ECONOMIC CONTRIBUTIONS ANALYSIS

OF THE PURDUE UNIVERSITY WEST LAFAYETTE CAMPUS

PURDUE UNIVERSITY® | Center for Regional Development

Technical Report

Economic Contributions Analysis of the Purdue University West Lafayette Campus

Tippecanoe County and Indiana (CY 2024)

Using REMI Policy Insight + v. 3.2.1

JULY 2025

Keywords

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Acknowledgements

2024 EXPENDATURES

$3.19
BILLION

$2.3B
operations, maintenance, and R&D

$785M
off campus student expenditures

$65M
new construction

$40M
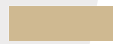athletic event visitor expenditures

2024 CONTRIBUTIONS

$6.5
BILLION

to county, state, and U.S. GDP

$3B+$1B
county's GDP + state's GDP

$2.45B
nation's GDP

GENERATED

28,900
JOBS IN INDIANA

+19,000 jobs at Purdue WL

13,000
new state residents

+2.5%
labor force participation
in Tippecanoe County

EXECUTIVE SUMMARY *view online →*

The Purdue Center for Regional Development (PCRD), a unit of the Purdue University Office of Engagement, completed a conservative[1] economic contributions study of the Purdue University West Lafayette campus in partnership with the Regional Economic Modeling, Inc. (REMI) economists. The study relied on 2024 calendar year data on the following **direct expenditure categories, totaling $3.19 billion**:

- Operating expenses and maintenance (including R&D expenditures): $2.3 billion
- New construction and related expenditures like consulting fees: $65 million
- Off campus student expenditures: $785 million
- Spending by visitors to athletic events who were not students: $40 million

REMI policy insight v.3.2.1 model was utilized. This is a state-of-the-art general equilibrium model that, among other things, estimates a one-time economic impact of expenditures.

Results indicate that Purdue University's West Lafayette campus $3.19 billion direct expenditures in 2024 resulted in roughly **28,900[2] additional jobs in the state**, of which around 20,000 additional jobs were in Tippecanoe County. These expenditures also resulted in an economic contribution to Indiana's GDP of $4 billion, of which $3 billion were in Tippecanoe County, and an additional $2.45 billion contribution to the rest of United States' GDP. In other words, Purdue's contribution to the county, state, and remainder of U.S. GDP **totaled $6.5 billion**.

Aside from the approximately 19,000 jobs in the educational services industry (Purdue employees), or about 48% of the total employment impact, about 12% of the total jobs in Tippecanoe County were in administrative and support services, close to 7% were in construction, and 6% each were in the professional scientific and technical and real estate industries.

Purdue's direct expenditures during 2024 resulted in a labor force participation rate increase of 2.5% in Tippecanoe County, expanding the workforce by 8,000 workers. Statewide, these expenditures added **close to 13,000 new residents** to Indiana's population, of which 8,600 were in Tippecanoe County.

[1]Additional economic benefits of expenditure areas that contribute to the economy but were not included due to data availability include incremental earnings by Purdue graduates, Purdue Research Park operated by the Purdue Research Foundation, the Purdue Applied Research Institute, public-private partnerships between the University and private industry, spending by attendees to conferences held on campus, and spending from attendees to convocations and other special and cultural events. Future studies will incorporate these additional expenditure categories.

[2]The total employment contribution for Tippecanoe County is around 39,000 jobs. Of the total jobs, 19,000 are employed by Purdue University resulting in 20,000 additional jobs in the county. The rest of Indiana has economic contributions and impacts of around 8,900 jobs resulting in roughly 28,900 additional jobs for the state.

Abstract

This study evaluates the economic contributions and broader impacts of Purdue University's West Lafayette campus on the local and regional economies of Tippecanoe County, Indiana and the United States. The study employs a 3-region[3] REMI model, which includes the nested geographies of the county, rest of Indiana, and the remainder of the United States. The economic contributions and impact analysis simulations focus on four major areas of university activities that include operating expenses and maintenance expenditures[4], new construction, off campus spending by students, and spending by visitors attending athletic events. These four areas collectively accounted for $3.19 billion in direct expenditures in the calendar year 2024. Note that several other areas of university affiliated activities which impact earnings and economic development are not included in this study because of data availability and separate accounting. The excluded areas from this study include incremental earnings potential of Purdue graduates, Purdue Research Park operated by Purdue Research Foundation, Purdue Applied Research Institute, and public-private partnership enterprises between private industry and the university such as Rolls Royce.

This analysis gives careful consideration to nullify induced investments generated by recurring expenditures rather than new expenditures. Note that recurring and routine annual expenditures by the university will not generate a capital investment response in the local economy because it is occurring year-over-year. In addition, the wages and salaries of remote and hybrid workers are accounted for contributions and impacts in the respective geographies. Some of the input data were estimated by using Department of Education estimates and the Placer.ai[5] model. Despite data limitations, the results show sizable economic contributions and impacts of the university on regional and state economies. The results reveal that the four expenditure areas accounted in the analysis contributed around 39,000 jobs—including 19,000 Purdue jobs--in Tippecanoe County and around 48,000 jobs in total for the state of Indiana. The spillovers of the spending, expenditures and investments extend beyond the boundaries of Indiana. The contributions to the gross regional/domestic product for Tippecanoe County, rest of Indiana, and the remainder of the U.S. were $3 billion, $1 billion, and $2.5 billion, respectively in 2024. Similarly, there are tangible contributions to the personal income and real disposable per capita personal income by as much as $4,000 for Tippecanoe County in 2024. The economic contributions and impacts of the university extend beyond educational services, affecting other industry sectors in the region. We anticipate adding additional University affiliated activities and streamline the data intake process to strengthen the methodology in future studies.

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[3] Tippecanoe County, rest of Indiana, and the rest of the U.S.

[4] Research and Development (R&D) expenditures of $394.5 million are included.

[5] https://www.placer.ai/

1.0 Introduction

Universities, colleges, and other institutions of higher learning make significant contributions through the development and training of human capital as well as creating new knowledge through Research and Development (R&D) resulting in innovative new products, processes, and ideas. In addition, the institutions of higher learning are major employers and significantly add to the local and regional economies by employing and supporting a large number of jobs and expenditures for operations and maintenance. Institutions of higher learning are generally located in large urban areas and metropolitan areas, however, there are more than 170[6] small communities or counties that are known as college towns because of the presence of large colleges or universities that are major economic anchors for the local and regional economies. Purdue University at West Lafayette is one such example of a college town, however, the adjacent City of Lafayette hosts major manufacturing establishments such as Subaru, Wabash National, Caterpillar, and Oscar Winski among others. Large urban areas have other kinds of important economic drivers including manufacturing and services. However, college towns are generally dependent on their universities and colleges. The researchers have stated that "eds and meds" or educational institutions and hospitals are the two major economic drivers of their respective communities and regions (Harker 2022; Bartik and Erickcek 2008).

This study estimates economic contributions and broader impacts of the Purdue University West Lafayette campus to the county and state economies of Indiana. The study adopts a conservative expenditure-based approach, focusing exclusively on direct spending[7] occurring during the calendar year 2024. Four major spending categories are included: operations and maintenance expenditures, new construction, student spending, and visitor spending related to athletic events. The input data have been collected by different methods such as operating expenses compiled for the Integrated Postsecondary Education Data System (IPEDS)[8], dollar value of new projects constructed on the campus in 2024, Department of Education data to estimate the expenditures in different consumption categories by off campus students and some specific expenditures by on campus students, and athletic event ticket purchases by non-students and their travel patterns.

This study does not include the revenues and monetized values of inventions and discoveries by faculty, but dollars spent on scientific R&D services in 2024 are included, in part, within the operations and maintenance expenditures. Similarly, this study does

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[6] https://www.americancommunities.org/community-type/college-towns/
[7] Based on available data.
[8] Integrated Postsecondary Education Data System, https://nces.ed.gov/ipeds

not include the Purdue Research Foundation (PRF) and Purdue Applied Research Institute (PARI). Two areas of significant economic impacts, which are incremental lifetime earnings of Purdue graduates working in Indiana and the venture capital values of patents and technology transfers are not included in this study. The Purdue University at West Lafayette runs programs such as Convos and organizes monthly performances of concerts, musicals, and Broadway theatre to enhance the quality of life in the region. The benefits of such initiatives are important for community wellbeing, but they are difficult to measure and are not included in this study. In addition, the impacts by expenditures from attendees to conferences in West Lafayette are not included in this study. The present study delves into economic contributions by a select set of university activities.

This project employs REMI (Regional Economic Models, Inc.)[9], which is a state-of-the-practice computable general equilibrium (CGE) model in North America. REMI is a dynamic model and unlike other static economic input-output models, it is capable of forecasting economic impacts and spillovers into several years compared to the base scenario. The building blocks of REMI include input-output table(s), computable general equilibrium framework, econometric equations, and the new economic geography (NEG) framework. To our knowledge, REMI models are the only commercially available dynamic macroeconomic models for regional economies in the U.S. The model is configured as three nested geographies of Tippecanoe County, Indiana, and the remainder of the U.S. This configuration enables assessment of multi-regional impacts emanating from localized economic shocks or policy stimuli.

2.0 Literature Review

Unlike economic impact analysis of investments on public infrastructure such as construction of roads or public utilities with established methods for economic assessments, impact analysis for universities requires a multifaceted approach. The reasons include different kinds of stakeholders, outputs, outcomes, and functions associated with institutions of higher learning. The roles of a land-grant public institution such as Purdue University can include teaching, research and development, engagement and technical assistance, and also enabling and facilitating new businesses and enterprises based on the discovery and inventions. The scholars assert that "establishing a counterfactual" or how much an area would be "better or worse off" with or without a university is one of the major challenges in quantifying economic impacts of institutions (Siegfried, Sanderson and McHenry 2007). Scholars have suggested to include stochastic methods such as Monte Carlo simulations for some of the expenditure areas such as student spending to improve the methodology (Pastor, Perez and Guevara 2013). In general, the suggested approach for economic impact analysis of universities is using

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[9] https://www.remi.com/

either the "supply side" or the "demand side" analysis. The supply side looks into a university's role in developing human capital or creating the talent supply line and knowledge creation.[10] Whereas the demand side investigates a university's role as a consumer and its expenditures to procure various goods and services.[11] Recently, researchers have uncovered a university's important role in boosting resilience of local and regional economies to adverse shocks such as decline in manufacturing in the U.S. regions (Howard, Weinstein and Yang 2024). Communities with universities, in general, were able to bear economic recessionary shocks effectively with minimal loss of jobs and sustained pre-recession populations and earnings (Howard, Weinstein and Yang 2024).

Intensity and scale of research and development (R&D) have a major role in defining and classifying universities[12] in the U.S. A recent study explored the long-term economic impacts of external research expenditures by a university system and found that spending of external R&D dollars had varying impacts over different geographies in medium sized metropolitan areas benefitting more compared to the R&D happening on campuses located in rural areas (Apriesnig et al. 2024). Hence, identifying the geographical areas of the impacts is equally important in addition to identifying various activities of spending and expenditures in the universities. Quddus et al. (2022) estimated economic impacts of Prairie View A&M University at the local, regional, and state levels in Texas because of different functions of the university which included three campuses and 36 Extension offices in Texas. This emphasized that delineating the scope of the study area from state to region to local level is important for economic contributions and impact analysis especially in case of a public land-grant university.

Perhaps the first attempt to quantify economic impacts of a university was the study of Claremont College in Claremont, California published in 1971 by John Caffrey and Herbert Isaacs (Quddus et al. 2022). The purpose was to show the economic benefits of colleges and universities and highlight the "town and gown relationships," especially the perception of lost taxes because of the exempted status of universities (Bowen 1972). However, this early effort highlighted that colleges and universities bring outside dollars and investments into the local economies and hence, similar to industries such as manufacturing adds to the economic base of the region (Bowen 1972). Previous research on economic analysis of public investments in infrastructure such as transportation has identified a variety of costs and benefits to the regional economy, users, and non-users. Such economic impacts can be classified as generative, distributive, or transfer impacts (CS, Cervero and Aschauer 1998).[13] As per the authors the generative impacts are related

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[10] Office of the University Economist, Arizona State University, https://economist.asu.edu/universities-knowledge/traditional_economic-impact-universities.
[11] Id.
[12] Carnegie Classification of R1, R2 and R3 of institutions of higher learning.
[13] Economic Impact Analysis of Transit Investments: A Guidebook of Practitioners, Transit Cooperative Research Program, Federal Transit Administration. TCRP report no. 35. 1998.

to the new economic growth such as new capital projects, employment, businesses, increased industrial production, etc. The distributive impacts are comprised of re-location of development projects and economic enterprises near transportation infrastructure (CS, Cervero and Aschauer 1998). Transfer impacts are related to transfer of funds from federal to state to local governments to finance the transportation projects (CS, Cervero and Aschauer 1998). Universities have the capacity to create substantive generative impacts by attracting the external R&D dollars, new construction of buildings and laboratories funded by external agencies and donors, various kinds of spending by students living off campus, and spending by out-of-town visitors attending sporting events. Economic impact analysis generally includes estimating direct, indirect, and induced impacts to the local and regional economies.[14] However, in the case of universities, such a linear framework to estimate economic contributions and impacts might not be justifiable. For example, university sporting events are considered major economic activities for the host college towns. However, research has found that the actual economic impacts from college sports are estimated to be modest when net instead of gross economic activities are accounted in the model (Baade, Baumann and Matheson 2011).

Some of the suggestions by researchers include:
- Appropriate delineation of local and regional area for impact assessment (Siegfried, Sanderson and McHenry 2007; Pastor, Perez and Guevara 2013; Quddus et al. 2022).
- Avoid double-counting by accounting for spending carefully in mutually exclusive categories (Siegfried, Sanderson and McHenry 2007).
- Focus on net economic activities as a result of the university functions (Baade, Baumann and Matheson 2011).

3.0 Methodology and Input Data Preparation

This study considers spending and expenditures undertaken during the calendar year 2024 (latest year available). The four main areas of spending include operating expenses and maintenance expenditures, new construction, off-campus student spending and certain expenditures by students living on campus, and spending by nonstudent visitors to the athletic events. Within each major area, there are several categories of expenditures. Operating expenses and maintenance had the largest spending in 2024. It

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[14] A project creating additional or new demand for an industry causing changes in employment is known as the direct impact; main industry purchasing intermediate goods and services from other supplying industries to serve the new demand creates an indirect impact; household spending and re-spending due to increased wages cause an induced impact in service industries such as retail, restaurants, etc. All three types of impacts contribute to the economic growth in the region.

included seven different categories of expenditures compiled as per the IPEDS which were:

1) Instruction, scholarships and departmental research;
2) Academic support and services;
3) Operation, repair, and maintenance of plants;
4) Office administrative services;
5) Auxiliary enterprises;
6) Public services; and
7) Scientific research and development services.

The total expenditures of the seven categories were more than **$2.3 billion** in 2024. Note that portions of these expenditures cannot be considered as new sales happening in the regional economy because it is recurring year-over-year. At the same time, certain expenditures such as scientific research and development have the capacity to induce new investments and developments because of the nature of the operations and business potential of the innovation. To avoid over estimation of impact results, careful considerations were given to exclude induced investment effects from recurring expenditures such as administrative, support, and maintenance services. At the same time expenditures in R&D, instructional and departmental research and new construction occurring in 2024 were not nullified for induced investments. Other adjustments were made to reflect specific known information on categories including supplies and expenses, salaries and wages, scholarships, etc.

A snapshot of the geographical distribution of Purdue University West Lafayette employees in Tippecanoe County, rest of Indiana, and outside of Indiana was used to distribute the salaries and wages to different geographical areas[15]. A remote worker will generate impacts at the residential location because of spending wages on the consumption of goods and services. A multiregional REMI model comprised of Tippecanoe County, rest of Indiana, and the remainder of the U.S. is used to allocate the specific dollar values to their respective geographies. Note that salaries and wages spent in the rest of Indiana and outside of Indiana could generate mainly induced impacts on service industries excluding the direct and indirect effects.[16] These distinctions are explicitly modeled within REMI's dynamic, multiregional structure capable of capturing localized spending effects and induced impacts across geographies.

In 2024, the new construction category comprised primarily of construction of new buildings and utility infrastructure. It also included consulting fees paid to consultants for architectural, surveying, and other engineering services. In total, around **$65 million**

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[15] 89.2% of Purdue University WL employees live in Tippecanoe County, 7.3% live in the rest of Indiana, and 3.5% live outside of Indiana as per fall 2024 data.
[16] See footnote 14.

was spent for new construction activities in 2024. Note that these expenditures can induce new demand and hence cause expansion and create new jobs in industries supplying to the construction projects and professional services. However, the economic impacts of construction activities fade after the completion of the projects. This expenditure category is expected to change year-over-year.

The third major area of expenditures in the local economy was spending by students living off campus and certain types of spending by students living on campus. Overall, this was a large expenditure estimated to be around **$785 million** in 2024. The off-campus students had expenditures on rental housing, food, purchasing of books and supplies, transportation, and other miscellaneous categories. The on-campus students had expenditures of books and supplies, transportation, and other miscellaneous categories. These expenditures were entered into REMI in consumer spending categories with the geographic area limited to only Tippecanoe County. The model had provisions to distribute miscellaneous expenditures into more than 30 consumption categories based on assumptions.

The fourth major area of expenditures was spending by visitors to the athletic events who were not students. More than 719,000 tickets were purchased by these non-students in 2024 for athletic events. However, the place of origin data or residential locations were not available for these visitors. The project team decided to use the Placer.ai software to assess the visitors' movements during the athletic events. The Ross-Ade Stadium was geofenced in Placer.ai and visitors' travel movements and origins were tracked for a sample of high-profile and general games during 2024. Placer.ai is capable of analyzing travel movement between locations by tracking cell phone applications instead of the phone GPS[17]. The anonymized data are aggregated to generate travel patterns and time-spending patterns at the locations of interest. Visitors spending at least 30 minutes inside the stadium on specific days of the games were analyzed for their travel origins in terms of geographic areas such as within Tippecanoe County, rest of Indiana, and outside of Indiana.[18] Amateur sports tourism such as college athletic events can stimulate local economies in small towns if organized at regular intervals (Brewer and Freeman 2015). However, extensive visitor surveys are needed to know the spending patterns and average spending per capita (Brewer and Freeman 2015). In lack of such data, simple conservative[19] assumptions were considered to estimate the annual dollar value of spending by non-student visitors to the athletic events in 2024. It is estimated

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[17] Global Positioning System.
[18] Placer.ai analysis revealed that on average 30.1% non-student visitors to athletic games were from Tippecanoe County, 43.8% were from rest of Indiana, and 26.1% were from outside of Indiana.
[19] It is assumed that a non-student visitor to the games from Tippecanoe County will spend $25 per capita, from the rest of Indiana will spend $50 per capita, and from outside of Indiana will spend $100 per capita. These consumer spending will occur on food, fuel, and accommodations.

that **$40 million** worth of spending happened in the local economy in 2024 due to visitors to the university athletic events.

3.1 Excluded Economic Contributions and Impact Areas

This study does not cover economic contributions from all types of university activities. Some of the excluded areas can have significant long-term economic impacts on the state and national economies. The authors of the impact reports from other universities revealed that data collection processes need to be established so that information can be collected to assess the economic contributions and impacts annually or biennially. This would help in studying the dynamic aspects of the economic contributions and impacts of universities. The excluded areas from the present study are:

- Increment in professional lifetime earnings of Purdue graduates in different disciplines is not included in this study. Several universities track their alumni data including their occupations and locations specific to the schools and departments. The reason is that earning potential can vary significantly by discipline such as STEM[20] versus non-STEM disciplines.
- Specific studies on patents and other intellectual properties are needed to estimate the long-term economic impacts from innovation and R&D.
- PRF and PARI expenditures and initiatives are not included in this study. However, expenditures from Discovery Park business areas are included in this study.
- The impacts of new industries and laboratories established in West Lafayette due to collaboration between private corporations and Purdue University such as Rolls Royce are not included in this study.
- The local economic impacts of spending by attendees to conferences taking place on the West Lafayette campus are not included in this study.
- The local economic impacts of spending by visitors and attendees to convocation ceremonies and programs by Convos are not included in this study.

It is anticipated that future studies can be refined by establishing data collection methods and gathering complete data on various kinds of spending.

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[20] Science, Technology, Engineering and Mathematics

4.0 Results

REMI is used to estimate one-time economic impacts for the year 2024. The simulation is based on the standard regional control base model available in REMI. The Keynesian closure[21] option is used for simulating the impacts. Table 1 shows the basic economic indicators as differences or contributions by university activities to economies of Tippecanoe County, the rest of Indiana, and all of Indiana for 2024. The four major areas of university activities added and supported Tippecanoe County's economy by creating and retaining nearly 39,000 jobs in 2024. For the entire state of Indiana, the total number of jobs retained and supported was nearly 48,000 in 2024. The residence adjusted employment for Tippecanoe County is high (83.4% of total employment) indicating that the majority of jobs are retained in Tippecanoe County. Note that the university has 19,000 faculty and staff and the remainder is because of the indirect and induced effects on the county's economy.

University activities contributed around $3 billion to Tippecanoe County's economy or gross regional product (GRP) in 2024. For the entire state of Indiana, the economic contribution was $4 billion in 2024. The GRP shows the final market value of goods and services generated by labor and properties whereas economic output includes intermediate purchases and all types of production. Hence, the economic output value contributed by university activities was nearly $5 billion for Tippecanoe County in 2024. The value-added includes compensation of employees, taxes on production and imports less subsidies, and gross operating surplus.[22] The value-added is usually close to the GRP. The results from REMI show that the four major areas of university activities and spending contributed $1.4 billion of personal income in Tippecanoe County and $2.3 billion of personal income for the state of Indiana. Disposable personal income after taxes was $1.2 billion in Tippecanoe County in 2024.

Table 1: Economic Indicators (Differences) 2024

Category	Units	Tippecanoe 2024	Rest of Indiana 2024	Total Indiana 2024
Total Employment	Thousands (Jobs)	39.07	8.88	47.95
Residence Adjusted Employment	Thousands	32.57	15.02	47.59

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[21] In computable general equilibrium model, Keynesian closure option is suitable for short to medium run of policy options. It is a demand-driven option and the aggregate demand determines the output, and the employment can be increased due to stimulus and investments.
[22] Definition obtained from REMI.

Category	Units	Tippecanoe 2024	Rest of Indiana 2024	Total Indiana 2024
Gross Regional Product	Billions of Fixed (2024) Dollars	3.02	1.02	4.04
Output	Billions of Fixed (2024) Dollars	4.91	1.75	6.66
Value-Added	Billions of Fixed (2024) Dollars	3.02	1.02	4.04
Personal Income	Billions of Fixed (2024) Dollars	1.40	0.93	2.33
Disposable Personal Income	Billions of Fixed (2024) Dollars	1.22	0.81	2.04

Source: REMI simulations run by PCRD

Economic linkages between industries, businesses, public and private institutions, and households do not stop at the state level as the ripple effects of policies, programs, and economic shocks and stimuli extend to the U.S. and even foreign countries. Table 2 shows the contributions to the GRP for Tippecanoe, rest of Indiana, and the remainder of the U.S. A total of $6.5 billion was contributed and retained in GRP in 2024 as a result of the university's operations and spending. Note that the REMI model incorporates multi-regional input-output linkages and spending and induced investments in certain areas such as R&D can spillover to larger geographic regions.

Table 2: Gross Regional/Domestic Product (Differences) 2024

Region	Units	2024
Tippecanoe County, IN	Billions of Fixed (2024) Dollars	3.02
Rest of Indiana	Billions of Fixed (2024) Dollars	1.02
Rest of U.S.	Billions of Fixed (2024) Dollars	2.45
Total	**Billions of Fixed (2024) Dollars**	**6.49**

Source: REMI simulations run by PCRD

The economic contributions and impacts of university operations make a sizable difference to the per capita disposable personal income at the county level. Table 3 shows that the university operations contributed on average more than $4,000 in disposable per capita personal income in Tippecanoe County.

Table 3: Disposable Personal Income Per Capita (Differences) 2024

Category	Units	Tippecanoe 2024
Real Disposable Personal Income	Billions of Fixed (2024) Dollars	1.22
Real Disposable Personal Income per Capita	Thousands of Fixed (2024) Dollars	4.08

Source: REMI simulations run by PCRD

Figure 1 shows the distribution of total impact on employment (39,000 jobs) into different industry sectors at the county level. The job numbers in the figure are in the thousands followed by the percent share in the specific industry sector. The largest jobs impact is in educational services with nearly 19,000 jobs created or retained in 2024 making 48% of the total impacts. Administrative and support services are the second highest with 12% of the jobs' impacts. It is followed by construction at 7% of the impacts. Professional scientific and technical services and real estate rank fourth and fifth receiving 6% of the jobs' impacts, respectively. More than one fifth (21%) of the jobs impacts happen in other types of industries. It is evident that the university operations are creating, supporting, and retaining jobs in educational services and R&D, which is included in professional scientific and technical services. In addition, the university activities also influence other types of industry sectors as evident from the pie chart (Figure 1). This indicates that the spillover of economic contributions and impacts occurs broadly in the regional economy.

The REMI model linkages include population and labor supply; labor and capital demand; output and demand; market shares; and compensation, prices and costs.[23] The model can estimate the labor force or job seekers moving into a region because of better opportunities caused by the new demand. The migration impacts can cause an increase in the labor pool or availability of the working-age population in the region. It can also impact the labor participation rate positively. Table 4 shows the differences or contributions in labor participation rate and the labor force in Tippecanoe County in 2024 as a result of university activities. The labor participation rate increased by 2.5% and nearly 8,000 workers were added to the Tippecanoe County labor force in 2024. This shows that university activities increased the economic attractiveness of Tippecanoe County.

The REMI model results reveal that the university activities have caused an increase in the population of Tippecanoe County mainly due to the new residents or incomers. The components of population change include natural growth or births minus deaths and

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[23] Refer to Appendix 2.

different types of incomers or movers such as labor force, international people, retired people, and special populations such as college students. The role of Purdue University in attracting international researchers and both, international and national students, is well known. The REMI analysis reveals the role in attracting labor force as well. Table 5 shows that the ripple effects of expenditures and spending caused population growth by as many as 8,600 people in Tippecanoe County and nearly 4,200 people in the rest of Indiana in 2024. The results reveal that more than 99% of the population growth in Tippecanoe County could be attributed to the incomers or new residents.

Table 4: Labor Force Components (Differences) 2024

Category	Units	Tippecanoe 2024
Labor Participation Rate	Rate	0.025
Labor Force	Thousands	8.12

Source: REMI simulations run by PCRD

Table 5: Population (Differences) 2024

Region	Units	Year 2024
Tippecanoe County, IN	Thousands	8.6
Rest of Indiana	Thousands	4.2
Total Indiana	**Thousands**	**12.8**

Source: REMI simulations run by PCRD

Figure 1: Employment Impacts in Thousands and Percentages by Industry Sectors, Tippecanoe County 2024
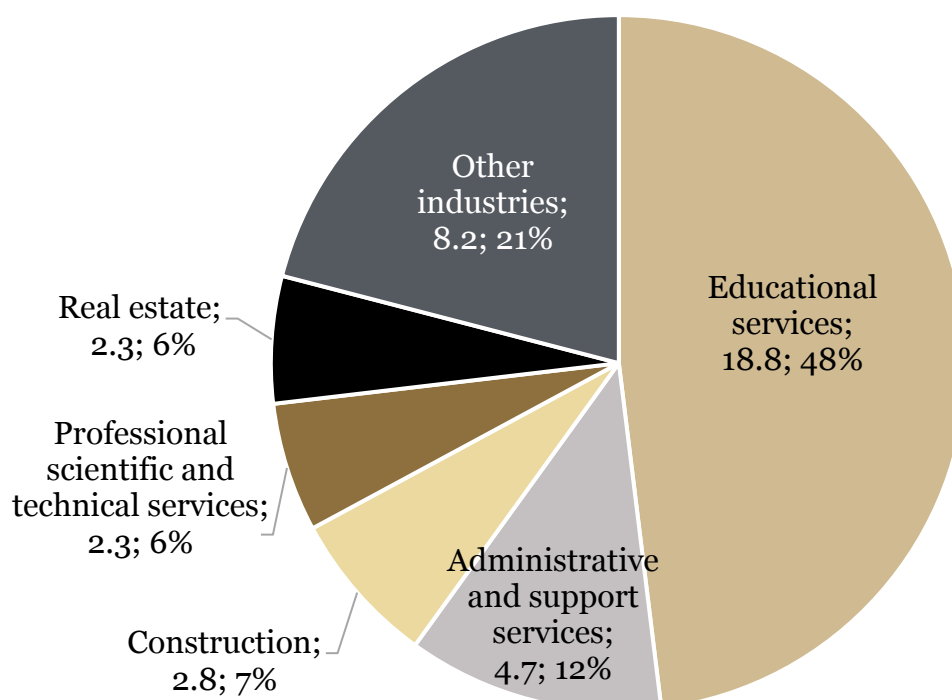
Source: REMI simulations run by PCRD

The REMI model reveals that Tippecanoe County had Type II[24] Employment Multiplier of +1.6 and Type II Output Multiplier of +2.3 in 2024 as a result of spending and expenditures from Purdue University activities. This indicates that economic contributions and impacts are inclusive of direct, indirect, and induced effects. The results reveal that the contributions of 39,000 jobs in Tippecanoe County are distributed as 62% direct, 5% indirect, and 33% induced effects. In the case of economic output, the nearly $5 billion impact in Tippecanoe County is distributed as 42% direct, 7% indirect, and 51% induced effects. Similarly, for Indiana, the Type II Employment Multiplier is +1.8 and the Type II Output Multiplier is +2.8, respectively. The total employment contributions of 48,000 jobs in Indiana is distributed as 54% direct, 5% indirect, and 41% induced effects. The total economic contribution of $6.7 billion output in Indiana is distributed as 34% direct, 7% indirect, and 59% induced effects.

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[24] Type II multipliers are ratios of direct + indirect + induced effects to the direct effects.

5.0 Discussion

The operations of Purdue University cause a variety of macroeconomic contributions and impacts on the county, state, and national levels. The distinct contributions to employment, GRP, output, and labor force are seen economywide at different geographic levels of the county and the state. Similarly, contributions and impacts are visible in personal income especially in the average disposable per capita personal income. Purdue University in West Lafayette and its spending in calendar year 2024 supported nearly 48,000 jobs statewide, with over 39,000 concentrated in Tippecanoe County which includes 19,000 employed within the university. Personal income gains were significant with $1.22 billion in disposable income and $4,000 personal income per capita contributed to Tippecanoe County. These figures reflect gains in purchasing power. The impacts spillover to demographics especially adding new residents or movers and labor force and improving the labor participation rates. Despite the exclusion of some major areas of university operations due to the lack of data, the results show significant economic contributions and impacts from the four areas included in the REMI model. It is also evident that these impacts go beyond Tippecanoe County and Indiana's borders. The future studies can be augmented by integrating stochastic methods with the CGE.

6.0 References

Apriesnig, J., Connolly, L., Xavier-Oliveira, E., and Halvorsen, K. (2024). Regional economic impact of university research expenditures. *Studies in Higher Education*, DOI: 10.1080/03075079.2024.2376262.

Baade, R., Baumann, R., and Matheson, V. (2011). Big men on Campus: Estimating the economic impact of college sports on local economies. *Regional Studies*. 45(3), 371-380.

Bartik, T. J., and Erickcek, G. (2008). The local economic impact of "Eds and Meds". Metropolitan Policy Program. *Brookings Institution*. https://www.brookings.edu/articles/the-local-economic-impact-of-eds-meds-how-policies-to-expand-universities-and-hospitals-affect-metropolitan-economies/. Accessed on June 15, 2025.

Bowen, H. (1972). Estimating the impact of a college or university on the local economy. *The Journal of Higher Education,* 43(1), 82-84. DOI: 10.1080/00221546.1972.11774934.

Brewer, R. M., and Freeman, K. M. (2015). Inexpensively estimating the economic impact of sports tourism programs in small American Cities. *Indiana Business Review*.

https://www.ibrc.indiana.edu/ibr/2015/spring/article1.html. Accessed on June 20, 2025.

CS, Cervero, R., and Aschauer, D. (1998). Economic impact analysis of transit investment: Guidebook for Practitioners. Transit Cooperative Research Program. Report 35. National Academy Press: Washington, D.C.

Harker. P. T. (2022). Introducing the anchor economy initiative: "Eds and Meds" and their economic impact. Philadelphia Feds. https://www.philadelphiafed.org/community-development/workforce-and-economic-development/221011-university-of-north-carolina. Accessed on June 15, 2025.

Howard, G., Weinstein, R., and Yang, Y. (2024). Do universities improve local economic resilience? *The Review of Economics and Statistics*, 106 (4), 1129-1145.

Quddus, M., Williams, M., Quazi, R., Langley, S., and McNeil, L. (2015). Economic impact of Prairie View A&M University on the local, regional and state economies in Texas. *Midwestern Business and Economic Review*. https://msutexas.edu/academics/business/Centers/mber/_assets/files/mber-2015-spring.pdf.

Pastor, J., Perez, F., and Guevara, J. (2013). Measuring the local economic impact of universities. *Higher Education*, 65, 539-564.

Siegfried, J., Sanderson, A., and McHenry, P. (2007). The economic impact of colleges and universities. *Economics of Education Review*, 26, 546-558.

7.0 Appendices

Appendix 1: Glossary of Economic and Demographic Variables

Disposable Personal Income: Total after-tax income received by persons; it is the income available to persons for spending or saving.

Economic Output: The amount of production, including all intermediate goods purchased as well as value-added (compensation and profit). This can also be thought of as sales or supply.

Employment: Employment comprises estimates of the number of jobs, full-time plus part-time, by place of work for all industries.

GDP: Gross Domestic Product (same as Gross Regional Product or GRP). The market value of goods and services produced by labor and property. It is also the sum of value-added across all industries.

Personal Income: Income received by persons from all sources. It is the sum of wages and salaries, supplements to wages and salaries, proprietors' income, rental income, asset income, and personal current transfer receipts, net of contributions for government social insurance.

Source: REMI documentation

Appendix 2: REMI Model Framework

The following core framework applies to all REMI model builds. The model integrates input-output, computable general equilibrium, econometric and economic geography methodologies. The model is dynamic, with forecasts and simulations generated on an annual basis and behavioral responses to compensation, price, and other economic factors.

The model consists of thousands of simultaneous equations with a structure that is relatively straightforward. The exact number of equations used varies depending on the extent of industry, demographic, demand, and other detail in the specific model being used. The overall structure of the model can be summarized in five major blocks: (1) Output and Demand, (2) Labor and Capital Demand, (3) Population and Labor Supply, (4) Compensation, Prices, and Costs, and (5) Market Shares. The blocks and their key interactions are shown in Figures 2 and 3.

Figure 2: REMI Model Linkages

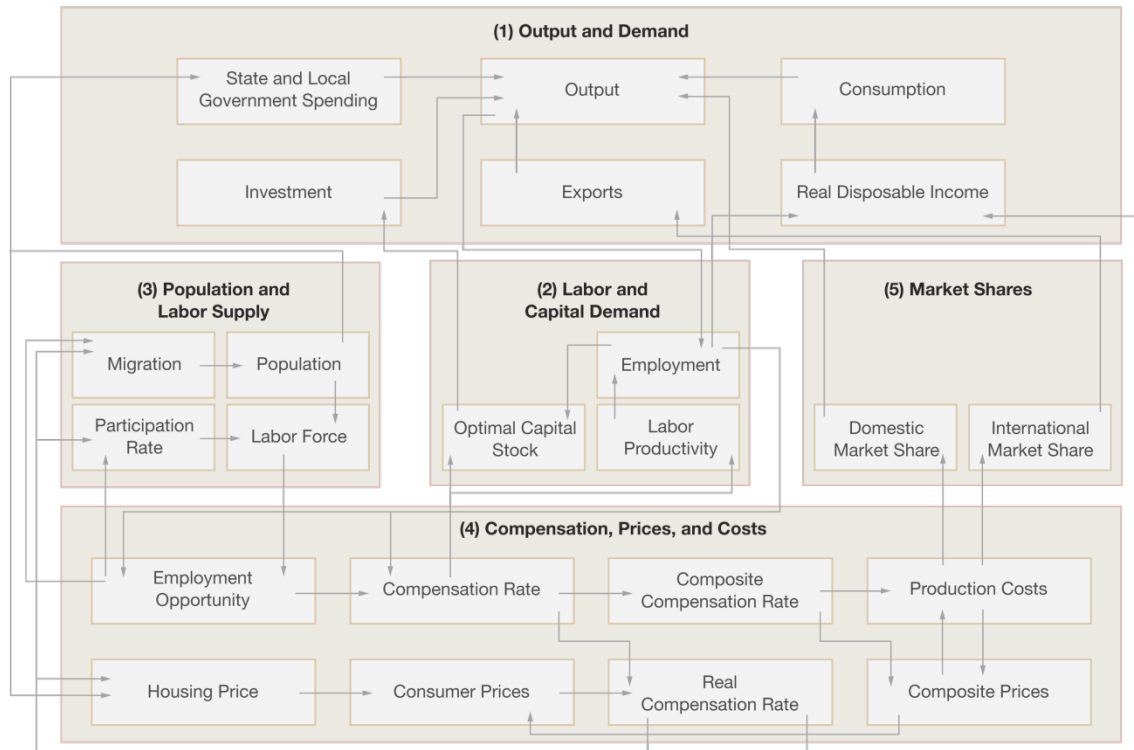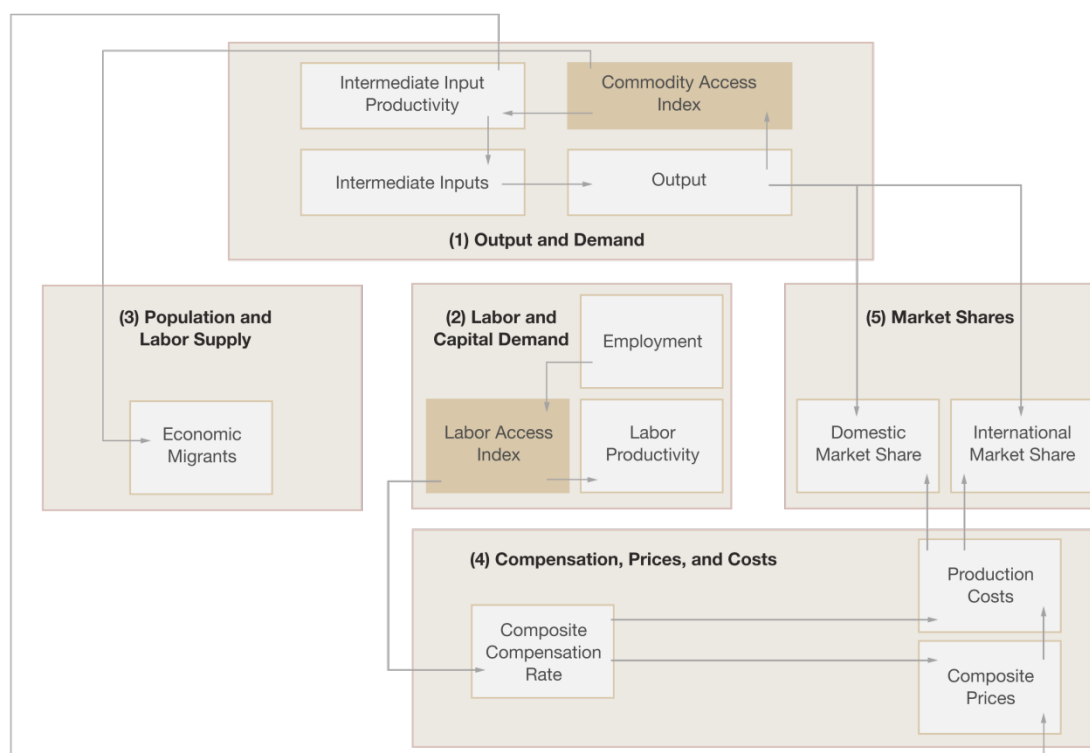REMI Model Linkages (Excluding Economic Geography Linkages)

Figure 3: Economic Geography Linkages

The Output and Demand block consists of output, demand, consumption, investment, government spending, exports, and imports, as well as feedback from output change due to the change in the productivity of intermediate inputs. The Labor and Capital Demand block includes labor intensity and productivity as well as demand for labor and capital. Labor force participation rate and migration equations are in the Population and Labor Supply block. The Compensation, Prices, and Costs block includes composite prices, determinants of production costs, the consumption price deflator, housing prices, and the compensation equations. The proportion of local, inter-regional, and export markets captured by each region is included in the Market Shares block.

Models can be built as single region, multi-region, or multi-region national models. A region is defined broadly as a sub-national area, and could consist of a state, province, county, or city, or any combination of sub-national areas.

Single-region models consist of an individual region, called the home region. The rest of the nation is also represented in the model. However, since the home region is only a small part of the total nation, the changes in the region do not have an endogenous effect on the variables in the rest of the nation.

Multi-regional models have interactions among regions, such as trade and commuting flows. These interactions include trade flows from each region to each of the other regions. These flows are illustrated for a three-region model in Figure 4.

Figure 4: Trade and Commuter Flow Linkages

Trade and Commuter Flow Linkages
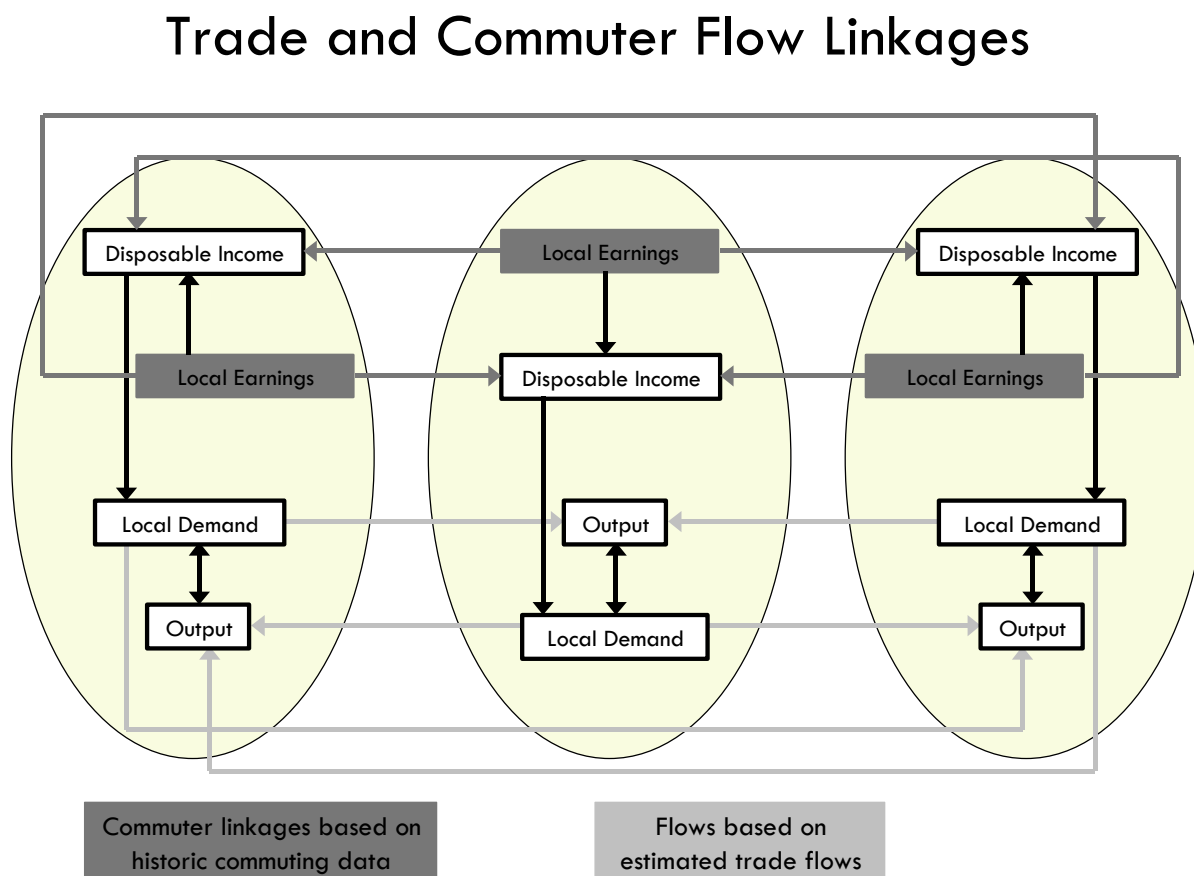
Multiregional national models also include a central bank monetary response that constrains labor markets. Models that only encompass a relatively small portion of a nation are not endogenously constrained by changes in exchange rates or monetary responses.

Block 1. Output and Demand

This block includes output, demand, consumption, investment, government spending, import, commodity access, and export concepts. Output for each industry in the home region is determined by industry demand in all regions in the nation, the home region's share of each market, and international exports from the region. For each industry, demand is determined by the amount of output, consumption, investment, and

capital demand on that industry. Consumption depends on real disposable income per capita, relative prices, differential income elasticities, and population. Input productivity depends on access to inputs because a larger choice set of inputs means it is more likely that the input with the specific characteristics required for the job will be found. In the capital stock adjustment process, investment occurs to fill the difference between optimal and actual capital stock for residential, non-residential, and equipment investment. Government spending changes are determined by changes in the population.

Block 2. Labor and Capital Demand

The Labor and Capital Demand block includes the determination of labor productivity, labor intensity, and the optimal capital stocks. Industry-specific labor productivity depends on the availability of workers with differentiated skills for the occupations used in each industry. The occupational labor supply and commuting costs determine firms' access to a specialized labor force. Labor intensity is determined by the cost of labor relative to the other factor inputs, capital, and fuel. Demand for capital is driven by the optimal capital stock equation for both non-residential capital and equipment. Optimal capital stock for each industry depends on the relative cost of labor and capital, and the employment weighted by capital use for each industry. Employment in private industries is determined by the value-added and employment per unit of value-added in each industry.

Block 3. Population and Labor Supply

The Population and Labor Supply block includes detailed demographic information about the region. Population data is given for age, gender, and race, with birth and survival rates for each group. The size and labor force participation rate of each group determines the labor supply. These participation rates respond to changes in employment relative to the potential labor force and to changes in the real after-tax compensation rate. Migration includes retirement, military, international, and economic migration. Economic migration is determined by the relative real after-tax compensation rate, relative employment opportunity, and consumer access to variety.

Block 4. Compensation, Prices and Costs

This block includes delivered prices, production costs, equipment cost, the consumption deflator, consumer prices, the price of housing, and the compensation equation. Economic geography concepts account for the productivity and price effects of access to specialized labor, goods, and services. These prices measure the price of the industry output, taking into account the access to production locations. This access is important due to the specialization of production that takes place within each industry, and because transportation and transaction costs of distance are significant. Composite prices for each

industry are then calculated based on the production costs of supplying regions, the effective distance to these regions, and the index of access to the variety of outputs in the industry relative to the access by other uses of the product. The cost of production for each industry is determined by the cost of labor, capital, fuel, and intermediate inputs. Labor costs reflect a productivity adjustment to account for access to specialized labor, as well as underlying compensation rates. Capital costs include costs of non-residential structures and equipment, while fuel costs incorporate electricity, natural gas, and residual fuels. The consumption deflator converts industry prices to prices for consumption commodities. For potential incomers, the consumer price is additionally calculated to include housing prices. Housing prices change from their initial level depending on changes in income and population density. Compensation changes are due to changes in labor demand and supply conditions and changes in the national compensation rate. Changes in employment opportunities relative to the labor force and occupational demand change determine compensation rates by industry.

Block 5. Market Shares

The market shares equations measure the proportion of local and export markets that are captured by each industry. These depend on relative production costs, the estimated price elasticity of demand, and the effective distance between the home region and each of the other regions. The change in share of a specific area in any region depends on changes in its delivered price and the quantity it produces compared with the same factors for competitors in that market. The share of local and external markets then drives the exports from and imports to the home economy.

Source: REMI Documentation

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