1,222.85 million. Indirect impacts result from the University's spending on goods and services, which stimulates other businesses in the supply chain, while induced impacts arise from the spending of wages by employees and others who benefit from university-related activities. These secondary benefits add $673.96 million to the total economic impact, demonstrating the multiplier effect of PVAMU's presence in the state. For example, every dollar spent by the University and its affiliates generates an average total output impact of $2.23, as shown by the multiplier effect (M.E.) in Table 7. This strong multiplier effect represents an ROI of 123% for every dollar spent by PVAMU and its affiliates (e.g., students, employees, and visitors).

The University directly and indirectly supports 7,151 full-time jobs in Texas. Of these, 2,442 jobs are directly linked to PVAMU and its employees' spending, while 4,709 jobs are generated indirectly through university-related activities. This employment benefit highlights the University's role as a major employer and economic catalyst in the state.

4.2. LONG-TERM IMPACT

College education is widely recognized as a significant enhancer of human capital, boosting graduates' lifetime earnings potential—a benefit often referred to as the "education premium." This linkage between higher education and increased earnings has become more pronounced over time, with Donovan and Bradley (2023) noting a distinct rise in wages for individuals with at least a college degree from 1979 to 2018,

contrasted with declining real wages for those with a high school diploma or less. As the value of a college degree in securing economic success grows, understanding the lifetime economic benefit of educational attainment becomes crucial. This concept, termed "synthetic work-life earnings," represents the estimated total income a median full-time worker is expected to earn throughout her career, starting with different educational levels. Such estimates, as calculated by Julian and Kominski in 2011 for the typical American worker[4], underline the substantial long-term financial advantages conferred by higher education.

TABLE 8 Lifetime Earnings for PVAMU 2023-2024 graduates (in millions) REGIONS	BACHELORS	MASTERS	DOCTORATE	TOTAL
Waller County	$245.05	$83.45	$12.96	$341.46
H-W-SL MSA	$1,825.21	$750.52	$107.83	$2,683.56
Texas	$3,242.01	$1,151.94	$188.50	$4,582.45
Other States	$442.03	$83.93	$13.68	$539.64
TOTAL = Texas and others	**$3,684.04**	**$1,235.87**	**$202.17**	**$5,122.08**

TABLE 8 presents the estimated lifetime earnings of Prairie View A&M University (PVAMU) graduates for the academic year 2023-2024, categorized by degree level (Bachelor, Master, Doctorate) and geographic region (Waller County, H-W-SL MSA, Texas, and Other States). Waller County, where PVAMU is located, shows the smallest contribution to lifetime earnings, totaling $341.46 million. Bachelor's degree holders account for most of this amount ($245.05 million), followed by master's degree holders ($83.45 million) and doctorate holders ($12.96 million). This suggests that while Waller County benefits from the University's presence, its economic impact is relatively localized and modest compared to broader regions.

The Greater Houston Area-The Woodlands-Sugar Land Metropolitan Statistical Area (H-W-SL MSA) demonstrates a significantly larger economic contribution, with total lifetime earnings of $2,683.56 million. Bachelor's degree holders dominate this figure with $1,825.21 million, while master's and doctorate holders contribute $750.52 million and $107.83 million, respectively. This highlights the region's strong economic ties to PVAMU graduates, particularly at the undergraduate and master's levels. When expanding to Texas, the economic impact grows substantially, with total lifetime earnings reaching $4,582.45 million. Bachelor's degree holders again lead with $3,242.01 million, followed by master's ($1,151.94 million) and doctorate holders ($188.50 million). Texas, as a whole, benefits significantly from the University's graduates, underscoring the statewide importance of PVAMU's educational contributions.

Beyond Texas, graduates in other states contribute $539.64 million in lifetime earnings, with bachelor's degree holders accounting for $442.03 million, master's holders for $83.93 million, and doctorate holders for $13.68 million. While this is smaller than the contributions within Texas, it still reflects the national reach and impact of PVAMU graduates. Combining Texas and other states, the total lifetime earnings of PVAMU graduates amount to $5,122.08 million[5], with bachelor's degree holders contributing the largest share ($3,684.04 million), followed by master's ($1,235.87 million) and doctorate holders ($202.17 million).

[4] As described in the methodology section, we have adjusted the SWE to account for inflation, evolving economic conditions, and socio-demographic dynamics.

5 MEASURING NON-QUANTIFIABLE IMPACT

Through a variety of activities (teaching, research, and service) conducted by departments and special centers, Prairie View A&M University serves the greater community. This section describes the scope and activities of some of these Centers[6]. While the list provided below is not exhaustive, many individuals visit these centers and spend money at restaurants, hotels, and gas stations, thereby contributing to the University's quantified economic impact.

5.1. Chancellor's Research Initiative (CRI) - Radiation Institute for Science and Engineering

pvamu.edu/RAISE

The Radiation Institute for Science and Engineering (RaISE) is a state-of-the-art laboratory established with an investment of $ 8 million by the Texas A&M University Chancellor's Research Initiative (CRI) to enhance the capabilities of radiation biology research at Prairie View A&M University. Advances in radiation biology have several overarching benefits including the understanding of the space radiation environment for long duration human exploration missions, applications in radiation oncology, and cancer treatment with protons and heavy ions. Research endeavors through RaISE will increase understanding of radiation particle damage at the cell and DNA levels by characterizing the radiation distribution through advanced micro-dosimetry detector systems and analyzing the cell structure for damage and repair with advanced high resolution confocal microscopes. The Center is also investigating radiation particle damage at the cellular and DNA levels with their newly developed advanced micro-dosimetry detector systems and continuing to seek opportunities for future space launch of radiation payloads (with two successful radiation payload launches in 2014 and 2018).

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[5] This estimate is comparable to the 2024 UNCF HBCU Economic Impact Report's estimate - *Transforming Futures: The Economic Engines of HBCUs* (McClendon et al., 2024).

[6] The descriptions are largely taken from homepage of the respective host departments of these Centers.

5.2. Prairie View Plasma Laboratory (PVPL)

pvamu.edu/PVSO

Prairie View Plasma Lab (PVPL) at Prairie View A&M University is considered to be the 2nd Such Facility in the US after DOE's Princeton Plasma Physics Lab (PPPL). PVPL was established and expanded over 12 years (2004-2016) through the continues support of more than $10M from the Depart of Energy (DOE).

Some of the Salient Features:

- A DOE/Fusion Energy Sciences Research Program at PVAMU Study of Rotamak Plasmas
- Unique Establishment - Capacitor bank was built with most units from Australia and Switzerland
- Unique Power - Most power requirements are distributed among two units of 100 A each
- Unique Approach - Microwave heating to sustain additional plasma
- Unique Capacity - Largest Spherical Tokamak

5.3. Cooperative Agricultural Research Center

pvamu.edu/CAFNR/homepage/research

The Cooperative Agricultural Research Center (CARC) is the unit within the College of Agriculture and Human Sciences that plays an important role in *agriculture, natural resources* and *life sciences*. The CARC component helps Prairie View A&M University fulfill its land-grant mission of teaching, research and service. Agricultural research in the Cooperative Agricultural Research Center is divided into the following areas: Animal Systems, Plant Systems, Food Systems, Natural Resources and Environmental Systems and Social Systems and Allied Research.

5.4. Cooperative Extension Program

pvamu.edu/CAFNR/extension

Through a well-organized network of professional educators and more than 4,000 trained volunteers, the Prairie View A&M University Cooperative Extension Program delivers practical research-based knowledge to small farm producers, families, aspiring entrepreneurs and youth in 35 Texas counties. Many participants have limited personal or family assets, limited opportunities or they come from communities that have limited resources.

Cooperative Extension Program agents and specialists respond not only with answers, but meet people where they are and move them along to the next level. Programs include the areas of 4-H & Youth Development (4H), Agriculture and Natural Resources (AGNR), Community and Economic Development (CED) and Family and Community Health (FCH).

5.5. International Goat Research Center

pvamu.edu/CAFNR/homepage/research/IGRC

The International Goat Research Center was built in 1981 and currently home to over 1,000 dairy and meat goats. The Center is one of the largest and longest established goat research programs in the country. The Goat Research Center specializes in research in the areas of genetics, reproductive physiology, nutrition and veterinary health. Research projects currently ongoing at the Center address value-added products from goat milk to goat meat.

In addition to supporting the research and academic programs at Prairie View A&M University, the International Goat Research Center is very active in the Cooperative Extension Program's public outreach programs, hosting open houses, field days and 4-H events throughout the year.

For many years the Cooperative Agricultural Research Center has hosted Agricultural Field Day (formerly Goat Field Day), an event that addresses relevant goat industry information and needs of goat producers ranging from basic management techniques to marketing various products.

The International Goat Research Center has been involved in a project funded by the United States Agency for International Development to improve animal health, farm management and marketing of sheep and goats in countries including Ethiopia and Nepal.

5.6. Texas Institute for the Preservation of History and Culture

pvamu.edu/TIPHC

African descendants have had a presence in Texas for almost 500 years, maybe longer. The territory was the northernmost area of New Spain (Mexico) in 1528 when Esteban (Estevanico), a Moroccan Moor servant, waded ashore with a group of Spanish conquistadors near what is now Galveston Island and established himself as the first known African in what would become Texas. Since, African Americans have contributed significantly in all facets of the building of the Lone Star State -- its infrastructure, image, and culture. For that, the Texas Institute for the Preservation of History and Culture (TIPHC) is charting every aspect of the black experience in Texas as an online encyclopedia.

The Institute employs a variety of methods and media including lectures, cultural exhibits, video production, publications (The Journal of History & Culture) and the Internet to disseminate information to the academic community and the general public by engaging resources in a renewed commitment to education cultural literacy. The Institute retains an active mailing list of secondary schools in the 254 counties in the state in Texas.

In 2020, TIPHC continued to serve the community in the midst of the Covid-19 pandemic by presenting an online exhibit, "The Apocalyptic Regeneration." It examines through images how freedom finally came to Texas, what was the reaction that day in Galveston, where the news was first announced by Union Gen. Gordon Granger, how the word was spread throughout the state to 250,000 enslaved Black Texans, and what the edict meant for African Americans who set out, for the first time, unshackled – emotionally and physically – and free to decide their own fates. They built towns ("Freedom Colonies"), schools, churches, businesses, and families they could raise and nurture without the threat of forced separation.

5.7. Prairie View Solar Observatory

pvamu.edu/PVSO

With Prairie View Solar Observatory (PVSO) built in 1997, PVAMU has been listed as 13th for solar physics research among universities worldwide and one of the four in the USA. But, the new, $ 8 million observatory complex expansion, originally initiated through NASA support (2010), funded by the US Department of Education and Title III (2014) was designed and built by PVAMU (2018) with additional leverage through the CRI (Chancellor's Research Initiative) / RaISE (2020) offers many more options for researchers, students, guest scientists, and visitors. We anticipate the commissioning of this new facility – Prairie View Observatory Complex (PVOc) sometime in 2020.

The Prairie View Observatory Complex has several ground-level telescopes that people can access, and additional mobile telescopes which can be rolled out of the observatory building to the pad area built for the public outreach purposes to allow visitors to see, touch, and work with the equipment. Telescopes range from 5" all the way to 20" with needed eye pieces that will allow any amateur observer to experience the up close views of craters on our Moon, rings of Saturn, moons of the Jupiter, and nearby stars and galaxies.

5.8. Center for International Business Education, College of Business

pvamu.edu/business/alumni-friends/center-for-international-business-education

The Center for International Business Education (CIBE) was established in 2004 with a grant from the US Department of Education. Activities and programs available through the CIBE are designed to internationalize the business curriculum at Prairie View A&M University and benefit the community by providing outreach opportunities and serving as a reliable resource.

Since its inception, the CIBE has:

- Created and/or supported the addition of several international business courses at both the undergraduate and graduate level including an undergraduate minor in International Business and a MBA Track in International Business,
- Implemented study abroad and immersion field trips for students, faculty, K-12 educators and business owners in the community,
- Provided training workshops for high school teachers,
- Published a quarterly e-newsletter on a variety of topics including import/export, international trade and guides to doing business in other countries.

5.9. The Small Business Development Center (SBDC), College of Business

sbdc.uh.edu/SBDC/Prairie_View_AM_University_SBDC.asp

The Prairie View A&M University Small Business Development Center (SBDC) provides free business consulting and affordable training seminars for small and medium-sized business owners and managers. The SBDC is a business consulting and training center of the SBDC Texas Gulf Coast Network. The SBDC offers affordable training seminars on business topics for start-up and pre-venture entrepreneurs. PVAMU SBDC director and staff assist business owners develop strategies, attract customers, increase sales and improve productivity and profitability, mostly at no charge. The center helps businesses of all types, sizes and budgets find knowledge, resources and connections for effective expansion.

The PVAMU SBDC also offers special assistance for business owners wanting to sell to the government, do business internationally, or commercialize their technology.

In 2020 during the pandemic, SBDC Director Lloyd A. Wright and Project Officer, Jasmin Espy, continue to serve local small businesses by offering advice and services electronically, including advice regarding business continuity plans, and how to access SBA's Covid-19 Disaster Relief Lending program.

5.10. The Center of Excellence in Research and Education for Big Military Data Intelligence

pvamu.edu/engineering/CREDIT

CREDIT funded by the US DOD, consists of a multidisciplinary team of faculty and research scientists from the Roy G. Perry College of Engineering. The center's mission is to accelerate research and education in predictive analytics for science and engineering to transform our ability to effectively address and solve many complex problems posed by big data. The CREDIT Center will engage students in cutting-edge big data research and provide training for them to become next generation data scientists and engineers that are critical to the nation.

CREDIT hosts an annual Mission Critical Big Data Analytics (MCBDA) workshop, most recently in May 2020.

department to recruit well qualified faculty and provide opportunities for pursuing research in the center. It will also further its research and development focus and to achieve self-sustenance.

5.11. The Center for Energy and Environmental Sustainability (CEES)

pvamu.edu/CEES

CEES supports rigorous and expanding programs of research and teaching in the areas of renewable energy and environmental sustainability. In 2010, the National Science Foundation (NSF) awarded PVAMU a five-year grant to establish the CEES under the Center for Research Excellence in Science and Technology (CREST) program.

The Center consists of a diverse team of faculty and research scientists from two colleges (Roy G. Perry College of Engineering and the Brailsford College of Arts & Sciences) and five departments (Chemical, Civil & Environmental, Mechanical and Electrical Engineering, and Chemistry and Physics). The goal of the center is to promulgate research and education focused on energy engineering. An added goal of the education effort is to significantly increase the number of students from underrepresented groups who earn their B.S., M.S. and Ph.D. degrees in science, technology, engineering and mathematics (STEM) fields.

5.12. The Center of Excellence for Communication Systems Technology Research

pvamu.edu/CECSTR

CECSTR conducts comprehensive research in the selected aspects of communication systems, Wavelets and Wavelet Transforms, Compressed Sensing/Compressive Sampling Systems, DSP Solutions, Signal/Image/Video Processing, Mixed Signal Systems, Communication Control Systems and High Speed (Broadband) Communication Systems. Among other emerging areas of research, it also seeks solutions to the problems that plague both military and commercial satellite and radar-based communication systems. The CECSTR is the only academic center of its kind in Texas, filling a gap in educating the state's future leaders in emerging high-technology areas. It supports specially undergraduate and graduate students of electrical and engineering technology Departments. CECSTR is funded by various industries and government agencies.

CECSTR is a Texas A&M University System Board of Regents approved center.

- CECSTR occupies over 10,000 SFT. of state-of-the-art R&D facilities
- Attracts more qualified students to the College of Engineering by providing scholarship/financial support and educational training.
- Enhances the electrical engineering curriculum in the study of telecommunications, signal processing and their real world applications.
- Provides avenues for collaboration with other research laboratories within the University, the Texas A&M university system and industry.
- Exposes students to real industrial experience by serving as interns with industry during the summer under the supervision of the principal investigators and industry personnel.
- Supports Undergraduate, Master's and Ph.D. programs in electrical engineering and the vision of the College of Engineering and PVAMU.

5.13. The Future Aerospace, Science and Technology Center

pvamu.edu/me/research/FAST-center-and-CEES-center

FAST Center on Lightweight Structural Materials and Processing conducts research in line with the needs of the Air Force, industry and the government. Researchers thus use the center to process and characterize composites for both military and civilian uses. The FAST center strives to place Prairie View as a national leader in the development of lightweight, high-temperature polymer matrix composites. The FAST Center is funded by the Air Force Office of Scientific Research.

Objectives:

- Conduct research in the development of new methods in nanomaterial processing, fabrication & characterization with emphasis on developing understanding and controlling of processing factors that would lead to multifunctional nanomaterial's tailored for improved (1) structural/mechanical properties, (2) electrical and thermal properties, (3) EMI and radiation shielding, (4) barrier properties, and (5) thin films for sensor and membrane applications
- Foster close research and subcontract relations with aerospace, material processing, oil and gas companies as well as private and government research labs to advance the properties and processing technology of polymeric composites.
- Provide opportunities for training graduate and undergraduate students in materials and processing technology and prepare them to assume leadership role in industry.

5.14. The Thermal Science Research Center

pvamu.edu/TSRC

TSRC allows researchers to conduct both basic and applied research, development and design in the broad engineering area of thermal science. Much of the work in the TSRC includes both experimentation and engineering modeling and simulation. Project collaboration links center researchers with their counterparts in such places as the European Community, Japan and the former Soviet Union. The TSRC is funded by the US Department of Energy, NASA, the US Nuclear Regulatory Commission, Sandia National Laboratories and the Center for Space Power.

The mission of the TSRC is to conduct both basic and applied research, development and design in the broad engineering area of Thermal Science. This includes emphasis in: (1) mutual verification, (2) advancements in product, component or process development, (3) co relational development, and (4) data reduction. The Institute for High Heat Flux Removal in the TSRC is developing a new facility to investigate mechanism and quantitative factors controlling high heat flux removal in fusion reactor components. Aspects of the results will be applicable also to electronic component cooling and other high heat flux applications including long-range air transport and advanced materials processing. Current research includes areas such as conjugate heat transfer and nucleate boiling, sub-cooled flow boiling, local heat transfer and flow in fusion high heat component development which involves collaborating with researchers from the United States, the European Community, Japan, Canada and the former Soviet Union.

Become a broad-based university, engineering research center by:

- Enhancing and developing linkages between the TSRC and university colleges (both undergraduate and graduate programs), industry, and other universities;
- Enhancing the University's reputation locally, regionally, nationally, and internationally; and
- Assisting the University in expanding its graduate program.

Continue to develop the already national and international cooperation with similar research and design programs;

Expand the previous and present funding base; and when possible, establish a basis for increasing industrial activities in the State of Texas.

5.15. The Center for Computational Systems Biology (CCSB@PVAMU)

CCSB.pvamu.edu

Established in 2017, CCSB@PVAMU is building strong capabilities in the research areas of computational biology and bioengineering, by utilizing the initial seed funding from the Texas A&M Chancellor's Research Initiative (CRI). The CCSB contains faculties from Electrical and Computer Engineering, Computer Science, Mathematics, Agriculture and Biology. As part of the CCSB@PVAMU, a Next Generation Sequencing (NGS) facility is being established in the Roy G. Perry College of Engineering. This facility will provide the infrastructure support for biomedical informatics research, student training, and potential commercialization using high-throughput technology. In addition, the CCSB@PVAMU will pave the way to establish a *Computational Biology and Bioengineering program at PVAMU* as well as help forge collaboration with the team at Texas A&M University led by Professor Edward Dougherty. The alliance will take advantage of the complementary capabilities of both teams, foster close collaborations, and boost research and education in both institutions.

5.16. The Center for Radiation Engineering and Science for Space Exploration

pvamu.edu/CRESSE

Prairie View A&M University researchers are on a NASA quest to find new ways to keep future astronauts and their flight instruments safe from the harmful radiation of deep space while on journeys to the moon and the planets that can last for up to three years. The Center for Radiation Engineering and Science for Space Exploration (CRESSE) is led by some of the nation's top scientists in fields associated with radiation research, instrumentation, environmental modeling, materials research and electronic components.

The team consists of six key personnel, who have brought more than $13.5 million in research and education funding to PVAMU in the past five years. They will use a scientifically accurate "recipe" of earthly materials to simulate Martian and lunar soil in order to build above ground and underground "habitats." These structures will then be bombarded with radiation particles that mimic surface and subterranean exposures found on Mars and the moon. Potentially deadly radiation is one of the limiting factors in human space exploration

CRESSE focuses primarily on supporting the International Space Station and future Mars missions. Its research is concentrated on science and technology related to radiation protection and the effects of space radiation on electronics and biosystems. CARR's goal is to significantly contribute to NASA's vast technology base, providing enabling technologies—such as new materials, electronics, shielding and radio-protectorates for humans—that will make major NASA missions even more successful, safer and less costly. CARR is funded by the National Aeronautics and Space Administration (NASA).

5.17. Community Urban Rural Enhancement Service (CURES) Center

pvamu.edu/SOA/CURES

The Community Urban Rural Enhancement Service Center (CURES) is a public interest design agency that strives to provide positive enhancement for communities in need. Through the CURES Center, faculty and students pursue active and ongoing partnerships with residential, commercial, neighborhood citizens, property owners, and local businesses that may benefit from the application of good design. By engaging in providing design solutions to community issues, faculty can provide a service to the greater good and students can better understand how their talents and skills can be applied in the real world.

The CURES goals are as following

- Assist and support communities consisting of Texas residents that are interested in developing the communities where they reside while providing the necessary assistance to produce quality results.
- Provide consultation services to community members regarding the use of Architecture services to improve the communities.
- Facilitate the exchange of ideas, information and technical enhancements among community members.
- Develop partnerships between the School of Architecture, other academic programs on the PVAMU campus, and the four million people that reside within the targeted service area.

It is the mission of the CURES center to be an agent for positive enhancement in communities. CURES and its community partners pursue sustainable solutions for problems identified by the communities through a democratic process, within the context of comprehensive community planning and built environment.

A united program consists of professional advisors which respects citizens of Texas Values hard work and dedication and provides assistance for all Texas residents.

5.18. Texas Gulf Coast Environmental Data Center

pvamu.edu/engineering/research/TEXGED

The Texas Gulf Coast Environmental Data (TEXGED) Center is a key player in supplying researchers and decision-makers with the information they need to plan and assess environmental problems along the US Gulf Coast's southern region. TEXGED Center was established in 1995 as the result of funded grant from NASA with a starter of about half million dollars through the small Satellites Initiatives SSTI Lewis of TRW and is called LEWIS SATELLITE HYPERSPECTRAL. Since then the center has participated and collaborated with JPL- NASA and used the AVIRIS sensor. Additionally the center also, used and received daily data from the AVHRR sensor as a collaborative site with NASA and NOAA.

TEXGED Center developed capabilities in conducting research in the environmental science areas such as bioremediation technologies using biological agents such as earthworms and soil microorganisms, monitoring global climatic changes, Biodiversity studies, ecological conservation, ecological changes over time (i.e. Space and time concept) and ecological / bio-modeling.

TEXGED Center has collaborated with international universities such as AIN-Shams University in Egypt to establish graduate program in environmental Science to benefit both universities (i.e. PVAMU and Ain Shams University) and to exchange visitors to exchange experience in the issues related to environmental problems. As the results of this cooperation, visitors from both universities were accomplished and seminars were conducted. The Center has trained and supported post-doctoral research scientist, undergraduate and graduate students to participate in research projects related to environmental issues. Address: P.O. Box 235 Prairie View, Texas 77446

5.19. Computational Fluid Dynamics (CFD) Institute

pvamu.edu/me/research/computational-fluid-dynamics

The Computational Fluid Dynamics (CFD) Institute was established on February 16, 1996 at the Roy G. Perry College of Engineering at Prairie View A&M University (PVAMU) in partnership with Rocketdyne Division of Pratt & Whitney. The purpose of the Institute was to conduct applied research and development in a key engineering discipline and to provide a mechanism for the development of an advanced degree program with concentration on CFD. One of the major objectives of the Institute is to involve students in research and expose them to current problems in this important engineering area.

The Institute is currently involved in the large scale computation-facilitated design optimization for propulsion components. Design optimization problems based on empirical formulations and experiments in the past are now being addressed with the aid of large scale CFD based on first principles. The large scale computation is costly and we can't afford to generate as many data points as we otherwise would desire to support the optimization process. This is especially true when the number of design variables increases. The challenges include physical modeling uncertainty, geometric complexities, non-uniform and non-orthogonal meshing, disparate length scales and characteristics of the flow variables (such as velocity and pressure), and acceptable run time for engineering analysis and design. To be able to carry out an effective large scale computation-based design optimization, it is essential that the uncertainty and appropriate confidence limits of the computed solutions be quantified over the chosen design space. To help realize that large scale computing can truly facilitate design optimization and decision making process, it is important to ensure that the computational results can be reused in different steps of the process. Such goals call for the Construction of a global representation of the design space characteristics, and offer various techniques and concepts to help us gain better knowledge to do optimization, sensitivity evaluation, trade-off comparison, and final decision.

5.20. Minority Achievement, Creativity, and High Ability Center (MACH-III)

pvamu.edu/MACH-iiicenter

The MACH-III Center serves as a galvanizing space for the brightest minds to come together on the Prairie View Agricultural and Mechanical University campus to advance the status of minority populations across P-20 education and workplace contexts. We expand and redefine the term "minority" in an effort to set the stage for engaged scholarship that speaks to the assets and potential inherent among populations of color and other marginalized groups.

While a number of researchers and educational entities advance an agenda focused on minority and underserved populations; the majority of these efforts are taking place in spaces that are detached from the authentic day-to-day experiences of the actual population they purport to study. Unique to the MACH-III Center is its positionality within a Minority Serving Institution (MSI) setting. We are resolute in advancing the importance of marginalized populations using their own "voices" to speak to their extant conditions emanating from their own cultural enclaves.

5.21. Texas Juvenile Crime Prevention Center

pvamu.edu/COJJP/texas-juvenile-crime-prevention-center

The Texas Juvenile Crime Prevention Center is committed to the reduction of juvenile delinquency and crime in the State of Texas. Through the creation of the Center and the College, Prairie View A&M University supports this mission as it strives to attain national recognition in the areas of education, research, and service in doing the following:

- Conducting, coordinating, collecting, and evaluating research in all areas relating to juvenile crime and delinquency;
- Providing a setting for educational programs relating to juvenile delinquency and crime, including degree programs at Prairie View A & M University and other educational programs such as continuing education and in-service training for criminal justice and social service professionals;
- Serving as a state and national resource for information on juvenile delinquency and crime; and
- In connection with its research and educational programs:
  - develop programs, policies, and strategies to address juvenile delinquency and crime and related social problems; and
  - create partnerships, collaborative efforts, or outreach, public service, or technical assistance programs to assist communities, governmental agencies, or private entities to implement programs, policies, and strategies that address juvenile delinquency and crime and related social problems.

5.22. Undergraduate Medical Academy

pvamu.edu/UMA

Established in 2004, the mission of the Undergraduate Medical Academy (UMA) is consistent with the overall mission of Prairie View A & M University and the Texas A & M University System. The UMA is dedicated to excellence in teaching, research, service and professional development. The UMA emphasizes the integration of leadership development and pre-medical science education, without sacrificing concern and compassion for the community.

Unit Outcomes

- Develop enriched undergraduate courses designed to strengthen academic preparation.
- Provide preparation for the Medical College Admission Test for medical school applicants.
- Foster faculty mentorship for each medical academy student.
- Enhance academic and career counseling for each medical academy student.

5.23. Ruth J. Simmons Center for Race and Justice

pvamu.edu/simmonscenter

The Ruth J. Simmons Center for Race and Justice was established to promote research, education, and advocacy on issues related to race, social justice, and equity. Named after Dr. Ruth J. Simmons, a distinguished academic leader and former president of PVAMU, the center serves as a hub for scholarly inquiry, policy analysis, and community engagement.

The center's mission is to foster a deeper understanding of racial and social justice issues through interdisciplinary research, public discourse, and strategic partnerships. It supports faculty and student research initiatives, sponsors conferences and speaker series, and collaborates with policymakers, community organizations, and industry leaders to develop solutions that address systemic disparities in education, economic opportunity, criminal justice, and public health.

Key initiatives of the center include:

- Research and Policy Analysis – Conducting data-driven studies on racial equity, economic disparities, and public policy reforms.
- Community Engagement – Partnering with local, state, and national organizations to advocate for social justice and community empowerment.
- Educational Programming – Hosting lectures, symposiums, and workshops that bring together scholars, students, and practitioners to discuss pressing issues in race and justice.
- Student Opportunities – Providing research fellowships, internships, and mentorship programs for PVAMU students interested in civil rights, advocacy, and public service.

5.24. Center for Innovation and Entrepreneurship

pvamu.edu/business/alumni-friends/CIE

The Center for Innovation and Entrepreneurship (CIE) serves as a dynamic hub for fostering entrepreneurial talent and innovation among students, faculty, and the broader community. Established with a grant from the U.S. Department of Education, the CIE is strategically located on the main campus in the Agriculture/Business Multipurpose Building, providing accessible resources and support for aspiring entrepreneurs.

The center's mission is to cultivate an entrepreneurial ecosystem that encourages the development of new ventures, supports small business growth, and promotes economic development. Through a combination of educational programs, hands-on training, and collaborative partnerships, the CIE empowers individuals to transform innovative ideas into viable business opportunities.

Key initiatives of the center include:

- Educational Programs – Offering a Certificate in Innovation and Entrepreneurship for non-business majors, enabling students from diverse disciplines to acquire essential business skills and knowledge for new venture development.
- Innovation Ecosystem Support – Facilitating access to funding, competitions, and mentorship opportunities to nurture entrepreneurial ideas and accelerate the commercialization of innovative solutions.
- Community Engagement – Partnering with local businesses, industry leaders, and economic development organizations to create a supportive network that enhances the regional entrepreneurial landscape.

5.25. Wellness in Houston

pvamu.edu/CAFNR/PWH

The Wellness in Houston initiative at Prairie View A&M University is committed to reducing health disparities and enhancing the quality of life for residents in the Greater Houston area. Originally launched as the Healthy Houston Initiative, the program focuses on promoting health, wellness, and nutrition, particularly among limited-resource communities.

The initiative's mission is to empower individuals and families by providing education and resources that foster healthy lifestyles. Through collaborative efforts, Wellness in Houston addresses critical areas such as:

- Public Health – Offering educational programs and workshops that emphasize disease prevention, healthy living, and access to healthcare services.
- Nutrition Education – Conducting classes and demonstrations to teach residents about balanced diets, meal planning, and cooking skills.
- Food Insecurity – Implementing strategies to improve food access and affordability, including community gardens and partnerships with local food banks.
- Mental Health – Providing resources and support to address mental well-being, stress management, and emotional resilience.
- Financial Literacy – Educating participants on budgeting, saving, and financial planning to enhance economic stability.

5.26. Algae Center of Excellence

pvamu.edu/CAFNR/homepage/research/algae-center-of-excellence

The Algae Center of Excellence is dedicated to advancing research, education, and workforce development in sustainable algae cultivation. The center focuses on harnessing the potential of algae for various applications, including biofuel production, wastewater treatment, and the development of high-value bioproducts.

The center's mission is to foster interdisciplinary research and innovation in algal science, while also providing hands-on training opportunities for students and faculty. By partnering with government agencies, industry leaders, and academic institutions, the Algae Center of Excellence contributes to solving global challenges related to renewable energy, environmental sustainability, and food security. Key initiatives of the center include:

- Biofuel and Bioproduct Research – Investigating the potential of algae as a sustainable source for biofuels, bioplastics, and other high-value bioproducts.
- Environmental Sustainability – Utilizing algae for wastewater treatment, carbon capture, and other eco-friendly applications.
- Education and Workforce Development – Offering specialized training programs, internships, and research opportunities for students pursuing careers in biotechnology, renewable energy, and environmental sciences.
- Industry and Government Collaboration – Partnering with industry stakeholders and government agencies to advance algae-based technologies and develop scalable commercial applications.

5.27. Small Farm Institute

pvamu.edu/CAFNR/homepage/research/small-farm-institute

The Small Farm Institute at Prairie View A&M University is dedicated to supporting small and limited-resource farmers through applied research, education, and outreach. The institute plays a critical role in advancing sustainable farming practices, enhancing agricultural productivity, and fostering economic growth among small farm operators in Texas and beyond.

The institute's mission is to provide farmers and ranchers with access to cutting-edge research, technical assistance, and business development resources that enhance their ability to compete in the evolving agricultural industry. By integrating research with hands-on training, the Small Farm Institute empowers farmers with the knowledge and tools necessary for improving crop yields, animal production, and market access. Key initiatives of the institute include:

- Sustainable Agriculture Research – Conducting studies on soil health, water conservation, organic farming, and innovative farming techniques tailored for small-scale agricultural operations.
- Livestock and Crop Management – Providing research-based recommendations on animal husbandry, pasture management, and alternative crop production.
- Business and Financial Training – Offering workshops and one-on-one consultations to assist farmers with financial planning, risk management, and accessing funding opportunities.
- Community Engagement and Outreach – Collaborating with local and state organizations to extend agricultural resources to historically underserved farming communities.

5.28. Poultry Center

pvamu.edu/CAFNR/homepage/research/poultry-center

The Poultry Center is a leading research facility dedicated to advancing poultry science through innovative research, education, and outreach. The center focuses on improving poultry nutrition, production efficiency, and disease prevention, while also providing hands-on training opportunities for students and professionals in the field of animal science.

The center's mission is to enhance poultry production systems by developing sustainable practices that improve bird health, feed efficiency, and environmental sustainability. By collaborating with industry stakeholders, government agencies, and research institutions, the Poultry Center supports the growth of the poultry industry and contributes to global food security. Key initiatives of the center include:

- Poultry Nutrition and Nutrigenomics – Conducting research on feed additives, alternative protein sources, and nutrient optimization to improve bird health and growth performance.
- Gut Health and Microbiome Research – Studying the effects of probiotics, prebiotics, and other dietary interventions on gut health and immune function in poultry.
- Sustainable Production Systems – Investigating environmentally friendly poultry farming practices, including waste management and resource-efficient housing systems.
- Workforce Development and Training – Providing specialized training programs, internships, and research opportunities for students interested in careers in poultry science, agribusiness, and veterinary medicine.

5.29. Center for Digital Media Arts

pvamu.edu/SOA/resources/research-centers

The Center for Digital Media Arts serves as a creative and technological hub dedicated to advancing education, research, and industry collaboration in the fields of digital media, design, and visual storytelling. The center provides students with real-world design experiences, fostering innovation in digital arts, animation, graphic design, and multimedia production.

The center's mission is to bridge the gap between academic learning and professional practice by offering state-of-the-art resources, industry partnerships, and hands-on training opportunities. Through interdisciplinary collaborations, the Center for Digital Media Arts equips students with the technical skills and artistic vision necessary to thrive in creative industries. Key initiatives of the center include:

- Multimedia Production and Design – Providing training and research opportunities in graphic design, digital animation, video production, and web development.
- Industry Collaboration – Partnering with media companies, design studios, and technology firms to offer students real-world experience through internships and collaborative projects.
- Student-Led Creative Projects – Encouraging students to engage in digital storytelling, game design, and interactive media to enhance their portfolios and industry readiness.
- Technology and Innovation – Exploring emerging digital tools, virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) applications in media and design.

5.30. National Center for Infrastructure Transformation (NCIT)

NCIT.pvamu.edu

The National Center for Infrastructure Transformation (NCIT) is a national-tier University Transportation Center (UTC) dedicated to enhancing the durability, resilience, and sustainability of the nation's transportation infrastructure. Established in 2023 with funding from the U.S. Department of Transportation, NCIT is the first-ever UTC led by a Historically Black College and University (HBCU), receiving $4 million annually over five years to address critical infrastructure challenges.

The center's mission is to develop innovative research, education, and technology transfer initiatives that improve transportation infrastructure performance and longevity. As the lead institution, PVAMU collaborates with a consortium of universities, including Arizona State University, Blinn College District, Michigan State University, Rutgers University, Texas A&M Transportation Institute, and Texas A&M University. Key initiatives of the center include:

- Infrastructure Durability and Resilience – Developing advanced methods to extend the lifespan of roads, bridges, and other transportation assets while enhancing their ability to withstand and recover from disruptions.
- Technology Integration – Investigating the impacts of connected and automated vehicles, electrification, artificial intelligence, and smart infrastructure solutions on transportation networks.
- Policy and Workforce Development – Supporting data-driven decision-making in infrastructure funding, equity, environmental sustainability, and innovative construction practices.
- Education and Outreach – Offering K-12 programs, workforce training, certification courses, undergraduate and graduate programs, and summer internships to prepare the next generation of transportation professionals.

5.31. Agro-Innovation and Technology Center (AITC)

AITC.pvamu.edu

The Agro-Innovation and Technology Center (AITC) is dedicated to integrating science and technology to enhance teaching, learning, and evaluation competencies within the agricultural sector. By fostering innovative thinking, AITC aims to co-create and disseminate knowledge through an enterprise platform, thereby advancing the university's mission in agriculture and related fields.

Mission and Vision: AITC's mission is to "integrate science and technology to enhance teaching, learning, and evaluation competencies, and encourage out-of-the-box thinking to co-create and share knowledge on an enterprise platform." This vision emphasizes the center's commitment to leveraging technological advancements to improve educational outcomes and knowledge sharing in agriculture.

Key Objectives and Services:

- Technology Infrastructure Development: Building robust technological frameworks to support teaching, outreach, and research activities in agriculture.
- Support Services: Offering IT support, remote assistance, inventory management, and technology training to faculty, staff, and students.
- Plan of Work Integration: Assisting in the development and tracking of research and extension projects, ensuring alignment with institutional goals and efficient knowledge transfer.
- Farm Management Tools: Providing resources such as virtual farm tours, interactive farm maps, and plot request systems to enhance practical learning and research applications.
- Application Development: Focusing on data warehousing, data mining, artificial intelligence applications, and data visualization to support research and decision-making processes.

5.32. Fabrication Design Center

pvamu.edu/SOA/resources/fabrication-center

The Fabrication Design Center is a state-of-the-art facility within the School of Architecture, dedicated to providing students with hands-on experience in design and construction. Completed in 2018, this innovative maker space is equipped with advanced technology and tools, enabling students to conceptualize, develop, and test their architectural ideas.

Mission and Vision: The Fabrication Center aims to enhance architectural education by offering a collaborative environment where students can engage in the practical application of design theories. By integrating traditional craftsmanship with modern digital fabrication techniques, the center fosters creativity, innovation, and experiential learning. Key Objectives and Services:

- Comprehensive Fabrication Facilities: The center is equipped for all phases of woodworking, metalworking, and machining, as well as digital fabrication with CNC routing, laser cutting, and 3D printing capabilities.
- Collaborative Assembly Areas: Designed with communal assembly spaces, the facility encourages peer-to-peer learning, collaboration, and cross-disciplinary interaction, allowing students to work collectively on projects.
- Innovative Design Environment: The architectural design of the center features an elevated plane referencing the prairie landscape, with light-filtering elements and a dynamic brick facade, creating an inspiring atmosphere for creativity.

5.33. Integrated Food Security Research Center (IFSRC)

pvamu.edu/CAFNR/homepage/research/IFSRC

The Integrated Food Security Research Center (IFSRC) was established in 2018 as part of the Texas A&M University System Chancellor's Research Initiative (CRI). The center is dedicated to addressing the multifaceted issue of food insecurity through comprehensive research, academic programs, and community outreach.

Mission and Vision: The mission of IFSRC is to explore the underlying causes and impacts of food insecurity and to develop effective strategies to alleviate hunger and poverty in affected communities. By integrating interdisciplinary research and practical solutions, the center aims to enhance food security and promote sustainable agricultural practices. Key Objectives and Services:

- Research Initiatives: Conducting studies to understand the socioeconomic and environmental factors contributing to food insecurity, and developing innovative approaches to mitigate these challenges.
- Academic Programs: Engaging students across all educational levels in programs related to nutrition, agriculture, and food safety, thereby preparing them for careers dedicated to enhancing food security.
- Community Outreach: Collaborating with local, state, and federal organizations, as well as non-profits, to implement programs that directly address food insecurity in vulnerable populations.
- Policy Development: Advising policymakers on effective strategies and interventions to combat food insecurity based on empirical research and community engagement.

5.34. Smart Microgrid Advanced Research and Technology (SMART) Center

pvamu.edu/smartgrid

The Smart Microgrid Advanced Research and Technology (SMART) Center is a dedicated research facility within the Roy G. Perry College of Engineering, established to advance innovations in smart microgrid technologies. The center focuses on creating reliable, sustainable, secure, and environmentally friendly microgrid systems to enhance energy resilience and efficiency.

Mission and Vision: The mission of the SMART Center is to develop cutting-edge research and technological solutions that address the challenges of modern power systems. By integrating advanced technologies such as deep learning, big data analytics, wireless sensor networks, data security, and the Internet of Things (IoT), the center aims to revolutionize the design and operation of smart microgrids. Key Objectives and Services:

- Innovative Research: Conducting interdisciplinary research to develop advanced microgrid architectures and control strategies that enhance the reliability and sustainability of power systems.
- Technology Development: Exploring the integration of emerging technologies, including AI-driven analytics and IoT devices, to improve the performance and security of microgrid networks.
- Collaboration and Partnerships: Engaging with industry partners, government agencies, and academic institutions to foster collaborative research and development efforts in smart grid technologies.
- Education and Training: Providing educational programs and training opportunities for students and professionals to develop expertise in smart microgrid systems and related technologies.

5.35. SECURE Cybersecurity Center of Excellence

securecenter.pvamu.edu

The SECURE Cybersecurity Center of Excellence, established in 2016, is a premier multidisciplinary research institute dedicated to advancing cybersecurity. Funded by the Texas A&M University System's Chancellor's Research Initiative (CRI) program, the center aims to foster long-term partnerships among industry, academia, and government to address complex cybersecurity challenges.

Mission and Vision: The center's mission is to promote research and education that tackle critical cyberattacks in the cyber-physical sphere through multidisciplinary and integrative initiatives. By viewing cybersecurity as a socio-technical issue, the SECURE Center seeks to develop innovative approaches, design defensive methods applicable to real-world settings, and enhance cybersecurity education. Key Objectives and Services:

- Research Initiatives: Focusing on areas such as Cyber-Psychology, Hardware Security Design, Penetration Testing, Network Security, Cryptography, Social Behavioral and Privacy, Internet of Things (IoT), Information Sciences, Malware Analysis, Artificial Intelligence, Cyber-Physical Systems (CPS), Data Science and Machine Learning, Intrusion Detection, Cloud Security, and Digital Forensics.
- Educational Programs: Offering seminar series, tutorials, short courses, and certificates to provide learning opportunities for graduate, undergraduate, and high school students in cybersecurity. The center also collaborates with faculty to integrate cybersecurity research into the classroom, enhancing curricular offerings.

- State-of-the-Art Facilities: Equipped with specialized labs, including the Networking Technology and Security Lab, Computing and Data Science Lab, Broadband Communication Lab, Signal Processing Lab, and Virus and Malware Research Lab. These facilities support cutting-edge research and practical training in cybersecurity.
- Collaborative Partnerships: Engaging with industry partners, government agencies, and academic institutions to foster collaborative research, technology transfer, and the deployment of cybersecurity solutions in real-world settings. The center continuously monitors the field to identify emerging research areas and adapt to evolving cybersecurity needs

5.36. PVAMU Athletics Department

pvpanthers.com

Prairie View A&M University Athletics founded in 1907 is the only remaining charter member of the Southwestern Athletic Conference. Located in Prairie View, Texas the department sponsors 16 sports with a long standing history of culture, academic success and athletic development. A member of the Southwestern Athletic Conference's western division, PVAMU athletics is dedicated to enhancing the quality of life of its students by providing competitive activities that will produce young men and women able to become constructive contributing members of society.

The mission of the Prairie View A&M University Athletics Department is to enhance the quality of life for students by providing competitive activities that will produce young men and women able to become constructive contributing members of society and to help them realize their full potential. We embrace our role as a part of the total educational experience and strive to provide programs that are not only diversified but that are specifically designed to teach athletic skills and to instill good character and sound moral values.

Fans, supporters, students and potential students will view the Prairie View A&M University Athletics program as an organization that puts the students first while focusing on sportsmanship, education and compliance.

6 CONCLUSION

Prairie View A&M University (PVAMU) has demonstrated its profound economic impact across Waller County, Greater Houston, and Texas in 2023. The findings of this study reveal that PVAMU contributed $1.2 billion to Texas's economy, $935.8 million to the Greater Houston Area, and $381.9 million to Waller County. These contributions were accompanied by creating 7,151 jobs statewide, 5,433 jobs in the Houston region, and 2,197 jobs locally, generating significant labor income for workers. Additionally, the University awarded 1,715 degrees in the 2023-24 academic year, with graduates projected to collectively earn billions of dollars over their lifetimes, further amplifying PVAMU's long-term economic influence. These results underscore PVAMU's dual role as an immediate economic driver and a catalyst for sustained growth through human capital development.

A key highlight of this study is the significant return on investment captured by the economic multipliers. Every dollar invested in PVAMU, and its affiliates generates substantial returns: $1.38 in Waller County, $2.09 in the Greater Houston Area, and $2.23 across Texas. These multipliers reflect the ripple effects of university-related expenditures, such as student and visitor spending, institutional operations, and research activities, which stimulate additional economic activity across various sectors.

Beyond the quantifiable economic contributions, PVAMU's impact extends to intangible benefits that are equally vital to the region's prosperity. The University enhances labor productivity, fosters innovation through research and technology transfer, and supports business development, all contributing to the broader economic ecosystem. The study's use of IMPLAN software and comprehensive data collection methods, including surveys and administrative records, ensures a robust and accurate assessment of PVAMU's economic footprint. By examining both short-term expenditures and long-term benefits, this study provides a holistic view of the University's role in driving economic growth and improving community well-being.

Therefore, PVAMU's economic contributions are a testament to its significance as a cornerstone of Waller County, Greater Houston, and Texas. The University generates immediate economic activity and invests in the future by equipping its graduates with the skills and knowledge needed to thrive in a competitive economy. The impressive return on investment captured by the multipliers further underscores the value of continued support for PVAMU. As the University continues to grow and aspire to R1 status, its ability to drive economic development and foster human capital will remain a critical asset to the region and the state, solidifying its position as an institution of the first class.

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7 APPENDIX

CHART 1
PVAMU Gradution Statistices (2006-2019)

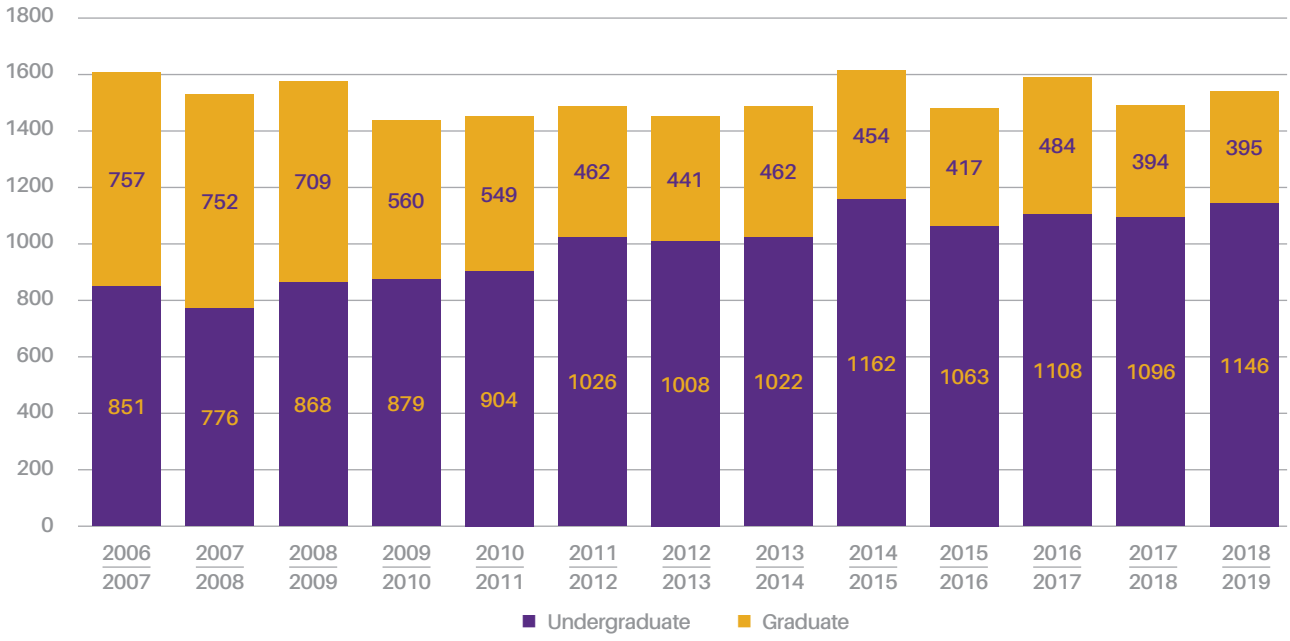

CHART 2
PVAMU Headcount by Degree Level (2005-2024)

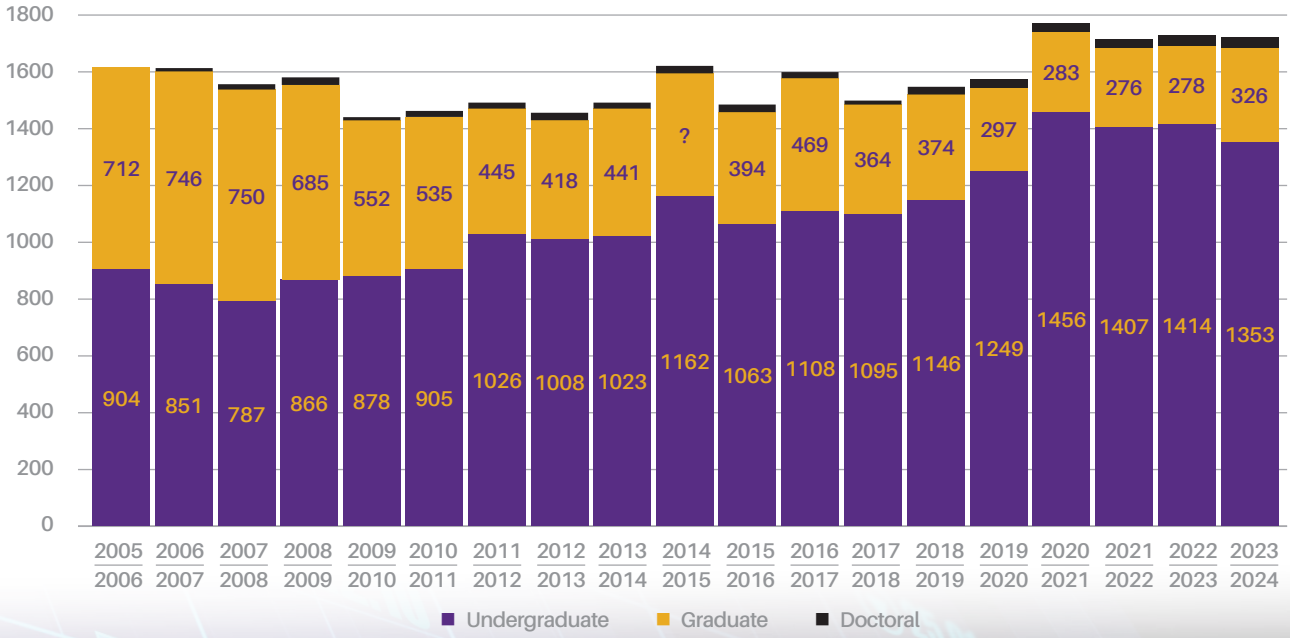

TABLE 8 Economic Impact of PVAMU on Waller County (FY 2016)

CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$75,525,431	$78,603,385	$77,290,510	$76,238,258	1,036
Other Institutional Spending*	$25,714,681	$54,357,726	$20,717,023	$15,506,741	314
Undergraduate Students	$40,267,656	$55,545,968	$8,729,278	$3,845,135	123
Graduate Students	$4,888,822	$6,952,594	$1,169,585	$524,151	16
Visitors	$8,218,830	$11,715,009	$2,013,897	$828,757	26
TOTAL	**$154,615,421**	**$207,174,683**	**$109,920,293**	**$96,943,042**	**1,515**

Source: Quddus et al (2017)

TABLE 9 Economic Impact of PVAMU on Houston-The Woodlands-Sugar Land MSA (FY 2016)

CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$79,896,566	$163,095,483	$129,342,915	$97,277,817	1,632
Other Institutional Spending*	$51,729,527	$132,395,518	$66,799,919	$51,336,867	840
Undergraduate Students	$88,031,040	$135,684,359	$65,681,791	$39,228,168	743
Graduate Students	$32,661,607	$50,718,045	$24,477,669	$14,484,982	279
Visitors	$16,034,571	$24,868,290	$12,157,773	$7,119,212	135
TOTAL	**$268,353,310**	**$506,761,694**	**$298,460,067**	**$209,447,046**	**3,630**

Source: Quddus et al (2017)

TABLE 10 Economic Impact of PVAMU on the State of Texas (FY 2016)

CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$79,896,566	$191,575,407	$142,770,210	$116,453,785	1,826
Other Institutional Spending*	$70,740,375	$194,903,540	$97,101,326	$73,178,192	1317
Undergraduate Students	$113,579,528	$191,700,739	$90,026,477	$53,292,579	1095
Graduate Students	$36,219,862	$58,369,751	$29,507,255	$17,319,801	360
Visitors	$16,973,623	$29,062,495	$14,075,224	$8,149,521	167
TOTAL	**$317,409,954**	**$665,611,932**	**$373,480,492**	**$268,393,878**	**4,766**

Source: Quddus et al (2017)

TABLE 11 Economic Impact of PVAMU on Waller County (FY 2012)

CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$67,307,051	$71,652,201	$70,135,242	$68,412,557	1,144
Other Institutional Spending*	$15,570,197	$34,314,139	$15,802,536	$11,107,333	277
Undergraduate Students	$30,220,250	$43,002,526	$8,347,509	$3,007,019	106
Graduate Students	$1,570,129	$2,283,908	$459,595	$172,663	6
Visitors	$7,430,781	$11,129,194	$2,411,654	$916,087	30
TOTAL	**$122,098,408**	**$162,381,968**	**$97,156,536**	**$83,615,659**	**1,563**

Source: Quddus et al (2012)

TABLE 12 Economic Impact of PVAMU on Houston-Baytown-Sugar Land MSA (FY 2012)

CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$67,557,051	$136,823,138	$110,870,139	$82,330,069	1,602
Other Institutional Spending*	$41,173,389	$107,428,618	$53,482,787	$41,960,876	583
Undergraduate Students	$67,384,945	$99,339,553	$49,828,460	$28,371,826	553
Graduate Students	$36,468,170	$54,310,510	$27,885,391	$15,963,874	318
Visitors	$14,449,774	$21,6 94,066	$11,314,812	$6,377,045	127
TOTAL	**$227,033,329**	**$419,595,885**	**$253,381,589**	**$175,003,690**	**3,182**

Source: Quddus et al (2012)

TABLE 13 Economic Impact of PVAMU on the State of Texas (FY 2012)

CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$67,557,051	$160,406,387	$122,609,917	$97,688,574	1,788
Other Institutional Spending*	$59,883,415	$167,374,451	$82,755,300	$62,528,394	912
Undergraduate Students	$85,103,492	$135,426,451	$65,411,692	$35,637,949	784
Graduate Students	$40,363,221	$65,953,518	$33,262,026	$19,732,155	412
Visitors	$14,828,978	$24,412,835	$12,525,378	$6,794,373	152
TOTAL	**$267,736,157**	**$553,573,642**	**$316,564,313**	**$222,381,445**	**4,047**

Source: Quddus et al (2012)

TABLE 14 Economic Impact of PVAMU on Waller County (FY 2010)

CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$69,634,822	$71,224,320	$70,665,765	$70,076,181	1,146
Other Institutional Spending*	$14,369,201	$29,664,677	$12,969,035	$10,379,307	178
Undergraduate Students	$19,861,698	$26,373,874	$4,215,820	$1,754,488	66
Graduate Students	$2,695,738	$3,457,301	$491,465	$207,428	7
Visitors	$2,411,752	$3,202,508	$607,492	$260,442	8
TOTAL	**$108,973,211**	**$133,922,680**	**$88,949,577**	**$82,677,846**	**1,405**

Source: Quddus et al (2010)

TABLE 15 Economic Impact of PVAMU on Houston-Baytown-Sugar Land MSA (FY 2010)

CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$69,884,822	$128,280,580	$97,141,132	$84,012,789	1,448
Other Institutional Spending*	$42,106,320	$109,458,468	$50,846,714	$38,054,457	484
Undergraduate Students	$56,491,324	$81,534,269	$36,564,311	$18,683,832	423
Graduate Students	$36,831,160	$53,158,637	$23,839,166	$12,181,468	276
Visitors	$10,774,298	$15,550,609	$6,973,722	$3,563,471	81
TOTAL	**$216,087,923**	**$387,982,562**	**$215,365,045**	**$156,496,017**	**2,711**

Source: Quddus et al (2010)

TABLE 16 Economic Impact of PVAMU on the State of Texas (FY 2010)

CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$69,884,822	$137,383,859	$108,604,130	$90,541,502	1,621
Other Institutional Spending*	$61,705,382	$168,983,051	$59,535,056	$42,244,366	765
Undergraduate Students	$75,091,484	$118,400,698	$54,858,393	$28,767,092	695
Graduate Students	$39,701,585	$62,599,579	$29,004,155	$15,209,435	368
Visitors	$10,774,298	$16,988,402	$7,871,207	$4,127,568	100
TOTAL	**$257,157,571**	**$504,355,589**	**$259,872,941**	**$180,889,963**	**3,549**

Source: Quddus et al (2010)

TABLE 17 Economic Impact of PVAMU on Waller County (FY 2008) CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$66,444,727	$70,195,218	$67,616,335	$66,948,752	1,124
Other Institutional Spending*	$12,245,719	$26,389,524	$3,894,139	$2,804,270	68
Undergraduate Students	$25,538,122	$28,628,234	$8,172,199	$3,881,795	144
Graduate Students	$7,633,526	$8,557,183	$2,404,561	$1,145,029	43
Visitors	$2,862,493	$3,217,443	$973,248	$435,099	16
TOTAL	**$114,724,588**	**$136,987,604**	**$83,060,482**	**$75,214,944**	**1,395**

Source: Quddus et al (2008)

TABLE 18 Economic Impact of PVAMU on Houston-Baytown-Sugar Land MSA (FY 2008) CHANNELS	INITIAL SPENDING	TOTAL OUTPUT IMPACT	VALUE-ADDED IMPACT	LABOR INCOME IMPACT	EMPLOYMENT IMPACT
Wages and Salaries	$66,444,727	$119,432,483	$89,671,960	$78,482,817	1,402
Other Institutional Spending*	$35,209,312	$89,924,583	$23,132,518	$13,872,469	263
Undergraduate Students	$57,860,914	$80,426,671	$34,369,383	$18,399,771	446
Graduate Students	$48,606,785	$67,563,432	$28,872,431	$15,456,958	374
Visitors	$12,171,894	$18,038,747	$8,106,482	$4,272,335	110
TOTAL	**$220,293,633**	**$375,385,917**	**$184,152,774**	**$130,484,350**	**2,595**

Source: Quddus et al (2008)


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