

2008

# James Cook University

# Economic Impact Report

JCU's Economic Impact on the north Queensland region

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## About the Consultants

DS Enterprises Pty Ltd is a North Queensland-based economic consulting firm having served north Queensland communities for over 11 years. The principal economist at DS Enterprises is Colin Dwyer (BEc Hons), who has over 23 years experience in private, public and academic consulting. Cairns-based economist Bill Cummings, of Cummings Economics, provided assistance on specific regional economic data.

DS Enterprises Pty Ltd has successfully completed many other projects including

- the Gulf Skills Audit;
- Australian Technical College North Queensland Business Plan, Economic Impact Study and Financial statements; and
- Cromarty Wetlands Cost Benefit Analysis.

This report was commissioned by James Cook University in November 2008.

### **Note:**

The term “north Queensland” is defined in this report as the combination of ABS defined areas of Northern (Townsville) and the Far North (Cairns) Statistical Divisions.

***“James Cook University is one of the most important individual employers in the combined Cairns and Townsville economies. Intensifying the economic benefits from JCU as a major employer, JCU staff earn higher amounts than the estimated mean individual incomes for both regional centres. Another major benefit for the local economies is the reliable levels of employment, job creation and consequential creation of dependable local demand. James Cook University enhances the resilient nature of both local economies. ”***

# James Cook University Economic Impact Report 2008

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*Townsville Campus*



*Cairns Campus*



## 1. Principal Findings

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### 1.1 *Regional Impact*

- **JCU's value to the Townsville and Cairns economies in 2008 was \$445m.**
- **For every \$1m of expenditure, the University creates, \$1.14m for Townsville and Cairns.**
- **JCU created a total of 5,438 equivalent full time (EFT) jobs, of which 1,907 EFT are JCU employees, and 3,531 EFT generated through secondary effects. Each EFT employed at JCU supports another 1.85 full-time jobs in north Queensland.**
- JCU spent \$99m on net wages and salaries in 2008.
- JCU spent \$67m on capital infrastructure in 2008.
- JCU spent \$235m on recurrent expenditure in 2008.
- Students attending JCU spent a total of \$139m in 2008.
- JCU staff spent \$94m in 2008.
- JCU created direct income effects of \$394m.
- In 2009 and 2010 James Cook University should create important value added economic benefits for north Queensland.

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### 1.2 *Townsville*

- **JCU's value to the Townsville Economy is \$359m.**
- **\$1m of JCU expenditure, the University creates \$1.13m for the Townsville economy.**
- **JCU contributed 3.4% to the Townsville economy.**
- **JCU contributed 3.4% of Townsville's total employment.**
- JCU created a total of 4,435 equivalent full time (EFT) jobs, of which 1,603 EFT are JCU employees in Townsville, and 2,832 EFT are generated through secondary effects. Each EFT employed at JCU Townsville supports another 1.76 full-time jobs in the Townsville region.
- \$1m of JCU capital expenditure in Townsville, creates over 10.5 jobs in Townsville.
- Students of JCU spent \$104m in 2008.
- JCU staff in Townsville spent \$77m in 2008.
- Every \$1m of student expenditure (or 97 students) creates 14.2 jobs in Townsville.
- JCU created direct income effects in the Townsville region of \$321m.
- JCU offers the Townsville region a unique specialisation in higher education workers.

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### 1.3 *Cairns*

- **JCU's value to the Cairns Economy is \$86m.**
- **For every \$1m of expenditure, the University creates \$1.18m for the Cairns economy.**
- JCU contributed almost 1% to the Cairns economy.
- JCU contributed 0.7% of Cairns total employment.
- JCU created a total of 1,003 equivalent full time (EFT) jobs, of which 303 EFT are JCU employees in Cairns, and 700 EFT generated in Cairns through secondary effects. Each EFT employed at JCU Cairns supports another 2.3 full-time jobs in the Cairns region.
- \$1m of JCU capital expenditure in Cairns, creates over 12 jobs in Cairns.
- Students of JCU spent \$34m 2008.
- JCU staff in Cairns spent \$17m in 2008.
- Every \$1m of student expenditure (or 93 students) creates 14.6 jobs in Cairns.
- JCU created direct income effects in the Cairns region of \$73m.

## 2. Introduction

James Cook University is a vital component of the wider Northern and Far North Queensland economies (referred to here as greater north Queensland), injecting significant demand into the economies of the two major population centres, Townsville and Cairns.

The University impacts on these economy's in a variety of ways:

- 1) Direct expenditure on goods and services
- 2) Payment of salaries and wages and staff expenditure
- 3) Student Expenditure
- 4) Capital Expenditure
- 5) Indirect and induced expenditure as a result of the increased levels of demand
- 6) Job creation by the University
- 7) Other estimated expenditure such as visitors (to students and to the University) and conferences.
- 8) Enhancing the productivity of the local workforce through its training and research
- 9) Investment in human capital in the region
- 10) The social and economic value of its research

James Cook is a significant employer in the combined Northern and Far North regions, a significant employer in the Townsville region, and a developing employer in the Cairns region

This study examines the direct economic impacts included in 1 to 4 above, together with estimates of the effects of 5 and 6 above. The secondary benefits (indirect and induced effects<sup>1</sup>) are estimated using multiplier values derived from studies in local and other areas in the region. While this study attempts to quantify the impact of 7 above, these are not included in the total economic impact estimate.

This paper does not attempt to quantify the impact of 8 to 10 above, although it is recognised that these have an economic benefit to the region. In particular, the researchers acknowledge that the research activities of JCU provide an enormous benefit to individuals, families, businesses and governments, locally, nationally and internationally. The value of research conducted by James Cook University to the local and wider economy is not quantified in this report, however, examples of the impact of JCU's research are provided in section 3.9.3.

Although the investment in human capital has not been included in the estimate of economic impact, the researchers have estimated the value of a degree and postgraduate qualification over an individual's lifetime from a recent study completed in the UK.

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<sup>1</sup> See Appendix for definitions

### 3. The Economic Impact of JCU on Townsville and Cairns

Townsville and Cairns are vibrant regional cities, with growing populations and diverse economies. James Cook University is a crucial component of each regional city. The University provides various commercial and training activities that enhances and intensifies the lifestyles of tropical Australians. The University creates a variety of economic drivers for the region including student expenditure, staff expenditure and its own demand for local goods and services.

When the University, its students and staff spend money within an economy, it has secondary impacts that percolate throughout all of those economic sectors where the University, students and staff spend directly or indirectly. These “knock on” effects are generally referred to as the secondary effects. Clearly the University will have a major impact on the local economies in the Townsville and Cairns areas as this is where the students and majority of staff reside and spend their income.

However, when goods and services are purchased outside the local economy, they have impacts on other areas, such as Brisbane and the Australian economy as a whole. This study does not estimate the impacts on those areas outside Townsville and Cairns.

The impacts are shown in terms of the effects on the level of output (gross regional product) and the number of full-time equivalent job opportunities supported (EFTs). All effects are shown at 2008 prices.

#### 3.1 Total Economic Impact of JCU to Townsville and Cairns

James Cook University is part of the broad economic base of greater north Queensland. The operations and commercial activities of the University provide solid benefits to both Cairns and Townsville’s economies. The total economic contribution of the University to the regional economy is \$445m. This represents 2% of combined Gross Regional Product. James Cook University is one of the most significant job creators in greater north Queensland. The benefit in job terms to the people of greater north Queensland is 5,438. This represents a significant 2% of combined employment.

**In summary:**

Location	Economic Impact	Employment (EFT)
Townsville	\$359.4 m	4,435
Cairns	\$ 85.9 m	1,003
<b>Combined Total</b>	<b>\$445.3 m</b>	<b>5,438</b>

### **3.1.1 Total Economic Impact in Townsville**

James Cook University is a strong contributor to the broad economic base of Townsville. The operations and commercial activities of the University provide solid benefits to Townsville's economy. The total economic contribution of the University to the Northern (Townsville) regional economy is \$359m. This represents 3.4% of the Northern region's Gross Regional Product. James Cook University is one of the most significant job creators in Townsville. The benefit in job terms to the people and businesses of Townsville is 4,435. This represents 3.4% of Townsville regional employment.

### **3.1.2 Total Economic Impact in Cairns**

James Cook University is part of the diverse Cairns economy. The operations and commercial activities of the University provide solid benefits to Cairns economy. The total economic contribution of the University to the Far North (Cairns) regional economy is \$86m. This represents almost 1% of Far North region's Gross Regional Product. The benefit in job terms to the people and businesses of Cairns is 1,003. This represents 0.7% of Cairns regional employment.

## **3.2 Recurrent Expenditure by James Cook University**

Recurrent expenditure completed by James Cook University in 2008 provided significant demand for the regional economies of Townsville and Cairns. The year 2008 has been taken as the baseline of this study. The financial data used is the actual financial results for 2008, as per the University's Statutory Accounts.

The total expenditure is \$264.0m, however depreciation (\$19.5m) and management fees to JCU Brisbane (JCUB) (\$9.0m) have been excluded. Depreciation is excluded as it is a non-cash item, and JCUB management fees are a leakage out of the regional economy.

The adjusted total JCU recurrent expenditure for the year ending December 2008 is \$235.4m. The breakdown of this expenditure is shown in Table 3.1. Staff costs are the largest component of the University's recurrent expenditure at \$146.4m, representing 62% of total adjusted recurrent expenditure.

In 2008, JCU's demand for goods and services was \$89.0m, representing 38% of its total recurrent adjusted expenditure. James Cook University provided considerable industry-specific demand for travel services (\$11.0m), equipment maintenance (\$9.0m) and minor equipment purchases (\$10.2m).

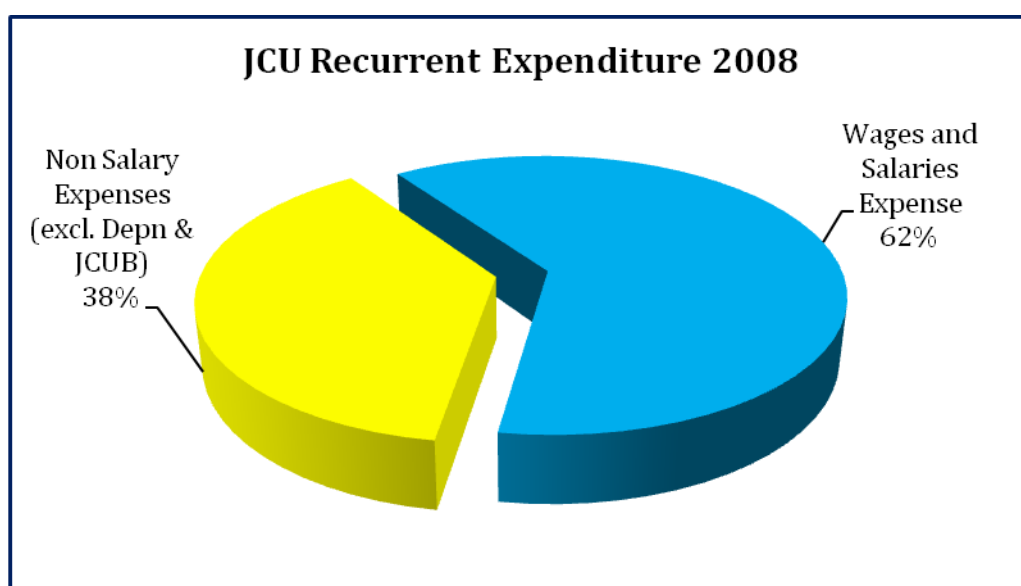
Table 3.1: James Cook University Recurrent Expenditure for 2008

Expenditure	2008 Actual (\$m)	2008 Share (%)
Bad & Doubtful Debts	\$0.099	0.04%
Depreciation	\$19.529	7.40%
Equipment, Repairs & Maintenance	\$9.041	3.43%
Minor Equipment	\$10.216	3.87%
Borrowing Costs	\$1.712	0.65%
Travel	\$11.008	4.17%
Other Operating Expenses	\$66.005	25.00%
<b>Sub Total Non Salary Expenses</b>	<b>\$117.610</b>	<b>44.55%</b>
Oncost	\$6.364	2.41%
Super	\$17.277	6.55%
Tax	\$23.857	9.04%
Net	\$98.860	37.45%
<b>Sub Total Wages and Salaries</b>	<b>\$146.358</b>	<b>55.45%</b>
<b>Total</b>	<b>\$263.968</b>	<b>100.00%</b>
Less: Depreciation	(\$19.529)	
Less: JCUB Management fees	(\$9.051)	
<b>Total Adjusted</b>	<b>\$235.388</b>	

Source: JCU Finance system December 2008. This table includes other locations, Townsville and Cairns

It is important to note that we have used the Net Salary figure of \$98.9m in our direct economic impact calculations. Taxes, superannuation payments and deductions were all considered as leakages out of the regional economy. It was unclear if oncots remained in the local economy or was a leakage. For this study we have been conservative and said they are a total leakage. The University's finance system was unable to provide precise information on non salary expenditure by geographical location.

Graph 1: Mix of JCU's Recurrent Expenditure for 2008



Source: JCU Finance system December 2008

### 3.2.1 James Cook University Recurrent Spending in Townsville

For the year ending December 2008 the University's total recurrent expenditure in Townsville was \$192.4m. The non-salary data by location was not available from the University's finance system; it has been estimated based on equivalent fulltime staff (EFT). The breakdown of this estimated expenditure is shown in Table 3.2.

Staff costs are the largest component of the recurrent expenditure in Townsville at \$119.2m, of which \$80.6m is net salary.

James Cook University injects a significant amount of demand into the Townsville economy when it purchases goods and services (\$73.2m in 2008). James Cook University also provides significant industry specific demand in Townsville for travel services (\$9.1m), equipment maintenance (\$7.4m) and minor equipment purchases (\$8.4m). Other expenses were the largest non salary expenditure of the University.

*Table 3.2: James Cook University Recurrent Estimated Expenditure in Townsville for 2008*

Expenditure	2008 Actual (\$m)	2008 Share (%)
Bad & Doubtful Debts	\$0.081	0.04%
Equipment, Repairs & Maintenance	\$7.435	3.86%
Minor Equipment	\$8.401	4.37%
Borrowing Costs	\$1.408	0.73%
Travel	\$9.052	4.71%
Other Operating Expenses	\$46.833	24.35%
<b>Sub Total Non Salary Expenses</b>	<b>\$73.209</b>	<b>38.06%</b>
Oncost	\$5.184	2.69%
Super	\$14.051	7.30%
Tax	\$19.348	10.06%
Net	\$80.572	41.89%
<b>Sub Total Wages and Salaries</b>	<b>\$119.155</b>	<b>61.94%</b>
<b>Total</b>	<b>\$192.364</b>	<b>100.00%</b>

Source: JCU Finance system December 2008

It is important to note that we have used the net salary figure of \$80.6m in our direct economic impact calculations. Taxes, superannuation payments and deductions were all considered as leakages out of the regional economy. It was unclear if oncosts remained in the local economy or was a leakage. For this study we have been conservative and said they are a total leakage.

### 3.2.2 James Cook University Recurrent Spending in Cairns

For the year ending December 2008 the University's total recurrent expenditure in Cairns was \$43.0m. The non-salary data by location was not available from the University's finance system; it has been estimated based on equivalent fulltime staff (EFT). The breakdown of this estimated expenditure is shown in Table 3.3.

Staff costs are the largest component of the recurrent expenditure in Cairns at \$27.2m, of which \$18.3m is net salary.

James Cook University provides important demand for the Cairns economy. In 2008, expenditure on goods and services was \$15.8m. James Cook University also provides significant industry-specific demand in Cairns for travel services (\$2.0m), equipment maintenance (\$1.6m) and minor equipment purchases (\$1.8m). Other expenses were the largest Non salary expenditure of the University.

*Table 3.3: James Cook University Recurrent Estimated Expenditure in Cairns for 2008*

<b>Expenditure</b>	<b>2008 Actual (\$m)</b>	<b>2008 Share (%)</b>
Bad & Doubtful Debts	\$0.018	0.01%
Equipment, Repairs & Maintenance	\$1.607	0.84%
Minor Equipment	\$1.815	0.94%
Borrowing Costs	\$0.304	0.16%
Travel	\$1.956	1.02%
Other Operating Expenses	\$10.121	5.26%
<b>Sub Total Non Salary Expenses</b>	<b>\$15.821</b>	<b>8.22%</b>
Oncost	\$1.180	0.61%
Super	\$3.227	1.68%
Tax	\$4.508	2.34%
Net	\$18.288	9.51%
<b>Sub Total Wages and Salaries</b>	<b>\$27.203</b>	<b>14.14%</b>
<b>Total</b>	<b>\$43.024</b>	<b>22.37%</b>

Source: JCU Finance system December 2008

It is important to note that we have used the net salary figure of \$18.3m in our direct economic impact calculations for Cairns. Taxes, superannuation payments and deductions were all considered as leakages out of the regional economy. It was unclear if oncosts remained in the local economy or was a leakage. For this study we have been conservative and considered them a leakage.

### 3.3 James Cook University's Capital Expenditure

In 2008, James Cook University provided a significant injection of construction and infrastructure demand. The capital expenditure by James Cook University in greater north Queensland region in 2008 is expected to be \$66.9m. Capital expenditure in Townsville was \$62.7m followed by Cairns with \$4.1m and other locations in greater north Queensland accounting for \$112,557. Capital expenditure increased by 137% or more than doubled between 2007 and 2008. Importantly this construction program and impact on the local economies of Cairns and Townsville is likely to remain strong with recent federal government commitments indicating capital expenditure expected to be strong in 2009.

Table 3.4: Capital Expenditure by Project for 2007 and 2008 in Townsville

Project Name	2007 Capital Expenditure	2008 Capital Expenditure
Western Courts Student Accommodation	-	\$2,700,000
Online Teaching & Learning	\$2,776,833	-
CDP Project Network Resilience, Redundancy & Reach	\$254,262	\$74,526
School of Creative Arts Facility	\$5,749,464	\$3,108,250
Veterinary Anatomy Office & Laboratory	\$451,167	\$97,452
Veterinary Clinic	\$383,718	\$6,297,790
Australian Tropical Science Innovation Precinct	\$754,675	\$2,758,265
Refurbish Research areas in Medicine	\$246,675	\$52,096
VSU Sport & Recreation Facilities	\$226,329	\$4,491,010
Campus District Cooling - Douglas	\$900,536	\$13,655,744
Expanded Medical School Facility	\$3,194,935	\$22,644,720
Pharmacy Extension	\$1,823,814	\$4,519,726
Rationalisation of Faculty AE&SS	-	\$395,360
Better Universities Renewal Funding (BURF)	-	\$1,280,000
Various Other Projects	\$219,646	\$585,943
<b>Total</b>	<b>\$16,982,054</b>	<b>\$62,660,882</b>

Source: JCU Finance system December 2008

In Townsville, the expanded medical school and new cooling system accounted for more than half the capital expenditure in 2008. Other large capital expenditure items included the Veterinary Clinic \$6.3m Extension to the Pharmacy School \$4.5m and Sport and Recreation facilities \$4.5m.

While it is recognised that Capital Expenditure can create transient jobs and payments can leak from the regional economy to Head office of 'out of town' project winners, we have recognised there is a significant injection of demand into the local economies of Cairns and Townsville, particularly the construction and property industries, and that there is also significant equivalent full time (EFT) job creation for these regional economies

The University had a capital expenditure impact and solid EFT job creation impact in Cairns in 2008, the new Dentistry School (\$1.5m) accounted for 36% of the capital expenditure in 2008 and the Mosquito research facility (\$1.9m) accounted for 46% of the capital expenditure in 2008. Other large capital expenditure items included continuing construction of the Sir Robert Norman building (housing the Australian Tropical Forest Institute) of \$313,000, Refectory and Amphitheatre both worth \$200,000.

It should also be noted that while Cairns has proportionally less capital expenditure than Townville there will be variation in the capital expenditure needs of each location from year to year. Indeed, in 2007 Cairns received proportionally higher capital expenditure than their proportion of students and staff. In addition, during 2009 and 2010 an additional \$28.5m will be spent on the School of Dentistry, and of the \$12m funding to JCU for the Queensland Tropical Health Alliance, almost \$9m will be spent in Cairns.

*Table 3.5: Capital Expenditure by Project for 2007 2008 in Cairns*

Project Name	2007 Capital Expenditure	2008 Capital Expenditure
New Refectory in Cairns	-	\$200,000
Australian Tropical Forest Institute	\$9,291,116	\$313,014
Cairns Amphitheatre	-	\$200,000
Tropical Medicine Mosquito Research Facility	\$111,186	\$1,921,427
School of Dentistry	-	\$1,500,000
<b>Total</b>	<b>\$9,402,302</b>	<b>\$4,134,441</b>

Source: JCU Finance system December 2008

The University also had a capital expenditure impact and minor EFT job creation impact in other greater north Queensland centres. The majority of this expenditure was for the purchase of property in 2007. Malanda, on the Atherton tablelands and close to Cairns received over \$750,000 in 2007 with the construction of a Tablelands veterinary teaching centre.

*Table 3.6: Capital Expenditure by Project for 2007 2008 in other regions*

Project Name	Location	2007 Capital Expenditure	2008 Capital Expenditure
Student Accommodation in Cloncurry	Cloncurry	\$403,729	\$17,246
Tablelands Veterinary Teach Ctr - Malanda	Malanda	\$754,708	\$10,289
Purchase Proserpine Student Accommodatn	Proserpine	\$249,055	\$79,911
Purchase Townhouse Thursday Island	Thursday Is.	\$414,609	\$5,111
<b>Total</b>		<b>\$1,822,101</b>	<b>\$112,557</b>

Source: JCU Finance system December 2008

*Sir Robert Norman Building (Australian Tropical Forest Institute) - Cairns*



*School of Creative Arts Building - Townsville*



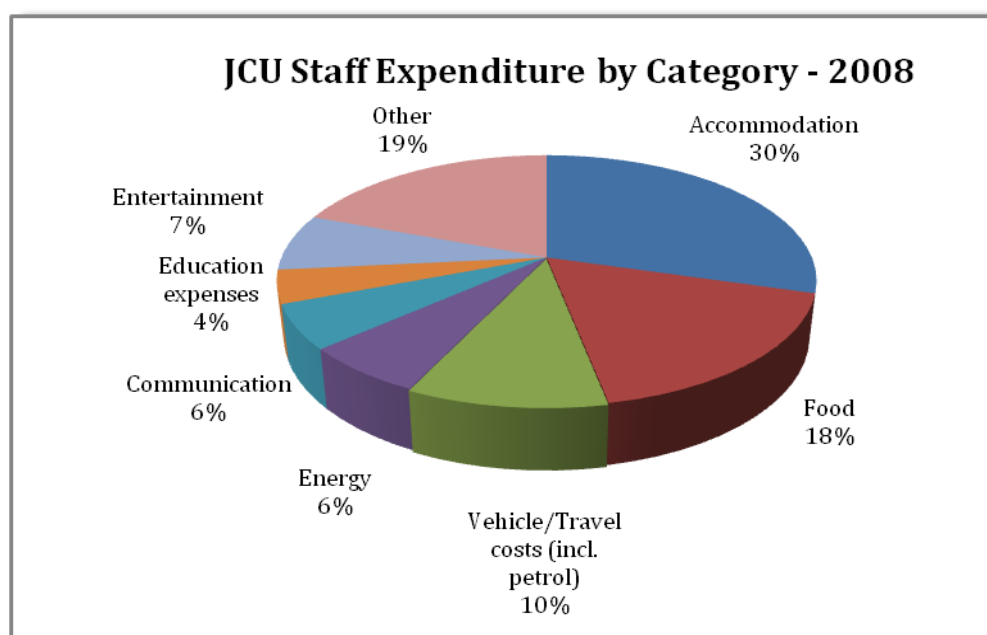
### 3.4 James Cook University Staff Expenditure by Location

James Cook University is one of the most important individual employers in the combined Cairns and Townsville economies. Intensifying the economic benefits from JCU as a major employer, JCU staff earn higher amounts than the estimated mean individual incomes for both regional centres. Another major benefit for the local economies is the reliable levels of employment, job creation and consequential creation of dependable local demand. James Cook University enhances the resilient nature of both local economies.

During 2008, staff at JCU (Townsville and Cairns) earned \$98.9m in disposable income; they spent approximately \$93.9m of their earnings, of which \$76.5m of their earnings was spent in Townsville and \$17.4m was spent in Cairns. Approximately 5% of staff income is estimated to be saved. The distribution of that expenditure by type of spending is shown in table 3.7. We assumed that this expenditure remained in the region.

On average, the largest expense of James Cook University staff was for accommodation (30%), food represented (18%) of personal net income, vehicle expenses represented (10%), entertainment (7%), energy (6%), communications (6%) and self and family member education expenses represented (4%).

Graph 2: Staff Expenditure by Category



Source: JCU Staff Survey December 2008

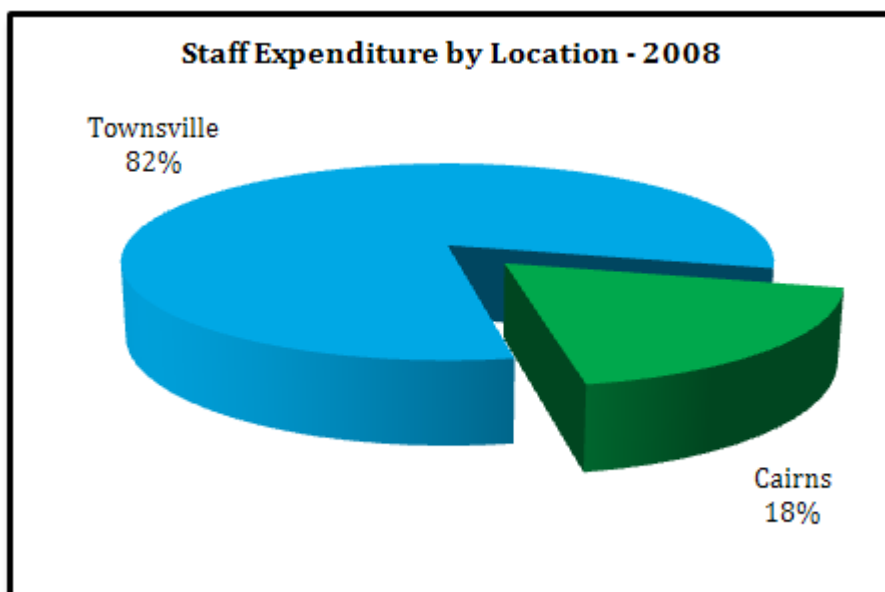
Table 3.7: Staff Expenditure by Location and Category

Category	Townsville (\$m)	Cairns (\$m)	Total (\$m)
Accommodation	22.602	5.130	27.732
Food	13.316	3.022	16.338
Vehicle/Travel costs (incl. petrol)	7.775	1.765	9.540
Energy	4.862	1.104	5.965
Communication	4.364	0.991	5.354
Education expenses	3.278	0.744	4.022
Entertainment	5.602	1.272	6.874
Other	14.744	3.347	18.091
<b>Total</b>	<b>76.543</b>	<b>17.374</b>	<b>93.917</b>

Source: JCU Staff Survey December 2008

Staff at both JCU campuses inject a significant amount of demand into their respective local economies. It is estimated that staff at the Townsville campus generated \$112.8m for the local economy and staff at the Cairns Campus generated \$27.5m for the local economy in 2008. Refer Multiplier tables 3.9 and 3.10.

Graph 3: Staff Expenditure by Location



Source: JCU Staff Survey December 2008

It is acknowledged that many elements of this expenditure are difficult to allocate to a location (expenditure on utilities, mortgage payments, licenses, etc).

### 3.5 James Cook University Student Expenditure by Location

Most students who attend James Cook University come from the local region. These students offer a solid foundation for the activities of a higher education facility like JCU and provide significant direct, indirect and induced levels of demand for local businesses and the overall regional economies. JCU also creates a unique level of regional economic demand for Cairns and Townsville as a significant attractor of higher spending students from other domestic and international locations.

During 2008, students at JCU spent approximately \$139m (excluding tuition fees) in the combined Cairns and Townsville economies. Each full-time student spends approximately \$13,569 per annum in the region. The distribution of that expenditure by student type is shown in table 3.8. We assumed that this expenditure remained in the region.

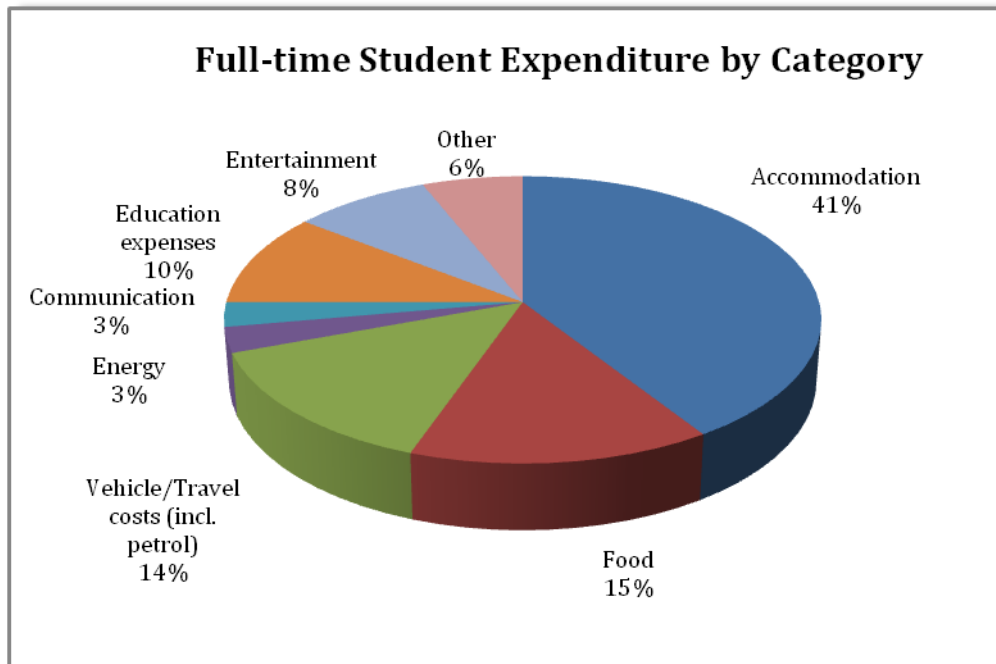
Table 3.8: Student Spending by Attendance Mode and Location

Student Type	Townsville	Cairns	Total (Tsv & Cns)	Students	Expenditure per Student
Full Time	\$62.066m	\$21.655m	<b>\$83.721m</b>	<b>6,170</b>	<b>\$13,569</b>
Part-time	\$42.315m	\$12.744m	<b>\$55.059m</b>	<b>7,171</b>	<b>\$7,678*</b>
<b>Total</b>	<b>\$104.380m</b>	<b>\$34.399m</b>	<b>\$138.780m</b>	<b>13,341</b>	<b>\$10,402</b>
Number of Students	10,128	3,213	<b>13,341</b>		
Expenditure/student	\$10,306	\$10,706	<b>\$10,402</b>		

Source: JCU Student Survey December 2008. Note: \* Part time student expenditure has been prorated

On average, the largest expense of James Cook University students was for accommodation (41%). Food represented (15%) of personal net income, vehicle expenses represented (14%), entertainment (8%), energy (3%), communications (3%), other education expenses represented 10%, and other expenditure represented 6%.

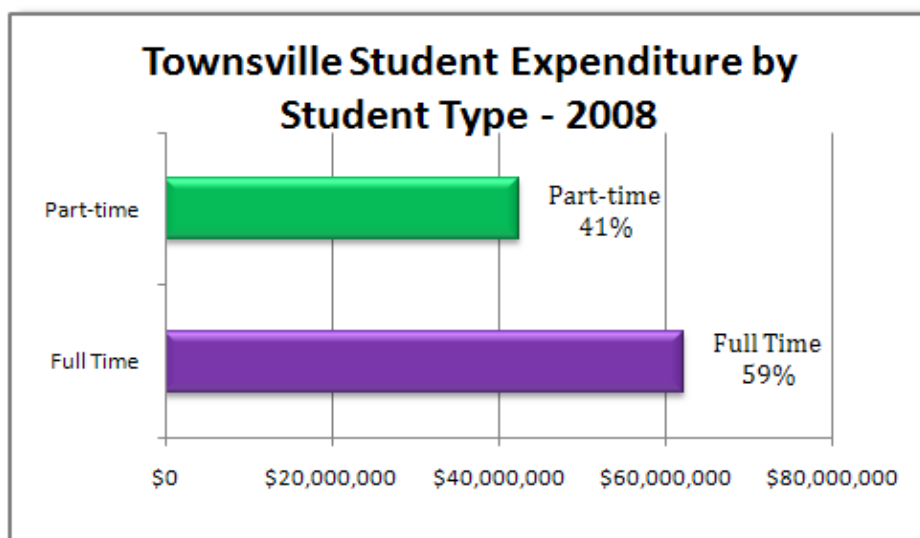
Graph 4: Full-time Student Expenditure by Category



Source: JCU Student Survey December 2008

Students at both campuses of JCU inject a significant amount of demand into their respective local economies. It is estimated that students at the Townsville campus spent \$104m in the local economy in 2008. Full time students in Townsville are estimated to have spent \$62m and part-time students spent \$42m in 2008. Each full-time student spends approximately \$13,251 per annum in the Townsville region.

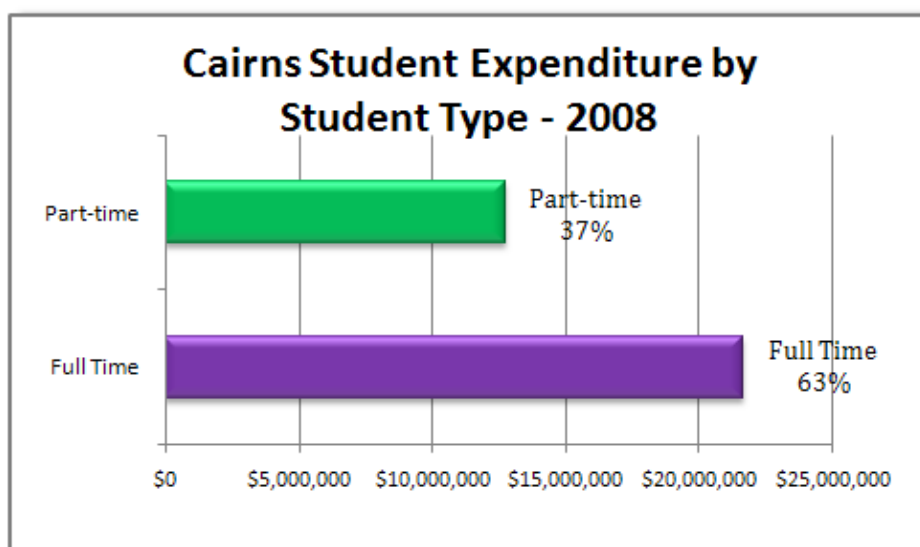
Graph 5: Townsville Student Expenditure by Student Type



Source: JCU Student Survey December 2008

While students at the Cairns Campus, were estimated to have spent \$34m in the Cairns regional economy in 2008, Full time students are estimated to have spent \$22m and Part-time students spent \$13m in 2008. Each full-time student spends approximately \$14,573 per annum in the Cairns region.

Graph 6: Cairns Student Expenditure by Student Type



Source: JCU Student Survey December 2008

### 3.6 University Direct Income Effects

The direct income effect represents the total amount of expenditure that the University contributes directly into the regional economy (ie. prior to multipliers being applied). The expenditure includes recurrent non-salary, net salary, capital and student expenditure.

In 2008, James Cook University contributed a total of \$394m in direct income to the local economies of Cairns (\$73m) and Townsville (\$321m).

Expenditure on goods and services was \$235.4m. The capital expenditure was \$66.8m, and the student expenditure was \$138.8m.

The total employment cost incurred by James Cook University in 2008 was \$146.4m, of which \$98.9m was paid out as net salaries and wages, and the balance (\$47.5m) as taxes, deductions, oncosts and superannuation. It is assumed that the oncosts, superannuation, deductions and tax of \$47.5m will not be spent at the regional level, and is therefore excluded so as to focus attention on the net earnings of staff paid within each of the locations, to more accurately measure economic impact.

### ***3.7 University Direct Employment Effects***

James Cook University is one of the most significant employers in the greater north Queensland economy. According to JCU's Human Resources system, in 2008 the University employed 2,612 people, or 1,906 full-time-equivalent (EFT) staff, of which 1,603 lived in Townsville and 303 lived in Cairns. The University provides a unique employment specialisation for the Townsville regional economy. When we compare the share of higher education workers employed in Townsville to the share of higher education workers employed state-wide we find that Townsville has, on average, a 75% higher employment specialisation than the rest of the State. While this is somewhat expected, it is important to note that very few regional centres have this type of specialisation. This means that Townsville benefits significantly from the export activities that its university generates.

### ***3.8 Impact of JCU on the Townsville and Cairns Economic Output***

James Cook University and its students are worth an estimated \$445m to the Townsville and Cairns economies. This is a significant amount of aggregate demand being injected into greater north Queensland. Significantly, in 2009 and 2010 James Cook University should continue contributing important value added economic benefits for greater north Queensland

#### ***3.8.1 The Multiplier Effect***

The following tables give data on direct expenditure and employment generated by the University itself and student spending, shows relevant 'value added' multipliers and 'employment' multipliers and calculates total economic impacts in each region for 2008.

Table 3.9: Multiplier Effect - Townsville

Townsville				
Expenditure Impacts		Type 2 Multiplier	Value Added (\$m)	Total Impact (\$m)
Recurrent Expenditure				
Staff (Net Salaries)	\$80.6m		\$32.2	\$112.8
Other	<u>\$73.2m</u>		<u>\$29.3</u>	<u>\$102.5</u>
<b>Total</b>	<b>\$153.8m</b>	1.4 <sup>1</sup>	<b>\$61.5</b>	<b>\$215.3</b>
Capital Expenditure	62.7	0.8	(\$12.5)	\$50.2
Student Expenditure	104.4	0.9 <sup>3</sup>	(\$10.5)	\$93.9
<b>Total</b>	<b>\$320.9</b>		<b>\$38.5</b>	<b>\$359.4</b>
Employment Impacts		Type 2 Multiplier on Initial	Multiplier Impact (EFT)	Total Employment Impact (EFT)
University Operations (actual EFT)	1,603.40	1.4307 <sup>1</sup>	691	2,294
		Type 2 Multiplier adjusted for Inflation in \$m expenditure	Multiplier Impact (EFT)	Total Employment Impact (EFT)
Capital Expenditure	\$62.7 m	10.53 <sup>2</sup>	660	660
Student Expenditure	\$104.4 m	14.19 <sup>3</sup>	1,481	1,481
<b>Total EFT</b>	<b>1,603</b>		<b>2,832</b>	<b>4,435</b>
<b>Multiplier categories applied:</b>				
1. Education				
2. Other Construction				
3. Accommodation etc.				

Source: DS Enterprises and Cummings Economics from JCU information and Qld Treasury multipliers

Table 3.10: Multiplier Effect – Cairns

Cairns				
Expenditure Impacts		Type 2 Multiplier	Value Added (\$m)	Total Impact (\$m)
Recurrent Expenditure				
Staff (Net Salaries)	\$18.3m		\$9.2	\$27.5
Other	<u>\$15.8m</u>		<u>\$7.9</u>	<u>\$23.7</u>
<b>Total</b>	<b>\$34.1m</b>	<b>1.5<sup>1</sup></b>	<b>\$17.1</b>	<b>\$51.2</b>
Capital Expenditure	\$4.1	0.9	(\$0.4)	\$3.7
Student Expenditure	\$34.4	0.9	(\$3.4)	\$31.0
<b>Total</b>	<b>\$72.6</b>		<b>\$13.3</b>	<b>\$85.9</b>
Employment Impacts		Type 2 Multiplier on Initial	Multiplier Impact (EFT)	Total Employment Impact (EFT)
University Operations (actual EFT)	303.4	1.4872 <sup>1</sup>	148	451
		Type 2 Multiplier adjusted for Inflation in \$m expenditure	Multiplier Impact (EFT)	Total Employment Impact (EFT)
Capital Expenditure	\$4.1 m	11.97 <sup>2</sup>	49	49
Student Expenditure	\$34.4 m	14.62 <sup>3</sup>	503	503
<b>Total EFT</b>	<b>303</b>		<b>700</b>	<b>1,003</b>
<i>Multiplier categories applied:</i>				
1. Education				
2. Other Construction				
3. Accommodation etc.				

Source: DS Enterprises and Cummings Economics from JCU information and Qld Treasury multipliers.

Table 3.11: Multiplier Effect – Combined (Townsville and Cairns)

Location	Economic Impact	Employment (EFT)
Townsville	\$359.4 m	4,435
Cairns	\$ 85.9 m	1,003
<b>Combined Total</b>	<b>\$445.3 m</b>	<b>5,438</b>

### 3.8.2 Gross Regional Product and Employment

Latest available official Gross Regional Product (GRP) figures for the two regions, Northern and Far North Statistical Divisions, are given in the publication *Experimental Estimates of Gross Regional Product, 2005/06*, Treasury, Queensland Government.

The following provides an updated estimate to 2008 of GRP for the two regions based on the 2005/06 figures plus inflation and population growth and provision for a real per capita increase in GRP of 2% pa.

Table 3.12: Gross Regional Product: Northern and Far North Statistical Divisions

Estimate of Gross Regional Product: Northern & Far North		
	Northern (Townsville)	Far North (Cairns)
<b>Est Gross Regional Product 2005/06</b>	<b>\$8,557 m</b>	<b>\$9,055 m</b>
<i>Apply following factors:</i>		
Population Growth 2006/07	2.5%	2.2%
Population Growth 2007/08	2.2%	2.5%
Population Growth est 2 <sup>nd</sup> half 2008	1.1%	1.25%
Inflation 2005/06 to 2008	11.2%	11.2%
Est Growth Real GRP per Capita	5%	5%
Total Growth	1.237	1.238
<b>Est Gross Regional Product 2008</b>	<b>\$10,581 m</b>	<b>\$11,213 m</b>

Source: Cummings Economics & ABS data.

Employed workforce recorded by Department of Employment and Workplace Relations for September Quarter 2008 was Northern (Townsville) region - 128,800, Far North (Cairns) region - 136,600.

The estimated impact of James Cook University on Gross Regional product and Employment is

- In 2008 James Cook University contributed 3.4% of the Northern region (Townsville) economy.
- In 2008 James Cook University contributed 3.4% of Northern region (Townsville) employment.
- In 2008 James Cook University contributed 0.8% of the Far North region (Cairns) economy.
- In 2008 James Cook University contributed 0.7% of Far North region (Cairns) jobs.

Table 3.13: JCU Impact on Gross Regional Product: Northern and Far North Statistical Divisions

<b>JCU Impact on Gross Regional Product: Northern &amp; Far North</b>		
	<b>Northern (Townsville)</b>	<b>Far North (Cairns)</b>
Value Added JCU	\$359.4 m	\$85.9 m
GRP	\$10,581 m	\$11,213 m
<b>JCU Percent of GRP</b>	<b>3.4%</b>	<b>0.8%</b>
Employment Created JCU	4,435	1,003
Regional Employment	128,800 <sup>1</sup>	136,600
<b>JCU Percent of Employment</b>	<b>3.4%</b>	<b>0.7%</b>
<i>Note:</i>		
1. Estimate based on Northern and North West Sep Qtr 2008 was 148,500. Census 2006 data indicates that split was 87% Northern.		

Source: Cummings Economics & DEEWR data.

### 3.9 Other Impacts (not included in quantified economic impact estimate)

#### 3.9.1 James Cook University's contribution to the Value of Human Assets

The social benefits of higher education and the facilities that provide them are often ignored in economic impact studies. Including a reference to social and environmental benefits is important when assessing the total impact of an organisation on a regional economy. Universities world-wide provide enormous benefits to individuals, communities and societies that should be acknowledged. There were no Australian studies that the researcher could find, measuring this benefit.

There have been a number of international studies that have attempted to identify and estimate the value of a degree or postgraduate qualification to an individual over their working lifetime. One of the more recent studies by Price Waterhouse Coopers on behalf of Universities UK (2006) estimated that the average value of a first degree is £160,000 over the working life of the graduate. The report acknowledges that there is wide variation depending on the subject areas with degrees in medicine and dentistry attracting an income premium of up to £340,000 and subjects like chemistry and physics attracting £185-190,000.

Furthermore, postgraduate qualifications attract a premium of £70-80,000 for a degree, £30-40,000 for a Post Graduate Certificate.

In the absence of similar Australian studies and allowing for an exchange rate of

\$1 = .42 pound, a CPI of 3.5% and transferring the results of this study to Townsville and Cairns the benefits for each graduate over their working life, on average is \$422,370.

There have been thousands of students graduate at JCU, since it became a University in 1970. Because records are inconsistent and unreliable it is unclear how many graduates remain in the Townville and Cairns regions.

Using the average lifetime earning value, it can be seen that there is enormous additional benefits to individuals and economies from higher education services and facilities.

### **3.9.2 Other Individual and Community Benefits**

Graduates also enjoy benefits beyond increased income. A 1998 report published by the Institute for Higher Education Policy in America reviews the individual benefits that college graduates enjoy, including higher levels of saving, increased personal/professional mobility, improved quality of life for their offspring, better consumer decision making, and more hobbies and leisure activities (Institute for Higher Education Policy, 1998).

According to a report published by the Carnegie Foundation, non-monetary individual benefits of higher education include increasing economic and job security for those who graduate with a bachelor's degree. In the United States of America research has also consistently shown a positive correlation between completion of higher education and good health, not only for oneself, but also for one's children.

In addition, JCU serves the regional community in a variety of ways, through access to facilities and knowledge. A stunning example of the power of having the university located in a regional area, is the story of Eddie Mabo, the Indigenous land rights campaigner (Refer p42 for the Eddie Mabo story)

### **3.9.3 Research Impacts**

Universities that engage in research and innovation in addition to teaching activities generate a much greater economic impact than those universities engaged in teaching alone. In addition to the economic impact generated through income, expenditure and employment, these universities produce a "spillover effect" to the level of technology in the region through its research and innovation activities.

JCU is currently ranked in the top 400 universities world-wide in the internationally recognised Shanghai Jiao Tong university ranking, which is primarily based on research performance. As a research-intensive university, located in a regional area, JCU has a unique position to value add to its local region through its research.

JCU's research directly impacts the local and wider economy by increasing employment and expenditure in the region. These impacts are captured in the estimates of James Cook University's economic impact for our region.

The benefits of the research outputs, for example, improved efficiency and effectiveness of industry, new discoveries that inform decision-makers, and creation of entrepreneurial opportunities, are not easily quantifiable. So while these benefits are recognised, the economic impact of the discoveries has not been quantified in this report. Some examples of the qualitative impact of some of JCU's research has had on the region and nation are provided below.

*Building to cope with tropical cyclones.* Following Cyclone Althea, which struck the Townsville region in 1971, and Cyclone Tracy, which struck Darwin in 1974, the Cyclone Structural Testing Station, associated with JCU's School of Engineering, was established in 1977. For more than 30 years, the Cyclone Structural Testing Station has provided independent advice to industry and government on the effects of severe winds on structures such as low-rise domestic and industrial buildings. This advice has also been incorporated in design codes and standards for buildings and their components in Australia and overseas, and has resulted in new buildings being able to cope better with tropical cyclones.

*Better Educational Outcomes for Boys.* Research by JCU School of Education researchers led by Professor Nola Alloway, in partnership with other Australian and overseas researchers, has challenged theories of literacy learning that over-simplify the statistics into stereotypes about boys and girls. One practical outcome from the research was the development of a five-module "Success for Boys" package of research-based professional learning materials. The Commonwealth has provided \$16 million for teachers from 1,600 schools across Australia to undertake a professional learning program based on the "Success for Boys" packages. The "Success for Boys" initiative provides teachers in the compulsory years of schooling – from early childhood to secondary – with high-quality professional material for improving boys' learning outcomes and engagement, especially those boys who are at risk of disengaging from school. More broadly, the research shows that focused teaching training makes for better literacy for boys.

*Better Ears and Communities.* Aboriginal health is a leading research theme at JCU, and the University actively contributes to improving Indigenous Australian health. One example is the treatment of chronic middle ear infection with discharge (otherwise known as chronic suppurative otitis media or CSOM). CSOM affects 30 per cent of children in remote Aboriginal communities in Australia. The role of new medicines that are applied direct to the ears ("topical agents") was investigated by Professor Richard Murray and colleagues. The "NACCHO Ear Trial", which began in 2001, compared a new topical agent (ciprofloxacin) with the recommended therapy at the time. Critical to this trial was that it took place in the "real world" setting of the Aboriginal primary health care clinic and was carried out by Aboriginal health workers. The trial found that ciprofloxacin was much more effective than the conventional therapy. The paper reporting the trial's outcomes published in the Medical Journal of Australia won the Australian Medical Association/Wyeth Prize for the best original research published in 2003 and the National Institute of Clinical Studies granted a Cochrane Users Award (Major Winner)

in 2004 for the best use of evidence to enhance patient care. More importantly, the research made a big difference to clinical practice in Aboriginal communities. The trial provided NACCHO with the evidence to argue for listing ciprofloxacin by the Pharmaceutical Benefits Scheme, making it available at an affordable price across Australia. As a result, CSOM is now in decline.

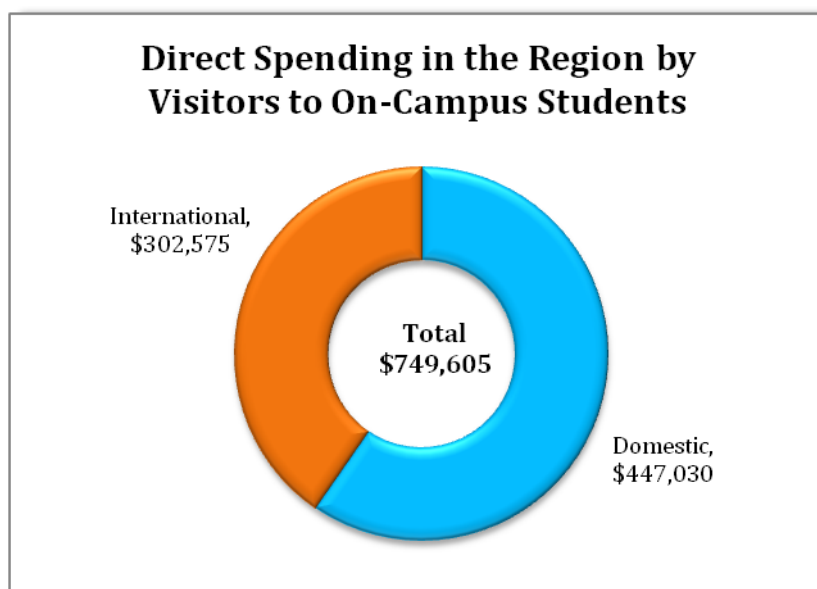
*Tropical Fish Futures – sustaining the Great Barrier Reef line fishery.* JCU's Fishing and Fisheries Research Centre, supported by the Cooperative Research Centre for the Great Barrier Reef World Heritage Area and Marine and Tropical Sciences Research Facility, have developed the underpinning knowledge for forward planning and management of the Great Barrier Reef (GBR) fishery. The research assessed the degree to which closing areas to fishing may have reduced fishing impacts and the Centre has evaluated the various mixes of strategies for conservation and fishery management designed to meet the needs of diverse GBR stakeholders. The work has been pivotal in rezoning of the reef by the Great Barrier Reef Marine Park Authority (GBRMPA), which has increased protected zones closed to fishing from five per cent to 33 per cent. The scheme introduced in 2004 is designed for sustainability and designates some 115,000km<sup>2</sup> as protected. Population monitoring work by JCU's fisheries researchers from the ARC Centre of Excellence for Coral Reef Studies suggests the rezoning program has been successful, with coral trout and red emperor stocks already recovering in parts of the reef open to fishing.

For more examples of the impacts of JCU's research, refer to the following publications: "Where JCU research makes a difference" and "Aboriginal and Torres Strait Islander Research @JCU – Making a Difference" both published in 2008, and on JCU's website at:  
<http://www.jcu.edu.au/research/excellence/index.htm>.

#### **3.9.4 Other Estimated additional Expenditure in Townsville and Cairns**

In addition to this injection of aggregate demand, a proportion of the students coming to James Cook University are likely to be visited by family and friends who will make expenditures in the local economy.

Graph 7: Direct Regional Economic Impact from Visitors to On-Campus Students



Source: BU study, HR System and TEL

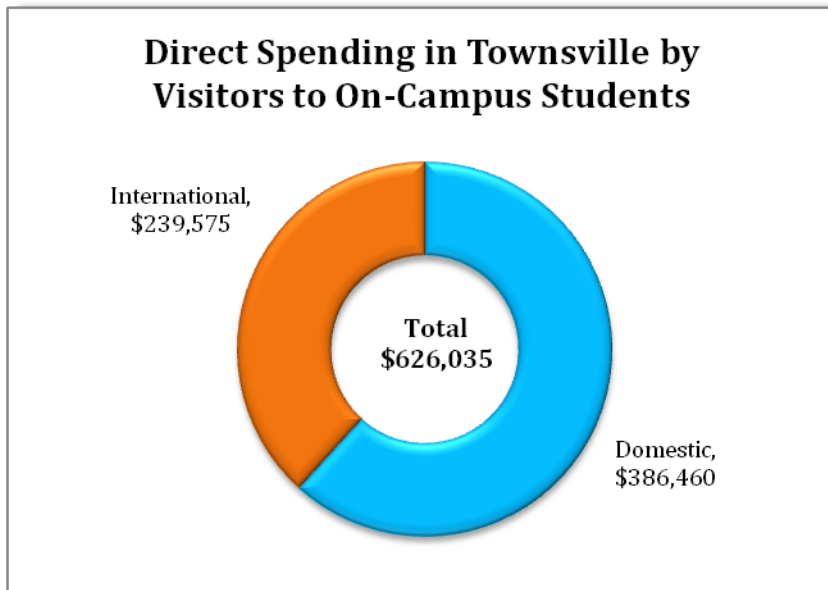
Assume that only the domestic students whose normal place of residence is outside the Townsville and Cairns regions generate such visitor traffic (4,967) and that, only 20%<sup>2</sup> of students are either accompanied to the University or receive visits from family and friends during the year. This suggests that if 993 students are visited by their parents/friends (4,967 x 0.2) and visited once per academic year and assuming a daily expenditure of \$150 per day per visit, provides an estimate of \$447,030 for Domestic visitor spend. In addition there are 1,729 identified students from overseas, 360 attending Cairns campus and 1,369 attending Townsville campus. Using a similar formula but allowing for only 10% visits, a longer stay of 7 nights and a higher daily spend of \$250 the international visitor injection is \$302,575. The total estimated visitor injection for 2008 is \$749,605.

The direct economic impact from visitors, friends and relatives visiting Townsville students whose normal place of residence is outside the Townsville region is estimated to be \$626,035 in 2008. There are 1,369 international students attending Townsville campus. In 2008, 41 percent of Townsville's domestic student population were normally resident outside the region and 13% were international students attending Townsville campus. Together they comprise 54% of Cairns Campus student population.

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<sup>2</sup> Bournemouth University (BU) Economic Impact Study 2007

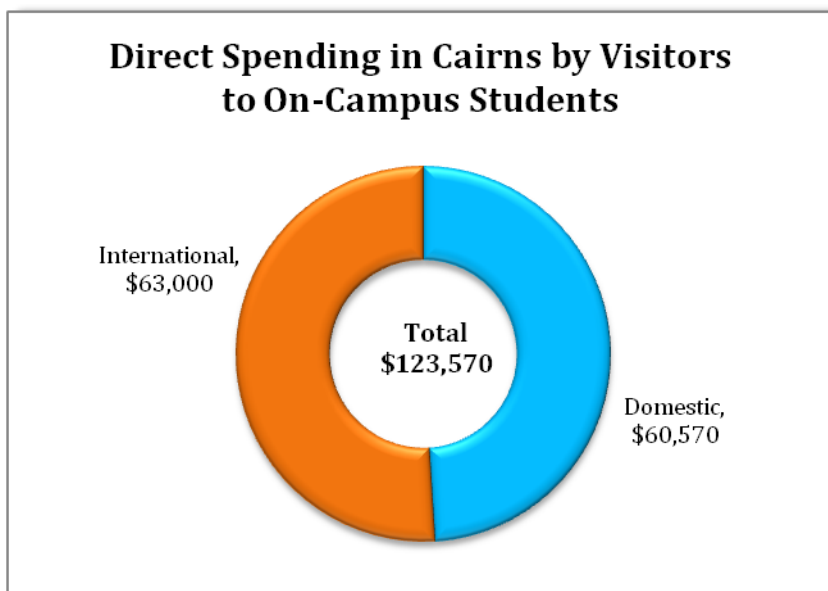
Graph 8: Direct Townsville Economic Impact from Visitors to On-Campus Students



Source: BU study, HR System and TEL

The direct economic impact from visitors, friends and relatives visiting Cairns students whose normal place of residence is outside Cairns is estimated to be \$123,570 in 2008. In 2008, twenty-two percent of Cairns domestic student population were normally resident outside the region students and 11% were international students attending Cairns campus. Together they comprise 33% of Cairns Campus student population.

Graph 9: Direct Cairns Economic Impact from Visitors to On-Campus Students



Source: BU study, HR System and TEL

In addition, there are other activities that the University attracts that impact the local economies of Cairns and Townsville, such as, staff working at the University on sabbatical from other universities and international and domestic conferences. These events vary from year to year, although when they occur, they have an impact on the local economy. The economic impact is unable to be estimated.

## **4. Methodology**

### **4.1 General**

This study uses the data that are available from the University finance system for the year ending 2008. The data was collected in March 2009. Primary data was also collected from sample surveys of staff and students, conducted in November 2009.

Income and expenditure data were extracted to show expenditure on the purchase of goods and services, and capital expenditure less depreciation. Although Capital expenditure can be cyclical and sometimes a significant leakage can occur as firms from outside the region can be awarded contracts, they were included as a direct expenditure item for the purposes of this impact study.

Staff costs were extracted from the University HR System.

With a short timeline and offering a prize to encourage survey responses, an online survey was launched to establish the location of staff and their expenditure patterns. The staff survey achieved 383 responses with a confidence interval of 5 at a confidence level of 95%. Similarly, an online survey was launched to determine the expenditure patterns of students. The student survey achieved 349 responses with a confidence interval of 5 at a confidence level of 95%.

In this way the researchers calculated University Expenditure, by staff income and expenditure and, finally, student expenditure (excluding University fees – the inclusion of University Fees in student expenditure would have led to double-counting as this sum is included in the expenditures made by the University).

The data by location for recurrent expenditure has been estimated based on equivalent fulltime staff (EFT).

Once the total expenditures by category and area were determined, QLD treasury multipliers for relevant industries were applied.

### **4.2 The Multiplier Effect**

The following seeks to identify regional economic impacts of James Cook University operations in the Townsville region and Cairns region. The multiplier impacts were produced by Cummings Economics Cairns.

### 4.2.1 Regional Boundaries

The impacts of James Cook University are on the two regions as defined by the two Queensland Statistical Divisions:

Northern - Based on Townsville plus Burdekin, Hinchinbrook and Dalrymple Shires. Employment data includes the North West statistical division, pro-rated to estimate the employment data for the Northern region.

Far North - Based on Cairns plus Cassowary Coast, Tablelands, Etheridge and Croydon Shires plus Weipa, Torres Shire and the various Aboriginal and Islander communities located in Cape York Peninsula and the Torres Strait.

### 4.2.2 Multipliers

The latest multipliers available at a regional level in Queensland, are those included in “*Queensland Regional Input-Output Tables, 1996-97*, Office of the Government Statistician, Queensland Government”.

Multipliers are available in this publication by 34 industry groups for ‘value added’ and ‘employment’.

The multipliers are composed of a number of elements. A particular entity will receive total ‘output’ that will generate expenditure on ‘inputs’ from other entities and on ‘value adding’ by the firm’s own workforce and its capital resources.

Both of these expenditures will set off a chain of ‘flow-on’ effects through the economy as enterprises spend with enterprises and as income of workforce is spent.

Initial expenditure by economic entities generate ‘flow-on’ expenditure through the economy as other entities receiving income from that entity, purchase inputs from other entities and so on. ‘Flow-on’ impacts are also generated as employees spend their incomes.

Type I multipliers only include the effect of the first “industrial support” transaction.

Type II multipliers include both the “industrial support” effect and the “consumption induced” effect.

The multipliers used in this assessment are Type II multipliers.

‘Output’ multipliers aggregate the total ‘flow-on’ effects but involve a great deal of double counting as one firm’s expenditure becomes another firm’s income. ‘Output’ multipliers are no longer published by Queensland Treasury.

'Value Added' multipliers eliminate double counting by aggregating only the 'value added' by each entity in the process. The multipliers used in this assessment are 'value added' multipliers.

Employment multipliers measure the number of jobs created as part of the 'flow-on' effect. The multipliers used in this assessment are Type II employment multipliers. Multipliers usually relate to a region or area. Once a 'flow-on' effect goes outside that area, it becomes an 'import' and is not counted. Thus, multipliers for regions will tend to be lower than those at a State level or a national level.

### **Technical Definition**

A technical definition of the multipliers used by Queensland Treasury is given on pages 43 and 44, Queensland Input-Output Tables 1996/97, 107 Industries, Office of the Government Statistician, Queensland Government (see [www.oesr.qld.gov.au](http://www.oesr.qld.gov.au) see single publications).

### **Examples of 'Flow-on' Effects**

As the University purchases goods and services provided by other entities and pays wages and salaries to staff, some of the spending on goods and services will be on locally produced goods and services and some on imported goods and services. Those goods and services that are imported do not become part of the multiplier process (eg. expenditure on books from overseas).

If the transaction is with a local supplier, then the value added to the transaction by the local business becomes part of the multiplier impact.

Further, if the books were published and printed locally, the 'value added' by the publisher and the printer becomes part of the multiplier impact. If any part of the production of the book was completed outside the region then this part does not form part of the local multiplier impact.

Also University staff and businesses receiving 'flow-on' benefits (wages) will purchase goods and services. For instance, the weekly grocery shopping will include 'value added' products made by local retailers who will pay staff, who in turn, spend on goods and services. If the product sold by the retailer is made outside the region, there is no further multiplier impact. If it is produced locally, there is.

### **4.2.3 Age of Multiplier Tables**

In practice, the age of the tables (11 years old) is not a major complication. By and large, 'value added' multiplier relationships usually change only slowly over time.

The employment multipliers are initially expressed in terms of jobs created per million dollars of expenditure in that industry. If these tables are used, they need to be adjusted for inflation. However, in this case, we have been able to obtain actual initial direct employment created by the University and are able to apply a multiplier not affected by inflation.

However, for calculation of employment generated by the capital expenditure and by student spending however, the multiplier tables have been adjusted for inflation 1996/97 to 2008.

#### **4.2.4 Industry Groupings in Multiplier Tables**

At regional levels, multipliers are available only in broad industry groupings.

In the case of the University's recurrent operations, the nearest industry grouping is for 'education'.

This grouping includes all education including schools, vocational and university-level education, and there are likely to be some differences.

Capital expenditure is primarily on buildings and appropriate grouping is taken to be 'other (non-residential) construction'.

Majority of student expenditure is on accommodation and food so the grouping 'accommodation, cafes and restaurants' is used.

#### **4.2.5 Accuracy**

Bearing in mind the above points, the total impact on the economy derived from multipliers should be regarded as 'order of magnitude estimates' only.

### **4.3 Employment**

The researchers also investigated the significance of James Cook University as an important employer in the Townsville and Cairns LGA regions. To complete this task total employment share in Queensland higher education institutions was obtained and compared to the LGA share. In this way we can determine if the University provides the region with a unique employment specialisation.

## **5. Appendix**

### **5.1 *Definitions and Concepts***

These terms are used extensively throughout this report.

#### **5.1.1 Levels of Economic Impact**

When the University, its students and staff spend money within an economy it will have secondary impacts that filter through those sectors that either support the University, student and staff spending directly or indirectly. These ripple effects are commonly called secondary effects. Generally, economic impact studies break the levels of impact down into three categories:

#### **5.1.2 Direct Effects**

These effects commence directly from expenditure made by the University and its students. Therefore the University's recurrent expenditure is direct spending. Similarly students made "additional" expenditure including visits from friends and relatives. These will be made to local landlords, food and beverage outlets, entertainment attractions and transport as part of the living costs. These are all direct effects.

#### **5.1.3 Indirect Effects**

The businesses and individuals that receive the money directly from the University and its students will re-spend a significant proportion of it on goods and services necessary for them to produce their output. For example, a shop that receives money from students will spend money on goods from their wholesalers, transport, electricity and heating for the shop, accountants, as well as, pay their staff wages. Similarly, businesses that receive money from the shop will purchase goods and services from other businesses so that they can function, they will also pay out money to staff and owners as wages and profits. All of these transactions that will percolate throughout the local economies, the region and the national economy are known as the indirect effects.

#### **5.1.4 Induced Effects**

During the direct and indirect effects as money is spent a portion of that money accumulates as income in the form of wages, salaries, profits, rent and interest. The recipients of that money will at some stage re-spend the vast majority of it on goods and services as their consumption expenditure. The act of re-spending this income that initially came as a result of the University and its student's activities creates a further injection of demand into the economy and increases the total effects further. This aspect of the impact is known as the induced effect.

### 5.1.5 Multiplier

The term multiplier, from an economic perspective, refers to the factor by which you multiply the original expenditure to estimate the direct and indirect effects associated with that original expenditure. There is a variety of multipliers relating to output, income and employment as well as variations in whether they include the direct and indirect effects, or the direct, indirect and induced effects.

## 5.2 Survey Data

The data used in this study were collected using 2 online surveys, one for the staff of JCU and one for the students. Both survey sets were asked questions relating to where their normal place of residence was, and what did they spend their money on.

Staff were asked questions about their expenditure on particular items such as accommodation and vehicle expenditure. Staff were also asked specific questions relating to their income and the nature of their employment with JCU (e.g. part-time or full-time).

Students were asked where their normal residence was when they were not at JCU, where they lived whilst at JCU, and what they spent their money on.

These data provided information relating to income and expenditure by staff and students.

Total staff employment by the University in 2008 was 2,611.6. A total of 383 staff responded to the survey, allowing a confidence level of 95% with a confidence interval of 5.

According to the Universities student system there were 16,581 Student's enrolled at JCU in 2008. A total of 352 students responded to the survey; allowing a confidence level of 95% with an interval of 6.

The **confidence interval** is the plus-or-minus figure usually reported in newspaper or television opinion poll results. For example, if you use a confidence interval of 4 and 47% percent of your sample picks an answer you can be "sure" that if you had asked the question of the entire relevant population between 43% (47-4) and 51% (47+4) would have picked that answer.

The **confidence level** tells you how sure you can be. It is expressed as a percentage and represents how often the true percentage of the population who would pick an answer lies within the confidence interval. The 95% confidence level means you can be 95% certain; the 99% confidence level means you can be 99% certain. Most researchers use the 95% confidence level.

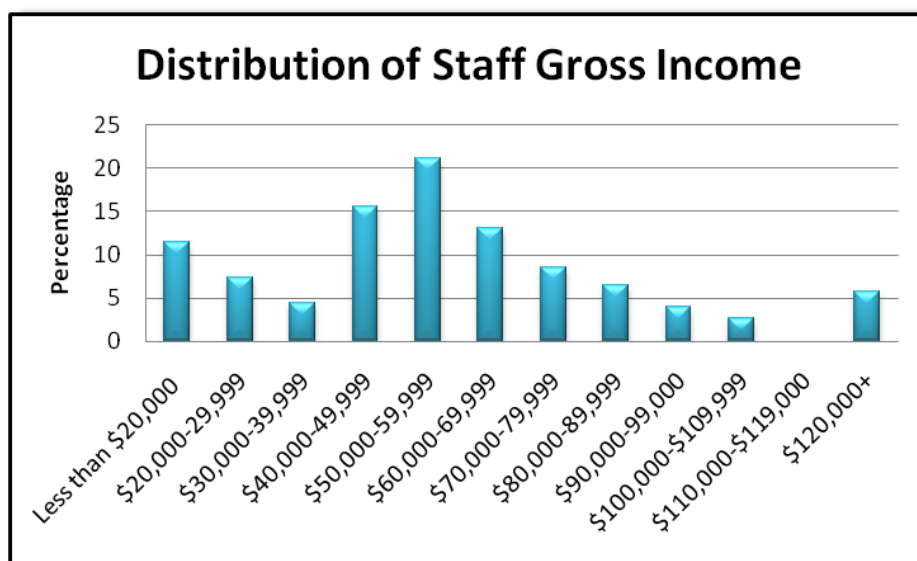
When you put the confidence level and the confidence interval together, you can say that you are 95% sure that the true percentage of the population is between 43% and 51%. The wider the confidence interval you are willing to accept, the more certain you can be that the whole population answers would be within that range.

### 5.2.1 Staff Survey

A total of 362 questionnaires were completed by Cairns and Townsville staff, with 59% of respondents saying they were Professional and Technical staff and 41% indicating they were Academic Staff; this sample amounted to almost 15% of all staff. About 60% of staff said they were employed on a permanent full time basis. Over 80% of all respondents lived in Townsville and around 16% lived in Cairns.

Staff were also asked to identify their income range. The respondents were asked to identify where they reside and to estimate their expenditure. The income categories from \$40,000 through to \$69,999 comprised 49.7% of respondents.

*Graph 10: Distribution of Staff Gross Income*



Source: JCU Staff Survey December 2008

Almost 57% of respondents said they originated from outside northern Queensland. Interestingly over a third of respondents indicated they came from outside Queensland with 16% of all respondents coming from overseas.

The staff survey contained 14 questions. The Staff Survey instrument is detailed below.

## JCU Staff Survey

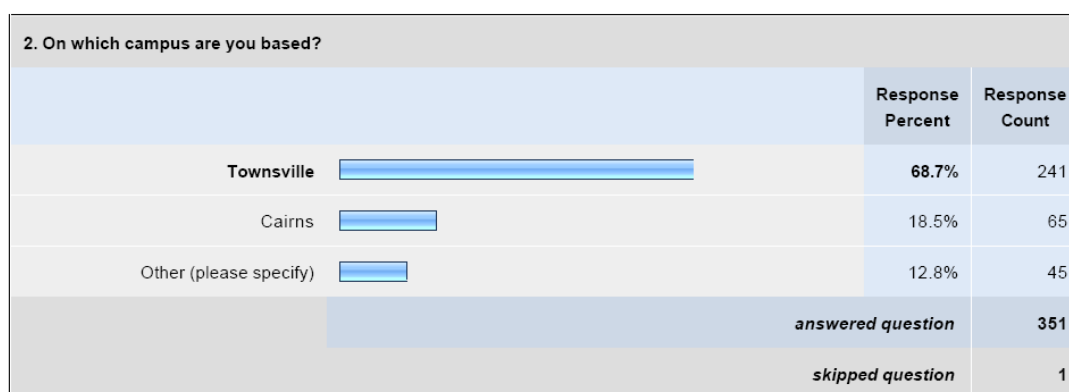
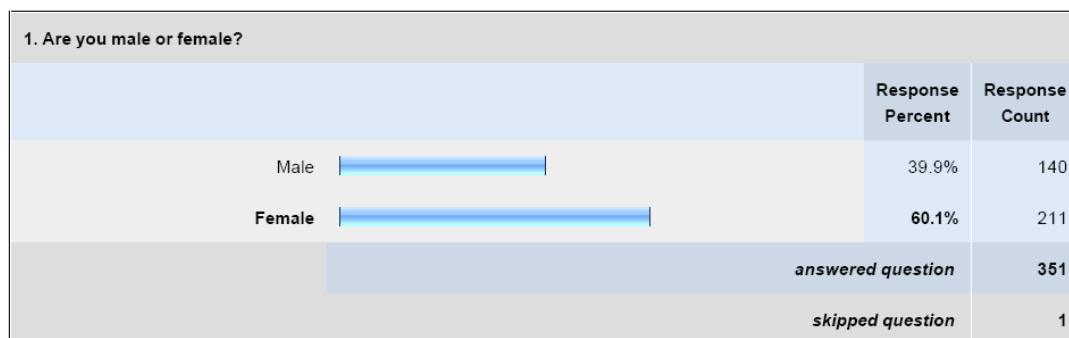
*The staff survey contained 14 questions. The Staff Survey instrument is detailed below.*

1. Are you male or female?
2. On which campus do you work? - Townsville, Cairns or Other
3. What Faculty or Division do you work in?
4. Are you an academic or professional/technical staff member?
5. Are you a permanent full-time, permanent part-time, contract or casual member of staff?
6. If you work part-time, what proportion of time are you contracted to work? (ie. expressed as a percentage of the full time hours per week. eg. 50%)
7. Please indicate the before tax annual income you receive from JCU?
  - Less than \$20,000
  - \$20,000-29,999
  - \$30,000-39,999
  - \$40,000-49,999
  - \$50,000-59,999
  - \$60,000-69,999
  - \$70,000-79,999
  - \$80,000-89,999
  - \$90,000-99,000
  - \$100,000-\$109,999
  - \$110,000-\$119,000
  - \$120,000+
8. What is your residential postcode?
9. How many people live in your household?
10. What is your total household income?
11. What % of your total household expenditure is spent in each of these areas?
  - (i) Accommodation expenses (including rent or mortgage payments and rates)
  - (ii) Food
  - (iii) Vehicle/Travel costs (incl. petrol)
  - (iv) Energy (ie. electricity, gas etc.)
  - (v) Communications (incl. Phone, internet, mobile)
  - (vi) Education
  - (vii) Entertainment
  - (viii) Other
12. Are you local to the Townsville/Cairns region?
13. If no, did you move to Townsville/Cairns to work or study at JCU?
14. If so, where did you move from?

## 5.2.2 Student Survey

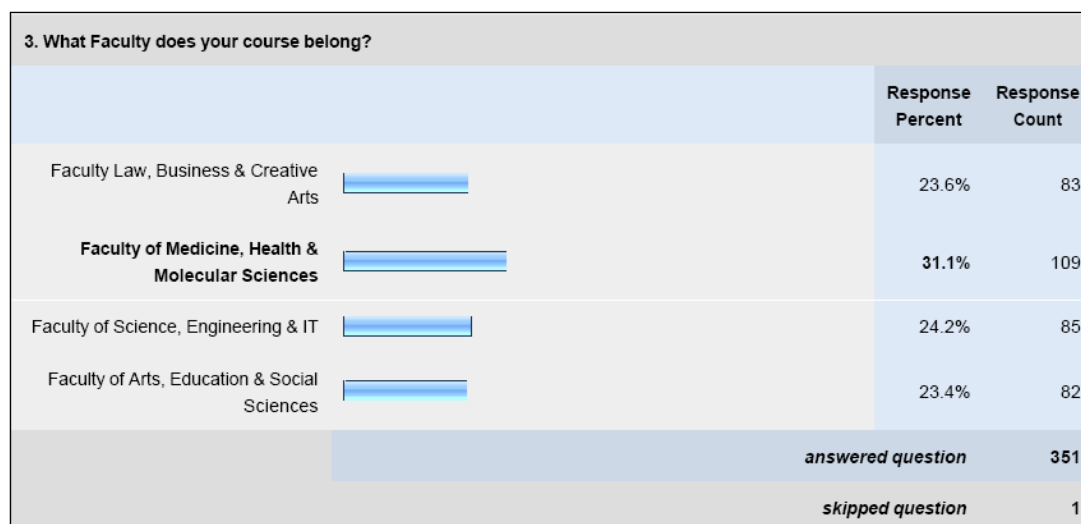
A total of 351 questionnaires were completed by students. Most of the respondents were female and 79% of respondents indicated they lived in Townville. Most respondents were undergraduate and the majority were full time students. This student population offers local business a positive source of labour, with over 70% of respondents saying they had some kind of paid employment; 82.5% indicated they had part time work.

Graph 11: Student Survey Responses - 1



The Faculty of Medicine, Health and Molecular Sciences provided the highest number of student responses.

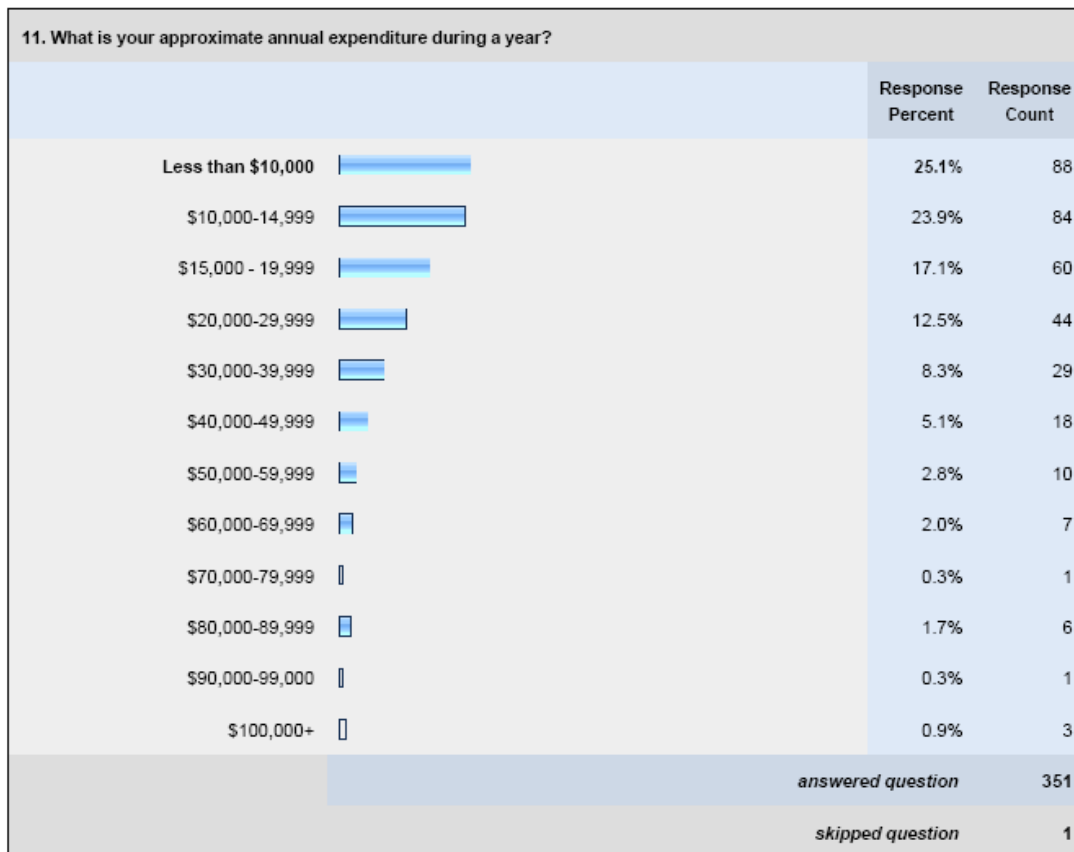
Graph 12: Student Survey Responses - 2



Almost 18% of respondents said they were international students and there was evidence that international students spent more than domestic students. The survey also shows the largest proportion of spending by students is on accommodation.

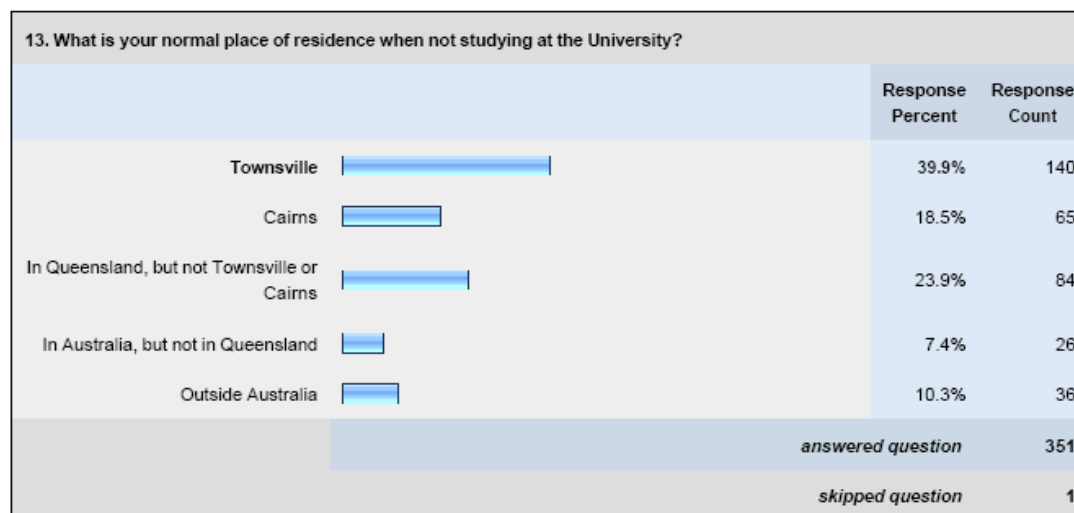
Part time students at JCU tend to spend more than full time students.

Graph 12: Student Survey Responses - 3



While most respondents normal place of residence was either in Cairns or Townsville 41.6% of respondents came from outside these regions.

Graph 12: Student Survey Responses - 4



## JCU Student Survey

*The student survey contained 14 questions. The Student Survey instrument is detailed below.*

1. Are you male or female?
2. On which campus are you based? - Townsville, Cairns or Other
3. To what Faculty does your course belong?
4. Are you a domestic or international student?
5. Are you studying at an undergraduate, postgraduate coursework, or postgraduate by research level at JCU?
6. Are you studying full-time or part-time?
7. If part time, how many subjects are you doing this year?
8. Do you also have a job?
9. If so, are you employed on a full-time or part-time basis?
10. If so, are you employed by JCU?
11. What is your approximate annual expenditure during a year?
  - Less than \$10,000
  - \$10,000-14,999
  - \$15,000 - 19,999
  - \$20,000-29,999
  - \$30,000-39,999
  - \$40,000-49,999
  - \$50,000-59,999
  - \$60,000-69,999
  - \$70,000-79,999
  - \$80,000-89,999
  - \$90,000-99,000
  - \$100,000+
12. What is your residential postcode whilst at James Cook University?
13. What is your normal place of residence when not studying at the University?
14. On average, when at the University, how much do you spend per week on the following items?
  - (i) Accommodation expenses (including rent or mortgage payments and rates)
  - (ii) Food
  - (iii) Vehicle/Travel costs (incl. petrol)
  - (iv) Energy (ie. electricity, gas etc.)
  - (v) Communications (incl. Phone, internet, mobile)
  - (vi) University fees
  - (vii) Other Education expenses
  - (viii) Entertainment
  - (ix) Other

### 5.3 References

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## 6. Limitation of Liability

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*The Eddie Koiki Mabo Library on the Townsville Campus*



### ***The Eddie Koiki Mabo Story***

*JCU has a special place in the recent history of Australia. The University was the base for many years for Eddie Koiki Mabo, a Torres Strait Islander from the Murray Islands (Mer Island) and a tireless campaigner for Indigenous land rights. Eddie is celebrated for his role in the historic decision of the High Court of Australia, popularly known as the Mabo Decision, which overturned the legal concept of terra nullius ("no-man's land").*

*Although Eddie Mabo came to JCU to work as a gardener, he would sit in on lectures and became a regular in the library, because he understood that the University was one of the places where he could learn how white people were so powerful. It was in a conversation with Professor Henry Reynolds and another JCU staff member, Associate Professor Noel Loos, that Eddie Koiki Mabo first found out that his land back on the island of Mer in the Torres Strait was legally considered to be Crown land.*

*In May 2008, the JCU library was renamed The Eddie Koiki Mabo Library.*

