

The Economic Impact of Ball State University:

A Brief Review

August 12, 2017

Introduction

Ball State University is a public, Doctoral University, and Higher Research Activity University located in Muncie, Indiana.¹ The university employs over 3,100 full time faculty and staff, 22,000 students occupying 731 acres, which house eight colleges, and over 30 residence halls. Drawing students and faculty from around the globe, Ball State University exerts a significant economic effect on Delaware County and the surrounding region.

This brief review outlines that economic impact as measured in population, earnings, and total economic activity (Gross Domestic Product). This study also provides an example of construction impact, using the 2004-2014 period of construction. We then provide fiscal impacts of the university on Delaware County, to include local property tax effects, local option income tax effects, and the impact of the university on state educational funding to Delaware County. We also estimate the impact of Ball State University events on travel and tourism spending in the region and on the effects of the university on the opportunity cost of facilities, population dynamics, and educational attainment in East Central Indiana.

Economic Impacts of University Operations

Estimating the impact of a university differs from most commercial impacts. A university, like a military installation, is exogenous to the local economy. In other words, the choice of this location is not due to local consumption of goods or services. Other activities, like restaurants or hospitals, are dependent upon the size of local demand for their services. Ball State exists independent of local demand for services, as this location was chosen by the legislature to open the university in 1918. Thus it is not necessary to worry about the potential for part of this economic activity to occur naturally, due to market forces as it would be were we to model the impact of a restaurant or hospital. To model the impact of the university on the state and region we begin with an accounting of the size and scope of the university itself. Selected values appear in Table 1.

¹ See Carnegie Classification of Institutions of Higher Education; <http://carnegieclassifications.iu.edu/index.php>

Table 1 , A Summary of Ball State Operations

At Ball State in Muncie	Values	Notes
Employees	3,121	Full-time only, 74 percent reside in Delaware County
Students	22,000	Approx. 17,000 undergraduates 5,000 graduates, 80% Indiana residents, 500 foreign.
Salaries and benefits	327,000,000	From FY 2016 Annual Report
Research Dollars	32,000,000	FY16 Sponsored Programs Annual Report
Other Operating Expenses	130,000,000	From FY 2016 Annual Report
Total Operating Budget	489,000,000	From FY 2016 Annual Report
Ticketed Visitors	172,100	Data from UMC on ticketed events only
Athletics	76,000	Football, basketball, and volleyball only
Other	96,100	e.g. Emens Auditorium, Sursa Performance Hall, Owsley Museum of Art and Christy Woods

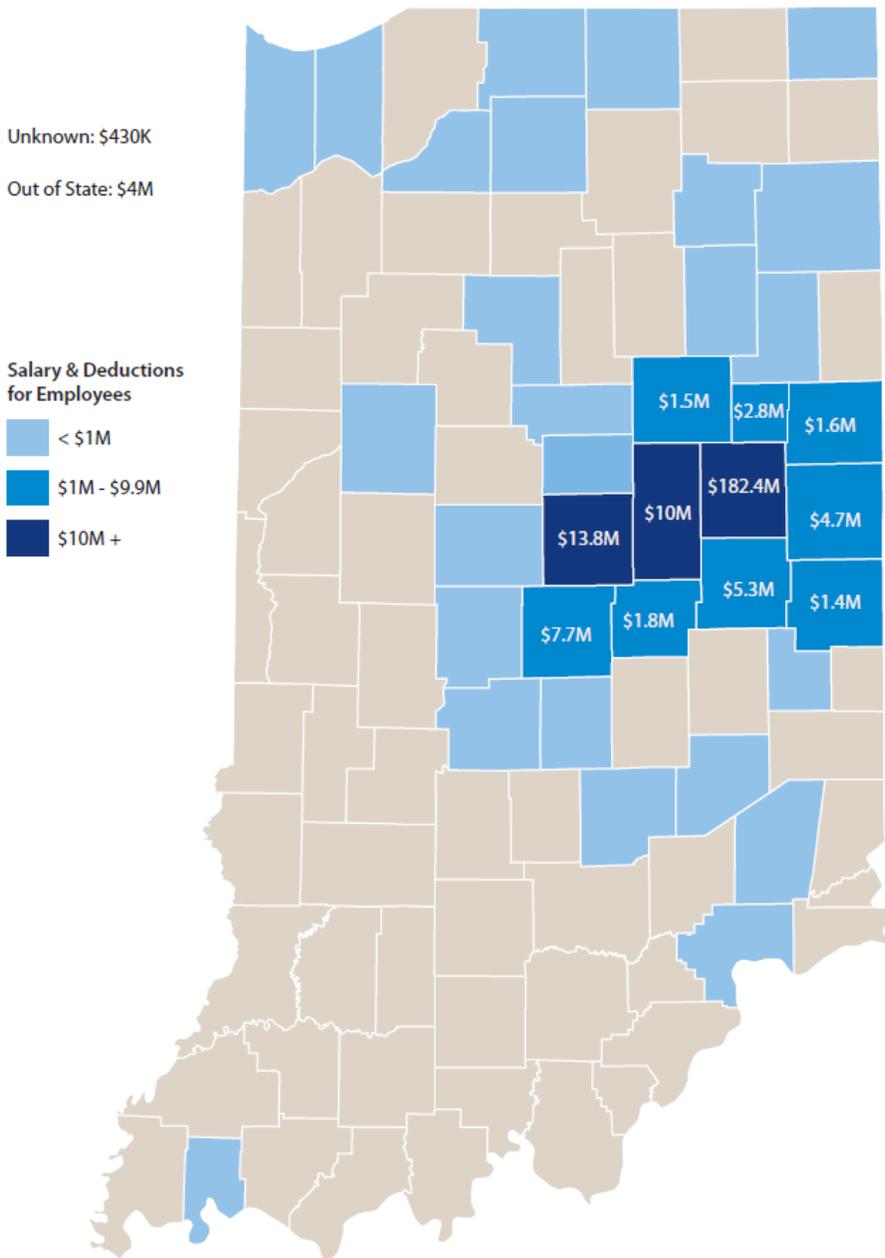
As an academic institution, Ball State University hires employees, houses students, maintains facilities, and purchases goods and services to continue operations. Employees and students live in differing proximity to campus, with some 74 percent of faculty along with some 16,000 students and their families live in Delaware County. The university purchases goods and services ranging from electricity and telecommunications services to motor vehicle fuel, food, beverages and laundry services. Faculty and staff members, students, their families and visitors to the university also purchase goods and services. This consumption entails an economic impact on local employment, incomes and total economic activity. The size of the impact depends upon the composition and geographic location of individual and institutional spending.

We know from employee records where workers live, but we do not know their individual household consumption patterns. However, it is clear that the bulk of employees live in Delaware County (74 percent of employees and 76 percent of earnings reside in Delaware County). See Figure 1.

Determining the geographic and consumption patterns of individuals is not feasible, even if we know the residence location. Rather, the most common method of ascertaining impact of activities such as a large research university is through the application of a spatial economic model based on the Bureau of Labor Statistics Regional Input Multipliers (RIMS II). In this setting, we use the well-known Regional Economic Modeling, Inc. 23-sector model for Indiana, and IMPLAN's full model for Delaware County and the surrounding East Central Indiana region.²

² This is similar other modeling approach used in previous studies of this university such as Brown, Joseph D. and Timothy R. Montgomery (1984) *The Economic Impact of Ball State University on Muncie and Delaware County*, Bureau of Business Research, Ball State University. See also Rickman, Dan S., and R. Keith Schwer. "A comparison of the multipliers of IMPLAN, REMI, and RIMS II: Benchmarking ready-made models for comparison." *The Annals of Regional Science* 29, no. 4 (1995): 363-374.

Figure 1, Distribution of BSU Employee Earnings



To evaluate this model at the sub-state level, we combine REMI output with estimates of local impact, after adjusting for known residential location of faculty, staff, and students as detailed in Table 1. We then decompose effects in three areas: the State of Indiana, the East Central Indiana region (Blackford, Hancock, Henry, Jay, Madison, Randolph, Wayne and Delaware counties). Those estimates appear in Table 2.

Table 2, Economic Impact of Ball State University

Category	Delaware County	East Central Indiana	Indiana
Total Employment	10,074	11,843	13,613
Private Non-Farm Employment	5,754	6,765	7,776
Gross Domestic Product (\$1,000's)	433,640	509,820	586,000
Personal Income (\$1,000's)	361,120	424,560	488,000
Resident Population	23,976	28,188	32,400
Ball State Student Population	18,000	20,000	21,500

Total employment, comprises all full-time jobs associated with the university or created by consumption of university operations, and faculty staff, students, and their families in each of these regions. Private employment is primarily non-governmental jobs (including those associated directly with Ball State as an employer). Gross Domestic Product details the value of goods and services produced, to including the direct effect of the university itself. Personal income reflects the value of wage and salaries and earnings related to proprietors of private sector firms in the economy. Resident population are those living inside Delaware County associated with Ball State University, or sustained by university and faculty, staff, and student spending. Ball State student population includes on-campus and off-campus residents for both students and their dependent family members.

It is also useful to know which sectors are impacted by the university. Fortunately, the structure of the local economy is well known, and the impacts of a shock to one sector, such as higher education, can be estimated across all other industries. The relative effect of the university's impact on Delaware County is reported in Table 3.

Not surprisingly, university-related economic activity occurs across a broad set of economic sectors. The largest of these include commercial rental properties, retail trade, health care, finance, and insurance.

Table 3, the Distribution of Ball State Impacts by Industry

Industry	Impact Share
Agriculture, Forestry, Fishing and Hunting	0.0%
Mining, Quarrying, and Oil and Gas Extraction	0.0%
Utilities	1.4%
Construction	1.3%
Manufacturing	1.3%
Wholesale Trade	3.2%
Retail Trade	10.7%
Transportation and Warehousing	3.6%
Information	3.1%
Finance and Insurance	8.4%
Real Estate and Rental and Leasing	24.3%
Professional, Scientific, and Technical Services	8.6%
Management of Companies and Enterprises	3.9%
Administrative and Support and Waste Management and Remediation Services	5.1%
Health Care and Social Assistance	15.4%
Arts, Entertainment, and Recreation	0.8%
Accommodation and Food Services	5.0%
Other Services (except Public Administration)	3.7%

The higher population levels due to Ball State includes faculty, staff, students, their families and others who live in the region due to the additional economic activity. This economic activity is taxed and thus involves fiscal effects, which we now discuss.

The Fiscal Effect of Ball State

As a state university, Ball State is statutorily exempt from most taxation. However, faculty, staff, students, and the economic activity associated with their presence is taxed through a variety of federal, state, and local instruments. Anything like a full accounting of federal, state, and local taxes is well outside the scope of this study. Instead, we focus on an accounting of the fiscal impact in Delaware County, where the university and the bulk of local impact occurs. Thus, we will largely sidestep federal and state taxation and concentrate on local tax instruments.

In Delaware County, households associated with Ball State University pay property taxes, local option income taxes, wheel tax, and fees. Both for individuals and local municipal governments, property and local option income taxes comprise the vast majority of revenues. The sole exception to this is public schools, which we address separately.

To assess the impact of BSU, we estimate the assessed value of residential investment on a per family basis. To do so, we assumed that the average home net assessed value was 125 percent of average faculty and staff income or roughly \$97,000. This is likely a very conservative

assumption. We then scale commercial property estimates according to the BSU related population share. Note, that this is again a very conservative estimate, since it does not account for student rental income, which is a significant share of property tax revenue for Muncie. For local option taxes, we assessed the local tax rate by an estimated AGI (90% of personal income). Results of these estimates appear in Table 4.

Table 4, Local tax Impact

	BSU Impact	BSU Share of Countywide Total
Residential Property Assessed Value	638,415,668	
Other commercial assessed value	333,729,543	28.60%
property tax	16,396,043	21.56%
LOIT	3,250,080	20.95%
Miscellaneous taxes (Wheel, Vehicle Surtax etc.) ³	930,000	20%
Total taxes related to BSU	\$20,576,123	20.6%

The population impact of Ball State University also extends to local schools, which depend upon both property taxes listed above, along with state funding to provide education. Our model estimates that local public schools in Delaware County enroll 3,022 more students than they would in the absence of Ball State University, or almost 21 percent of student enrollment. This, in turn, results in state payments to local schools of roughly \$20.5 million annually, supporting more than 201 classroom teachers across Delaware County.⁴

Travel and Visitation

Universities are significant magnets of travel and tourism. Prospective students visit campus, family members visit campus, and other university-tied individuals travel to and from campus, along with fans to enjoy sporting events. Visitors also come to view amenities of the university, such as events at Emens Auditorium or the Owsley Museum of Art.

We do not know the full number of these visits that are specifically related to Ball State University. Neither do we know how much travel and entrainment leakage is prevented by the university activities. For example, many residents might choose to attend an activity in Indianapolis, but remain in Muncie to enjoy a concert at Emens. However, the university does report more than 76,000 ticketed visitors to athletic events in the four largest areas (Football, Men’s and Women’s Basketball, and Women’s Volleyball). Likewise, we know that over 96,000

³ See DeBoer, Larry and Anita Yadavalli (2012) Indiana’s County Motor Vehicle Excise Surtax and Wheel Tax, Department of Agricultural Economics, Purdue University.

⁴ Absent a detailed census, we cannot know which school corporations children of ball state employees and students attend. Moreover, we cannot know the school location of those children who are in Delaware County because of Ball state spending.

ticketed visitors attend events at Emens, Pruis Hall, the Owsley Museum and other venues on campus.

The economic impact of these visits is dependent upon the level and composition of spending of these visitors in the local area. Fortunately, the Muncie Convention and Visitors Bureau recently commissioned a survey of visitor spending.⁵ In order to provide a rough estimate of this impact, we include spending categories other than pass-through spending (like entrance fees) and campground fees. This provides roughly \$32 million in additional direct economic impact due to the university. The total impact of tourism attributable to Ball State is roughly \$43.7 million per year when accounting for the indirect and induced effect of tourism. Again, this does not include any unticketed visits for events such as a lawn graduation, non-ticketed performance or athletic event, academic conference, or general visits by friends and family to Ball State University. The actual impact is certainly much higher.

Other Economic and Fiscal Considerations

Any discussion of university impacts occasions significant questions about the state of the community in the absence of the university. Some of these questions involve population or economic growth; others involve the potential use of university property for alternative purposes. These are interesting and legitimate questions. We address two of them below.

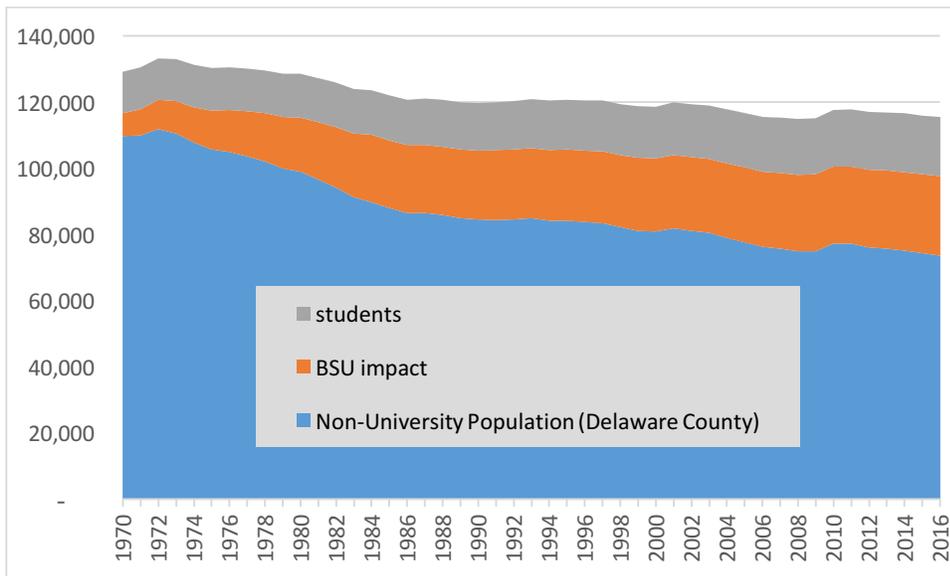
The population of Delaware County has been in decline since the early 1970s and Muncie's core population (non-annexed regions) has been losing households since the 1950s. Over the same period, Ball State enrollment, as well as the size and impact of its faculty and staff has grown.

From 1970 through 2016, Ball State added more than 5,500 students who resided in Delaware County and the impact of growing faculty, staff and students, and their families rose by more than 16,000 persons. Non-BSU related population declines by more than 36,000 persons over the same period.

Over that time, Ball State's impact on Delaware County (Muncie, MSA) rose from less than 15 percent to more than 1/3rd of total countywide population. Without Ball State's population contribution, Muncie would have ceased to qualify as a metropolitan statistical area in 1979.

⁵ ECONOMIC IMPACT OF THE MUNCIE/DELAWARE COUNTY TOURISM AND TRAVEL INDUSTRY – 2000 AND 2008, Certec, Inc. 2009.

Figure 2, Delaware County, BSU Impact and Student Population⁶



Though the Indiana legislature, like other states, chooses to exempt state property from local and municipal taxation, concern over the potential loss of property revenues to Ball State’s physical presence is common. This might be termed the concern over the opportunity cost of having a university occupy land within a municipal area. In that context, we note that Ball State occupies some 731 acres out of 17,664 acres in Muncie municipal limits. To ascertain a scale measure of property we apply the Gross Assessed Value, per acre in Muncie, to which yields a value of about \$176,000 per acre. At mean net assessed value rates, that leaves taxable value of roughly \$95,000 per acre in Muncie. The effective property tax rate in Delaware County is 2.25 percent (average of 2015-2016 rates).

Thus the annual property tax losses attributable to the Ball State campus in the unlikely possibility that it might be used for commercial or residential purposes is roughly \$1.5 million per year. Delaware County receives roughly \$10.43 dollars in property tax revenues for every dollar lost to Ball State Campus facilities. Within Muncie, municipal taxing units receive roughly \$6.25 in property tax revenue for every dollar potentially lost to tax-exempt state property associated with Ball State University.

However, this assumes that Ball State University property would have a higher value use in a non-metropolitan county of roughly 75,000 persons, with more than 2.5 million square feet of vacant industrial property.

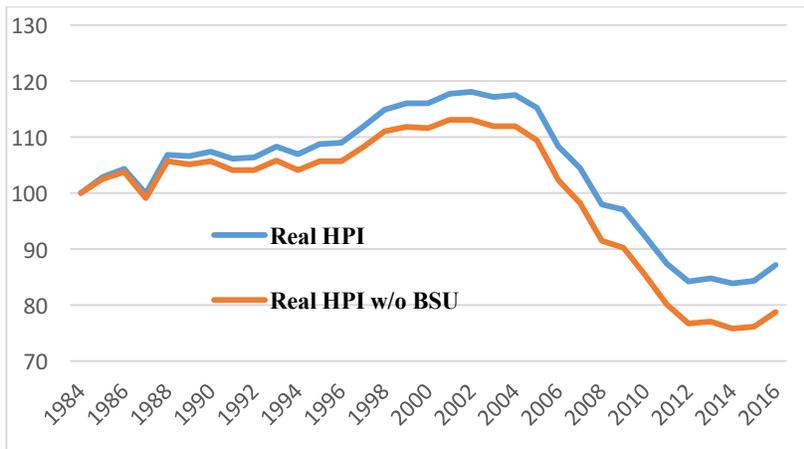
Questions also arise regarding property values in the county in view of the population and economic activity impact of Ball State. This modeled using data on home prices and population

⁶ Data on Muncie population from the Bureau of Economic Analysis, Regional Economic Information Systems, Muncie student population from various BSU reports, and employment from Brown, Joseph D. and Timothy Montgomery (1984) Economic Impact of all state University on Muncie and Delaware County, Bureau of Business Research, Report 17, 1984.

change the county. A more costly approach would be to model a synthetic demand model for housing, including family size, amenities and personal income, rather than just population. However, for our purposes here, a population effect estimate on housing is sufficient, as it yields a more conservative estimate. Moreover, several studies identify proximity to a university as a boost to home values. We do not include those effects in our analysis.⁷

We have data from 1984 through the present on housing prices, a House Price Index or HPI.⁸ From this we can estimate, in a simple time series model the percentage change in home prices due to population change. Home prices in Delaware County have been declining for more than a decade and a half, and have not yet returned to pre-1984 levels. However, the situation would be almost 10 percent worse without the concurrent population growth attributable to Ball State University. Indeed, the additional property tax value associated with this increase in home values is roughly \$4 million per year across Delaware County. A graphic of these results appear in Figure 3.

Figure 3, Effect of BSU on local residential housing values (HPI Index)



Finally, residents often question the effect of university construction on Delaware County. Ball State is a growing university, with a national reputation in several academic fields and research pursuits. As a consequence, construction of dormitory facilities and academic buildings are a constant feature of the university, and have impacts to the local community beyond the travel annoyance.

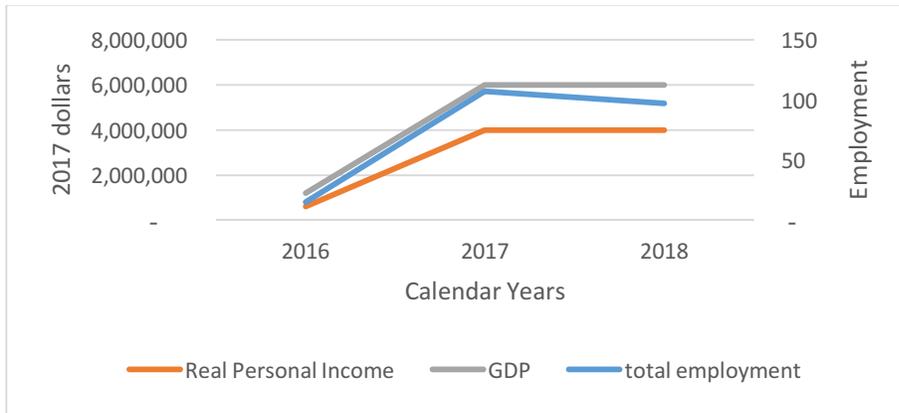
We model impacts to the new Health Sciences College, which is under construction in 2016 and 2017 at a cost of roughly \$62.5 million over those two years. Over that time, and the time leading up to groundbreaking, the facility will employ almost seven percent of all construction workers in Delaware County, creating an average of more than 100 jobs per year during the

⁷ See Fields, Terry J. (2011) A Hedonic Model for Off-Campus Student Housing: The Value of Location, Location, Location Ball State University

⁸ See Bogin, A., Doerner, W. and Larson, W. (2016). Local House Price Dynamics: New Indices and Stylized Facts. Federal Housing Finance Agency, Working Paper 16-01. The working paper is accessible at <http://www.fhfa.gov/papers/wp1601.aspx>.

construction phase and adding more than \$8 million in disposable personal income into the Muncie community. Employing the same assumptions detailed above, this construction would add more than \$8,810 in property taxes over two years, and result in an additional \$45,6000 in local option taxes of all types collected in the county. This does not include the additional faculty, staff, and student impacts or the concomitant increase in market value of surrounding property.

Figure 4, Impact of Health College on Delaware County Economy (construction only)



Summary

Ball State University employs more than 3,200 faculty and staff members and at record enrollment has more than 22,000 undergraduate and graduate students enrolled in classes. Of these, 74 percent of faculty, earning 76 percent of wages live in Delaware County, as do roughly 18,000 students.

The university boasts award winning research and academic programs, nationally known faculty and staff and brings a vast array of cultural, recreational and sporting activities to East Central Indiana.

Expenditures by faculty and staff, visitors, and the university as an enterprise boost population of Delaware County by almost 24,000 persons, not including the 18,000 students who live in residence halls and rental homes in Muncie. This boosts school enrollments by more than 3,000 children or more than one in five students across the county.

Ball State, its operations and associated activities account for almost 28 percent of assessed value in the county, more than one in five property tax and local income tax dollars collected in Delaware County. The 3,000 students account for more than \$20 million in additional state funding to Delaware County schools, and the presence of Ball State adds more than 10,000 jobs and \$586 million of Gross Domestic Product to Delaware County. Altogether, more than one out of every five people, jobs, wages, local tax dollars, and public school students are in Delaware County because Ball State University is located in Muncie.

Contact: Michael J. Hicks. Ph.D. 765.285.5926 or cber@bsu.edu