



Tennessee
TECH

2019 – 2020 Footprint Analysis of Tennessee Tech University

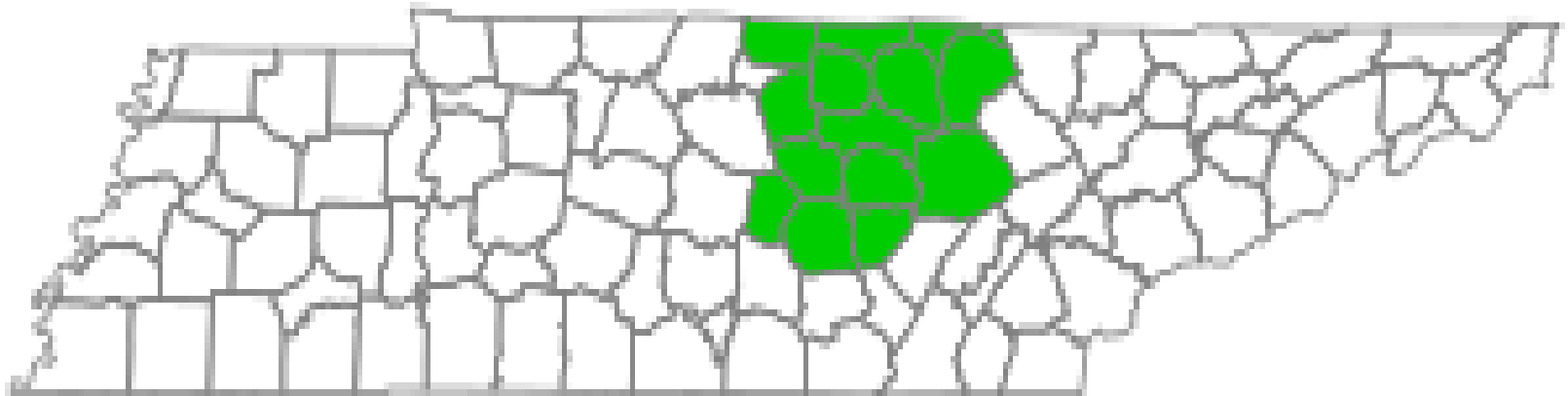
Yolunda Nabors, Senior Lecturer

REMI Users' Conference

October 20, 2021



Introduction



Introduction

- University employed 2,363
 - Total salary outlay of \$88.1 million
- Tennessee Technological University conferred 2,462 degrees
 - 26% of TTU graduates find employment within the Upper Cumberland region
 - 50% obtain a job in the rest of Tennessee
- TTU student enrollment for the AY 19-20 was 10,177
 - Student expenditure \approx \$99.1 million
- Sporting events revenue of \$13.3 million
- Tourism
 - 87,299 visitors
 - estimated \$17.8 million revenue
- Auxiliary
 - Comprised of the campus bookstore, food service, housing, vending, & wellness facility
 - Revenue = \$18.6 million
- Construction Spending
 - Book value \approx \$91.3 million



Purpose

- Analyzes the university's economic footprint during AY 19-20.
 - Estimate changes in outcome variable due to Covid 19.
- TTU contributes to the Tennessee economy through its staff, students, activities, and capital investments.
- The effects on the economy yield observable impacts on employment, GDP, Output, and Personal Income.
- To account for real changes from the baseline, this study reports a five-year average spanning from 2022-2026.
- The overall impacts, which include the direct, indirect, and induced effects, were observed as “differences” from the REMI baseline forecast, so the overall impacts are attributable to the existence of Tennessee Technological University.



Methodology

- Wage bill differences between TTU employees and those employed in the same industries within REMI's baseline economy were determined and entered.

Industry NAICS Code & Description	Adjustment to Wages and Salaries
55 - Management of companies and enterprises	\$122,273
61 - Educational services; private	\$56,611
561 - Administrative and support services	\$6,581
61 - Educational services; private	-\$14,889
54 - Professional, scientific, and technical services	\$38,962

- Graduate and undergraduate students are treated as two separate groups with different spending patterns as determined by TTU's cost of attendance



Methodology

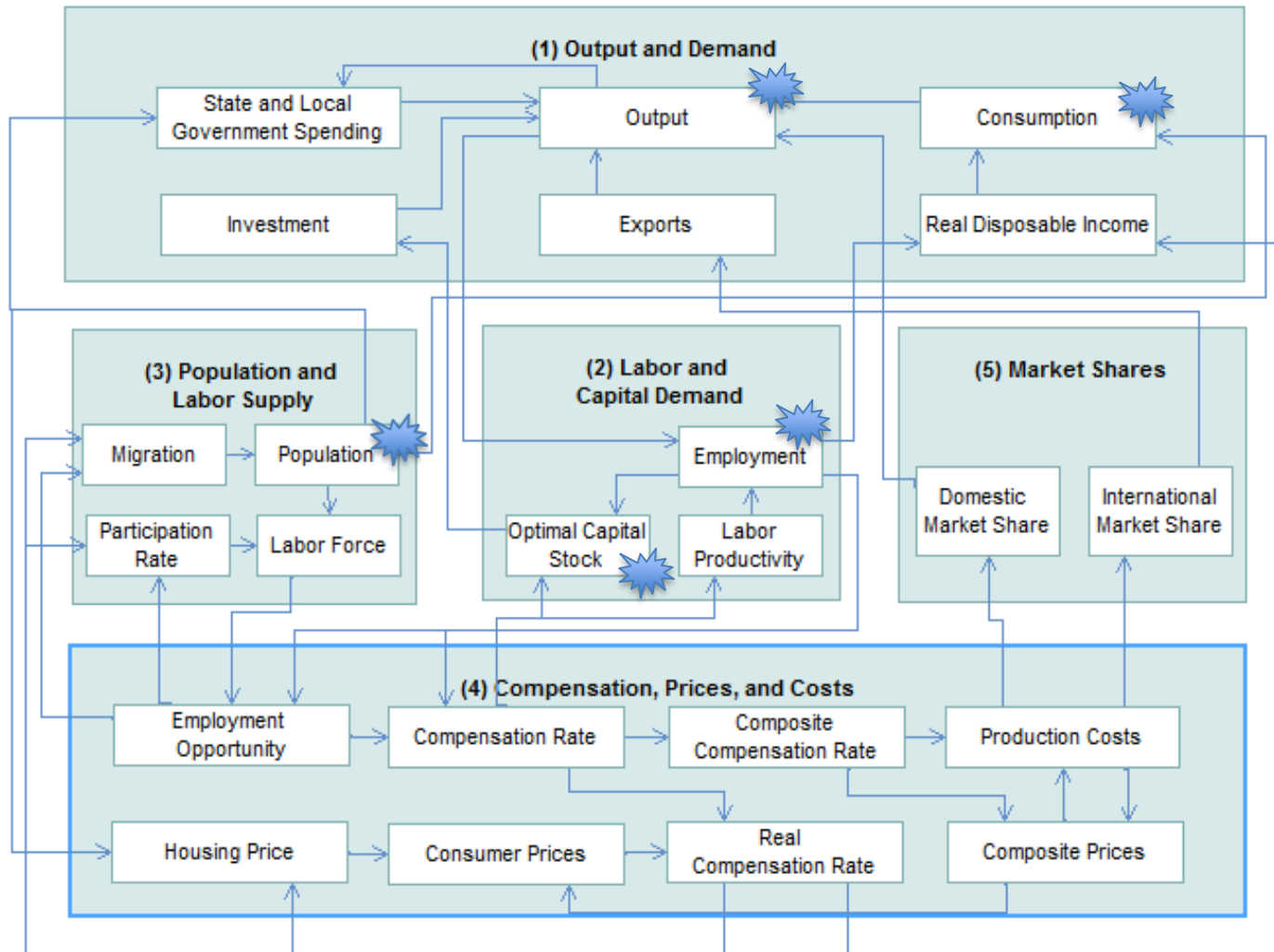
- Tourism variables which capture spectator spending during TTU sporting events are intended to reflect the gains from restaurant, fast food, grocery, souvenir, retail, amusement, and gasoline expenditure

2013 TSSAA Bowl		
Spending differences between single day and overnight attendees		
Spending Class	Primary Overnight Spenders	Primary Spenders Single Day
Restaurant	\$65	37
Fast Food	26	14
Groceries	7	5
Souvenirs	22	9
Retail	24	8
Amusement	5	7
Other	0.76	3
Gas	60	31



Notable Results

Model Linkages



Key Assumptions

- The university spends all revenue each year and does not operate a deficit.
- The university's student population, employment, and revenues do not grow during the period of simulation.
- Absent TTU, individuals in the region would not obtain college degrees.
- Seventy-six percent of TTU alumni find employment in Tennessee.
- Approximately 34% of undergraduates acquire off-campus housing.
- All graduate students acquire off-campus housing.
- Sixty percent of sporting event spectators reside within 100 miles of the university.
- Construction expenditure will remain the same throughout the duration of model simulation.



Notable Results

Economic Impact Comparisons

2019-2020 Footprint Analysis of Tennessee Technological University Region: Tennessee

Category	Units	without Graduate Effects	With Graduate Effects
Total Employment	Individuals (Jobs)	6,937	11,871
Private Non-Farm Employment	Individuals (Jobs)	6,121	10,594
Gross Domestic Product	Current Dollars	609,363,902	1,516,359,389
Output	Current Dollars	970,841,024	2,702,709,664
Personal Income	Current Dollars	505,656,417	892,560,143
Real Disposable Personal Income	Fixed (2012) Dollars	337,791,543	587,936,880

2019-2020 Footprint Analysis of Tennessee Technological University Region: Upper Cumberland

Category	Units	without Graduate Effects	With Graduate Effects
Total Employment	Individuals (Jobs)	5,998	7,356
Private Non-Farm Employment	Individuals (Jobs)	5,253	6,449
Gross Domestic Product	Current Dollars	528,745,907	860,548,889
Output	Current Dollars	830,339,467	1,446,969,726
Personal Income	Current Dollars	433,069,913	523,960,336
Real Disposable Personal Income	Fixed (2012) Dollars	295,289,474	354,456,986



Notable Results

Total Employment Gains by Industry

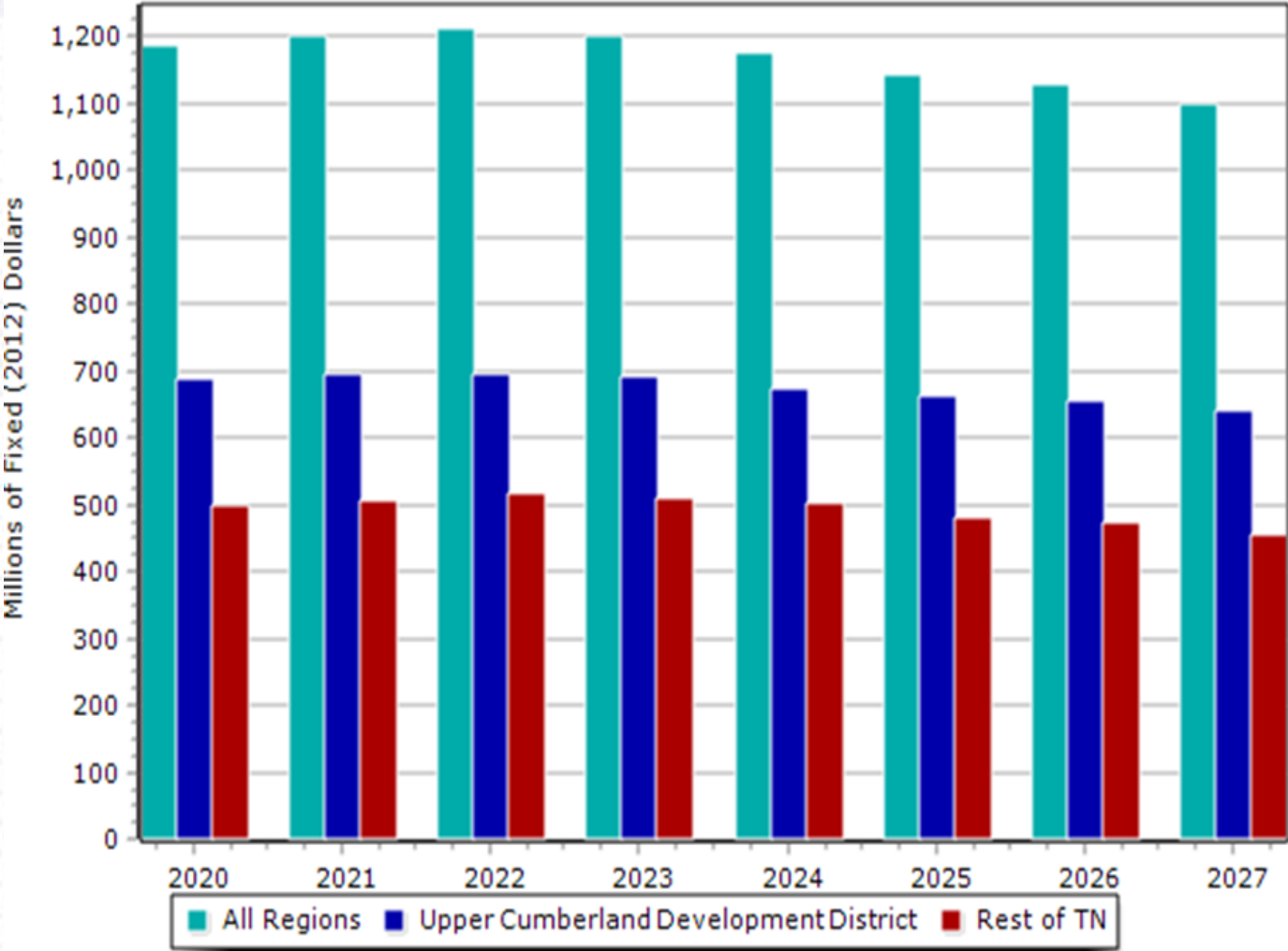
2019-2020 Footprint Analysis of Tennessee Technological University

Industry	Units	All Regions	Upper Cumberland	Rest of TN
Construction	Individuals (Jobs)	1,640	1,429	211
Manufacturing	Individuals (Jobs)	85	52	32
Retail trade	Individuals (Jobs)	470	394	75
Real estate and rental and leasing	Individuals (Jobs)	196	161	35
Professional, scientific, and technical services	Individuals (Jobs)	589	512	77
Administrative, support, waste management, and remediation services	Individuals (Jobs)	645	553	92
Educational services; private	Individuals (Jobs)	1,494	1,477	17
Health care and social assistance	Individuals (Jobs)	244	153	91
Accommodation and food services	Individuals (Jobs)	386	299	86
Other services (except public administration)	Individuals (Jobs)	147	117	31
State and Local Government	Individuals (Jobs)	816	745	72



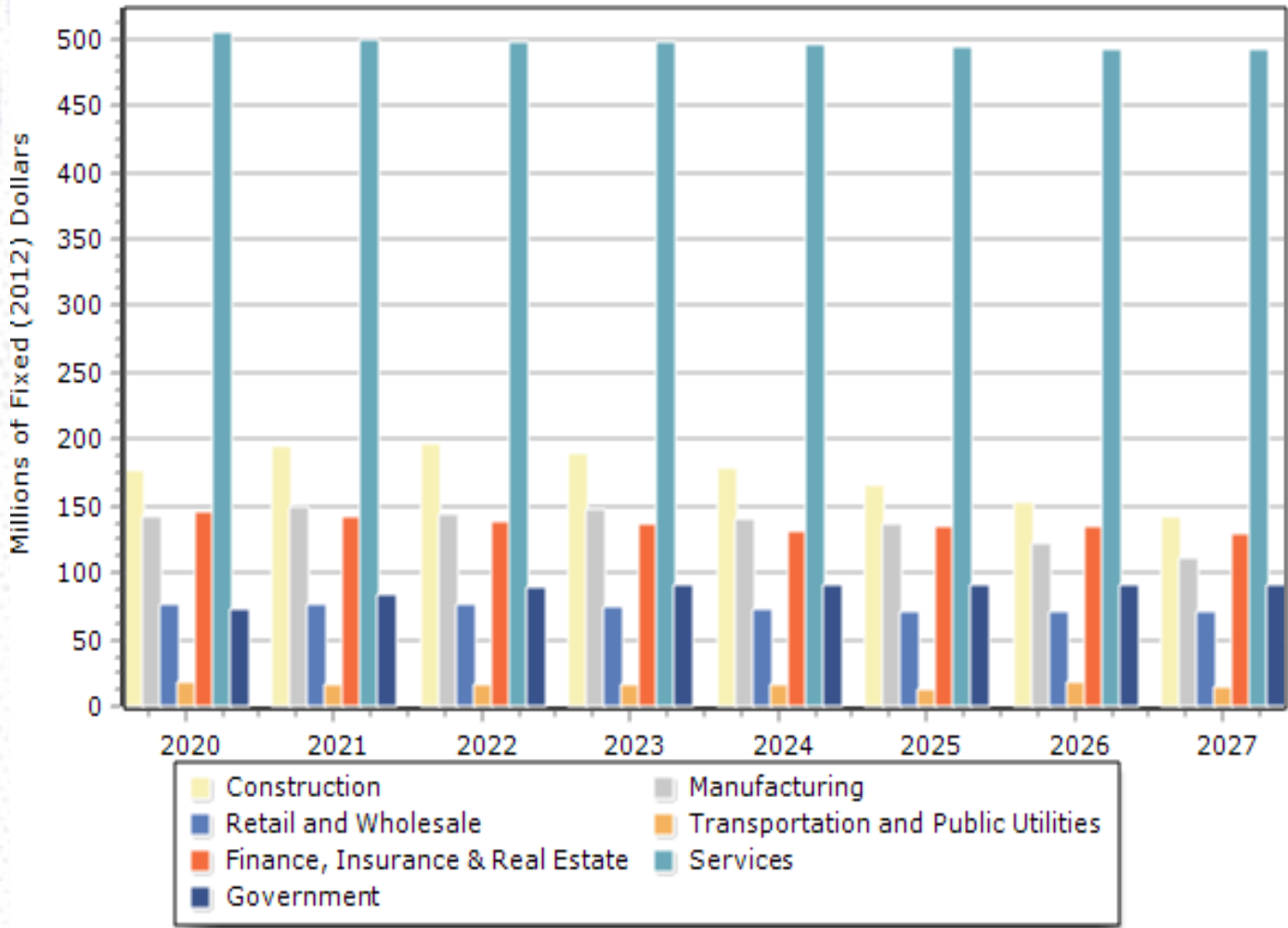
Notable Results

Yearly GDP Gains by Region



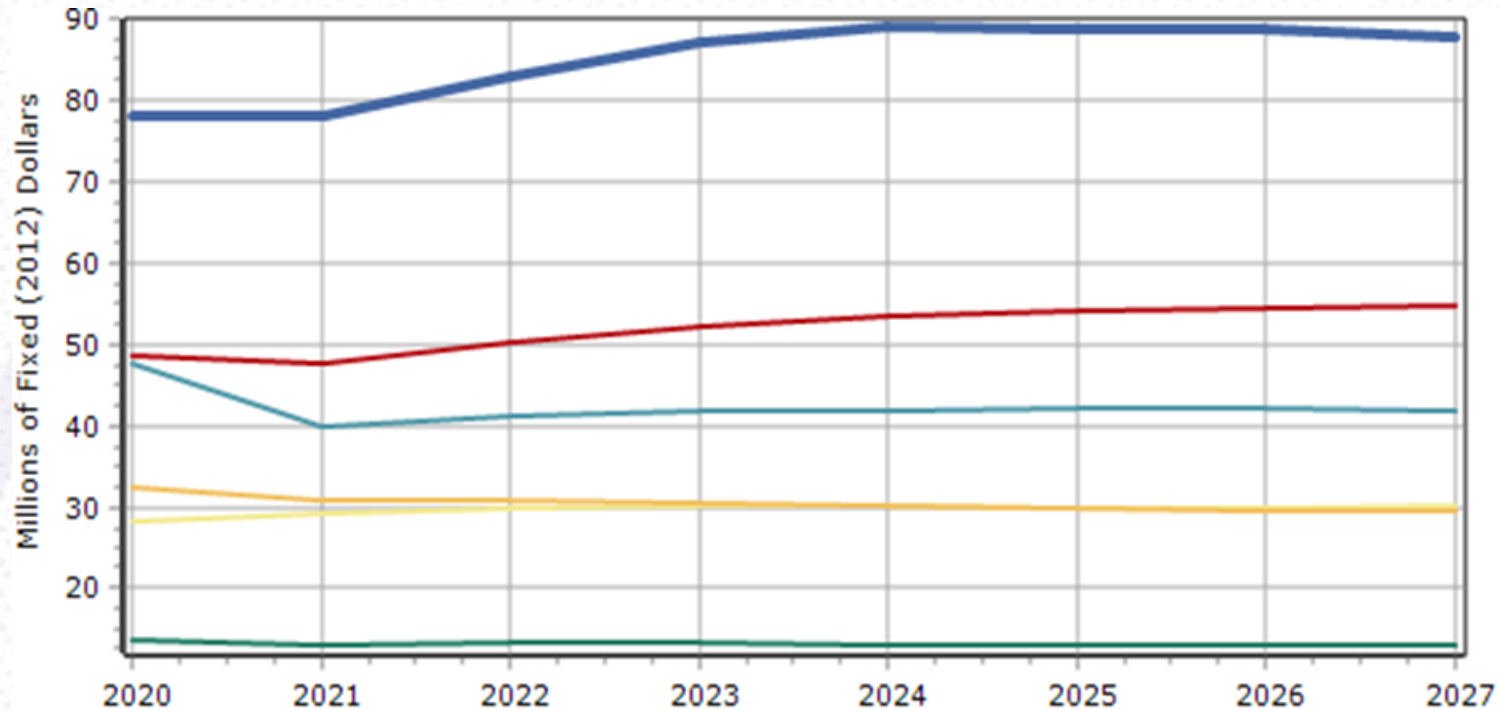
Notable Results

Output Gains by Industry: Upper Cumberland



Notable Results

Personal Consumption Expenditure by Industry: Upper Cumberland



- ✓ Furnishings and durable household equipment
- ✓ Recreational goods and vehicles and other durable goods
- ✓ Other nondurable goods
- ✓ Housing
- ✓ Health care
- ✓ Recreation and other services



But then there was Covid 19...



Major Changes

- **Tourism**
 - Declined to 25,900 campus visitors
 - Estimated expenditure of AY 20-21 \approx \$5.2 million
- **Student population changes**
 - Increased by 40 students Fall 2020
 - Decreased by 380 Fall 2021
 - Decline in student expenditure
- **Auxiliary**
 - Decreased due to low population of on-campus students



Key Assumptions

- The university spends all revenue each year and does not operate a deficit.
- The university's student population, employment, and revenues do not grow during the period of simulation.
- Absent TTU, individuals in the region would not obtain college degrees.
- **Seventy-six percent of TTU alumni find employment in Tennessee.**
- Approximately 34% of undergraduates acquire off-campus housing.
- All graduate students acquire off-campus housing.
- Sixty percent of sporting event spectators reside within 100 miles of the university.
- Construction expenditure will remain the same throughout the duration of model simulation.



Notable Results

Economic Impact Comparisons without Graduate Effects

Footprint Analysis of Tennessee Technological University

Region: Upper Cumberland

Category	Units	AY 2019-2020	AY 2020-2021
Total Employment	Individuals (Jobs)	5,998	5,948
Private Non-Farm Employment	Individuals (Jobs)	5,253	5,222
Gross Domestic Product	Current Dollars	528,745,907	517,621,083
Output	Current Dollars	830,339,467	813,529,051
Personal Income	Current Dollars	433,069,913	427,360,185
Real Disposable Personal Income	Fixed (2012) Dollars	295,289,474	291,204,933



Notable Results

Total Employment Gains by Industry

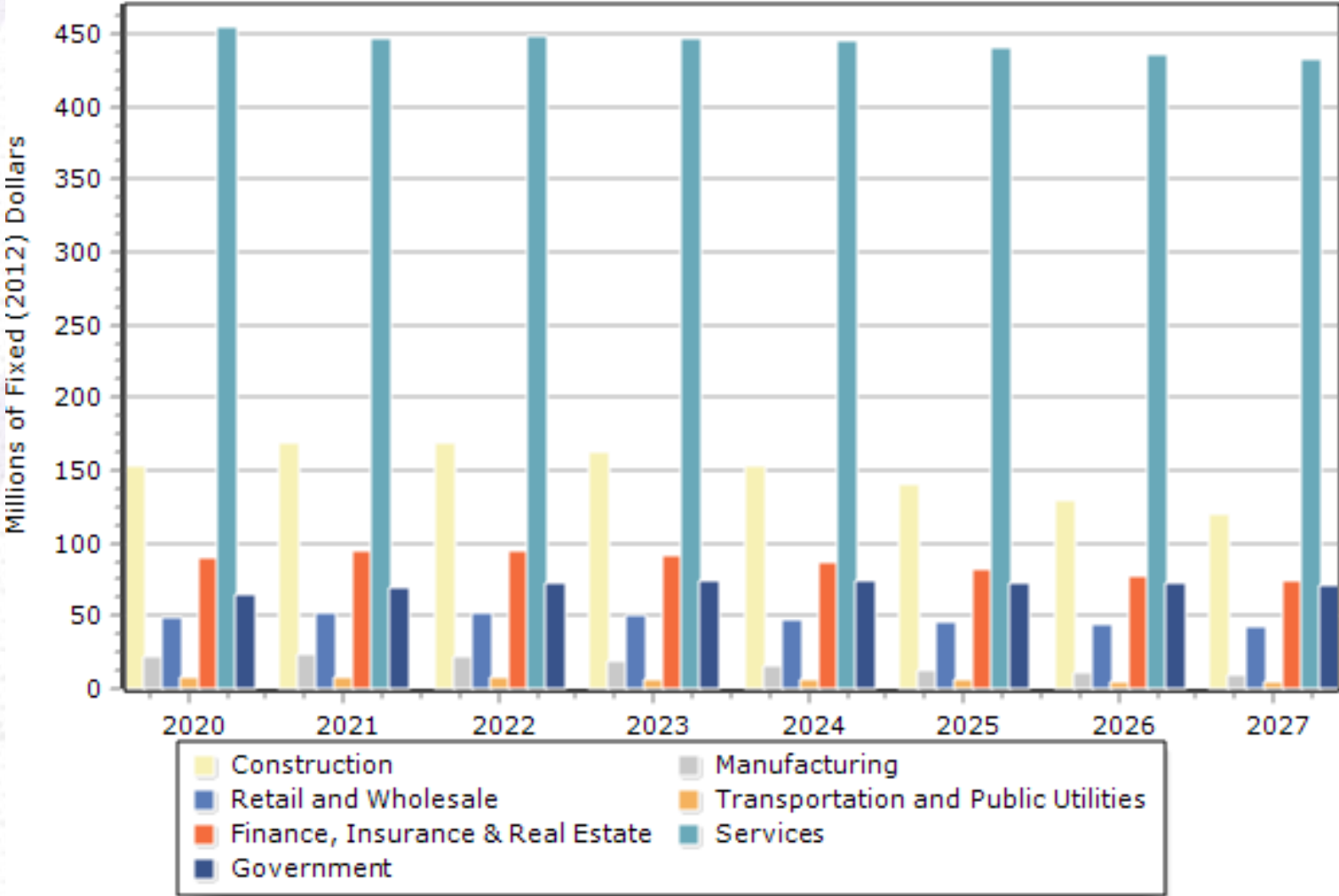
2020-2021 Footprint Analysis of Tennessee Technological University

Industry	Units	All Regions	Upper Cumberland	Rest of TN
Construction	Individuals (Jobs)	1,630	1,419	210
Manufacturing	Individuals (Jobs)	83	51	32
Retail trade	Individuals (Jobs)	464	389	75
Real estate and rental and leasing	Individuals (Jobs)	192	157	35
Professional, scientific, and technical services	Individuals (Jobs)	587	510	76
Administrative, support, waste management, and remediation services	Individuals (Jobs)	642	551	91
Educational services; private	Individuals (Jobs)	1,493	1,476	17
Health care and social assistance	Individuals (Jobs)	242	151	91
Accommodation and food services	Individuals (Jobs)	380	294	85
Other services (except public administration)	Individuals (Jobs)	145	115	30
State and Local Government	Individuals (Jobs)	797	726	70



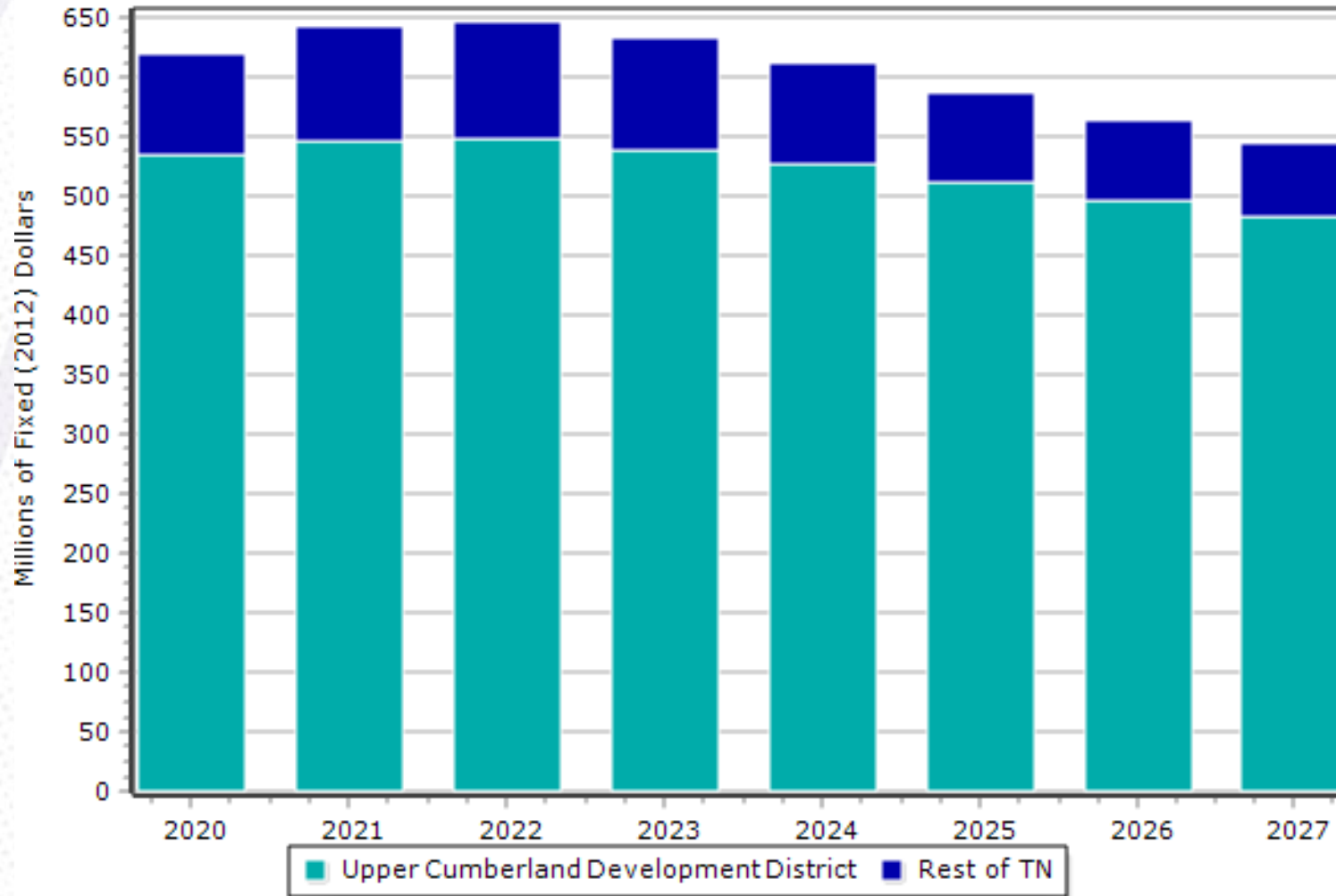
Notable Results

Output Gains by Industry: Upper Cumberland



Notable Results

Yearly GDP Gains by Region



Conclusion

Economic Impact Comparisons with Graduate Effects

Footprint Analysis of Tennessee Technological University

Region: Upper Cumberland

Category	Units	AY 2019-2020	AY 2020-2021
Total Employment	Individuals (Jobs)	7,356	7,304
Private Non-Farm Employment	Individuals (Jobs)	6,449	6,418
Gross Domestic Product	Current Dollars	860,548,889	658,155,522
Output	Current Dollars	1,446,969,726	1,104,831,301
Personal Income	Current Dollars	523,960,336	516,759,430
Real Disposable Personal Income	Fixed (2012) Dollars	354,456,986	349,321,020



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